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FERTILITY TRENDS IN CHILE 1960-2003

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Abstract

The objective of this study is to characterize the fertility trends in Chile in recent decades, and identify the main factors underlying them. This study is based on an in-depth analysis of the available data: the population censuses of 1992 and 2002, socioeconomic household surveys, and data provided by the Civil Registry regarding demographic and vital statistics of the population. The fertility rate has significant effects on aspects such as economic growth, the demands on the education and health systems, the funding of pensions systems, etc. On a micro level, family characteristics depend crucially on the number of children per mother. A household with five children faces very different opportunities and restrictions to one with two children, holding other factors constant.

Key Words:

Fertility.

Fertility trends in Chile 1960-2003

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INTRODUCTION

The objective of this study is to characterize the fertility trends in Chile in recent decades, and identify the main factors underlying them. This study is based on an in-depth analysis of the available data: the population censuses of 1992 and 2002, socioeconomic household surveys, and data provided by the Civil Registry regarding demographic and vital statistics of the population.

The fertility rate has significant effects on aspects such as economic growth, the demands on the education and health systems, the funding of pensions systems, etc. On a micro level, family characteristics depend crucially on the number of children per mother. A household with five children faces very different opportunities and restrictions to one with two children, holding other factors constant.

The opportunities available to children also depend on the family structure into which they are born and grow up. The economic and emotional environment of children that grow up with both parents can differ significantly from environments where one parent is absent. When the rate of total births occurring out-of-wedlock increases in a country from 15 to 50 percent, structural changes occur in the environment in which children grow up, with consequent potential effects on their material and emotional development expectations.

The figures above are not simply illustrative, they describe the actual situation in Chile in the 1960 to 2003 period. In those years, the number of children per woman dropped by half, while the percentage of out-of-wedlock births increased from 15.9 to 53.8 percent during the same period.

The number of children per woman has decreased in the context of declines in the infant mortality rate, increases in the schooling levels of the population, massification of contraceptive methods and greater employment opportunities for woman. The reduction in birth rates is especially high among married women, as well as among women from lower socioeconomic levels. There has also been an increase in the proportion of women who are mothers. This goes some way towards compensating the drop in the number of children per woman.

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The increase in out-of-wedlock births is a result of the drop in the birth rate among married women, as well as of increases in the proportion of unmarried women, rather than of increases in the birth rate among unmarried women. In fact, this latter variable remains relatively stable throughout the period analyzed.

Out-of-wedlock births include, in relatively equal parts, cases where the mother is single and where she lives with a partner. Single mothers tend to be younger, live in their parent's home and study or work; around 50 percent of them will live with a partner in the years following the birth. On the other hand, mothers that live with their partners tend to live in their own houses and are dedicated to household chores.

This study is organized into four sections. The first section describes the main fertility trends in the period under study, comparing them with the international evidence. The following two sections analyze in detail the most important stylized facts of the period, the drop in the birth rate and the increase in the proportion of out-of-wedlock births. The last section presents the findings.

1. DATA AND MAIN TRENDS

1.1 Stylized facts in Chile

An important development during the 1960-2003 period is the sharp reduction in fertility rates, either measured as the number of children women have throughout their lives, or as the birth rate during a given year.

The number of children per woman is an indicator that approximates fertility relatively well in the context of information provided by household surveys or censuses. In particular, the population censuses of 1992 and 2002 gather data on the number of children that a woman has had throughout her life. With this information, the number of children of the women cohorts during the 1958-2002 period can be deduced. The cohorts are identified as women between 35-39 years for each calendar period. For example, in the 2002 census women aged between 55 and 59 report an average of 3.5 children born throughout their lives; from this data it is deduced that women in the 35-39 year cohort in 1982 have 3.5 children.¹

The findings show that the number of children drops from around 4.5 children per woman in the 1960s to half that level by the year 2000. The drop in the number of children that started back in the 1960s is maintained throughout the entire period under study, and seems to apply to future years also (Table 1).²

The census data also indicates a slight increase in the proportion of women who are mothers: the rate of mothers increased from around 87 percent in the 1960s, to around 92 percent by the mid-90s. To estimate the number of children per mother, the number of children per woman must be adjusted by the proportion of women who are mothers. The number of children per mother is obviously somewhat greater than the number of children per woman. However, both indicators show a similar trend throughout the period under study.

¹ Note that the measure is carried out after the women have finished their reproductive cycle; in the example, when the 35-39 cohort in 1982 had already reached 55-59 years of age (2002). This ensures that the measure reports the total number of children, even though the Civil Registry data indicate that around 95 percent of births occur among women aged below 35 years.

² During previous decades —1930 to 1960—, birth rates remained relatively constant. See Valenzuela (2006).

Table 1. Trends in fertility, Chile 1960-2003

	Children per woman (1)	Births per 1000 women (2)	Mother's age upon having first child (3)	% Out-of-wedlock births (4)	Births per 1000 women, married (5)	Births per 1000 women, unmarried (6)
1960	4.34	147.3	23.7	15.9	258.9	48.5
1965	4.61	139.6	23.3	17.1	217.7	53.3
1970	4.34	107.6	22.9	20.2	159.4	49.0
1975	3.99	93.3	22.6	22.1	138.3	45.7
1980	3.42	80.6	22.6	27.6	115.6	46.9
1985	3.07	76.8	22.8	31.8	97.0	55.8
1990	2.83	82.2	23.2	34.3	102.7	60.8
1995	2.64	69.6	23.2	40.5	85.1	56.5
2000	2.39	60.7	23.3	48.8	68.9	55.2
2003	-----	55.3	23.3	53.8	59.4	53.1

Source: Column (1) is calculated based on the 1992 and 2002 population censuses; columns (2) and (6) are based on information from the Demographic Yearbooks of the INE. Columns (2), (5) and (6) are live births per 1000 women between 15 and 49 years of age.

The second measure of fertility is the rate of live births per 1000 women of childbearing age in each year. This data corresponds to a flow concept, which occurs in a given time interval (one year), while the number of children per woman represents a stock variable that accumulates over time.

The birth rate decreased from 147.3 births per 1000 women of childbearing age (15-49) in 1960, to 55.3 births per 1000 women in 2003. This is a drop to nearly a third of the initial level.

Note that the birth rate per year is a predictor of the future trends of the number-of-children per woman, given that it reports the change in the margin of the latter variable. As such, the drop in birth rates during the latest measurements anticipates future reductions in the number of children per woman.

In addition to the drop in the fertility rate, the other important factor as regards fertility in Chile is the systematic increase in the proportion of children born out-of-wedlock. In fact, over half the births occurred out-of-wedlock in 2003, compared to 15.9 percent in 1960.

Currently, around half of out-of-wedlock births correspond to single women, while the other half correspond to cohabiting women. Nonetheless, a significant share of single mothers will establish a couple relationship during the years following the birth of the child, as can be inferred from the cohort tracking (section 3).

The increase in the proportion of out-of-wedlock births corresponds to a sharp decrease in the birth rate among married women. Between 1960 and 2003, the number of live births per 1000 married women of childbearing age fell to less than a quarter, from 258.9 to 59.4 per 1000. On the other hand, the birth rate among unmarried women remained relatively stable throughout the period, fluctuating between 50 to 60 live births per 1000 unmarried women of childbearing age. Thus, the birth rates among married and unmarried women are practically identical currently. It should also be kept in mind that the proportion of unmarried women of childbearing age increased by around 10 percentage points from the mid-1960s to the beginning of this century.

The decrease in the fertility rate has not been accompanied by a delay in the age of having the first child. The average age of the mother at the first birth fluctuated between 22.6 and 23.7 years in the period under analysis, remaining relatively stable over time. On the other hand, the age of the mother at the birth of the second and third child has increased in recent decades. The indicator increased by an average of around three years for the birth of the second child and nearly four years in the case of the third child.

These findings represent averages that are influenced by differing behaviors among married and unmarried women. In the married group, the average age of the mother at the first birth increased from around 23 years in the mid-1960s to 26.5 years in the 2003 measurement. On the other hand, the average age of single mothers at the birth of the first child has remained relatively stable, at around 21 to 22 years of age.

1.2 The international evidence

The reduction in the fertility rate since the 1960s is universal, even though it has been higher in developing countries than in developed ones (Table 2). In fact, the number of children per woman in developing countries practically dropped by half, from an average of 6.09 in 1960 to 3.20 in 2000; in Latin America the reduction was from 5.96 to 2.81 during the same period of time. Meanwhile, developed countries already had low fertility rates in 1960 (2.69), and dropped to levels below the critical threshold of 2.0 children per woman towards the year 2000.

The international evidence shows that the decrease in the fertility rate is accompanied by a putting off of the age of having the first child, as well as an increase in the interval of births between children. Meanwhile, an increase is observed in the proportion of women who are mothers, as well as increases in the out-of-wedlock birth rate. The related factors that are reported include the decreases in the infant mortality rate, increases in the schooling level and labor market participation of women (Schultz 1997).

Table 3 presents statistics on the proportion of out-of-wedlock births for a range of Organization for Economic Cooperation and Development (OECD) countries. Interestingly, in this aspect Chile has similar levels to the Scandinavian countries, but significantly higher levels than the other European countries and the United States.

Table 2. Total fertility rate. Countries of the World by income level and region

	1960	1970	1980	1990	2000
High income	2.69	2.20	1.93	1.88	1.91
Low income	6.09	5.41	4.19	3.71	3.20
Latin America	5.96	4.99	3.93	3.25	2.81
South and Southeast Asia	5.47	4.59	2.77	2.47	2.13
South and East Asia	6.07	5.78	5.16	4.47	3.61
Africa	6.79	6.62	6.40	6.03	5.31
World total	4.98	4.46	3.65	3.31	2.96

Source: United Nations World Population Prospects (1990).

Note: Average number of live births of a woman during her life.

Table 3. Out-of-wedlock birth rate. Selection of OECD countries, 1998

Country	Rate
Sweden	54.0
Denmark	45.0
France	40.0
United Kingdom	38.0
United States	33.0
Ireland	28.0
Portugal	20.0
Italy	9.0
Greece	4.0

Source: Stephanie J. Ventura & Christine A. Bachrach, "Nonmarital Childbearing in the United States, 1940-99", *National Vital Statistics Reports* 48, no. 16 (October 18, 2000).

2. TRENDS IN THE REDUCTION OF THE BIRTH RATE

2.1 Determinants of fertility

In many countries, the reduction in the fertility rate is closely related to increases in per capita income. This has led to the search for conceptual explanations relating increases in income to the reduction in the number of children per woman. This arises because, at first glance, greater economic resources seems to imply a greater economic capacity to have more children. As such, how could the opposite result be explained?

An important concept for explaining the inverse relationship between income and fertility is the "quality" of the children. This means that parents are not only interested in having children, but are in fact strongly interested in their development and future life expectations. This is referred to in the literature as the "quality" of the children. Increases in per capita income allow for a range of activities that promote the quality of the children, such as more and better prenatal care, early development, nutrition, education, health and other related components. Considering that quantity and quality interact in a multiplicative manner since the greater quality must be distributed among all the children, it can be demonstrated that increases in income induce increases in quality but drops in the desired number of children (see Becker 1981; Willis 1973).

Another channel that relates income and fertility inversely is the opportunity use of time by women. Economic development experiences are accompanied by increases in the schooling level of women and a greater availability of remunerated employment in the labor market. As a result, women have more attractive professional and material development opportunities in the area of remunerated work, with the subsequent reduction of available time for having and rearing children. In technical terms, the opportunity cost of time of women increases, producing a substitution between activities in the household and those taking place out of the household.

Nonetheless, the actual fertility rate will approach the desired level to the extent that women have access to the means to safely and effectively prevent new pregnancies. The massification of contraceptive

methods dating back to the middle of the last century plays a key role in the reduction observed in the fertility rate, as well as permitting a better planning of pregnancy periods and thus facilitating the labor market incorporation of women.

The reduction in the infant mortality rate is another factor that explains the drop in the fertility rate. This occurs when parents want to have a given number of children, so the lower number of infant deaths leads to a lower number of new births to reach that desired number, holding other factors constant.

There is also a probable interaction in the development of factors that cause or facilitate a reduction in the fertility rate with the evolution of cultural norms that underlie the preferences of parents regarding the desired number of children.

2.2 Developments in Chile

In recent decades, Chile has experienced significant changes in the factors affecting the fertility rate, such as per capita income, schooling level, female labor market participation and the infant mortality rate (Table 4). Other related developments in the period are the implementation of birth control policies, as well as changes in cultural norms and patterns of behavior related to economic development, sociopolitical regimes and the globalization of economies.

Between the early 1960s and the mid-1980s, the economy was notoriously unstable, with rises and falls that ultimately resulted in a relative stagnation of the per capita income. On the other hand, from the mid-1980s the economy has been very dynamic, leading to a doubling of the per capita income in a relatively short period of time, and has placed Chile in the forefront in Latin America in terms of economic development.³

However, the drop in the fertility rate in the early 1960s precedes the period of economic dynamism. While there were periods of growth in per capita income in the 1960s and 1970s, increases in per capita income were too small to explain the persistent drop in the fertility rate in those years. In fact, by 1985 the birth rate had dropped to practically half the 1960 level, while the per capita income had only grown by 15 percent.⁴ Thus, economic growth may have facilitated the demographic transition that has occurred since the early 1960s, but it has probably not been a key determinant in that process.

³ This process has been widely studied in the literature, identifying key determinant factors such as opening up the economy, macroeconomic stability, the allocation of resources through the market and a pro-investment environment. A relatively advanced level of human capital, measured by years of schooling and health level of the population, as well as the strengthening of the economic and political institutions, are also notable key factors. See, among others, Soto & Loayza (2002)

⁴ The increase in per capita income between 1960-65 and 1990-95 was 16.6 percent.

Table 4. Factors related to fertility, Chile 1960-2000

	Per capita GDP (1960: 100) (1)	Women's schooling 25-29 (2)	Participation in the labor force Women 25-40 (3)	Infant mortality rate, per 1000 births (4)	Births per 1000 women 15-49 (2)
1960	100.0	6.4	42.5	125.1	147.3
1965	106.7	6.6	39.5	101.7	139.6
1970	121.2	7.4	45.0	82.2	107.6
1975	99.6	8.2	40.0	57.6	93.3
1980	132.8	9.2	45.1	33.0	80.6
1985	114.5	9.8	49.4	19.5	76.8
1990	145.8	10.1	50.5	16.0	82.2
1995	203.8	10.6	54.5	11.1	69.6
2000	237.8	11.3	58.4	8.9	60.7
2003	249.5	11.5 *	61.7	8.3	55.3

Source: (1) Central Bank of Chile; (2) Population censuses 1992 and 2002.; (3) Employment Survey, University of Chile; (4) Demographic Yearbooks, INE; (5) Demographic Yearbooks of the INE, respective years.

* Corresponds to 2002.

Meanwhile, the schooling level of the population, for men and women, increased systematically throughout the period under study. The measurement is done in terms of years of schooling of the population between 25 and 29 years of age, a segment that reflects recent developments in educational coverage.⁵ For women, the indicator increased from 6.4 years of schooling in 1960 to 11.5 in 2002. The trends recorded in the schooling level reflect the increases in educational demand and supply that Chile has experienced in recent decades.

Nevertheless, the growth in schooling has also probably not played a key role in the fertility trends from the early sixties, at least with respect to the effect of schooling on the opportunity cost of women's time in the household and their subsequent incorporation into the labor market. This is because the labor market participation rate of women in Chile remained relatively stable during the sixties and seventies, fluctuating in the range of 40 to 45 percent, during which time the birth rate fell significantly.

Thus, the decrease in the fertility rate precedes the increase in the labor market participation rate of women by practically two decades. The reduction in the number of children per mother would facilitate the subsequent incorporation of women into remunerated work, but there are no indications of an immediate causal relationship between both developments in that first period. However, this does occur later, when in the 1990s there is a significant incorporation of married women into the labor market.

Maybe the greatest change explaining the drop in the fertility rate has been the introduction of birth control methods through the National Health Service, which dates back to the mid-1960s. These methods allow the gap between desirable and actual fertility to be reduced, as well as making the time planning of pregnancies possible. The coverage statistics of the birth-control program provide a good approximation

⁵ The indicator comes from the most recent population censuses and has nationwide coverage. The estimate is carried out on cohorts, on the assumption that years of schooling are stable in the 25-29 age bracket. Thus, for example, the Population and Housing Census of 1992 provides information on the schooling of women aged 25 to 29 in 1972, through the schooling of women aged 45 to 49 in 1992.

of the use of contraceptive methods. The program started back in 1964, covering 1.2 percent of women between 15 and 49 years. The following years are marked by the systematic increase in the coverage of the program, until leveling out at around 21 percent in 1976.⁶

The reduction of the infant mortality rate is another factor that may have contributed to the drop in the fertility rate. This indicator fell from around 125.1 deaths per 1000 live births in 1960 to only 8.3 deaths per 1000 in 2003. The reduction of the infant mortality rate is directly due to the successful mother-child care policy implemented in Chile, as well as to progress in contextual factors, such as the higher levels of schooling of mothers and sanitary infrastructure.

To illustrate the point, consider the impact of the reduction in the infant mortality that occurred from the early 1960s to the late seventies from 120 to 30 per 1000 live births. Let us assume that the drop in the fertility rate is concentrated in the lowest educational group, which represents around 60 percent of women aged between 25 and 40 in the period. Under those parameters, the death rate of 120 per 1000 implies that out of 5.5 live births per woman, 4.4 children live more than one year. If the death rate drops to 30 per 1000, 4.63 live births are “needed” to achieve the same survival rate. Thus, the birth rate could drop from 5.5 to 4.63, with the number of children surviving the first year of age remaining constant.⁷

2.3 Whose fertility rate drops the most?

What has been the distribution of the drop in the fertility rate on different groups of women? Is this a situation that affects women evenly or some groups more than others?

There are three types of variables which are especially significant concerning differences in fertility behavior: the age of mothers, their marital status and socioeconomic condition. These factors provide a more precise profile of fertility trends, as well as causalities hypothesis.

Age of mothers

Table 5 presents the birth rate according to the age of the mother. The indicator is constructed by dividing the number of live births per 1000 women, for each of the age brackets considered. Two sources of information are used for this effect: i) births occurring in Chile each year, based on data from the Civil Registry; ii) number of women by age brackets, contained in a recent joint publication by the National Statistics Institute and the Economic Commission for Latin America and the Caribbean (INE – ECLAC 2004).

In 1960, the birth rate exceeded 200 live births per 1000 women between 20 and 35 years of age. This implies that one out of every five women aged between 20-35 was a mother in each year of the period; so motherhood was a common condition throughout most of the fertility cycle. In the following decades, the birth rate dropped sharply in all age groups. Indeed, by the year 2003 all age groups had a birth rate below 100 live births per 1000 women.

⁶ The statistics refer to the flow of women attended in the program; this figure is lower than the accumulated total of women attended. The reference comes from Silva (1990).

⁷ The infant mortality rate had been declining before 1960 (see Valenzuela, 2006). However, the adjustment of actual births to intended ones is facilitated by the large-scale introduction of contraceptive methods, from the 1960s.

The greater the age of the women, the more significant the drop in the birth rate, which is related to a lower number of children and a subsequently shorter reproductive cycle. Thus, while younger women (20 to 35 years of age) had a birth rate by the end of the period that was 40 percent its initial level in 1960; women between 35-39 had a rate that was one third its initial level and, in the case of the 40-44 group, the respective figure is 28 percent.

The drop in birth rate occurs early on in women over 30 years of age. Between 1960 and 1970, these women had already reached over half of the total reduction in birth rate over the period. This is consistent with the impact of the public birth control policy, introduced in the 1960s, on the reduction in the birth rate in Chile.

Meanwhile, the adolescent women group (15-19) has a more irregular pattern concerning the birth rate behavior. Between 1960 and 1985, the birth rate of the group dropped slowly but steadily, from 74.4 to 56.4 live births per 1000 women, only changing direction in the 1990s, when the adolescent birth rate returns to its 1970s level. The latest measurement available (2003) shows a sharp drop in the birth rate, which may or may not constitute a trend for the future.

Table 5. Births per 1000 women, total women, Chile 1960-2003

	Age brackets						
	15-19	20-24	25-29	30-34	35-39	40-44	15-49
1960	74.4	221.1	239.6	212.3	141.1	54.0	147.3
1965	77.4	213.1	228.0	182.1	139.3	56.8	139.6
1970	70.1	179.6	170.0	126.4	82.9	41.3	107.6
1975	67.7	162.1	151.4	105.0	68.4	27.5	93.3
1980	59.7	140.7	131.8	87.9	48.9	18.7	80.6
1985	56.4	126.5	124.1	88.8	48.2	14.5	76.8
1990	64.7	139.0	133.5	95.7	53.0	14.4	82.2
1995	65.5	116.5	111.8	84.4	47.2	14.0	69.6
2000	60.4	98.5	103.3	81.7	46.3	12.8	60.7
2003	49.3	88.5	94.1	81.7	47.3	15.3	55.3

Source: For total women by age bracket, INE – ECLAC (2004). For number of births: Demographic Yearbooks of the INE, respective years.

Marital status

The second variable of interest is the marital status of mothers. Table 6 presents the birth rate according to mothers' marital status and age. The statistics are shown for ten-year periods, with more detailed series being presented in the Appendix. The construction of the indicator is based on the previously mentioned data sources, since the information on births provided by the Civil Registry distinguishes

between mothers' marital status. This data is complemented by estimates for the percentage distribution of married and unmarried women by ages.⁸

The downward trend in the fertility rate is driven by the behavior of married women. This group shows a sharp drop in the fertility rate throughout the period; their birth rate dropping to approximately one quarter of its initial level. Married women had 258.9 children per 1000 women (married) in 1960, while in 2000 the rate had dropped to only 68.9 children per 1000 married women. The sharpest drops in the indicator occur in the 1960s and 1990s, which suggests the existence of different kinds of causal factors behind the reduction in the birth rate among married women.

Table 6. Live births per 1000 women, married and unmarried mothers, Chile 1960-2000

	Age brackets						
	15-19	20-24	25-29	30-34	35-39	40-44	15-49
Married							
1960	680.0	493.6	362.4	280.2	180.6	78.0	258.9
1970	492.6	373.0	205.8	143.8	89.5	44.6	159.4
1980	346.2	287.5	163.8	98.2	51.8	20.1	115.6
1990	266.1	210.0	160.1	104.2	53.5	14.2	102.7
2000	212.9	181.1	138.8	93.7	47.9	12.0	68.9
Unmarried							
1960	23.4	60.4	72.0	83.3	65.0	29.2	48.5
1970	24.3	57.9	88.9	80.7	68.6	37.7	49.0
1980	29.9	59.1	75.6	65.7	46.3	18.5	46.9
1990	43.6	85.7	87.4	78.8	54.5	16.3	60.8
2000	54.0	76.6	73.7	65.4	45.2	15.3	55.2

Source: Tables A-1 and A-2 of Appendix.

The reduction of the birth rate among married women characterizes all relevant age groups, even though the most significant decrease occurs among older age groups. In the segment of women aged between 40 and 44, the birth rate in the year 2000 is only 15 percent its 1960 level. This is a result of the lower number of children that women have throughout their lives, since it allows women to finish their reproductive period earlier.⁹ The younger women group (15-19) has the highest birth rates. The reason for this is that the few women that marry at that age probably do so precisely as a result of their motherhood condition.

Meanwhile, the birth rate among unmarried women remained stable between 1960 and 1980 at just below 50 live births per 1000 unmarried women, and increased slightly in the following period (55 to 60 per 1000). Varying behavior is observed according to women's ages. The younger groups show

⁸ The data comes from the Demographic Yearbooks of the National Statistical Office in the 1960-1985 period, and from the population censuses of 1992 and 2002 for the 1990-2003 period. In these cases, the variable is projected to the years not covered by the Census, using a linear extrapolation of the 1992 and 2002 data, disaggregated by age bracket and marital status.

⁹ Further ahead, it is shown that the age of the married mother at the birth of the first child is put off until later. Thus, the lower number of children implies delays in the birth of the first child and a bringing forward of the birth of the last child.

significant increases in birth rates from 1980. The birth rate among unmarried women between 15 and 19 years practically doubled between 1980 and 2000, while those aged between 20 and 24 show an increase of around 40 percent during the same period. On the other hand, the birth rate of middle-aged unmarried women drops during the period, by around 15 to 20 points per 1000 women.

Thus, while in 1960 married women had a birth rate that was more than five times higher than that of unmarried women (258.9 versus 48.5); by the year 2000 that difference had dropped to only 25 percent (68.9 versus 55.2). The convergence in the birth rate between married and unmarried women occurs in all ages, but is more marked among younger age groups.

The behavior of birth rates according to the marital status of mothers can be interpreted in terms of the determinant factors in the fertility rate. In the case of married mothers, the effect of the contraceptive policies introduced in the 1960s is clearly reflected in the drop of the birth rate from 258.9 to 159.4 between 1960 and 1970. The birth rate of the married women group drops again significantly in the 1990s (102.7 to 68.9), when the labor market participation of these women increases by around 16 percentage points. In this particular case, the improved labor market opportunities arising from economic growth induce a reduction in the birth rate by facilitating the incorporation of married women into the labor market. This is consistent with the evidence that shows that the labor market participation rate of married women varies significantly with the number of children: for this group, the greater participation rate requires a decrease in the fertility rate.¹⁰

Meanwhile, the stability observed in the birth rate among unmarried women requires explanation, considering the sharp fall in the birth rate among married women. If the determinants behind the drop in the birth rate among married women also affect unmarried women, then there must be other compensating factors in operation. Alternatively, it may be the case that the factors that determine the fall in the birth rate among married women have less effect on unmarried women.

The evidence suggests that both types of situations occur. On the one hand, it is likely that the birth control policy has had less effect on the unmarried women. Thus, couples having out-of-wedlock sexual relations use contraceptive methods irregularly and young single women may face problems with access to reproductive health treatment in public clinics. On the other hand, the labor market participation rate of unmarried women scarcely varies with the number of children, so the improved employment opportunities of the 1990s did not lead to a reduction in the birth rate of this group.

With respect to the factors that can produce increases in the birth rate among unmarried women, changes in social norms in terms of an increased acceptance of situations such as single motherhood or cohabiting couples are particularly significant. A related factor is a possible decrease in shotgun marriages arising from pregnancies; so, situations that used to lead to a marriage now end up being out-of-wedlock births.¹¹

¹⁰ See Larrañaga, 2006.

¹¹ Among other factors, the fall in forced marriages (*shotgun weddings*) may be related to the massification of contraceptives, since it may be argued that those who end up pregnant do so by choice. See Akerlof, Yellen & Katz (1996).

Indeed, the 2002 Centro de Estudios Públicos public opinion survey on attitudes and values related to women and the family,¹² indicated that 68 percent of the population consider that “it is acceptable that a couple live together with no intention of getting married”; 45 percent disagree with the statement that “married persons are, in general, happier than unmarried persons” (versus 31 percent who agree and 23 percent have no opinion); and 43 percent disagree with the statement that “people that want children should get married” (44 percent agree and 11 percent are indifferent). There is little comparative data for earlier periods, but the available data seems to validate the hypothesis that there has been a change in values in issues related to the family. Thus, the earlier CEP survey on the subject, carried out in 1995, reported that 41 percent of the population found “pre-marital relations morally acceptable”, while 22 percent indicated that “it depends on the age” (in 2002, 68 percent agreed without any restrictions).

Socioeconomic level

In the census data the socioeconomic status can be proxied by years of schooling. This variable is highly correlated with family income or estate. Furthermore, schooling is functional for the estimation methodology based on cohorts that can be captured retroactively from census information. The data of the 2002 census reports on the schooling of the women cohorts aged between 35-39 in earlier periods, as well as providing information on their number of children.

Women are classified into four groups of the same size (quartiles), according to their schooling level. The cut-off points of the years of schooling that define the quartiles change throughout the period, as the average schooling of the population increases. Thus, for 1960 the first quartile corresponds to women with 0-2 years of schooling, the second quartile covers those with 3-5 years of education, the third quartile between 6 and 8 years and the fourth quartile corresponds to women with 9 years or more of schooling. In the year 2002, the respective quartiles use the cut-off points of 0-7, 8-10, 11-12 and 13 or more years of schooling.

Table 7. Fertility rate by socioeconomic level, Chile 1960-2002 (number of children per woman)

35-39 cohort in year:	Socioeconomic level (years of schooling quartile)			
	I	II	III	IV
1960	5.72	4.83	3.94	3.01
1965	5.82	4.94	4.28	3.24
1970	5.72	4.82	3.68	3.14
1975	5.08	4.32	3.43	2.81
1980	4.48	3.85	3.03	2.53
1985	3.85	3.29	2.66	2.26
1990	3.54	3.18	2.60	2.20
1995	3.24	2.82	2.38	2.15
2000	2.88	2.61	2.24	1.91

Source: Author's calculations from the 1992 and 2002 Population census.

¹² The Centro de Estudios Públicos (CEP) is one of the main producers of public opinion surveys in Chile. The survey indicated consists of an interview in households, with a sample of 1,505 people and nationwide representativeness. (See CEP 2002).

The most significant reduction in fertility occurs with women from lower socioeconomic status, corresponding to the first two quartiles (Table 7). In the case of the first quartile, the average number of children per woman drops from a rate of around 6.0 in the early 1960s to less than 3.0 in recent years; while the second quartile shows a drop of around 5 to 2.6 children per woman over a similar period of time. Meanwhile, women from medium or high socioeconomic strata also present falls in the fertility rate, but within narrower ranges: 4.0 to 2.2 and 3.0 to 1.9, respectively.

One consequence of the above is the convergence of fertility behavior among socioeconomic strata. While in the early 1960s the lower quartiles had around 2.5 children more than the higher quartile, by the beginning of this century the gap had closed to 1.0 child.

An alternative way of examining the differences in fertility rates among socioeconomic strata is presented in Table A-3 of the Appendix, which reports the percentage of women with 5 children or more. The data is revealing concerning the importance of changes in reproductive behavior. Over half of women from low socioeconomic strata had five or more children in the 1960s and 70s, compared with around one third of women in the middle stratum (third quartile) and one fifth in the upper stratum (upper 25 percent). Rates have fallen significantly over time, particular for the middle and upper strata, whose present levels are one seventh of their 1970 levels. The poorest women also experienced sharp falls, although the 20 percent figure today for five or more children remains significant.¹³

The reduction of the fertility rate gap by socioeconomic strata has significant implications on inequality and the distribution of opportunities in Chile. Children that grow up in a poor family with two or three children face very different development opportunities to those growing up in poor families with five or six children. Other things equal, the reduction in the fertility rate of the poorest groups should lead to a reduction in inequality.

The data reported reinforces the hypothesis that the drop in the fertility rate in Chile is related to processes that reduce the gap between the actual and desired number of children, such as access to birth control methods and the reduction in the infant mortality rate, more than to economic factors, such as the effect of economic growth and greater schooling on the labor market participation of women.

Women with the highest reductions in the fertility rate are those from the lowest socioeconomic level and have the lowest labor market participation rates. Thus, between 1960 and 1990 the participation rate of women with only primary education increased by only 4 percentage points; and it is only after the mid-1990s, thirty years after the drop in the fertility rate started, that this group entered the labor market massively.

¹³ The comparisons are carried out for the year 1995 instead of 2000, in order to ensure that women have finished their fertility cycle. This considers that the measurement is carried out in 2002, when women aged 35-39 in 1995 had already reached 42-46 years of age; on the other hand, those aged 35-39 in 2000 are now aged 37-41. In the case of the indicator analyzed, the finishing age of the cycle is important.

2.4 Other findings

Non-mothers

The evidence from developed countries shows that as the fertility rate drops, the proportion of women who are mothers increases. The information for Chile tends to ratify this trend, since the proportion of women who are mothers increased by around five percentage points during the period. Most of the adjustment in the trend occurred in the 1960s (Table 8). The data are nationwide, refer to women from the 35-39 year age bracket, and come from the population censuses.¹⁴

The percentage of women who are mothers differs according to socioeconomic strata, with higher levels appearing among women from the lowest stratum. On average, around 93 percent of women from the two lower strata have been mothers, compared to 91 percent of women from the third stratum and 86.3 percent of women from the highest stratum.

Table 8. Percentage of women who are mothers, 1960-2000

35-39 cohort in year	Socioeconomic strata (measured as years of schooling quartiles)				Total
	I	II	III	IV	
1960	89.5	88.4	86.8	82.9	87.0
1965	92.5	90.1	88.5	83.8	88.8
1970	92.4	90.1	89.4	84.3	89.2
1975	92.3	91.1	90.5	86.3	90.2
1980	93.8	92.6	91.8	87.2	91.2
1985	93.2	93.4	91.4	87.4	91.8
1990	93.5	95.2	92.4	87.4	92.3
1995	93.4	95.0	91.8	88.3	92.3
2000	93.4	94.9	91.9	85.5	91.4
Average	93.1	92.8	91.0	86.3	90.9

Source: Author's calculations from the 1992 and 2002 Population census.

The rate of women who are mothers increases for all socioeconomic groups throughout the period under study. In the case of the lower stratum, the indicator increases by around four percentage points, while in the other strata the increase ranges between five and six percentage points.

Currently, around 75 percent of women aged between 35-70 years who are *not* mothers are single women. The probability of a woman being single is somewhat higher in the upper stratum (17.5 percent) compared to women from the middle and lower strata (around 15 percent). Single women from the upper stratum are more likely to not be mothers: 56 percent of single women from this segment are not mothers, compared to around 35 percent in the other strata.

The trends indicated above may be a reflection of various types of factors. The increase in maternity throughout the period may be due to technological developments that facilitate maternity in the case of

¹⁴ The data is gathered from the 1992 and 2002 population censuses, following the methodology previously described for estimating the number of children per mother.

people with fertility problems, as well as changes in family arrangements that give women greater independence.¹⁵

Meanwhile, the relationship between maternity and socioeconomic strata could be a reflection of the labor income structure and the subsequent opportunity costs facing women with higher levels of education; in a context of non flexible jobs to accommodate maternity.¹⁶ It is also possible that women who do not want to or cannot have children lengthen the period of their studies.

Age of the mother at birth of children

Throughout the period under analysis, the age of the mother upon the birth of the first child has remained constant, with the age of the mother at the birth of the second child being put back by around three years and by around four years in the case of the third child (Table A-4 of the Appendix).

The above finding is somewhat surprising when compared with international evidence, as well as the increase in years of schooling in Chile. Currently, one quarter of women between 25 and 45 years have higher education, compared to less than 5 percent at the start of the period. This should have led to an increase in the age of having the first child, if other relevant factors remained constant.

The explanation for this apparent contradiction is that there have been changes in other factors that affect the age of the mother at the first birth. The increase in the percentage of out-of-wedlock births is a particularly relevant factor, given that the age of the mother at the first birth depends on her marital status.

In effect, the age of married mothers when they have their first child has behaved as one would expect, increasing from around 23 years of age in the 1960s to an average of 26 years in the latest measurements (Table 9). On the other hand, the average age of unmarried mothers when having the first child has remained relatively stable throughout the period, ranging between 21 and 22 years. The increased out-of-wedlock birth rate has given a greater weighting to the latter indicator in the average indicator, thus explaining the apparent contradiction in the data.

¹⁵ For example, the case of women who previously did not marry in order to take care of their parents.

¹⁶ In the 1960-2002 period, the working week of women remained stable (44.3 hours on average). See Larrañaga, 2006 “.

Table 9. Age of the mother upon the birth of the first child, 1960-2003

	All	Married	Not married
1960	23.7	23.5	21.4
1965	23.3	22.9	21.0
1970	22.9	22.8	21.0
1975	22.6	22.7	21.8
1980	22.6	22.8	21.7
1985	22.8	23.4	21.8
1990	23.2	23.9	21.8
1995	23.2	24.3	21.8
2000	23.3	25.5	21.7
2003	23.3	26.5	22.0

Source: Demographic Yearbooks of the INE, respective years.

Meanwhile, the age of mothers at the second and third birth is driven by the behavior of married mothers. Out of the total of births among married mothers, around 30 percent correspond to a first birth, and the remaining 70 percent to the births of the subsequent children; while the respective percentages for unmarried mothers are 55 and 45 percent. This is a reflection of two types of situations: mothers that remain single and who have a low number of children throughout their lives; and single mothers who end up married, recording the following children in the category of born in-wedlock.

3. OUT-OF-WEDLOCK BIRTHS

The increase in the out-of-wedlock birth rate, together with the decrease in the fertility rate, is the most significant stylized fact in the reproductive behavior of the Chilean population in the last forty years. However, while the situation in Chile as regards fertility does not differ from the trends displayed by most countries, the out-of-wedlock birth rate is particularly high and needs to be understood in terms of its causes and consequences.

This section analyzes out-of-wedlock births, firstly identifying the contribution of its immediate determinants, such as the birth rate among married women, the birth rate among unmarried women, and the percentage of each group of women out of the total of childbearing age. Subsequently, a more in-depth analysis is carried out, using the information contained in the National Socioeconomic Characterization Surveys (CASEN) in the 1990 to 2003 period. This data allows the conditions of cohabitee, single mother and separated mother to be distinguished; construct a socioeconomic profile of mothers according to marital status, as well as “tracking” the mothers over time through an analysis of artificial cohorts.

3.1 Statistics of out-of-wedlock births

Between 1960 and 2003, the percentage of out-of-wedlock births increased from 15.9 to 53.8 percent, equivalent to 37.9 percentage points (Table 10). The growth rate increased throughout the period. In the 1960s, the growth rate was only 4.3 percentage points, and increased to around seven percentage points

in the following two decades. During the 1990s, the growth rate doubled reaching 14.5 percentage points; that trend continued in the following three years (2000-03), increasing by other five percentage points.

The increase in the out-of-wedlock birth rate has been more significant among younger women: from 29 percent in 1960 to 89.9 percent in 2003 for adolescents (15-19 years); from 16.8 to 68.3 percent for women aged between 20 and 24 years; from 11.9 to 44.0 percent for women aged between 25 and 29 years. Two thirds of the increase by women aged between 20 and 29 years occurred between 1990 and 2003.

Table 10. Percentage of out-of-wedlock births, by mother's ages, 1960-2003

	15-19	20-24	25-29	30-34	35-39	40-44	15-49
1960	29.0	16.8	11.9	12.0	12.2	3.8	15.9
1965	32.4	17.2	13.1	13.2	15.5	14.3	17.1
1970	31.3	19.7	15.6	16.0	17.3	17.2	20.2
1975	35.8	22.5	16.5	17.3	19.9	19.7	22.1
1980	45.3	26.9	19.9	19.5	22.0	21.6	27.6
1985	55.0	34.1	23.7	23.4	25.7	27.1	31.8
1990	60.5	37.3	25.0	26.3	29.8	31.5	34.3
1995	70.6	46.8	29.8	28.0	31.7	38.7	40.5
2000	85.0	59.5	37.6	31.8	34.6	40.8	48.8
2003	89.9	68.3	44.0	35.6	37.4	49.5	53.8
Change in percentage points							
1960-90	31.5	20.5	13.1	14.3	17.6	27.7	18.4
1990-03	29.4	31.0	19.0	9.3	7.6	18.0	19.5
1960-03	60.9	51.5	32.1	23.6	25.2	45.7	37.9

Source: For total women by age bracket, INE – ECLAC (2004). For number of births: Demographic Yearbooks of the INE, respective years.

Thus, out-of-wedlock births are currently the norm among younger women, that is, those between 15-19 and 20-24 years; while for middle-aged women it represents around 40 percent of births. These are percentages within each age group, which differs from its participation in the total of out-of-wedlock births. The latter depends on the relative size of each group out of the total of unmarried mothers. Indeed, in 2003 women aged 15-19 contributed around one quarter of all children born out-of-wedlock; those aged 20-24 represented 30 percent; while the 25-29 group contributed another 20 percent of the total.

3.2 Immediate determinants of out-of-wedlock births

The percentage of out-of-wedlock births results from the arithmetic interplay of three variables: the birth rate among married women, the birth rate among unmarried women, and the total distribution of women of childbearing age among married and unmarried women.

As indicated earlier, the birth rate among married women experienced a sharp decrease throughout the period. In itself, the drop in the birth rate among married women can explain an increase in the percentage of out of wedlock births, since it reduces the denominator out of which the fraction of those

born out-of-wedlock is calculated. On the other hand, the relative stability of the birth rate among unmarried women implies that this factor has not had a significant role in the increased percentage of out-of-wedlock births. Its contribution has been concentrated among young women since 1990.

The third determinant of out-of-wedlock births is the percentage of unmarried women out of the total of women of childbearing age. The higher the percentage, the higher the percentage of out-of-wedlock births, for given values of the birth rates of married and unmarried women. Table A-5 of the Appendix presents the percentage of unmarried women out of the total of women, by age bracket and calendar year. The data show significant increases in the percentage of unmarried women in all age brackets from 1990, especially among women aged between 20-24 and 25-29 who have increases of around 20 percentage points.

A formal treatment of the effect of the mentioned factors is presented in Table 11. The five-yearly variation of the out-of-wedlock birth rate is decomposed in terms of the contribution of: i) changes in the birth rate among married women; ii) changes in the birth rate among unmarried women; iii) changes in the percentage of unmarried women. Increases in the percentage of out-of-wedlock births may be caused by increases in the birth rate among unmarried women or in the percentage of unmarried women, as well as by drops in the birth rate among married women.¹⁷

Table 11. Decomposition of change in the out-of-wedlock birth rates:

	Change in % of out-of-wedlock births	Due to an increase in birth rate among unmarried women	Due to a fall in birth rate among unmarried women	Due to an increase in % of unmarried women	Residual
1960-65	1.2	1.3	2.5	-2.3	-0.3
1965-70	3.1	-1.2	4.9	-0.3	-0.3
1970-75	1.8	-1.1	2.4	0.6	-0.1
1975-80	5.5	0.4	3.2	1.6	0.2
1980-85	4.3	3.6	3.6	-2.8	-0.2
1985-90	2.4	1.9	-1.2	1.8	0.0
1990-95	6.2	-1.6	4.3	3.5	0.0
1995-00	8.3	-0.6	5.2	3.6	0.1
2000-03	5.0	-1.0	3.7	2.2	0.0

Source: See footnote of page 17.

The results show that the drop in the birth rate among married women is the main determinant of the increase in the percentage of out-of-wedlock births. During all five-year subperiods, the drop in the birth rate among married women causes most of the increase in the variable, including cases where the impact would have been even greater if there had not been compensating changes in other factors. The exception occurs during 1985-90, when the birth rate among married women increases for the only time in the period under analysis.

¹⁷ The decomposition is carried out in the term $Nf/N = (Nf/Mf)(Mf/M)/((Nf/Mf)(Mf/M) + (Nd/Md)(1-Mf/M))$; where N represents births, M women of fertile age; f is out of marriage; d is within marriage. The decomposition is carried out numerically, evaluating the contribution of the change in each element on the result variable, keeping the other terms of the formula in their previous period value.

Meanwhile, increases in the proportion of unmarried women become a factor that contributes to the increase in the percentage of out-of-wedlock births from 1990. In fact, this factor is responsible for the increased growth rate of the indicator in the latter period. Meanwhile, variations in the birth rate among unmarried women are a quantitatively less significant factor in the evolution of the out-of-wedlock birth rate, not showing a clearly defined trend.

Thus, the causes underlying the trend in out-of-wedlock births are those that explain the drop in the birth rate among married women, such as access to contraceptives and incorporation into the labor market, as well as the factors that stabilize the birth rate among unmarried women, such as difficulties in access to contraceptives, the low elasticity of labor supply with respect to the number of children, and the change in social norms leading to a greater acceptance of *de facto* unions and single mothers. Meanwhile, the increase in the proportion of unmarried women corresponds to factors such as the longer duration of studies and the aforementioned changes in social norms.

3.3 Who are the out-of-wedlock mothers?

The data provided by the CASEN Survey is utilized for a more in-depth analysis of out-of-wedlock births.¹⁸ This data provides information on the relationship of each respondent with the head of the family nucleus within households, allowing mother-child pairs to be identified.

Marital status

The marital status of mothers is analyzed with reference to women aged between 15 and 44 years that have been mothers in the five years preceding the CASEN Surveys of 1990, 1996 and 2003. During this period, the out-of-wedlock birth rate increased from 32.1 to 53.8 percent.¹⁹

The data provided by the CASEN Survey confirms the drop in births by married mothers and the subsequent increase in out-of-wedlock births (Table 12). The percentage of married mothers out of the total of mothers dropped from 74.5 percent in 1990 to 55.9 percent in 2003, while the rate for unmarried mothers increased from 24.5 to 45.9 percent.

Women of all (fertile) ages display sharp drops in out-of-wedlock births throughout this period. We are dealing with across the board behavior rather than confined to the younger cohorts. Nevertheless, the most significant drops occur among younger women. For mothers aged between 15 and 19 years, the percentage of out-of-wedlock births rose from 54.2 percent in 1990 to 90.4 percent in 2003, while for those aged between 20 and 24 years of age, the respective figures are 33.8 and 68.9 percent.

Out-of-wedlock births include three types of situations with regard to the marital status of the mother: single, cohabitant and separated. These cases have different connotations as regards causes and possible future consequences. The most common conditions of unmarried mothers are being single and

¹⁸ The Casen survey is the main source of nationwide socioeconomic data. It is a multi-topic survey with income, employment, education, health and housing modules. It is the source of all the data used in Chile related to poverty, income distribution, access to social services and related issues. It is a large scale survey (around 60 thousand households in the last survey), it is both nationally and regionally representative, and is undertaken every two or three years.

¹⁹ The period corresponds to 1986-2003, considering mothers who had children in the five years preceding the 1990 measurement.

living with a partner, which together represented 21 percent of all mothers in 1990 and 40.3 percent in 2003. Meanwhile, separated mothers represent around 5 percent of all mothers.²⁰

The highest growth in this period is mothers who live with their partner. The participation of this group out of the total of mothers increased from 9.5 to 22.0 percent between 1990 and 2003. In the same time period, the proportion of single mothers out of the total of mothers increased from 11.5 to 18.3 percent. Thus, mothers who live with a partner displaced single mothers as the most numerous group of unmarried mothers.

Table 12. Mothers by marital status and age (percentages) (considers births in the 5 years before each measurement)

	15-19	20-24	25-29	30-34	35-39	40-44	Total
1990							
Married	45.8	66.2	77.1	81.0	81.3	78.8	74.5
Single	36.8	19.0	9.6	5.9	5.3	4.2	11.5
Cohabitant	15.3	11.1	8.3	8.5	8.7	10.0	9.5
Separated	2.1	3.4	4.6	4.0	4.2	5.2	4.0
1996							
Married	30.8	54.5	67.6	75.8	74.3	70.5	66.6
Single	41.8	26.0	13.2	6.5	6.1	4.1	13.6
Cohabitant	26.1	16.1	15.0	11.7	12.8	16.2	15.0
Separated	1.3	3.3	3.9	5.1	6.3	7.8	4.7
2003							
Married	9.6	31.1	55.1	67.5	69.4	64.6	54.1
Single	56.3	34.9	16.9	9.2	6.6	7.3	18.3
Cohabitant	33.5	29.8	22.8	16.9	17.0	19.0	22.0
Separated	0.7	3.1	5.1	5.9	6.3	7.7	5.2

Source: Processing CASEN Surveys respective years.

Single mothers predominate among younger women. In 2003 they represented 56.3 percent of all mothers in the 15-19 age segment, and nearly 35 percent in the 20 to 24 year bracket. For interpretation consider that the frequency of motherhood is around 10 percent of the total of women in the youngest segment, and increases 4 to 5 times in the following age brackets. Thus, the probability that an under-20 year-old be a mother is relatively low, but if she is a mother, it is highly probable that she is a single mother.

On the other hand, from 25 years of age onwards, the most common condition of unmarried mothers is living with a partner: it represents around 22 percent of the total of mothers in the 25-29 year bracket and between 15 and 20 percent in the following age brackets (2003).

²⁰ It should be kept in mind that it considers women who were mothers in the five-year period preceding each survey, so there may be some discrepancy in the marital status of the mother between the birth of the child and entry in the survey.

Socioeconomic profile of mothers by marital status

A profile of the socioeconomic characteristics of mothers by marital status is carried out on the group of women aged between 20 and 24 years in the year 2000.²¹ This is a particularly relevant group due to its high incidence of maternity —38.5 percent of women between 20-24 years had children aged less than 5 years in the year 2000 - as well as a significant participation in the total of out-of-wedlock births (45.5 percent in that year).

The profile of the group is presented in Table 13, and includes non-mothers as reference. Significant socioeconomic differences are observed between women who are mothers and those who are not mothers. On average, women who have been mothers belong to lower socioeconomic strata, as indicated by the schooling level or per capita income of the household.

Table 13. Socioeconomic profile of women aged 20-24 years, by maternity and marital status, Chile 2000

	Married mothers	Cohabiting Mothers	Single mothers	Non-mothers
% in secondary nucleus	36.2	42.3	96.0	10.2
Per capita household income (\$000)	83.1	67.7	70.2	155.7
% in quintiles 1 and 2	49.4	61.5	59.6	28.0
Number of children	1.33	1.34	1.13	---
% who study	6.4	4.4	16.9	40.0
Years of schooling	10.5	9.8	9.4	12.5
% in the labor market	29.8	27.1	52.2	48.5
Labor income (\$000)	134.2	121.5	100.1	133.6
Hours worked	42.9	41.4	46.4	47.9
Number of people in household	4.71	5.14	5.69	4.89
% of total women 20-24	16.0	10.7	12.5	58.8

Source: Processing CASEN Survey 2000.

Among women who have been mothers, there are differences between married and unmarried women. The latter have, on average, lower levels of education and household per capita income, so out-of-wedlock births occur more frequently in the lower socioeconomic strata.

There are also differences among single mothers relative to mothers that live with a partner. Single mothers have a significantly higher probability of being working or studying, and most tend to live with their parents, forming a secondary nucleus in the parent's household. On the other hand, most mothers who live with a partner do not study or have remunerated work, and mostly live in households composed of the own-family nucleus. These characteristics are shared by married women.²²

The fact that most single mothers live in their parents' homes studying or working suggests a reversal causal relationship from marital status to socioeconomic status. This may be the case if the new mother

²¹ The socioeconomic profile is relatively stable in the period, so the choice of year of analysis is not critical.

²² Most mothers who live with their partners in secondary nucleuses live in the homes of the parents of their partner; on the other hand, most married women who live in secondary nucleuses live in their own parents' houses.

—and her parents' family— consider that her life expectations as well as the child's are better served remaining in the parent's household than moving out with her partner.

3.4 What happens over time with married and unmarried mothers?

The data presented up to now are snapshots of the situation of mothers in the years for which the information is gathered. However, there are questions related to the dynamics of mothers over time, such as the duration and changes in marital status, that need longitudinal data to be answered.

In the context of repeated cross-section surveys —such as CASEN— artificial cohorts can be constructed to obtain an approximate answer to some of the questions that a longitudinal survey would answer with exactitude. By artificial cohorts, we understand the configuration of representative samples of the same cohort of persons over various periods of time. Thus, for example, the cohort of women aged between 20-24 years of age in the CASEN Survey of 1990 corresponds to the 33-37 year cohort in the CASEN Survey of 2003. The comparison of statistics for both periods provides information on the evolution of the behavior of the cohort, although not at an individual level.

In particular we are interested in knowing what occurs with the marital status of mothers over time, since the effects of out-of-wedlock births will critically depend on the marital situation of these mothers. For example, the literature reports that single mothers have a greater degree of economic vulnerability, with negative implications on the opportunities available to their children. As such, it is important to discover what percentage of single mothers remains so in the following years. For this, all mothers aged between 15 and 29 years whose oldest child is not older than five years of age are identified in the CASEN Survey of 1990. We subsequently identify all mothers aged between 21 and 35 years with oldest children aged between 6 and 11 years of age. In the 2003 CASEN Survey, tracking the cohort indicated requires women aged between 28 and 42 years of age with oldest children aged between 13 and 18 years to be identified. The analysis is carried out considering three cohorts of mothers by their age in 1990: 15-19 years, 20-24 years and 25 to 29 years.

The findings are presented in Table 14 and indicate that, currently, around half of out-of-wedlock births correspond to women that live with their partners, and the other half to single mothers. Of the latter group, around half will change status six to eight years later, either through marriage or through cohabitation with a partner.

Let us firstly consider mothers aged between 15 and 19 years in 1990. The group mainly included married women (46.1 percent), cohabitants (14.9 percent) and single women (37.0 percent). Six years later (1996), the situation of the cohort presents significant changes in marital status; particularly with regard to the proportion who is married, which increases by nearly 16 percentage points, and of single women, which drops by around 21 percentage points. Eight years later (2003), the percentage of single women in the cohort continues to drop, even though the proportion of separated women increases and the proportion of married women decreases.

The interpretation of the statistics requires the possible transitions among marital statuses to be established. In order to simplify the analysis, we assume that a person changes marital status no more than once in the 1990-96 period. Therefore, 20.1 percent of mothers aged between 15-19 years in 1990

get married in the following four years, corresponding to the sum of 16.3 net increase points in married women and 3.8 increase points in separate women. The new married women are single mothers or cohabitants in the base year. While single women drop around 21 points and cohabitants increase by just over one point, this does not necessarily imply that the new married women were the previously single women, since there may well be flows from single women to cohabitants and cohabitants to married women.

Table 14. Transition in marital status, between 1990 and 2003, of cohorts of mothers (mothers whose oldest child was aged 5 years or less in 1990)

	15-19 cohort in 1990			20-24 cohort in 1990			25-29 cohort in 1990		
	1990	1996	2003	1990	1996	2003	1990	1996	2003
Married	46.1	62.4	58.9	66.1	67.5	67.1	75.4	77.4	68.7
Cohabitant	14.9	16.2	15.6	10.4	13.5	15.6	7.4	8.7	13.3
Separated	2.1	5.9	10.6	3.2	5.7	10.0	4.8	5.1	10.0
Single	37.0	15.6	10.7	20.0	12.4	6.3	11.9	7.4	6.3
Total	100.0	99.8	99.5	99.7	99.1	89.9	99.5	98.9	98.9

Source: Author calculation from CASEN Surveys 1990, 1996 and 2000.

Note: Does not include the "widow" marital status.

The tracking of the cohort of mothers aged between 20-24 years in 1990 shows that the most significant adjustment occurs among single mothers, whose participation in the cohort drops from 20 percent in 1990 to 12.4 percent in 1996 and 6.3 percent in 2003. Meanwhile, the percentage of married mothers remains constant over time; cohabitants increased by five percentage points throughout the period, while separated women increased by seven percentage points. Once again, these are net results that may hide transitions among the various subgroups.

On the other hand, the group of mothers aged between 25-29 years in 1990 is more stable over time, probably because of its low rate of single mothers in the initial period. In any case, the proportion of single women drops practically by half between 1990 and 2003 (11.9 to 6.3 percent).

In the appendix, it is shown what happens with the cohorts of mothers in 1996 during the following eight years (Table A-6). The initial situation is characterized by a greater percentage of mothers who live with their partners or single women with respect to the 1990 cohort. However, they present a similar reduction over time; about half will change marital status between 1996 and 2003.

4. SUMMARY AND CONCLUSIONS

During the 1960-2003 period there were significant changes in fertility-related behavior, which have important implications in the structure of the family and society.

The most relevant developments were the decrease in the fertility rate, from an average of around five children per mother in the early 1960s, to approximately half that figure by the beginning of the 2000s

century, and a sharp increase in out-of-wedlock births, whose rate increased from 16 to 54 percent in a similar period of time. While the trend in the fertility rate is similar in many other countries, the out-of-wedlock birth rate is very high by international levels.

The drop in the fertility rate corresponds to a sharp reduction in the birth rate among married women, which drops to around one quarter of its level at the start of the period. On the other hand, the birth rate among unmarried women tends to remain stable, so there is a progressive convergence with the birth rate among married women.

A significant part of the drop in the fertility rate is not directly related to increases in per capita income or in the female labor participation. In fact, the period when the economy grows fastest and most women are incorporated into the labor market comes significantly after the point in which the fertility rate starts to drop. Evidence that the incorporation of married women into the labor market is related to falls in the fertility rate of this group only appear in the 1990s.

The drop in the fertility rate seems to be more closely related to access to modern contraceptive methods, whose use starts to become widespread by the end of the 1960s and which allows the actual level of children to approach the desired level. It is also probable that there was a reduction in the desired number of children, either because the quality of the children is prioritized over the quantity or because the increased level of schooling of women rises their individual development expectations. Meanwhile, the sharp drop in the infant mortality rate contributes to a reduction in the actual number of children, since it becomes possible to reach the desired number of children with a lower number of births.

The drop in the fertility rate is particularly important in the lower socioeconomic strata, thus reducing the gaps with the other population groups. In the 1960s, mothers from the lowest stratum had around 2.7 children more than those in the upper stratum, while by the end of the nineties the distance had dropped to 1.1 children per mother. This development improves the opportunities for children from the lower stratum.

Similarly, the reduction in the fertility rate has implications on most aspects of society and the economy, such as on demand for education and health, the structure of subsidies and the pensions system, savings and economic growth, etc.

The stability of the birth rate among unmarried women needs to be explained, considering the sharp drop in the birth rate among married women. That is, if the determinants of the drop in the birth rate among married women also act on unmarried women, then there are other factors at play in the opposite direction in this segment, compensating the downward pressure in the birth rate among unmarried women. Alternatively, it may be the case that the determinant factors in the drop in the birth rate among married women have less impact on unmarried women.

The evidence suggests that both types of situations occur. On the one hand, it is likely that the birth control policy has been less effective among unmarried women. It is likely that couples having sex out-of-wedlock use contraceptive methods irregularly, or that young single women face problems in the access to reproductive healthcare in public clinics. On the other hand, the elasticity of labor supply of unmarried women with respect to the number of children is lower.

Among factors that can lead to increases in the birth rate among unmarried women stand out changes in the social norms in terms of a greater acceptance of situations like single parenthood or couples living

together. Another factor that must be considered is a possible decrease in “shot gun” marriages after the pregnancy, so situations that previously led to a marriage now become out-of-wedlock births.

The percentage of out-of-wedlock births results from the arithmetic interplay of three variables: the birth rate among married women, the birth rate among unmarried women, and the distribution of the total of women of childbearing age among married and unmarried women.

The most significant factor explaining the increase in the out-of-wedlock birth rate is the reduction in the birth rate among married women. This factor explains nearly all the changes in the indicator until 1985, including cases where the impact would have been even greater were it not for the compensating effects of other variables. Increases in the percentage of unmarried women, in the 20 to 29 year-of-age group, are a relevant factor in the increase in the indicator from 1990. On the other hand, there are no relevant effects arising from changes in the birth rate among unmarried women.

Out-of-wedlock births predominantly characterize women from lower income families and lower educational levels. Out-of-wedlock births currently include, in relatively equal parts, single mothers and others who live with their partner. Single mothers tend to be younger, to live in their parent’s home and study or have remunerated work. Around half of them will live with a partner within the following years after the birth. On the other hand, mothers who live with their partner tend to live in their own home and to be dedicated to household duties.

Thus, the increase in out-of-wedlock births reflects changes in the reproductive behavior of married women more than an explosion of births among unmarried women. Nevertheless, there may be significant implications in terms of future developments since over half of children would be born from unmarried couples.

One of the crucial issues in the area is to research the effect of this situation on the opportunities facing children. This requires identifying the effect of out-of-wedlock births on the school attainments of the children, their health and nutritional condition, social and emotional development, and the other areas affecting their future life opportunities. In this respect, the lack of debate in the area is quite surprising, and is not congruent with the attention given to health, education and other factors related to the opportunities of children. The literature for developed countries indicates that children who are born out of wedlock are more likely to live in one-parent households, have instability in living conditions, live in poverty and develop socio-emotional problems. During adolescence, they have lower educational attainments, have sex at a younger age and have a higher probability of having children out-of-wedlock.²³

²³ A range of studies for the U.S. case appears in the Department of Health and Human Services (1995).

APPENDIX

Table A-1. Births per 1000 women, married mothers, 1960-2003

	15-19	20-24	25-29	30-34	35-39	40-44	15-49
1960	680.0	493.6	362.4	280.2	180.6	78.0	258.9
1965	566.8	456.4	291.5	217.9	156.5	65.2	217.7
1970	492.6	373.0	205.8	143.8	89.5	44.6	159.4
1975	497.2	303.9	192.7	117.6	72.0	29.8	138.3
1980	346.2	287.5	163.8	98.2	51.8	20.1	115.6
1985	269.0	196.6	146.6	94.4	48.4	14.5	97.0
1990	266.1	210.0	160.1	104.2	53.5	14.2	102.7
1995	300.9	205.1	145.6	95.7	48.6	12.9	85.1
2000	212.9	181.1	138.8	93.7	47.9	12.0	68.9
2003	148.7	154.4	124.3	92.0	48.1	12.6	59.4

Source: For the total of women by age bracket, INE – ECLAC (2004). For marital status distribution, Demographic Yearbooks of the INE, 1960 to 1985; databases of the 1992 and 2002 Censuses for subsequent years. For number of births: Demographic Yearbooks of the INE, respective years.

Table A-2. Births per 1000 women, unmarried mothers (excludes widows), 1960-2003

	15-19	20-24	25-29	30-34	35-39	40-44	15-49
1960	23,4	60,4	72,0	83,3	65,0	8,3	48,5
1965	27,6	59,9	95,0	92,1	98,9	41,3	53,3
1970	24,3	57,9	88,9	80,7	68,6	37,7	49,0
1975	26,6	62,6	75,1	74,6	65,7	26,5	45,7
1980	29,9	59,1	75,6	65,7	46,3	18,5	46,9
1985	34,2	75,3	85,1	79,7	53,6	18,0	55,8
1990	43,6	85,7	87,4	78,8	54,5	16,3	60,8
1995	50,1	80,1	74,2	66,4	46,7	17,5	56,5
2000	54,0	76,6	73,7	65,4	45,2	15,3	55,2
2003	45,9	73,5	71,2	68,7	46,9	20,8	53,1

Source: For the total of women by age bracket, INE – ECLAC (2004). For marital status distribution, Demographic Yearbooks of the INE, 1960 to 1985; databases of the 1992 and 2002 Censuses for subsequent years. For number of births: Demographic Yearbooks of the INE, respective years.

Table A-3. Percentage of women with 5 or more children, Chile 1960-2000

35-39 cohort in year	Socioeconomic level (years of schooling quartile)			
	I	II	III	IV
1960	56.3	45.1	30.8	22.8
1965	57.2	45.9	39.1	23.8
1970	57.6	42.6	30.8	20.5
1975	51.6	41.7	26.2	15.3
1980	43.7	34.1	17.4	9.7
1985	34.0	22.6	10.3	4.9
1990	27.2	18.4	8.2	3.7
1995	20.6	10.9	5.0	3.1
2000 *	13.1	7.5	3.3	1.8

Source: author calculation from Population census 1992 and 2002.

* There may be women who have not completed their fertility cycle yet, since they are aged between 37-41 in the 2002 measurement.

Table A-4. Age of the mother upon the birth of children, Chile 1960-2003

	Average, all children	First child	Second child	Third child
1960	27.6	23.6	25.1	26.7
1965	27.4	23.3	24.7	26.3
1970	26.5	22.9	24.7	26.5
1975	25.9	22.6	24.9	27.0
1980	25.6	22.6	25.3	27.9
1985	25.9	22.8	25.9	28.6
1990	26.3	23.1	26.5	29.4
1995	26.7	23.1	27.1	30.3
2000	27.1	23.3	27.8	31.1
2003	27.4	23.3	28.1	31.3

Source: Demographic Yearbooks of the INE, respective years.

Table A-5. Percentage of unmarried women out of total women, by ages, Chile 1960-2003 (excludes widows)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	15-49
1960	92.2	62.2	40.6	31.4	27.8	27.0	26.9	50.2
1965	90.8	61.2	31.6	26.4	22.4	20.8	20.5	45.7
1970	90.2	61.3	30.0	25.4	21.4	19.7	19.5	45.2
1975	91.3	58.5	33.6	24.8	21.4	21.6	22.5	46.1
1980	90.6	64.1	35.0	26.6	23.9	23.0	23.9	48.4
1985	90.6	57.4	34.9	26.5	23.8	23.1	23.8	44.8
1990	90.3	59.3	37.9	32.0	29.4	28.6	28.3	46.8
1995	93.5	69.2	45.5	35.9	32.6	31.7	31.5	50.6
2000	95.7	77.7	53.2	40.0	35.9	35.1	34.8	54.3
2003	96.7	81.9	57.8	42.5	37.9	37.1	36.9	56.5

Source: For the total of women by age bracket, INE – ECLAC (2004). For marital status distribution, Demographic Yearbooks of the INE, 1960 to 1985; databases of the 1992 and 2002 Censuses for subsequent years.

Table A-6. Transition in marital status between 1996 and 2000 for mothers in 1996 (cohorts of mothers with oldest child aged 5 years or less) (excludes widows)

	15-19 cohort in 1996		20-24 cohort in 1996		25-29 cohort in 1996	
	1996	2003	1996	2003	1996	2003
Married	30.8	46.0	53.2	57.1	65.5	67.7
Cohabitee	26.1	26.2	16.1	20.7	12.8	12.6
Separated	1.3	5.0	3.1	8.0	3.9	7.4
Single	41.7	22.7	27.3	13.8	17.3	11.6
Total	100.0	99.7	99.8	99.5	99.4	99.3

Source: author calculation from CASEN Surveys 1996 and 2003.

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