Research Department **Bank of Israel**

The Effect of Childcare Cost on the Labor Supply of Mothers with Young Children

Ella Shachar*

Discussion Paper No. 2012.12
August 2012

Research Department, Bank of Israel http://www.boi.org.il

* Research Department, Ella Shachar – Ella.Shachar@boi.org.il, Tel. – 972-2-6552646

חטיבת המחקר, בנק ישראל ת"ד 780 ירושלים 91007
Research Department, Bank of Israel, POB 780, 91007 Jerusalem, Israel

עלות הטיפול בילדים בגיל הרך והשפעתה על היצע העבודה של נשים

אלה שחר

תקציר

עבודה זו בוחנת את השפעת העלות של מסגרות הטיפול בילדים בגיל הרך (child care cost) על היצע העבודה של האימהות. במחקר מוצג ניתוח של עלות המסגרות, כולל השוואה בין-לאומית, וכן נסקרת מדיניות התמיכות באימהות העובדות בישראל. הממצאים מדגישים את העלויות הגבוהות של המסגרות לילדים בגיל הרך בישראל בהשוואה בין-לאומית, על רקע מימוש מועט של התמיכות הקיימות. המחקר בוחן את גמישות התעסוקה של אימהות לילדים בגילים שבהם עלויות הטיפול הן הגבוהות ביותר – טרם ההגעה לגיל של חינוך חובה (ללא תשלום). הגמישות נאמדה על בסיס המודל ההסתברותי (probit model with sample selection correction, המקובל במחקרים בנושא, עם תיקונים סטטיסטיים לבעיות המיון. ממצאי המחקר מלמדים כי לעלות של מסגרות הטיפול בילדים יש השפעה שלילית מובהקת על היצע העבודה של אימהות לילדים בגיל הרך, וזאת בעוצמה של 0.14- (גמישות התעסוקה ביחס לעלות המסגרות). נוסף על כך נמצא כי לזמינות של המקומות במסגרות המסובסדות, על פי מדד שפותח במחקר, יש השפעה שלילית מובהקת על ההוצאה המשפחתית למסגרות הטיפול בילדים.

The Effect of Childcare Cost on the Labor Supply of Mothers with Young Children

Ella Shachar

Abstract

This study examines the effect of the cost of childcare for children aged 0-4 on the labor supply of mothers. This paper analyzes childcare cost in Israel, compares it to the OECD countries, and surveys the current policy of supporting working families with children. The findings emphasize the high cost of childcare in Israel in comparison with other countries, given the low take-up rate of existing programs. The study estimates the elasticity of female labor force participation with respect to the cost of care for young children. As usual in studies of this type, the estimations are based on the structural probit model of labor force participation, with a correction for sample selection. The results show that the cost of childcare has a significant negative effect on the employment of mothers with young children —the elasticity of the cost of childcare with respect to labor force participation is -0.14. In addition, it was found that the shortage of places in subsidized childcare facilities (based on a special index developed in this study) significantly increases family childcare expenditures.

1. Introduction

The rate of participation by mothers in the labor force, which has generally always been low, has risen significantly over the past 20 years—among other things due to the development of childcare educational institutions. Nevertheless, the rate of participation by mothers with young children is lower than for women without children of these ages—a gap that exists in all population groups and that is also maintained in groups segmented by educational level. Spending on childcare at these ages (up to age 3), which is particularly high, declines when eligibility for free educational services becomes effective.

Many studies around the world indicate that the cost of childcare reduces the labor supply of mothers, and that partially subsidizing the cost for specific population groups would increase the likelihood of those mothers going to work. A mother's non-participation in the labor market, among other things because of high childcare costs, detracts from a woman's earning power and limits her acquisition of professional experience during the period when she is at home caring for her children – a period that can last for years, until the youngest child in the family reaches the age of eligibility for free education. A long absence from the labor market significantly reduces the probability that a mother will return to the labor market and find work corresponding to her professional training. It also has a negative impact on her salary—a long-term effect—since a prolonged period out of the labor market places her from the outset at the bottom of the wage scale, compared with her colleagues of the same age, and worsens the existing gender-based salary differences. Furthermore, families with children having a single wage-earner are very likely to encounter economic distress: the incidence of poverty and poverty gaps among these families is substantially greater than among families with two wage-earners.

Israel has a support system for working mothers that grants eligible mothers a subsidy amounting to about half of the cost of childcare for young children (the average for a mother receiving a subsidy). However, only half of mothers meeting the criteria for the benefit actually receive it. The primary reason, perhaps, is a shortage of slots in subsidized childcare centers. The number of slots in these facilities is enough for only about one-quarter of all working mothers' children. Some of these mothers are ineligible for a subsidized price because of the means test, but they are also affected by the shortage of slots, because even the full price in public childcare supervised by the state is lower than the price of similar childcare in the private sector, which is very costly.

In addition to this state subsidy, the tax system in Israel grants every working mother a tax credit for children up to age 18. Most mothers, however, do not reach the tax threshold; only one-fifth of mothers earn enough to take full advantage of this benefit, and even when the benefit is fully utilized, it constitutes only 12 percent of the price of supervised childcare. The number of tax credit points for a mother of children up to age 5 was doubled in 2012, but only 13 percent of all working mothers took full advantage of the benefit – those in the upper fifth of the salary distribution for mothers of children at this age. Studies show that employment of low-paid and poorly educated mothers is more elastic with respect to the cost of childcare, and diverting budget spending to subsidized care for young children would therefore cause a rise in employment and reduce poverty among disadvantaged people.

An international comparison highlights the burden on working parents in Israel, compared to the developed countries. The share of spending on childcare (in terms of the average wage) for a representative family in Israel, which is among the highest in OECD countries, exceeds the average in these countries by a full third (when the calculation is controlled for the difference in birthrates).

The purpose of this study is to estimate the elasticity of the labor supply of mothers with young children with respect to the cost of childcare, and to identify the groups that are most sensitive to this spending. The estimate will make it possible to evaluate the various policies proposed for expanding support for working families, the cost of these policies, and their expected effect on the employment of women.

The analysis is based on the accepted model in studies on the subject, with a correction for Israeli conditions. The challenge in applying the model lies in data selection problems, because of the choice of the relevant group for analysis – working women who pay for childcare.

The study is structured as follows: Section 2 describes the background of spending on childcare and the prevailing support policy in Israel, Section 3 reviews the literature on the subject, Sections 4 and 5 describe the theoretical and econometric models, respectively, of the study, Section 6 presents the database and descriptive statistics, Section 7 presents the estimation, and Section 8 concludes.

2. Cost of Care for Young Children and State Support for Working Mothers

2.1 The Cost of Care for Young Children

The number of mothers with young children[1] in Israel is estimated at 500,000. Most of them have other children under 18, and half of them have three or more children. Two-thirds of these families pay for care for young children. Use of this care is correlated with the mother's employment status. Since she is usually the main caregiver for the children, her return to work after giving birth necessitates a childcare arrangement when she is at work. Seventy-nine percent of working mothers pay for care for young children, compared with 45 percent of those who do not work (Table 1).

Table 1 – Payment for Care for Children Aged 0-4, by Mother's Employment Status

(Household Expenditure Survey, average 2007-2009)

	Payment for Childcare (percentages)	Average Monthly Spending (NIS)*	Number of Women (thousands)
All mothers with children aged 0-4	65	1,458	506.0
Working mothers	79	1,748	292.5
Non-working mothers	45	768	213.5

* In 2009 prices.

[1] Mothers with at least one child in the 0-4 age bracket.

Family spending on care for children aged 0-4, which accounts for a substantial proportion of the monthly budget, is estimated at NIS 1,458 per family.[2] Non-working mothers are available to care for their children, and these families therefore spend less. Families with two wage earners, in contrast, need childcare during the working day, and care costs are therefore more significant for them. In families in which the mother works, average spending is more than double that of families in which the mother does not work: NIS 1,748 per month, compared with NIS 768 per month. An examination of spending according to population groups shows a high variance in both the use of paid care and the amount spent on it (Table 2). Eighty percent of Jewish families who are long-term residents of Israel pay for care for young children. Their spending on this item, which amounts to a quarter of the average wage,[3] is 26 percent higher than the average such payment. Among ultra-Orthodox families, spending was less than half of the general average, while the proportion of ultra-Orthodox families paying for care was about the same as for other long-term resident families (79 percent). In contrast, only one third of Arab families with children aged 0-4 pay for childcare, and the cost of their care is one-quarter of the average general cost for all families. The differences between groups in the proportion of those using paid care and in the amount paid reflect differences in the level of the women's participation in the labor market and the difference in receiving the designated support for working families with young children.

Table 2: Monthly Spending on Care for Children up to Age 4, by Population Group

(Household Expenditure Survey, average 2007-2009, in 2009 prices)

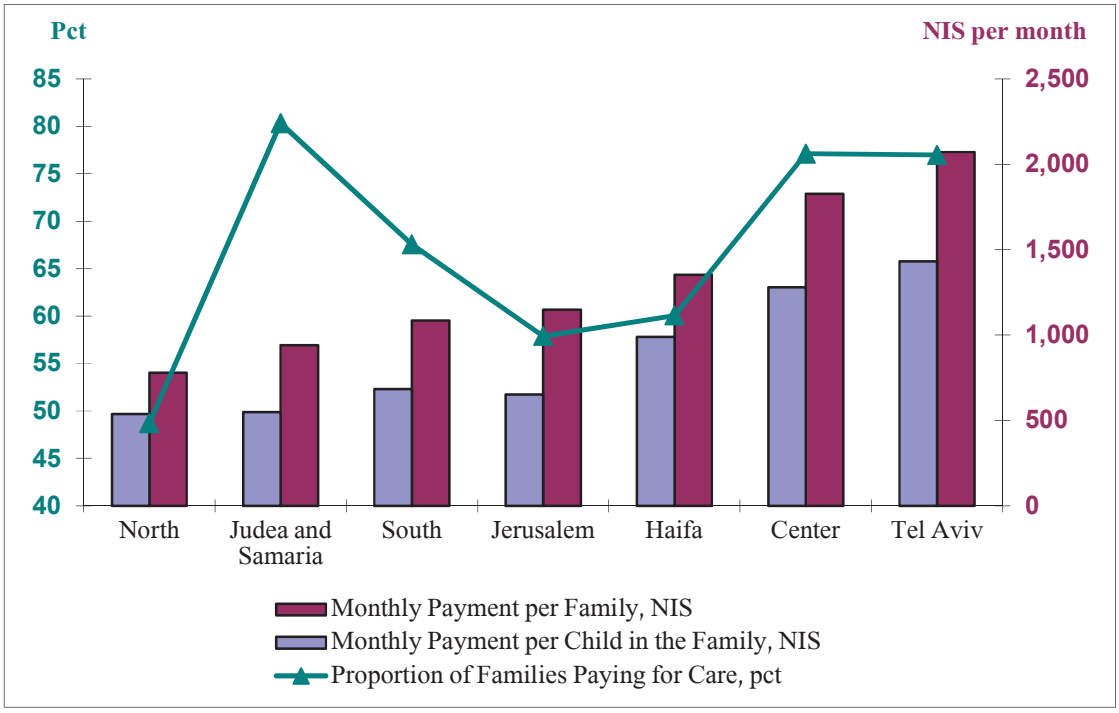
Population Group	Payment for Care (NIS)	Payment as a Proportion of the Average Payment (percentages)	Proportion of Families in the Group Paying for Childcare (percentages)
Long-term resident Jews	1,837	126	80
Immigrated to Israel in the 1990s or later	1,365	94	65
Ultra-Orthodox	667	46	79
Arabs	338	23	34
Average	1,458	100	67

The low proportion of Arab families using paid care reflects the low employment rate of Arab women. For ultra-Orthodox women, whose employment rate is approximately the same as the general population in the study, low spending was due to the high proportion of ultra-Orthodox families benefiting from the subsidized price in supervised care (for further discussion of the subsidy policy, see below). The effect of the differences in women's employment patterns can be tested through an analysis of spending using a geographic cross-section (Figure 1).

[2] Hereafter, all sums are in 2009 prices.
[3] In 2009, the average monthly wage was NIS 7,974.

Figure 1 – Average Family Expenditure on Care for Young Children, by District

(Household Expenditure Survey, average 2007-2009, in 2009 prices)

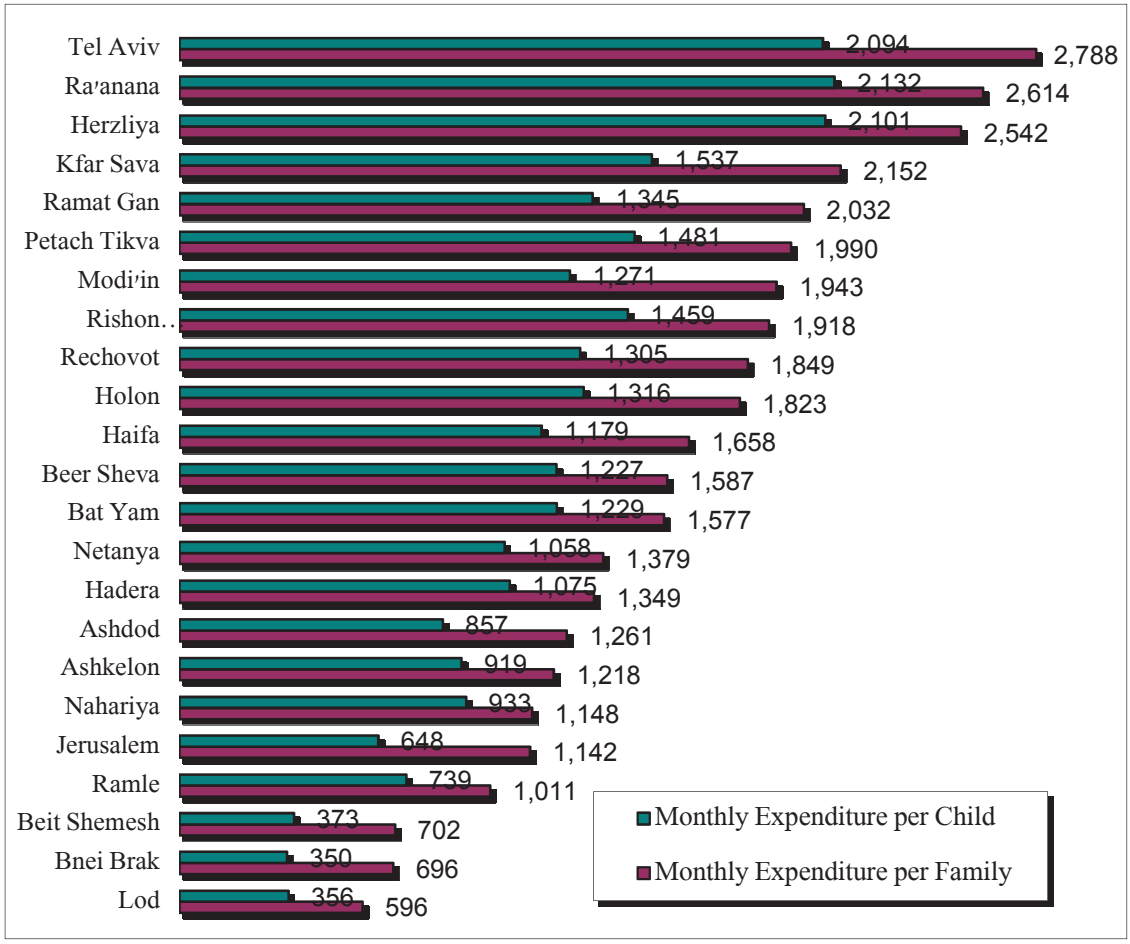


In districts with a higher employment rate, the proportion of families paying for care is higher, and the amount spent is also greater. For example, in the Central and Tel Aviv districts, 77 percent of families with young children paid for care, and their spending on this care averaged NIS 2,000 per month in the Tel Aviv district (NIS 1,400 per child of the relevant age) and NIS 1,800 per month in the Central district (NIS 1,280 per child of the relevant age). In districts where the proportion of families receiving assistance in paying for childcare was lower, spending was also lower. This does not apply to Judea and Samaria, where 80 percent of families with children aged 0-4 pay for care, and the price per child is particularly low – NIS 500 per month. In addition to the mother's employment, the gaps also reflect differences in the regional markets for childcare services.

There are also large differences within districts between different communities in the amount of family childcare expenditure (Figure 2). For example, the prices paid in Bnei Brak and Lod are much lower than the prices in most of the communities in the Tel Aviv and Central districts. The monthly expenditure of a family with children aged 0-4 is highest in Tel Aviv, Ra'anana, and Herzliya (NIS 2,500-2,800 per month), and lowest in Beit Shemesh, Bnei Brak, and Lod (NIS 600-700 per family). The gaps are even wider when the number of children up to age 4 in a family is taken into account.

Figure 2 – Average Family Expenditure on Care for Young Children, by Selected Communities

(Household Expenditure Survey, average 2007-2009, in 2009 prices)



Among the reasons for the great variation in expenditure on childcare is the support granted through the various care facilities, including subsidies for daycare centers and pre-compulsory play groups supervised by the Ministry of Industry, Trade, and Labor and subsidies for pre-compulsory schooling care budgeted by the Ministry of Education. (The subsidy can be up to 100 percent of the price in low socioeconomic areas where the law for compulsory education from age 3 is implemented.)

In families in which the mothers work and also pay for care for young children, monthly spending on care for children aged 0-4 accounts for one quarter of the mother's net wage. This situation significantly reduces the mother's effective wage (the wage net of the cost of childcare). The proportion of the mother's net wage accounted for by this spending is an important consideration in her decision of whether to return to work after giving birth. Among other things, this is reflected in the employment rate among mothers with children aged 0-4, which is lower than that for other women (Table 3) in all population groups. The gap is smaller among educated women, and wider among women with little education and

women heading single-parent families. Employment gaps are wide among immigrant women, a finding partly explained by the large proportion among them of women heading single-parent families—2.5 times the proportion among those who have resided in Israel for a long time.

According to a personnel survey by the Central Bureau of Statistics, the majority of non-working women with young children cited childcare as a reason for not working. The survey questions did not address the question of whether the reason was the women's desire to stay at home and care for their children or the low effective wage that they would receive, due to the need to spend large amounts on childcare. At the same time, 12 percent of non-working mothers answered that they would like to work.

Table 3 – Employment Rates among Women Aged 25-45 in Percentages

(2009 personnel survey)

	Mothers with Children Aged 0-4	Other Women	All Women
All women/mothers	63	71	68
Heads of single-parent families	61	72	71
Immigrants	70	84	79
Ultra-Orthodox women	56	59	57
Arabs	29	40	35
Non-academic Jews	66	77	72
Academics	82	86	84
Academic Arabs	75	83	79

2.2 A Review of State Support for Working Mothers with Young Children

An effective policy in the labor market includes support for working families with children aimed at reducing the burden of childcare expenditures. There are two main types of support: direct support paid to the caregivers (the operators of childcare facilities, such as daycare centers and pre-compulsory play groups), which lowers the price paid by the parents, and indirect support paid to working parents through the tax system, i.e., tax benefits

2.2.1 Direct Support

Subsidizing the cost of public childcare is standard policy in developed countries. In Israel, there is an array of facilities designed for children aged 0-3, comprised of daycare centers and pre-compulsory play groups, for which those eligible pay a subsidized price. This care is budgeted and supervised by the Ministry of Industry, Trade, and Labor. In order to obtain a subsidy, a family must meet an employment test (the mother must work at least 24 hours per

week)[4] and a means test. The proportion of the subsidy is determined according to the equivalised per capita income in the nuclear family, up to 65 percent of the monthly price for low-income families (Table 4).[5]

Table 4 – Level of the Subsidy in Subsidized Care
(Price List for the 2011/2012 School Year, NIS) *

Subsidy Grade**	Equivalised Average Per Capita Income	Average Income of a Family with 3 Children up to Age 18	Per Child Payment by the Parents	Amount of the Subsidy	Proportion of the Subsidy (percentages)
3	1,839	8,549	754	1,406	65
4	2,275	10,579	953	1,207	56
5	2,695	12,532	1,176	984	46
6	3,116	14,487	1,237	923	43
7	3,536	16,440	1,417	743	34
8	3,956	18,393	1,599	561	26
9	4,376	20,346	1,719	441	20
10	4,793	22,287	1,820	340	16
11	5,251	24,415	2,187	0	0

* The Ministry of Industry, Trade, and Labor price list for infants and analysis by the author.
** The table includes the principal subsidy grades, excluding the grades for children handled by the local welfare agencies (hereinafter – "welfare children").

For example, a family with three children whose monthly income totals NIS 10,000 is entitled to a subsidy equal to half the monthly price of childcare. Families who are not low-income also benefit from a subsidy: A family with three children and two wage-earners, each of whom earns the average wage, is entitled to a subsidy amounting to one-third of the cost of childcare. Nevertheless, the subsidy level in Israel is still lower than the other developed countries, in which the employment rate of women is high. In these countries, the state and the local authorities pay for an average of 68 percent of the monthly price, leaving the parents to pay the rest.[6] In Israel, in contrast, the average subsidy for all children in subsidized care was 44 percent of the monthly price.

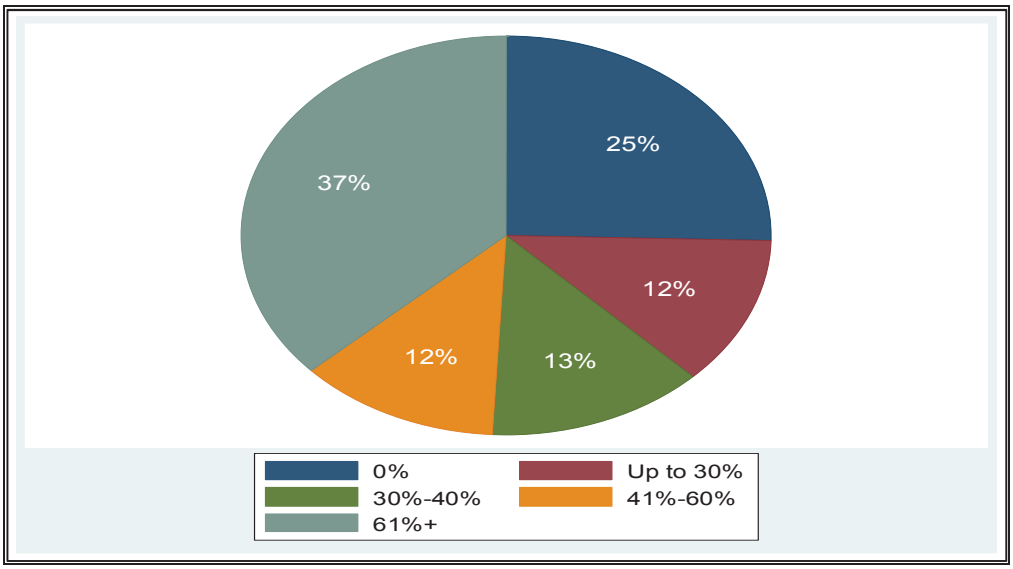
[4] The subsidy is also granted in other cases: in certain cases to those working 20 hours per week, the unemployed, immigrants, students, etc. The fathers must be either working or studying (this also includes formal religious studies for adults). Subsidies for childcare by state welfare agencies to those entitled to it according to criteria not related to the parents' employment are not discussed in this paper.
[5] In certain cases, the proportion of the subsidy can reach as high as 73 percent.
[6] The average for Italy, Sweden, Finland, Belgium, Denmark, Germany, the Netherlands, Canada, and the US. See "Daycare Subsidy Policies: Another Step Toward Encouraging Integration into the Job Market," Bank of Israel, *Recent Economic Developments*, 119 http://www.bankisrael.gov.il/develheb/develheb119/develheb.pdf and O. Fichtelberg-Barmatz (2006), "Governmental Assistance in Financing Education Services for Young Children: What Do Other Countries Do?", Planning, Research, and Economics Administration, Ministry of Industry, Trade, and Labor – http://www.moital.gov.il/NR/exeres/EF4C970C2797-4031-B373-DC38378A65FE.htm.

Furthermore, only a small proportion of working families with children at the relevant age benefit from the subsidy, due to a shortage of slots in subsidized care. Children from about 70,000 working families[7] (about 85,000 children)[8] were cared for in these establishments in 2011—approximately one-quarter of all families in which the mother met the employment test entitling her to register for subsidized care. Some of these families are also eligible for the subsidized price. The number of families eligible for a subsidy is estimated at 110,000, while only 55,000 benefit from it in practice.[9] Families meeting the employment test whose income exceeds the limit for a subsidy entitlement benefit from the fact that (full) payment for state-supervised care is less than payment for similar care in the private sector.[10]

A detailed analysis of the population benefiting from the subsidy is possible using the available data file of children in supervised care during the 2006/2007 school year. These records were combined with data on the children's parents in the salary file of the Israel Tax Authority, a file that also contains demographic data from the Israel Population Registry (for further discussion of the databases, see Section 6). In 2007, 75 percent of children in subsidized care benefited from the subsidized price (Figure 3). A large proportion of these children received a particularly high subsidy: about one-third of the children in these care establishments received a subsidy amounting to over 60 percent of the monthly price.

Figure 3 – Distribution of Subsidy Rates for all Children in Subsidized Care, 2007

(Excluding welfare children)



[7] From this point on, the analysis does not include welfare children in subsidized care.

[8] About 20 percent of the families whose children were registered in subsidized care had at least two children in these facilities.

[9] The estimated number of families entitled to a subsidy is based on a file of wage-earners that includes the data needed to calculate eligibility for registration for supervised care and to calculate eligibility for a subsidy, such as income data, the parents' employment, composition of the family, and the ages of the children.

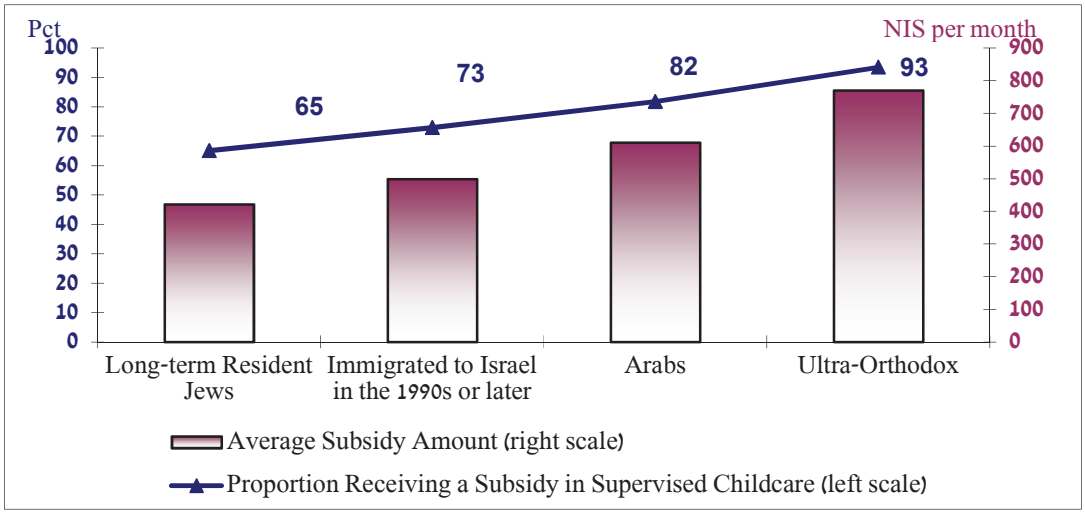
[10] One of the explanations for this lies in the cost of rent, a significant component of the cost of private care, while supervised care establishments usually operate in buildings constructed with state funding (daycare centers) or the private homes of the people operating them (pre-compulsory play groups).

The proportion of children from families with relatively high income, who are not entitled to a subsidized price, has remained constant over the years—about one-fourth of all the children in subsidized care. This facilitates social integration by avoiding the isolation of relatively disadvantaged population groups. In order to increase the number of families benefiting from the subsidized price at a time when there is a shortage of slots in subsidized care, however, the priority conditions for accepting children for care have been changed in recent years.[11] Preference has been given to low-income families, a change that has meant a substantial rise in the proportion of subsidized children in these care facilities—from 75 percent before the change to 83–85 percent this year.[12] While this change is consistent with studies that found that subsidizing care for young children has a positive impact on the development of children from deprived families[13], it detracts from social integration by isolating the children from these families, because a shortage of slots means that subsidized care is reserved almost exclusively for children from disadvantaged backgrounds.

The subsidy level for population groups with a relatively low socioeconomic background is significantly higher than for others (Figure 4). A large majority of the children in the care facilities aimed at the ultra-Orthodox or Arab populations benefit from the subsidized price (93 percent among the ultra-Orthodox and 82 percent among the Arabs), compared with two-thirds among Jews who have resided in Israel for a long time.[14]

Figure 4 – Average Subsidy per Child in Supervised Care, by Population Groups

(Families with children in subsidized care, 2007)



[11] Due to the shortage of subsidized care, acceptance committees were set up for daycare centers by the Ministry of Industry, Trade, and Labor; these committees decide whether to accept children according to the criteria of governing priority. Preference is granted to single mothers and according to the number of hours that the mother works, income level, etc.

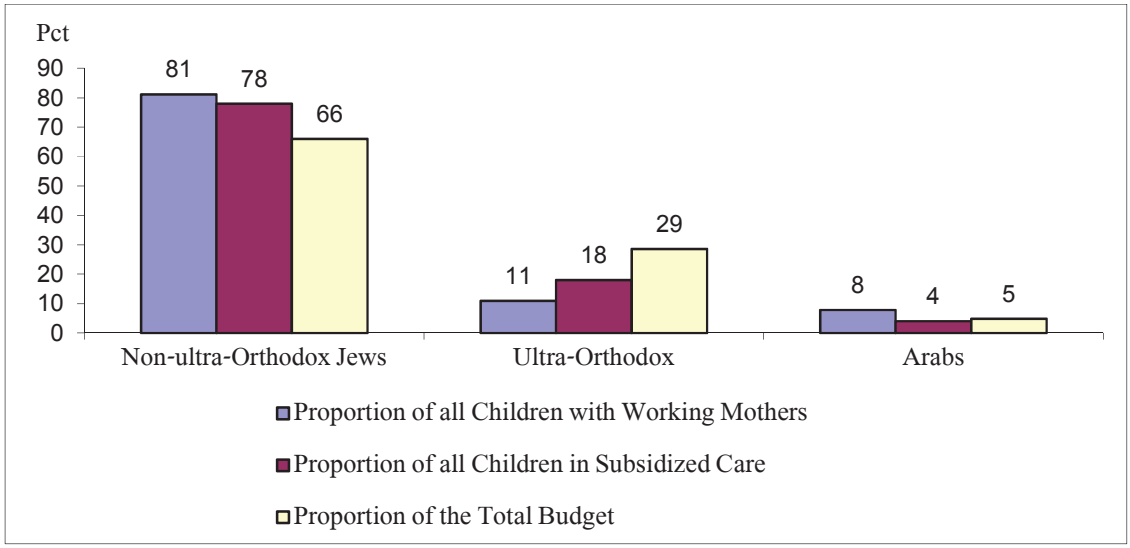
[12] For figures on the distribution of children according to subsidy grades during the 2011 school year, see Almagor-Lotan (2011).

[13] OECD (2007).

[14] Arabs in the subsidized childcare file were identified according to a community defined as an Arab community by the Central Bureau of Statistics. The ultra-Orthodox group was identified by the character of the organization that provided the care.

The highest average subsidy amount is granted in subsidized childcare aimed at the ultra-Orthodox population—50 percent more than the average subsidy for all children in subsidized care. This analysis focuses solely on children in subsidized care. In order to present the full picture, all children of the relevant age in working families should be taken into account. Figure 5 compares the proportion of children aged 0-3 with working mothers from all the population groups in the allocation of slots in subsidized care, and their proportion of the budget for subsidizing the cost of care (Budget Section 14-22-13, "Participation in Maintaining Children in Daycare Centers"). It was found that the ultra-Orthodox population's share of slots in subsidized care was significantly higher than the proportion of ultra-Orthodox children among all children with working mothers. The proportion of resources allocated for them was almost three times their proportion in the study population[15]: 29 percent of the budget for subsidizing the price of supervised care was granted to the ultra-Orthodox population, while the proportion of ultra-Orthodox children of the relevant age among all children with working mothers was estimated at 11 percent.

Figure 5 – Distribution of the Budget for Subsidizing Childcare*, by Groups of the Working Population, 2007**



* Budget Section 14-22-13 "Participation in Maintaining Children in Daycare Centers."

** Proportion of all children aged 0-3 with mothers working at least 24 hours per week (determined according to the Household Expenditure Survey).

The opposite picture is obtained for the Arab population: its socioeconomic level is low, but it receives only 5 percent of the total budget – less than a third of the proportion of Arab children among all children with working mothers. These trends are similar to the trends in the budget distribution for elementary school education, in which extra funds are allocated to state religious education, compared with a lower allocation to non-Jewish education (Blass, Zussman, and Tsur, 2010). Among other things, the gaps in budget distribution result from

[15] Children aged 0-3 with mothers working over 24 hours per week.

the non-uniform availability of slots in establishments designed for the various population groups. In general, the number of slots in subsidized care covers one-quarter of the potential demand (the number of children in working families meeting the employment test). Ultra-Orthodox families benefit from the greatest availability of places in subsidized childcare: 44 percent of the relevant population (children aged 0-3 in families in which the mother meets the employment test) have slots in subsidized care (Table 5). For non-ultra-Orthodox Jews, on the other hand, subsidized care covers only one-quarter of the children of working mothers. The proportion of availability is lowest for the Arab population: only 13 percent of children of working mothers have slots in subsidized care.

The analysis is based on figures for the 2006/2007 school year (available data), but it appears that as of the current year, no significant changes have occurred. The number of places in subsidized childcare rose by an average of 2 percent per year—close to the growth rate in the number of employed women with children of the relevant age.

Table 5 – Availability of Slots in Subsidized Childcare, by Population Groups, 2007*

Population Group	Percentages**
Non-ultra-Orthodox Jews	24 (2.6)
Ultra-Orthodox Jews	44 (3.5)
Arabs	13 (1.4)
Total	25 (2.6)

* Calculated as the ratio of the number of places in subsidized care aimed at a given population group to the total number of children aged 0-3 in families in which the mother works more than 24 hours per week.

** The standard deviation is in parentheses.

2.2.2 Indirect Support

Indirect support consists of the benefits granted through the tax system: a working mother is granted one tax credit point for each child (this was true up until 2012). The value of the benefit is uniform for all children up to age 18 (one credit point per child, with a monthly value of NIS 209 in 2011 prices), with no differentiation according to the cost of care or the child's age. In 2012, the number of credit points for a mother was increased to two for each child up to age 5, and the benefit now totals NIS 430 per month (in 2012 prices) – more than 20 percent of the price of supervised care.[16] This addition does not change the situation, because most of the women are not in the position to take the benefit, or even partial advantage of it—because they are low-paid, and usually do not reach the tax threshold, or because they do not have the appropriate level of tax liability. Only one-third of working

[16] According to Government Decision No. 602 from July 2009, "Decision Concerning the Encouragement of the Employment of Mothers of Children Aged 0-5 ("Child Caregivers Law," made following a claim by Adv. Peri).

mothers of children up to age 18 take full advantage of the benefit, and utilization of the benefit is particularly low among uneducated women. Among women with children aged 0-3, utilization of the benefit is even lower, because they work fewer hours: only one-quarter of wage-earning mothers of children aged 0-3 utilize at least one tax credit point. In effect, the benefit is skewed towards families with relatively high income from work and relatively few children. Low-income families with a heavier burden of childcare (in terms of the mother's wage) are unable to take advantage of the credit points. This situation is particularly difficult for single mothers: Most do not enjoy the benefit, and only 12 percent of them fully utilize at least one credit point for each child. Utilization of tax credit points is especially low among low-paid population groups: the vast majority of Arab and ultra-Orthodox women do not benefit from indirect support—even though they are entitled to a larger benefit because they have many children (Table 6).

Table 6 – The Utilization Rate of at Least One Credit Point for Each Child, by Population Groups

(Wage-earning women with children aged 0-3, wage-earners' file)

Population Group	Proportion of Women Taking Advantage of at Least One Credit Point for Each Child Among all Working Women in this Population Group, Percentages
Non-ultra-Orthodox Jews	27
Ultra-Orthodox Jews	7
Arabs	9

The lowest rate of utilization, only 7 percent, was among wage-earning ultra-Orthodox mothers, but they benefit from greater access to direct support through childcare subsidized by the Ministry of Industry, Trade, and Labor: 44 percent of them take advantage of the direct benefit. On the other hand, the inability of Arab women to take advantage of the tax benefit is not compensated for by childcare subsidies, due to a severe lack of facilities: only 13 percent of the children of Arab working women have slots in subsidized care (Table 5).

Support for the families of working women is at the center of public debate. Starting in 2012, the tax benefit for mothers was extended, but only women earning particularly high wages can take advantage of the additional credit point for children up to age 5. For example, a mother with three children, one of whom is younger than 5 years old, is entitled to 6.75 credit points per month (NIS 1,400 in 2011 prices).[17] In order to take full advantage of this benefit, however, she must earn over NIS 10,400, meaning that she must be in the top quintile of the salary distribution of women with children.

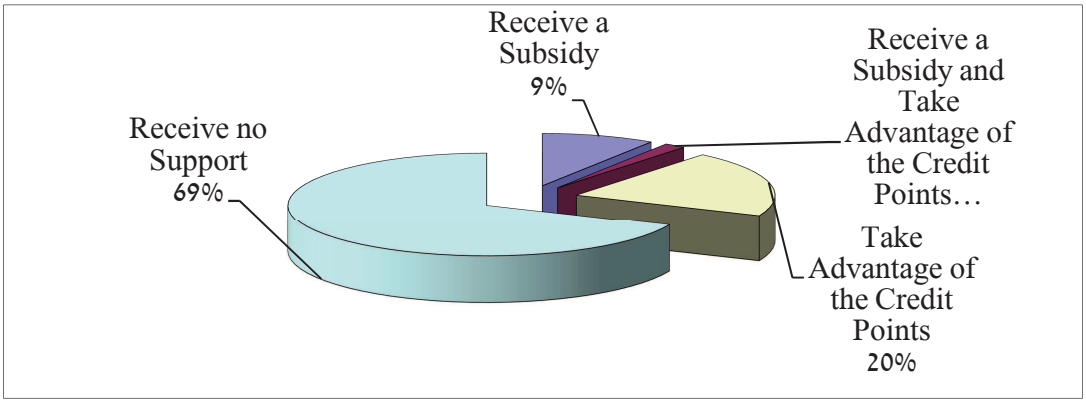
[17] 2.75 personal credit points, plus 1 credit point for each child, and an additional credit point for each child up to age 5.

An improvement in the situation of working families with children will take place following approval of the recommendations of the Trajtenberg Committee (Committee for Economic and Social Change) under the Economic and Social Change Law. The Law grants a man two credit points for each child up to age 3.[18] For the first time in Israel, tax benefits are also granted to men with children[19]; these benefits are aimed at improving the situation of most working families. Half of non-ultra-Orthodox Jewish families will benefit from at least two credit points (of the mother or of the father) for each child up to age 3. About one-third of the families of Arab working women with children up to age 3 will receive the tax benefit for the work of one of the parents. Only 17 percent of the families of working ultra-Orthodox women will benefit from utilization of credit points for children up to age 3 due to one of the parents.

A comprehensive examination of the granting of support for working mothers with children up to age 3 in Israel, up to 2012, shows that most families of working mothers were unable to take advantage of the benefits. Based on 2007 figures, (these data are available only for that year), including both the receiving of the subsidy and utilization of the credit points, a comprehensive analysis of the utilization of support designed for working mothers with children up to age 3 was conducted (Figure 6).[20] Only 11 percent of all wage-earning mothers of children up to age 3 benefited from the subsidized price of daycare centers or pre-compulsory play groups. In addition to the subsidy, some of these also took full advantage of the tax credit points for children (2 percent of these women). Twenty-two percent of the working mothers of children up to age 3 took full advantage of the credit points (one credit point for each child)—mothers with high wages belonging to the top quintile of mothers' salary distribution.

Figure 6 – Support for Working Mothers of Children up to Age 3*

(Wage-earners only, 2007)



* Calculated on the basis of the Israel Tax Authority wage-earners file and the supervised care file, 2007.

[18] The committee recommended a list of policy measures designed for working families. For details, see the Report of the Committee for Economic and Social Change, 2011.

[19] Up until now, Israel was unusual in granting child benefits according to the taxpayer's gender. See Brender (2009) for further discussion.

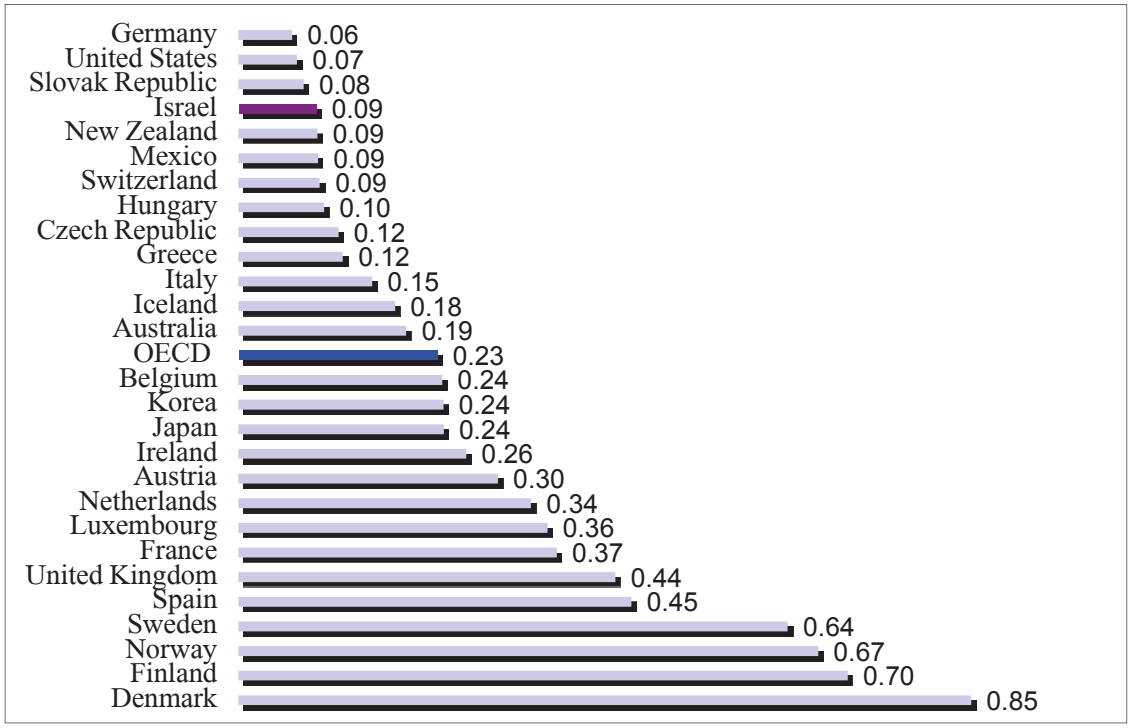
[20] Starting at age 3, a child can be registered for pre-compulsory nursery school, in which the price of care is partially or fully subsidized. The database for the study does not include detailed figures for the registration of children in this system; the analysis therefore focuses on mothers with children up to age 3.

Two-thirds of all working mothers of children up to age 3 received no support for their children—women earning close to the minimum wage, which is below the tax threshold, therefore were not enable to take advantage of the credit points. One-fifth of them meets the eligibility criteria for subsidized childcare, but cannot take advantage of this because the number of slots in subsidized care is limited. The remaining women are not entitled to the subsidy because they do not work the required number of hours, or because their family income is too high for eligibility (because of their spouse's high salary).

2.2.3 An International Comparison

Public spending in Israel on subsidized care for children up to age 3 totals 0.09 percent of GDP, compared with an average of 0.23 percent in OECD countries (Figure 7). If the figures are standardized for the difference in the fertility rate, the gap becomes almost twice as wide.[21]

Figure 7 – Public Spending on Care for Children up to Age 3 as a Percentage of GDP



Source: OECD Family Database.

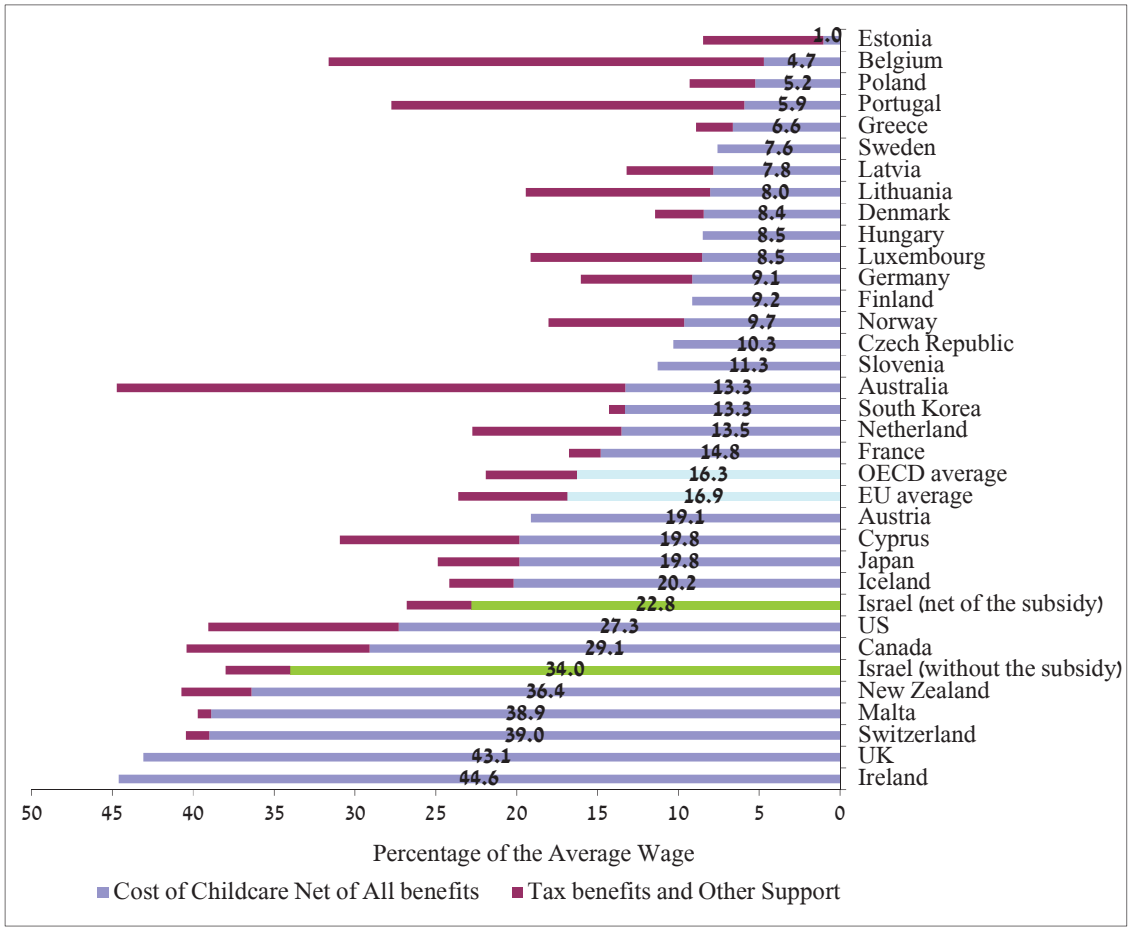
In addition to the direct childcare subsidy, extensive tax benefits are granted in the developed countries. In order to show all this support—direct and indirect—for families of working women with children, spending on childcare was compared after deducting all

[21] Were the general fertility rate in Israel the same as in OECD countries, the proportion of GDP spent in Israel would be 0.06 percent, not 0.09 percent, compared with 0.23 percent in the OECD.

support.[22] The comparison is based on a representative family (not an average family) in order to eliminate the effect of the differences in the number of children per family, which is greater in Israel than in OECD countries. A representative family is a family with two wage-earners jointly earning 167 percent of the nationwide average wage (assuming that the main wage-earner earns the average wage and the secondary wage-earner earns two-thirds of the average wage) and two children aged 2 and 3 in full day educational facilities for children. Figure 8 ranks OECD countries according to a family's *net* expenditure on childcare in terms of the average wage (after deducting the tax benefits and subsidies). The full cost of childcare in the graph is the monthly price paid by the parents, net of the subsidy granted.

Figure 8 – Payment for Childcare Net of Tax Benefits and Other Support, OECD*

(Percentage of average wage, 2004)



* The comparison refers to a representative family with two wage-earners whose combined salary is 167 percent of the nationwide average salary (assuming that the main wage-earner earns the average wage and the secondary wage-earner earns two-thirds of the average wage) and two children aged 2 and 3 in fully operational educational facilities for children.

Source: Data for OECD countries – OECD (2007), for Israel – calculated by the author.

[22] The comparison is based on the study of Immervoll and Barber (2006). For a list of the benefits, see Appendix A.

The comparison shows that in two-thirds of OECD countries, net expenditure (after all the benefits) for two children in care does not exceed 17 percent of the average wage. In some countries, the low cost is due to extensive direct support (especially in the Scandinavian countries): Some of the cost is subsidized by the state or local authorities through the service provider (daycare centers), which makes the payment borne by the parent very low. For example, this is the prevailing policy in Sweden and Finland where the parents are supported solely through a direct subsidy, and receive no tax benefits or other support. In other countries, the parents pay full price for care, and are supported through tax benefits, which significantly offset the cost. For example, in Belgium, Portugal, and Australia, the parents pay a particularly high price for care – one-third of the average wage or even more, but a large proportion of the payment is refunded through benefits and other support, which makes their net expenditure relatively low. Estimates of costs in Israel are based on the prices of subsidized care after the subsidy for supervised care is deducted (this is correct for only about one-quarter of the relevant families) and without any subsidy (the relevant situation for most of the population). Calculation of the other support includes child allowances paid by the National Insurance Institute. Tax benefits were not taken into consideration for Israel, because the wage level assumed for the mother for the international comparison does not reach the level enabling her to take advantage of the credit points to which she is entitled for her children. The Earned Income Tax Credit, which was implemented nationwide in Israel in 2011, also fails to change the picture, because the representative family's income is higher than the upper limit for receiving this grant.[23]

Spending by mothers on childcare in Israel is higher than in most OECD countries, even for those benefiting from the subsidy. When the subsidy's availability (meaning the possibility of taking advantage of it) is taken into account, the subsidy is very small, and childcare expenditure amounts to a third of the average wage. Starting in 2012, tax benefits for working families were expanded, and two credit points were awarded to a father for each child up to age 3. Including the benefit in this model does improve the current situation, but for most families (those who did not take advantage of their eligibility for the subsidy) spending in terms of the average wage was still higher than in most OECD countries (22 percent of the average wage). In families benefiting from the subsidy, the expenditure was close to the OECD average (15 percent of the average wage).

3. A Review of the Literature

The effect of the cost of childcare on the female labor supply has been examined in many studies. Most of them found that the elasticity of mothers' employment with respect to the cost of care was negative. At the same time, the variance of the estimated elasticity was high—the estimates vary between 0 and 1. Anderson and Levine (1999) reviewed the studies on the subject in detail. They note that despite the high variance in the power of the elasticity obtained, its frequency varies between -0.3 and -0.4. The reason for the differences in elasticity lies in the differences within the population studied, in the data sources, and in the

[23] The Earned Income Tax Credit (the income grant) was paid starting in 2008 (for labor in 2007) in selected areas, and nationwide from 2011. The amount of the grant depends on the wage of the entitled person and the number of his children up to age 18, and is limited by the family's income.

models used and their specifications. The accepted models in studies on this subject are the structural model of the mother's labor supply, the probability model, and studies that use a natural experiment approach.[24]

The studies based on the structural model are less common. They include many assumptions about the mothers' behavior, and report mostly low elasticity close to zero. Using this method, Ribar (1995) estimated the elasticity of the labor supply of married women with children up to age 15 at between -0.09 and -0.07. On the basis of the structural model, Michalopoulos, et al. (1992) concluded that the elasticity of mothers with children up to age 18, whether married or single-parent, was negligible. Studies based on a natural experiment, in contrast, report higher elasticities. For example, Gelbach (1997) found elasticity in a -0.13 to -0.36 range.

Using a natural experiment for Israel, Schlosser investigated the effect of the law granting free education for children aged 3-4 (pre-compulsory schooling) on the labor supply of Arab women. She found that increasing the supply of childcare and fully subsidizing its cost caused an 8 percent rise in the mothers' employment rate. Most of the increased employment is among educated mothers, while the law had practically no effect on employment among uneducated mothers.

Implementation of a broad reform in the Canadian province of Quebec provided data for a natural experiment comparing the changes in participation rates of mothers with children aged 0-5 to those of other provinces (Lefebvre and Merrigan, 2008). As part of the reform, a subsidized price was granted for each child, thereby reducing the cost to a nominal one. The total subsidy under this program rose 3.5 times—from 0.16 percent of GDP to 0.57 percent. This study found that the reform contributed to an 8.1 percent rise in the employment rate of mothers with children at the eligible ages.

Use of the natural experiment approach is preferable, because it makes it possible to deal with the selection problem in the comparison groups—those benefiting from the subsidized price and those paying the full price. At the same time, given the limited quantity of data suitable for a study using this approach, and the great demand for a study for purposes of setting policy in this matter, the most common model in studies testing the elasticity of the labor supply of mothers with respect to childcare expenditure is the probability model developed by Connelly (1992) and Ribar (1992). This model estimates the likelihood of a mother being employed as a function of her wages and the potential cost of care for her children. As part of the model, statistical corrections are made for selection problems resulting from the partial nature of the data. The data are only for working mothers (from salary data), and only for those paying for childcare (from data for the cost of childcare). Following these corrections, the potential wage and potential cost of care are calculated for each observed mother, and these are included as key regressors in the labor market participation equation.

[24] Use of the controlled natural experiment approach involves difficulties, because all the programs in which support is granted for childcare also include other types of support (such as help in finding work, subsidized professional courses, etc.). This makes it difficult to isolate the effect of subsidies on mothers' employment.

The majority of studies using this method found that the cost of childcare had a negative effect on women's employment, but the power of the effect—the elasticity of women's employment with respect to childcare expenditure—differed between the studies. The reasons for this include differences in the study population characteristics (single mothers, married mothers, young mothers, etc.), the children's age (up to age 6, up to age 13, up to age 18, etc.) and the women's economic situation (poor mothers). Another reason for the high variance in elasticity is the different specifications in defining the variables. For example, differences result from how the childcare cost variable is defined (the monthly cost, cost per work-hour of the mother, cost in comparison with the mother's number of weekly work-hours). Nevertheless, the elasticities obtained for all the different ways of calculating the variable were negative.

On the other hand, Anderson and Levine (1999), who tested the sensitivity of results to different ways of dealing the selection problem (for example, different techniques), found that these had no great effect on the magnitude of the elasticity obtained. Kimmel (1998) reported a similar finding.

The findings of studies indicate differences in elasticity between different population groups, depending on their demographic features, level of education, incidence of poverty, and number of hours worked. It is very important to identify the groups most sensitive to childcare costs, because this can contribute to effective allocation of resources, thereby maximizing the resulting increase in employment. For example, Anderson and Levine (1999) found that the employment elasticity for mothers of children up to age 6 with little education was triple (-0.89) the employment elasticity for educated mothers (-0.3). A study conducted by the Government Accounting Office (1994) based on the probability model found that the effect on poor women's employment was stronger, and their employment's elasticity (-0.5) was greater than that of wealthy women's employment (-0.19).

Another important finding was that elasticity varied according to the number of hours worked: childcare expenditures reduce the chances of full-time work more than the chances of part-time work (Connelly and Kimmel, 2010). A study of Canadian data (Powell, 1998) reported a similar finding for married mothers (elasticity of full-time employment was -0.7, compared with -0.2 elasticity of part-time employment). Connelly and Kimmel (2010) also found that the elasticity of full-time work by single mothers (-1.29), who are usually in the bottom income deciles and have lower employment rates, was significantly higher than the elasticity of married mothers (-0.75).

Matters concerning the encouragement of employment, eliminating labor market entry barriers, and a transition from welfare to work are at the center of public discussion in various countries. Enhancing a support policy that encourages, or at least does not have a negative impact on, the incentive to work requires testing the policy's effect on the labor supply of women. Studies were conducted over the past decade testing the elasticity of women's employment with respect to the cost of childcare in a number of countries. An international survey of these studies conducted by Gong et al. (2010) found that the elasticity of employment (with respect to childcare cost) among countries averaged -0.27, with a minimum of -0.92 and a maximum near zero (calculated for married mothers only in the US, Canada, Germany, Sweden, Norway, and Australia – Table 7).

Table 7 – Elasticity of Mothers' Employment with Respect to Cost of Childcare

(Married mothers, based on a review of the international literature)

Country	Minimum Value	Average	Maximum Value
US*	-0.92	-0.47	-0.09
Australia*	-0.21	-0.12	0
Canada*	-0.38	-0.25	-0.12
Sweden		0.00	
Norway		-0.12	
Germany		-0.04	

* Calculated as a simple average of the studies conducted.

4. The Theoretical Model

The theoretical framework of the study is based on the individual's preferences, represented by a mother's utility function (Heckman 1974, Connelly 1992, Ribar 1992). This function maximizes the utility by selecting an optimal quantity of consumption of goods, leisure, and childcare quality. The selection is simultaneous, subject to budget limitations (defined by the mother's wages, other family income, the price of childcare, etc.) and limitations on the mother's time and that of the child.

The utility function is in the following form:

(1) Max $U = U(X_m, Q, t_L)$

(2) $Q = Q(t_Q, t_{cc}q; N, A)$

with the following constraints:

(3) $t_m W + V = X_m + P_{cc}t_{cc}$

(4) $t_m + t_Q + t_l = 1$

(5) $t_Q + t_{cc} = 1$

where:

U is the utility function; X is consumer goods; Q is the quality of childcare; t_L is leisure; t_Q is the time devoted by the mother to childcare; $t_{cc}q$ is the time spent caring for the children by another party (quality q); N is the number of children in the family; A is the ages of the children in the family; t_m is the mother's work hours; W is the hourly wage; V is the household income, excluding the mother's labor (including the spouse's income); and $P_{cc}t_{cc}$ is the family expenditure on childcare (cost per hour x hours of care).

The quality of childcare (2) is affected by the time the mother spends caring for the child (t_Q) and the time spent caring by another party for pay (t_{cc}). It also depends on the number of children in the family and the composition of their ages.

Constraint 1—The budget constraint (3): Consumption of the goods (the price of the consumer product was assumed to be 1), and the childcare services (not by the mother – the hourly cost of care, multiplied by the number of care hours) equals the mother's wage and

the family's other income (including the spouse's wage), where the hourly price of care is affected by the quality of care (q) and by other factors: $P_{cc} = P(q^+, N^+, A^-)$.The composition of the children's ages (A) can contribute to reducing the cost of caring for young children: the presence of adult children in the home reduces the number of care hours that must be paid for, because the adult children participate in caring for the small children. On the other hand, the number of young children (N) increases the cost of care.

Constraint 2—The time constraint: the mother's time (4) is composed of work hours, childcare time, and leisure time. The time of the child being cared for (5) reflects the division of time between time under the mother's care and time under another party's care.

In order to simplify the model, several assumptions have been made: all the family's income is consumed (no savings) and there is an absence of constraints on the transition from non-employment to employment (no difference between employment and participation).

From the first order conditions, we obtain the following equation:

$$(7) \quad \frac{U_L}{U_x} = W = \frac{U_Q}{U_x}(Q_1 - Q_2 q^*) + P_{cc}^*$$

According to this condition, the substitution between leisure and consumption of goods equals wage and is identical to the mother's utility from childcare, compared with the utility of consuming goods and payment of the optimal price (P^*_{cc}) for childcare by another party. According to the standard labor supply model, the mother will decide to go to work when the wages offered in the labor market equal her reservation wage. In this model, the reservation wage of a mother with small children also reflects the cost of childcare while she is at work. Each additional child raises the mother's reservation wage and lowers her probability of employment. On the other hand, reducing the cost of childcare by granting support for it should lower the reservation wage, thereby increasing the probability that the mother will go to work.

5. Econometric Model

The model is a probability model of labor supply, in which the decision of whether or not to participate in the labor market is measured as a function of characteristics affecting the propensity to work: wage, childcare expenditure, the mother's demographic and economic characteristics, and the unobserved factors (8).

$$(8) \quad F = f(W, P_{cc}, A, u)$$

The function can be written as an equation:

$$LFP = \beta_0 + \beta_1 \ln W + \beta_2 P_{cc} + \beta_3 X + \mu_0 + u$$

where LFP is participation in the labor market; β_0 is a constant; X is a vector of the individual's economic and demographic characteristics; $\ln W$ is the potential wage; and P_{cc} is the potential cost of childcare.

The equation receives the value 1 when a woman works a positive number of hours:

$$LFP = \begin{cases} 1 & if\ F^* > 0 \\ 0 & otherwise \end{cases}$$

In the initial stage, two equations must be estimated: the wage equation (9), on the basis of which the potential wage of each mother must be estimated, and the childcare cost equation (10), on the basis of which the potential cost of childcare for each mother must be estimated.

(9) $\ln W = \gamma' M + v_w$

(10) $P_c = \alpha' D + v_p$

The wage regression is estimated on the basis of the Mincer model, with human capital characteristics and other characteristics of the working mothers (M) and the unobserved characteristics (v_w). Including data only for working mothers (for whom the wage is known) causes selection of observations and requires a correction, which was done using the Heckman method.

Another equation to be estimated in the initial stage is the childcare cost regression (10), which includes the variables affecting the cost, such as the number of small children, the presence of adult children, the mother's family status, the presence of other adults in the household, etc. (D), and unobserved factors (v_p).

This equation will include only observations of mothers paying for childcare. In this model, the cost variable is estimated as the mother's hourly cost of care, and requires information about her work hours. The calculation method restricts the childcare cost data to working mothers paying for childcare. In this case, there are two selection problems: only observations of working mothers are selected, and only those working mothers paying for childcare are selected. This requires a correction. Some of the studies made corrections for only one type of selection – payment for childcare. Studies in which the selection problem was addressed according to both approaches (a correction for selection of payment for childcare services only and a correction for selection of both the employment situation and payment for childcare services) indicate that the elasticity of employment with respect to childcare expenditures is almost unaffected by the choice of approach (see Anderson and Levine (1999) and Kimmel (1998), for example). The probable explanation is that the two decisions are significantly correlated. According to these findings, a statistical correction of selection was done in the framework of this study only for the use of paid childcare services.

In the final stage, the principal equation of participation in the labor force was estimated. The equation includes as regressors the potential wage and the potential cost of childcare calculated for each mother in the sample.

The estimation stages are as follows:

1. Estimation of the labor market participation equation. On the basis of this estimate, a correction is calculated using the Heckman method.
2. Estimation of the salary equation, including a Heckman correction. Based on the coefficients obtained, the potential wage is calculated for every mother in the sample.

3. Estimation of the equation for the probability of paying for care for young children. A Heckman correction is calculated on the basis of this estimate.
4. Estimation of a regression for the cost of childcare, including a Heckman correction. Based on the coefficients obtained, the potential cost of childcare is estimated for every mother in the entire sample.
5. Estimation of the final equation – the participation equation. The equation includes both the potential wage and the potential cost of childcare, as well as additional explanatory variables. Based on the coefficients obtained, the elasticity of the women's employment with respect to the cost of childcare is calculated.

5.1 Methodology Problems

5.1.1 Exogeneity of the Cost of Childcare and Wages

Estimation of the two regressions (childcare cost and mother's wage) in the model assumes exogeneity between the two variables. According to this model, the variables in these equations should not be correlated with the result of the other equation: the vector of variables in the salary regression (*M* in Equation 9) will not include variables correlated with the cost of childcare (such as the number of young children), and the vector of variables in the childcare cost equation (*D* in Equation 10) will not include variables correlated with wage (such as the mother's level of education). As a rule, it is necessary for each one of the four equations preceding the final regression to include at least one variable distinguishing it from the other equations.

5.1.2 Calculation of Statistical Corrections for Data Selection

Estimation of the two equations preceding the final participation equation requires two selection corrections. The first is needed for the salary regression, because it is estimated only for employed mothers. In this case, the correction uses the Heckman method (1979), in which a regression representing the labor supply is estimated (probit), and is used to predict the probability of each mother in the sample to be employed. Based on this figure, an Inverse Mills Ratio (IMR) is constructed for each observation, and inserted into the salary equation as an additional regressor.

In this model, a correction is also calculated for selection in the childcare cost equation. In this case, there are also two selection problems (selection of working women, and selection of only working women who pay for childcare). Estimation using both methods—a) selection according to payment for childcare, and b) selection according to payment for childcare and for employment status—gives very similar results.[25] In order to simplify the estimation process, the Heckman method was therefore used to deal with the selection problems in both preliminary equations (the wage equation and the care cost equation).

[25] For example, see Anderson and Levine (1999) and Kimmel (1998).

6. Data and Theoretical Statistics

This study is based on figures from the Household Expenditure Survey of the Central Bureau of Statistics. The survey includes detailed information about the cost of childcare and various characteristics of individuals and households: education, employment status, family status, age, number and ages of children, year of immigration to Israel, religion, salary, work hours, etc. The study includes mothers with at least one child aged 0-4. Due to the limited number of observations in the annual survey the data included the survey figures for the last three years published at the time of the study: 2007–2009. The survey figures represent the overall cost of childcare for the family, without specifying the cost for each child. The costs related to care of children aged 0-4 may be classified according to the definition of the cost: daycare/nursery (not including compulsory kindergarten), a childcare worker residing or not residing on the premises (assuming that spending on childcare focuses on children aged 0-4, not older children), and afternoon childcare (if the family has more children up to age 9, the relative proportion of total family expenditure was taken into account). The cost of childcare per work hour of the mother was calculated as the ratio of the monthly cost of care to the mother's monthly work hours.

The survey figures include total childcare expenditure, with no distinction between the subsidized price and the full price. Furthermore, no distinction was made between subsidized daycare and public pre-compulsory play groups and those belonging to the private sector. In order to reflect the effect of subsidized care on the cost of childcare, an index was compiled reflecting the availability of subsidized care. The analysis is based on a file that includes all children in care subsidized by the Ministry of Industry, Trade, and Labor during the 2006-2007 school year.[26] The database includes information about the level of eligibility for a subsidy for each individual, the geographic location of care, the mother's employment status, etc. The data were added to a random sample of working mothers that includes information about the parents' wages,[27] and demographic data from the Population Registry were also added. An availability index was compiled on the basis of these data as the ratio of the number of slots in supervised care in a community to the number of children of the relevant age with mothers working over 24 hours per week.

Based on the administrative sources of information (the file of wage-earners in 2007), the number of working mothers with children eligible for supervised care in 2007 was estimated at 300,000—250,000 of whom work over 24 hours per week.[28] Since the administrative file does not include data for work hours, the extent of employment was estimated on the basis of the monthly salary. In 2007, the number of children aged 0-3 with mothers who met the employment test was estimated at 325,000, while the number of children with places in subsidized care totaled 74,000 (excluding welfare children) – less than one-quarter of the

[26] The file did not include welfare children in daycare centers.

[27] The files for individuals were prepared on the basis of Form 126 (computerized) submitted by the employer to the Israel Tax Authority. The form includes a list of all payments and deductions, credit points, a list of work months, type of position, etc. for each employee at an annual level. The file includes data for 10 percent of all employed persons, who were selected randomly.

[28] Hereinafter, the figures were calculated on the basis of the wage earners file. These are 24-30 percent higher than those calculated according to the Household Expenditure Survey. The results are consistent with the fact that a fixed 30 percent gap exists between the number of wage earners estimated according to administrative data and the estimate according to the Central Bureau of Statistics surveys (Forman, 2005).

relevant population. This ratio reflects the level of availability of places in subsidized childcare for working mothers of children aged 0-3. It is important to note that care in this system is also worthwhile for families not eligible for the subsidy, both because its monthly price is lower than that of care in the private sector at a similar level[29], and because supervision by the Ministry of Industry, Trade, and Labor requires that high pedagogic and safety standards be met. The level of availability of supervised care should affect the amount spent on care for children aged 0-3, and perhaps also the mother's decision whether or not to work (questions examined in this study). These facilities are operated by social organizations (WIZO, NA'AMAT, and Emunah women's organizations, and others), each aimed at a specific population group. Calculating the availability index for the three main population groups (non-ultra-Orthodox Jews, ultra-Orthodox Jews, and Arabs) shows the wide gaps between them in the availability of supervised care (Table 8).

Table 8 – The Availability Index According to Population Group, 2007*

District	Ultra-Orthodox Jews	Non-Ultra-Orthodox Jews	Arabs
Jerusalem**	0.22	0.34	0.10
North	0.81	0.47	0.17
Haifa	0.41	0.22	0.12
Central	0.69	0.22	0.15
Tel Aviv	0.47	0.28	N/A
South	0.68	0.36	0.14
Judea and Samaria	0.54	0.38	-
General Average***	0.44 (0.035)	0.24 (0.026)	0.13 (0.014)

* Calculated as the ratio of the number of places in subsidized care operated by organizations aimed at each population group to the number of children with mothers working over 24 hours per week.

** The estimate of the care facilities aimed at the ultra-Orthodox population in Jerusalem is an underestimate, because there is a large group of pre-compulsory play groups that cannot be classified as ultra-Orthodox organizations.

*** The standard deviation is in parentheses.

The availability index calculated according to geographic areas highlights the distressing situation in subsidized care in various communities. For example, among the non-ultra-Orthodox Jewish population, the shortage of slots in subsidized care is particularly acute in the Petah Tikva, Holon, and Hadera areas, where there are enough slots in subsidized care for only one-fifth of the children of working mothers (Table 9). The worst shortage of slots is in the Central and Haifa districts; in the North district, on the other hand, there are places

[29] One of the significant items in spending on care in the private market is rent for the building, while the subsidized facilities are usually located in public buildings or the apartments of the parties operating the pre-compulsory play groups.

for about half of the children. These figures highlight the need for planning for specific areas in the construction of new care facilities, which is needed above all in communities in which the number of slots is sufficient for only one-fifth of the potential demand.[30]

Table 9 – Availability Index for Places in Child Care Designated for Non-Ultra-Orthodox Jews, 2007

District		Sub-District	
Name	Availability Index*	Name	Availability Index*
Jerusalem	0.34		
North	0.47	Tzfat	0.65
		Kinneret	0.51
		Jezreel-Afula	0.52
		Acre	0.36
		Jezreel-Nazareth	0.21
		Golan	0.74
Haifa	0.22	Haifa	0.23
		Hadera	0.18
Central	0.22	Sharon	0.24
		Petah Tikva	0.18
		Ramle	0.25
		Rehovot	0.25
Tel Aviv	0.28	Tel Aviv	0.30
		Tel Aviv-Ramat Gan	0.35
		Tel Aviv-Holon	0.19
South	0.36	Ashkelon	0.35
		Beer Sheva	0.37
Judea and Samaria	0.38		
Total	0.24		

* Calculated as the ratio of the number of places in subsidized care operated by organizations aimed at non-ultra-Orthodox Jews to the number of children with working mothers (non-ultra-Orthodox Jews).

[30] Another possible index of the shortage of care is the number of registration requests by parents that were refused because of a lack of slots. This index, however, is an underestimate, because many parents don't apply in the first place, knowing that the lack of slots means that they have little chance of getting a place.

The calculation of the availability index was based on administrative data available for individual communities, and even smaller subdivisions. On the other hand, in the Household Expenditure Survey, used for estimation in this study, only large communities with 100,000 or more residents are identified. For the smaller communities, the index was therefore calculated at the lowest level at which identification in the Household Expenditure Survey was possible – the subdivision. In 2007–2009, a partial-to-complete subsidy for parents with children aged 3-4 in pre-compulsory kindergartens operated by the local authorities was instituted. A free education law was applied in certain areas during those years; these areas cannot be identified at the individual geographic level of the Household Expenditure Survey.[31] In order to reflect this effect, a dummy variable was defined for the presence of children aged 4—the main population in pre-compulsory kindergartens.

The sample of the annual Household Expenditure Survey includes 1,100 observations relevant to this study. After combining the files for the past three years of the survey, the number of observations reached 3,300. The financial data were translated into fixed 2009 prices on the basis of the Consumer Price Index.

The descriptive statistics are displayed in Table 10. The table contains the figures for the entire survey segmented according to the mother's employment status, and the monthly spending on care for children aged 0-4 was calculated for the working mothers. The employment rate calculated on the basis of Household Expenditure Survey data (58 percent) is lower than the figure obtained from the Labour Force Survey of the CBS (63 percent). Similar gaps were maintained in the employment rate of women with children up to age 18, and for women in general.

Different patterns of payment for childcare according to the mother's employment status are distinguishable in the statistical data. Working mothers are more frequently aided in paying for childcare, and 81 percent pay for childcare, compared with 47 percent of mothers who were not employed.

Well-educated mothers are more involved in the labor market, and among the working mothers, the educated ones are more inclined to pay for childcare: the percentage of women with an academic degree among working women is 44 percent, and is higher among working mothers and mothers paying for childcare (46 percent).

Spending on childcare is highest among working mothers (NIS 1,700), and accounts for a quarter of their monthly wages. Working mothers paying for care earn 7 percent more per month, and their spouses' wages are slightly higher than the wages of non-working women's spouses. A positive correlation between family labor income (the mother's salary and that of her spouse) and spending on childcare highlights the phenomenon of selection—the fact that women with higher wages can afford to pay more for childcare—and emphasizes the need to deal with the problem discussed in Section 5.

[31] The law was applied in certain communities and specific areas within those communities.

Table 10 – Economic and Demographic Data for Mothers with Young Children (Averages)

Variable	All Mothers	Non-Working Mothers	Working Mothers	Working Mothers Paying for Childcare
Children aged 0-1	0.58	0.66	0.52	0.49
Children aged 2-3	0.58	0.59	0.56	0.62
Children aged 4	0.29	0.31	0.27	0.30
Mothers with a one or more children aged 12-18, percentages	20	24	17	16
Not employed in the family	1.21	1.31	1.13	1.09
Not employed in the family – a woman	0.14	0.18	0.10	0.08
Immigrant women, percentages	15	13	17	15
Arab women, percentages	24	46	9	5
Ultra-Orthodox women, percentages	10	11	9	10
Employed women, percentages	58	-	-	-
Single-parent, percentages	7	5	8	7
Age	32.2	31.4	32.8	32.9
Years of education	13.7	12.3	14.7	14.8
Women with academic degree, percentages	33	16	44	46
Average monthly payment for childcare, NIS*	944	360	1,370	1,700
Mothers paying for childcare, percentages**	67	47	81	100
Weekly work hours	34.8	-	34.8	35.1
Average monthly wage, NIS	3,621	-	6,264	6,733
Hourly wage, NIS	49.5	-	49.5	51.2
Spouse's wage, NIS	7,334	5,600	8,599	9,052
Cost of childcare per mother's work hour, NIS	16	-	16	16

* The amounts are different than those displayed in Table 2, because here they focus on all mothers with children aged 0-4, while Table 2 relates only to mothers paying for childcare.

** The figures are slightly different than those displayed in Table 1, because they are based on the final sample, from which some observations were removed due to lack of values for certain variables (for example, an unknown number of work hours).

7. Results

As described above, the estimation consists of three stages. First, the variables to be inserted into the final equation are estimated – the potential wage and the potential cost of care. In the first stage, the Mincer wage equation is estimated, with a correction for the selection of participation in the labor market (Table 11). Due to the lack of sufficient amount of observations of working Arab mothers paying for childcare, this group was removed from the sample. The estimation focuses solely on Jewish women.[32] The explanatory variables in the two equations are standard – personal characteristics (age, family status, number of children), belonging to a population group (immigrant women, ultra-Orthodox women), and control variables for geographic differences (average wage in the area, taken at a lag; dummy variables for districts) and for the survey years. A high and significant ρ justifies the use of the Heckman model, and reflects the high positive correlation between the unobserved factors in the two equations – the participation equation and the wage equation. As expected, the tendency to work increases with the mother's level of education. Immigrant and ultra-Orthodox mothers are less likely to work, and those who do work are paid lower wages than long-term residents and non-ultra-Orthodox Jewish women. Each additional child lowers the probability that the mother will work. This effect is particularly strong when the children are younger than 3, weakens as the child's age rises, and is not significant for children over 12. The number of children also reduces the mother's wage: each additional child reduces it by 2 percent. The highest probability of employment is for mothers residing in the Central and Tel Aviv districts. At the same time, residence in these districts does not contribute to a higher wage. Among the factors having a positive impact on the wage of mothers with young children are age and education. Controlling for the survey years generates a strong negative effect on wage in 2009, a year of economic slowdown, compared with 2007, a year of economic growth. In addition, a number of other factors were tested and found to be non-significant, such as the utilization of credit points for children and the availability of subsidized care in the mother's area of residence.

[32] Combining all three survey years increases the number of observations of working Arab women. Nevertheless, the number of observations of working Arab women paying for childcare remains very small.

Table 11 – The Salary Equation with a Statistical Correction for the Probability of Working (Heckman Correction)

	Natural Logarithm of Hourly Wage		Participation Equation
	Adjusted Coefficients♦	Regression Coefficients	
Years of education	0.075 ***(18.01)	0.093 ***(19.00)	0.075 ***(7.90)
Age	0.065 ***(3.79)	0.067 ***(3.84)	0.006 (1.03)
Age squared	0.001- ***(2.65)	-0.001 ***(2.65)	
Married	0.053 (1.27)	0.053 (1.27)	
Women who immigrated to Israel in the 1990s or later	-0.159 ***(5.21)	-0.186 ***(5.47)	-0.111 *(1.73)
Ultra-Orthodox women	0.196- ***(4.55)	0.261- ***(5.42)	-0.257 ***(2.82)
Number of children up to age 18	0.021- **(1.99)	0.021- **(1.99)	-0.089 ***(3.15)
Average wage in the area	0.0001 *(1.87)	0.000 *(1.87)	
District of residence (control: Jerusalem district) Northern district	-0.137 *(2.53)	-0.099 *(1.63)	0.161 (1.46)
Haifa district	0.108- (2.01)	0.066- (1.15)	0.180 (1.59)
Central district	0.065- (1.33)	0.001- (0.01)	0.277 ***(3.24)
Tel Aviv district	0.051- (1.91)	0.009 (0.15)	0.260 ***(2.84)
Southern district	0.130- ***(2.63)	0.088- (1.60)	0.182 **(1.90)
2008 survey year	0.057- **(1.99)	0.054- *(1.67)	0.011 (0.17)
2009 survey year	0.121- ***(3.44)	0.131- ***(3.46)	-0.041 (0.54)
Other income			-0.024 (1.47)
Number of children aged 0-3			-0.215 ***(4.29)
Number of children aged 4-5			-0.149 ***(2.94)
Number of children aged 12-15			-0.043 (0.77)
Additional adult in the household			0.393 ***(5.76)
Employment rate in the area			0.012 (0.70)
Constant		0.381 (0.99)	-0.535 *(1.83)
ρ		0.82	
γ^2		116.03	
Number of observations		2,085	3,045

♦ The salary regression coefficients corrected for a selection equation.
*** 1 percent level of significance; ** 5 percent level of significance; * 10 percent level of significance; the t value is displayed in parentheses.

Specific variables for the number of young children were not included in the wage equation in order to avoid a correlation between the estimated potential wage and the cost of childcare. The potential wage is estimated for all the women in the sample, and inserted as an explanatory variable into the final equation that estimates the factors affecting the mother's employment.

In the second stage, the equation for the cost of childcare per work hour of the mother was estimated for the purpose of estimating the potential spending for all of the mothers. In order to eliminate the selection problem in estimation based on samples of working mothers who pay for childcare, the equation takes into account the likelihood of the mother paying for childcare (according to the Heckman method). The estimation results are displayed in Table 12. A significantly negative ρ indicates a negative correlation between the random errors of the two equations: women whose potential spending on childcare is high have less chance of receiving assistance in childcare services. This result is similar to the findings in previous studies, and reflects the fact that a low effective wage makes going to work less worthwhile for mothers whose potential childcare spending is higher, and such mothers will therefore prefer to remain at home and care for their children (for example, Powell, 1997). The results indicate that immigrant and ultra-Orthodox women are less inclined to pay for care, and if they do pay for care, they pay less. This is particularly true for ultra-Orthodox mothers, who spend 60 percent less than the rest of the population on childcare. Among other things, low spending by both ultra-Orthodox women and immigrants reflects the low prices in the childcare service market segments aimed at these populations. Educated women are more inclined to pay for childcare. Spending is positively correlated with family income (including the spouse's salary). Babies up to age 1 in the family reduce the likelihood of paying for care services, compared with families whose children are older. The presence of older children in the household reduces the likelihood of paying for care of young children, because the older ones contribute to care without any payment. Furthermore, in families paying for care, the presence of adult children lowers spending by 27 percent. On the other hand, the presence of unemployed adults in the household does not prevent the use of paid childcare; it merely lowers spending, and only if the available adult is a woman.

The low availability of subsidized care does not change the decision to pay for care, but it affects the amount spent. Extending availability of slots in subsidized care contributes to lowering childcare spending. Moving from a community with coverage for one-fifth of the potential demand (children from working families who meet the requirements to be accepted for subsidized care) to a community in which coverage extends to a third of the potential demand would reduce the cost of care by 2.8 percent.

Table 12 – The Childcare Cost Equation with a Statistical Correction for the Probability of Paying for Childcare (Heckman correction)

	Natural Logarithm of the Cost of Care		Use of Paid Childcare
	Calculated Coefficients♦	Regression Coefficients	
Age	0.004 (0.78)	0.003 (0.59)	0.002 (0.31)
Married	0.144- (1.12)	0.191- (1.39)	0.098 (0.90)
Ultra-Orthodox women	0.603- ***(5.73)	0.479- ***(4.04)	-0.258 ***(2.82)
Women who immigrated to Israel in the 1990s or later	-0.279 ***(4.07)	-0.122 (1.54)	-0.322 ***(4.93)
Educated			0.440 ***(9.06)
Other income	0.087 ***(3.95)	0.087 ***(3.95)	
Children up to age 1	0.669 ***(9.47)	0.913 ***(11.08)	-0.518 ***(8.04)
Children aged 1-4	0.458 ***(10.06)	0.356 ***(6.58)	0.217 ***(4.71)
Children aged 5-9	0.134- ***(4.04)	0.109- ***(3.16)	-0.052 (1.64)
Presence of children aged 12-18 in the household	-0.272 ***(3.62)	-0.177 **(2.11)	-0.199 ***(2.72)
Unemployed adult	0.139 (1.48)	0.193 **(1.92)	-0.114 (1.43)
Unemployed adult woman	0.308- **(2.08)	0.391- **(2.37)	0.175 (1.28)
Availability index	0.214- *(1.84)	0.221- *(1.63)	0.014 (0.11)
District of residence (control: Jerusalem district) Northern district	-0.498 ***(4.51)	-0.560 ***(4.52)	0.133 (1.15)
Haifa district	0.217- **(2.04)	0.267- **(2.21)	0.110 (0.98)
Central district	0.101- (1.20)	0.260- ***(2.62)	0.347 ***(3.74)
Tel Aviv district	0.043 (0.47)	0.057- (0.54)	0.219 **(2.28)
Southern district	0.501- ***(4.85)	0.616- ***(5.26)	0.252 **(2.37)
Judea and Samaria district	0.524- ***(4.85)	0.597- ***(4.84)	0.160 (1.39)
Constant		1.793 ***(6.37)	-0.349 (1.56)
Number of observations		1,763	3,235
ρ		-0.71	
χ^2		***45.11	

♦ The salary regression coefficients are correlated with the selection equation.
*** 1 percent level of significance; ** 5 percent level of significance; * 10 percent level of significance; the value of t is displayed in parentheses.

This limited effect reflects the relatively small number of families who benefit from the subsidy – only one half of all those potentially eligible. The others do not take advantage of their eligibility, among other things because of a lack of subsidized care facilities. Controlling for geographic areas (in comparison with the Jerusalem district) shows that living in the North and Haifa districts reduces the cost of care in comparison with the Jerusalem district. No difference in this effect was found between the survey years.

Neither the mother's wage nor other variables correlated with the mother's earning power (such as education), were included in the childcare cost equation, according to the assumption of exogeneity between the two factors.

Based on the coefficients obtained, the potential cost of childcare was estimated for every mother in the sample, according to her characteristics. This figure and the potential wage were included in the final equation for the labor supply of mothers. The estimation results are displayed in Table 13, including the regression coefficients and the elasticities (marginal effect).

The coefficients obtained are consistent with both the economic theory of labor supply and the findings of previous studies (for example, see Connelly, 1992; Powell, 1998; Connelly and Kimmel, 2003; and Anderson and Levine, 1999). The results of the main equation, which estimates the effect of the various factors on the tendency to work among mothers with young children, indicate that the cost of childcare has a negative effect on women's labor supply. The coefficient of the natural logarithm of childcare cost per work hour of the mother is negative and significant. The estimated elasticity for a representative woman is 0.14, meaning that a 1 percent rise in spending on childcare reduces the likelihood of a mother going to work by 0.14, with a standard deviation of 0.0025. The elasticity was higher for ultra-Orthodox women (-0.17) and uneducated women (-0.16), and lower for educated women (-0.12). The potential hourly wage and age also increase the likelihood that a woman will work. Among mothers of small children, mothers of children up to age 1 are more inclined to stay at home than mothers of older children. Ultra-Orthodox and immigrant mothers are less inclined to work than other women.

Table 13 – Labor Supply of Mothers with Children Aged 0-4 (employed = 1)

	(1)	(2)
	Coefficients	Elasticity
Natural logarithm of the potential cost of childcare	-0.417 ***(56.62)	-0.142 ***(56.62)
Natural logarithm of the potential wage	0.705 ***(137.59)	0.240 ***(137.59)
Age	0.027 ***(14.54)	0.009 ***(14.54)
Age squared	-0.001 ***(18.83)	-0.000 ***(18.83)
Number of children up to age 18	-0.131 ***(100.95)	-0.045 ***(100.95)
Married	0.140- ***(25.07)	-0.046 ***(25.07)
Women who immigrated to Israel in the 1990s or later	0.062- ***(16.78)	-0.021 ***(16.78)
Ultra-Orthodox women	0.203- ***(35.40)	-0.072 ***(35.40)
Presence of children up to age 1	0.099- ***(12.04)	-0.034 ***(12.04)
Children aged 1	0.165 ***(34.73)	0.056 ***(34.73)
Children aged 2-3	0.266 ***(62.29)	0.091 ***(62.29)
Children aged 4	0.266 ***(59.28)	0.090 ***(59.28)
Other income	0.064 ***(51.83)	0.022 ***(51.83)
District of residence (control: Jerusalem district) Northern district	0.080 **(13.40)	0.027 ***(13.40)
Haifa district	0.086 **(16.07)	0.029 ***(16.07)
Central district	0.151 **(36.68)	0.050 ***(36.68)
Tel Aviv district	0.169 **(38.25)	0.056 ***(38.25)
Southern district	0.094 **(16.90)	0.031 *** (16.90)
2008 survey year	0.053 **(16.94)	0.018 ***(16.94)
2009 survey year	0.046 **(14.34)	0.016 ***(14.34)
Constant	-1.473	
	**(47.26)	
Number of observations	3,263	3,263
R^2	0.085	

*** 1 percent level of significance; ** 5 percent level of significance; * 10 percent level of significance; the value of t is displayed in parentheses.

The probability of female immigrants working is 2 percent less than for other women, and the probability of ultra-Orthodox women working is 7 percent less. Controlling for the mothers' area of residence shows that women living in the Central and Tel Aviv areas have the highest probability of being employed (15 percent and 17 percent higher than the probability in the Jerusalem district, respectively).

These results are low, compared with the most frequent results in studies (-0.3 to -0.4), but are close to the results in some of them. For example, Connelly (1992) found an employment elasticity of -0.2, Ribar (1995) estimated the elasticity at -0.09, Powell (2002) obtained an elasticity of -0.12 for Canadian data, and Kornstad et al. (2007) estimated elasticity at -0.12 for Norwegian data. The elasticity of employment with respect to the cost of childcare can serve as an index for the selection of types of policies for encouraging entering or remaining in the labor market, such as the earned income tax credit (EITC) program implemented nationwide in Israel starting in 2011, a program that gives a subsidy to low-income employees. In a study testing the desirable parameters for implementing the program in Israel, it was found that the elasticity of employment with respect to changes in wage was estimated at 0.07 (Brender and Strawczynski, 2006). In calculating the elasticity per shekel spent, a larger gap was obtained between sensitivity to changes in childcare cost and sensitivity (lower) to wage.[33]

The relatively high elasticity of employment of mothers with young children can be explained by the higher level of the subsidy in comparison with their salary than in comparison with the salary of other wage-earners, because the mothers' salaries are lower.[34]

Testing the dependence of the magnitude of the elasticity on the explanatory variables shows that its power is stable. In regression including only basic explanatory variables, an elasticity of -0.115 was obtained (the first column in Table 14). Adding demographic variables increases the elasticity to -0.14, and including the education variable causes little change in the coefficient (the last column in Table 14).

Based on the elasticity that was estimated (0.14), a subsidy amounting to the complete cost of spending on childcare would increase female employment from 63 percent to 71 percent. Granting support amounting to half of family spending on childcare would increase the employment rate of mothers with children aged 0-4 from 63 percent to 67 percent, at a total cost of NIS 2.9 billion. 21,700 women would join the labor force as a result – at an annual cost of NIS 135,000 per "new" employee. This cost is significant, but lower than the cost of boosting employment through other support programs.[35] Focusing the subsidy on families with low earning power and low employment rates would make this policy more effective. In addition to increasing the employment rate, support will have another positive effect – for

[33] The calculation is necessary due to the different levels of wages and childcare spending. According to the calculation, one shekel of childcare spending reduces the likelihood of employment by 0.009, and a one-shekel drop in salary reduces the likelihood of working by 0.002.

[34] Another possible explanation of the difference in the estimates of the program's effect is differences in the population for which these estimates were calculated. Mothers with children aged 0-4 are a subgroup in the Brender and Strawczynski study's population, which includes parents with children up to age 18 (the relevant population for the EITC program).

[35] Brender and Strawczynski (see footnote 19) estimated the cost of adding a new employee to the labor market through a direct salary subsidy at NIS 214,000 (in 2002 prices).

example, increasing the number of work hours,[36] reducing poverty, and narrowing social gaps in education.

8. Conclusion

This study tests the effect of the cost of care for young children on the labor supply of mothers. Testing was based on the probability model, with statistical corrections for the data selection problem. The study is based on data from the Household Expenditure Surveys published for the three years prior to when the study was conducted: 2007–2009. It examines the amount of family spending on childcare in Israel, presents an international comparison, and describes the system of support for working mothers and the extent to which it has been implemented. In order to reflect the direct effect of the childcare subsidy paid through supervised childcare facilities, an index was developed for the availability of these facilities to the families eligible for them. The index was calculated from the administrative data which includes the extent to which the support was utilized and the parents' employment particulars. It was found that the number of slots in subsidized care was enough for the children of one-quarter of all mothers working a significant number of hours. This shortage does not directly affect the mother's decision to work, but it significantly affects family spending on childcare. The study indicates that the average cost of care paid for by a working mother is very high – about a quarter of her net wages. An international comparison, taking into account differences in birth rates between the countries, shows that the cost of childcare in terms of the average salary in Israel is much higher than the average in OECD countries, given the low proportion of mothers taking advantage of support – both direct support (due to the shortage of slots in subsidized care) and indirect support (due to the mother's low salary, which prevents her from utilizing the tax benefits for which she is eligible).

It was found that the cost of childcare had a significant negative effect on the labor supply of mothers. The elasticity of female employment with respect to the cost was estimated at -0.14, meaning that a 1 percent decrease in the cost of childcare would increase the probability of the mothers' employment by 0.14. The significant negative elasticity obtained confirms the effectiveness of subsidizing childcare, which would reduce the negative effect of this cost on mothers' employment.

[36] Brender and Gallo found that the elasticity of work hours with respect to mothers' wages was higher than that of women with no children: A. Brender and L. Gallo (2007), "The Effect of Changes in Wages, GDP, and Workers' Demographic Characteristics on Working Hours," Bank of Israel Research Department, Discussion Paper Series No. 2007.10.

Table 14 – Elasticity of the Employment of Mothers with Young Children (Employment Regression, employed = 1)

	(1)	(2)	(3)
Natural logarithm of the potential cost of childcare	-0.115 **(125.66)	0.142- **(137.59)	-0.153 **(64.85)
Natural logarithm of the potential wage	0.291 **(224.67)	0.240 **(56.62)	0.141 **(60.73)
District of residence (control: Jerusalem district) North district	0.101 **(63.86)	0.027 **(13.40)	0.011 **(5.44)
Haifa district	0.094 **(59.09)	0.029 **(16.07)	0.024 **(13.43)
Central district	0.114 **(93.11)	0.050 **(36.68)	0.055 **(39.80)
Tel Aviv district	0.099 **(74.07)	0.056 **(38.25)	0.064 **(44.29)
South district	0.090 **(62.92)	0.031 **(16.90)	0.017 **(8.78)
2008 survey	0.018 **(16.76)	0.018 **(16.94)	0.016 **(14.49)
2009 survey	0.016 **(15.14)	0.016 **(14.34)	0.006 **(5.62)
Women who immigrated to Israel in the 1990s or later		0.021- **(16.78)	-0.048 **(36.60)
Ultra-Orthodox women		0.072- **(35.40)	-0.092 **(44.54)
Age		0.009 **(14.54)	0.013 **(19.93)
Age squared		0.000 **(18.83)	0.000 **(22.10)
Married		0.046- **(25.07)	-0.039 **(21.20)
Children up to age 18		0.045- **(100.95)	-0.045 **(102.57)
Presence of child up to age 1		-0.034 **(12.04)	-0.029 **(10.34)
Children aged 1		0.056 **(34.73)	0.057 **(35.07)
Children aged 2-3		0.091 **(62.29)	0.092 **(63.32)
Children aged 4		0.090 **(59.28)	0.094 **(61.34)
Other income		0.022 **(51.83)	0.020 **(47.57)
Educated			0.092 **(74.67)
Number of observations	3,263	3,263	3,263

*** 1 percent level of significance; ** 5 percent level of significance; * 10 percent level of significance; the value of t is displayed in parentheses.

Bibliography

Almagor Lotan, O. (2011), "Determining Subsidy Ranks for Children in Care Recognized by the Ministry of Industry, Trade, and Labor, and the Ministry's Preparations for Starting the 2012 School Year," Jerusalem, The Knesset Center for Research and Information.

Almagor Lotan, O. and Shwartz, E. (2010), Follow-Up of the Implementation of the Government Decision Regarding the Encouragement of the Mothers of Children Aged 0-5 and the Regulation of Day Care Centers, Nursery Schools, and Afternoon Care," a follow-up document submitted to the Committee on the Status of Women, The Knesset Center for Research and Information.

Anderson, P. and Levine, P. (1999), "Child Care and Mothers` Employment Decisions", NBER Working Paper Series, Working Paper No. 7058, March.

Blass, N., Zussman, N. and Tsur, S. (2010), "The Allocation of Teachers' Working Hours in Primary Education, 2001-2009" Bank of Israel, Research Department, Discussion Paper Series 2010.18.

Brender, A. (2005), "Tax Benefits for Women in Israel: International Perspective and Benefit Take-Up," in Gender and Taxation: Does the Tax System Take Gender Into Account – Fourth Annual Adva Center Conference on Budget and Gender, Adva Center, Tel Aviv.

Brender, A. (2009), "Tax Rates on Labor Income in Israel at International Perspective: 2006-2007," Bank of Israel, Articles and Position Papers Series, 2007.5.

Brender, A. and Gallo, L. (2007), "The Effect of Changes in Wages, GDP, and Workers' Demographic Characteristics on Working Hours," Bank of Israel Research Department, Discussion Paper Series No. 2007.10.

Brender, A. and Strawczynski, M. (2006), "Earned Income Tax Credit in Israel: Designing the System to Reflect the Characteristics of Labor Supply and Poverty", *Israel Economic Review*, Vol. 4, No 1, pp. 27-58.

Connelly, R. (1992). "The Effect of Child Care Costs on Married Women's Labor Force Participation", *The Review of Economics and Statistics*, 74, pp. 83–90.

Connelly, R. and Kimmel, J. (2003), "Marital Status and Full-time/Part-time Work Status in Child Care Choices", *Applied Economics*, 35, pp. 761–777.

Forman, O. (2005), "Wage-Earners Income Tax File – A Comparative Analysis of Employment and Wage Indices from Different Sources," Central Bureau of Statistics, Chief Scientist Branch.

Fichtelberg-Barmatz, O. (2008), "Daycare Centers and Their Supervision, Assessments for 2007," Ministry of Industry, Trade, and Labor, Research and Economics Administration.

Fichtelberg-Barmatz, O., Harris, R., and Anavi, O. (2010), "The Number of Children in a Daycare Center and its Classes. Findings from a Census of Daycare Centers for Young Children Recognized by the Ministry of Industry, Trade, and Labor," Ministry of Industry, Trade, and Labor, Research and Economics Administration.

Gelbach J. (1997), "How Large an Effect Do Child Care Cost Have on Single Mothers' Labor Supply? Evidence Using Access to Free Public Schooling," http://glui.umd.edu/~gelbach/papers/howlarge/index.html.

Gong, X., Breunig, R. and King, A. (2010), "How Responsive is Female Labor Supply to Child Care Cost: New Australian Estimates," IZA DP, 5119.

Heckman, J. (1974), "Effects of Child-Care Programs on Women's Work Effort," *Economics of the Family: Marriage, Children, and Human Capital*, Schultz, W. (ed.), Chicago: The University of Chicago Press.

Heckman, J. (1979), "Sample Selection Bias as a Specification Error," *Econometrica*, 47, pp. 153–162.

Immervoll, H. and Barber, D. (2006),"Can Parents Afford to Work? Childcare Cost, Tax-Benefit Policies and Work Incentives," IZA Discussion Paper Series, 1932.

Kornstad, T. and Thoresen, T. (2007), "A Discrete Choice Model for Labor Supply and Childcare", *Journal of Population Economics*, 20(4), pp. 781–803.

Lefebvre, P. and Merrigan, P. (2008), "Child-Care Policy and the Labor Supply of Mothers with Young Children: A Natural Experiment from Canada," *Journal of Labor Economics*, 26/3, pp. 519–548.

Michalopoulos, C., Robins, P., and Garfinkel, I. (1992), "A Structural Model of Labor Supply and Child Care Demand," *Journal of Human Resources*, 27, pp. 166–203.

OECD (2007), "Babies and Bosses: Reconciling Work and Family Life," OECD.

Powell, L. (1998), "Part-time Versus Full-time Work and Child Care Cost: Evidence for Married Mothers", *Applied Economics*, 30, pp. 503–511.

Powell, L. (2002), "Joint Labor Supply and Childcare Choice Decisions of Married Mothers," *The Journal of Human Resources*, 37(1), pp. 106–128.

Ribar, D. (1995), "A Structural Model of Child Care and the Labor Supply of Married Women," *Journal of Labor Economics* 13/3, pp. 558–597.

Schwartz, A. (2010), "Analysis of the Budget and Activity of the Women's Employment Department in the Ministry of Industry, Trade, and Labor, Jerusalem, Knesset, Center for Research and Information, Budget Supervision Department.

Schlosser, A. (2005), "Public Preschool and the Labor Supply of Arab Mothers: Evidence from a Natural Experiment," Central Bureau of Statistics, http://www1.cbs.gov.il/mucpuf/cheder-mechkar/public_preschool_schlosser_e.pdf.

Weissblau, E. (2011), "Supervision of Daycare for Toddlers. Part A – Characteristics of Private Care Facilities for Young Children and the Permits Required of Them," The Knesset Center for Research and Information.

Knesset Center for Research and Information (2011), "Implementation of the Government Program for Encouraging Employment among Mothers of Children Aged 0-5 – Follow-Up Meeting," May 22.

Knesset Center for Research and Information, Budget Supervision Department (2011), “Change in the Method of Calculating Income for the Purpose of Subsidizing Children in Recognized Care Facilities,” May.

United States General Accounting Office (1994), "Child Care Subsidies Increase Likelihood that Low-Income Mothers Will Work," December 1994, http://www.gao.gov/archive/1995/he9520.pdf.