**Bank of Israel** **Research Department**

# The Effect of Child Allowances on Labor Supply: Evidence from Israel

**Yuval Mazar* and Yaniv Reingewertz****

**Discussion Paper 2018.07**
**August 2018**

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

* Research Department, Yuval.mazar@boi.org.il Tel. 972-2-6552695

** Corresponding author. Department of Public Administration and Policy, School of Political Science, University of Haifa. Email: Yanivrein@poli.haifa.ac.il.

We would like to thank seminar participants at Uppsala University, the University of Haifa and the Bank of Israel, as well as session participants at the Israeli Economic Association annual meeting. We would also like to thank Adi Brender, Dani Spiro, Aviad Schwartz, Shay Tzur and Uri Zilber for helpful comments and suggestions.



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

# The Effect of Child Allowances on Labor Supply: Evidence from Israel

**Yuval Mazar and Yaniv Reingewertz**

## Abstract

This study estimates the effect of the sharp reduction in Israel's child allowances in the early 2000s on labor supply. The study uses the difference-in-differences method to estimate changes in the labor supply of men and women with more children (four or five) compared to changes in the labor supply of men and women with fewer children (two or three). The results show an increase of approximately 4.3 percentage points in the labor supply of women with four or five children, and approximately 2.8 percentage points in the labor supply of men with four or five children, relative to that of women and men with two or three children.

# השפעת גובה קצבאות הילדים על היצע העבודה: עדויות מתחילת שנות ה-2000

**יובל מזר ויניב ריינגוורץ'**

## תקציר

מחקר זה אומד את השפעת ההפחתה החדה של קצבאות הילדים בתחילת שנות ה-2000 על היצע העבודה. המחקר עושה שימוש בשיטת "הפרש ההפרשים" (difference-in-differences) כדי לאמוד את השינויים בהיצע העבודה של נשים וגברים מרובי ילדים בהשוואה לשינויים בהיצע העבודה של נשים וגברים מעוטי ילדים. נמצא כי הפחתת הקצבאות הביאה לעלייה משמעותית בהיצע העבודה של משפחות מרובות ילדים – עלייה של כ-4.3 נקודות האחוז בהיצע העבודה של נשים מרובות ילדים ושל כ-2.8 נקודות האחוז בהיצע העבודה של גברים מרובי ילדים, ביחס לנשים וגברים מעוטי ילדים.

## 1. Introduction and Literature Review

How does non-work income affect the labor supply? This is a core question in labor economics and an important policy issue. The question is highly relevant for policymakers because it translates directly into the implications of the government allowance system on people's willingness to work. Unfortunately, evidence regarding the link between non-work income and the labor supply is limited and conflicting. In this paper, we use the reform applied to the Israeli allowance system in 2003 to examine how changes in child allowances over the years affected the labor supply of women and men in the short and medium terms.

We exploit the non-linearity of child allowance cuts across families with 4-5 children and those with 2-3 children to perform a difference-in-differences analysis. Households with more children were subject to a much greater decrease in child allowance payments compared to their 2- or 3-child counterparts. We show that, while these two groups experience similar time trends in labor force participation before the reform, the labor supply among parents with 4-5 children increased by 4.3 percent and 2.8 percent more for women and men, respectively, compared to the increase among individuals with 2-3 children. These estimates translate to an income elasticity of labor supply of -0.77 for women and 0.5 for men.

Although the labor supply elasticity of individuals with respect to their income has been studied worldwide, there is nonetheless little literature on the topic. Possibly the earliest econometric estimate of labor supply elasticity with respect to income is given by Ashenfelter and Heckman (1974), who estimate elasticities of -0.102 for men and -0.886 for women.[1] Income elasticity estimates around -0.1 seem to be relatively prevalent in the more contemporary literature, for both men and women: In one study of lottery winners in

[1] Their estimate for men is not statistically different from zero.

the United States, the elasticity of the labor supply with respect to the increase in income was about -0.1 (Imbens et al., 2001); A study using changes made to the tax and allowance system in Sweden found similar results, despite showing considerable variance over time among population groups (Liang, 2012). Kumar and Liang (2016) report similar magnitudes and claim that income elasticity of labor supply is declining in the US.

In line with the relatively low estimates surveyed above, several studies suggest that the effect of changes in income on the labor supply is very low, even marginal or zero. For example, Banerjee et al. (2017) found no effect of income allowances on the labor supply in third-world countries. Jones and Marinescu (2018), focusing on long-term macro effects of increased income allowances in Alaska, also found no effect on the labor supply. A study of lottery winners in Sweden (Cesarini et al., 2017) found relatively low labor supply elasticity as well.

On the other hand, Blundell et al. (2016) suggest that the income effect ranges from -0.2 to -0.4, based on the allowance reform introduced in the UK in 1999.[2] In addition, researchers focusing on Seattle and Denver found that an increase in income allowances equivalent to about $2,400 per annum (at 2013 rates) reduced the labor supply by 3.3 percent (Price and Song, 2016). Since the average annual income in their sample was $24,000, the change in the labor supply is translatable to an income elasticity of about -0.33. These relatively new studies, together with the early results of Ashenfelter and Heckman (1974) suggest that the magnitude of the income effect is still debatable, and that it depends on factors not fully understood yet.

[2] The income effect estimated in Blundell et al. (2016) is not calculated for child allowances. The income effect resulting from a change in child allowances may be lower than the effect of other changes in income (Graham and Beller, 1989).

Possibly the two papers most related to our study are Toledano et al. (2009) and Cohen et al. (2013).[3] Both papers focus on the effect of changes in child allowances on the birth rate and show a reduction in the birth rate after the allowances cut. Toledano et al. (2009) also suggest that the decline in fertility rates as a result of the child allowance cuts is not affected by labor supply. This reduces concerns that changes in labor supply as a result of the reform are affected by fertility choices.[4]

Toledano et al. (2009) also provide suggestive evidence for the effect of the reduced allowances on employment. They estimated the probability of ultraorthodox women and Arab women being employed between 1994 and 2007, and found cuts in child allowances to have a substantial positive effect on the employment rate of Arab women (by 4 to 7 percent) and a *negative* effect on that of ultraorthodox women (by 3 percent).[5] These estimates have two main limitations. First, they are potentially biased due to correlations between the reduced allowances and the business cycle. Second, that they do not address issues of selection (i.e., their research design does not take into account unobserved differences between the women within each group). The current study takes a wider perspective and examines the effect of reductions in child allowances on labor force participation (rather than the employment rate, which may be affected by the business cycle), and for men and women across the population rather than specific groups.

This research makes a significant contribution to the literature on the income elasticity of labor supply by adding to the limited extant evidence on how non-work

[3] Two more papers dealing with the 2003 policy changes are Flug and Strawczynski (2007) and Deutsch (2017).
[4] Our methodology takes into account fertility choices in several additional ways (see section 4).
[5] The effect is calculated according to the allowance amount at a given time, compared with a hypothetical situation in which there was no allowance whatsoever.

income affects labor force participation (the extensive margin).[6] We find elasticities which are at the high-end of current available estimates. We also show that the income elasticity of labor supply is affected by various socio-economic attributes such as religiosity, age, marital status and education.

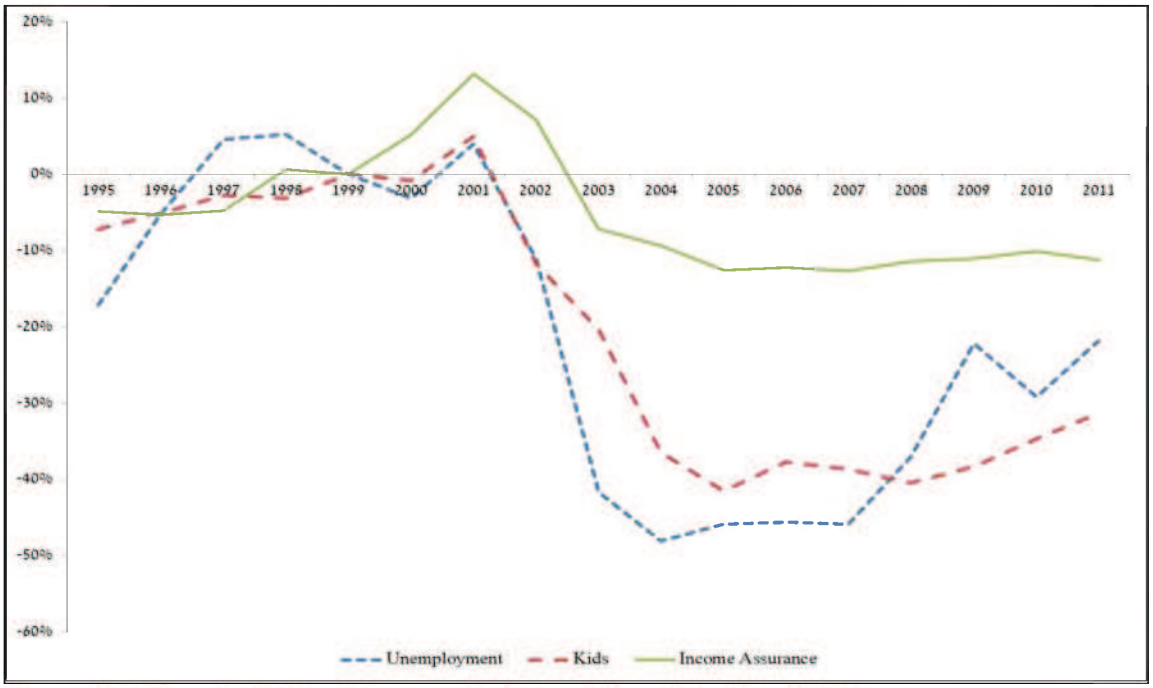
## 2. The Institutional Background

In the early 2000s, as part of an economic efficiency drive, the Israeli government introduced sharp cuts to transfer payments, particularly child allowances (Figure 1a). These began with a 15 percent reduction in 2002, and continued with steep reductions announced in June 2003: a further 40 percent reduction immediately, with even more cuts for larger families to be implemented in 2004–2006 (see Table A.1a and b in the Appendix for allowances per child from 1999 through 2011). The cuts varied by birth order, and allowances for the fourth and subsequent children saw the steepest decline. Thus, for example, the allowances of families with two or three children in 2010[7] were 18 and 24 percent lower, respectively, than for families of the same size in 1999, while for families with four or five children these figures were 35 and 38 percent (Figure 1b). This development significantly narrowed the gap between allowances received by families with fewer children versus those with four or more.

[6] A related question which will be left for future research is the effect of non-work income on the intensive margin – the number of hours an individual works. Prior research has established that the response at the intensive margin is smaller than at the extensive margin (see, among others, Blundell et al. 2011, de Boer et al. 2015). The intensive margin is also harder to precisely estimate, due to selection issues (Heckman 1993).

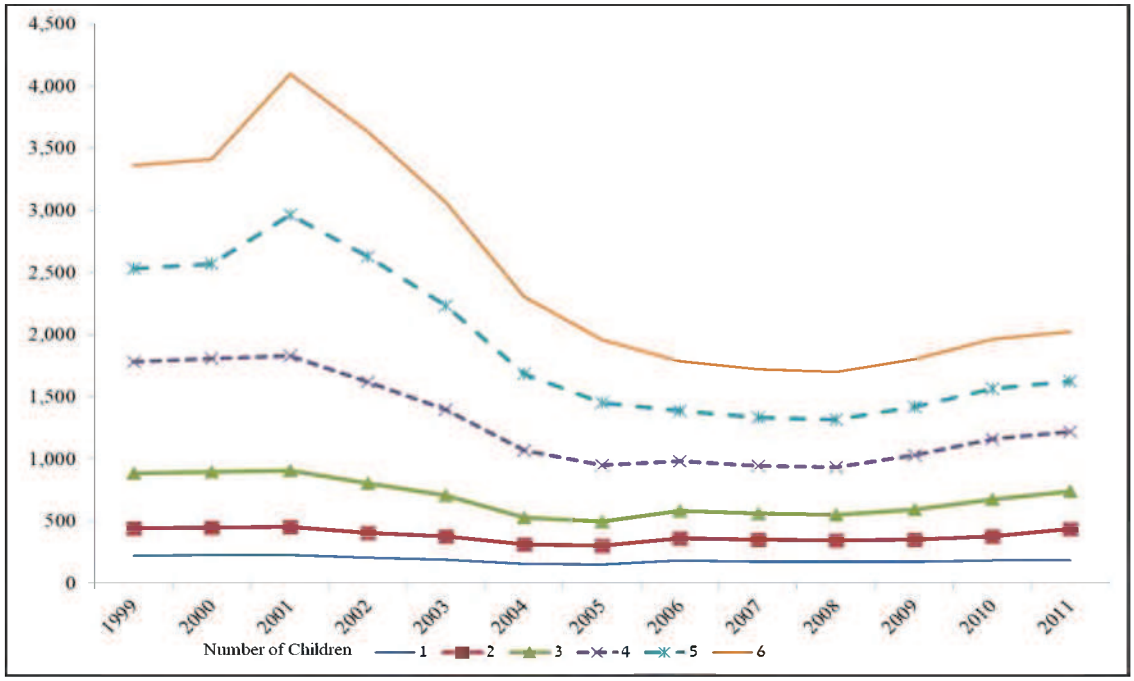
[7] We refer here to children under the age of 18 and born prior to the introduction of the reform. The cuts for children born after the reform were even steeper, as will be discussed below.

**Figure 1a: The Rate of Change in Average Allowances per Recipient Relative to 1999**




Source: Data from the National Insurance Institute and Shoresh Institute (2016).

**Figure 1b: Allowance per Family by Number of Children, 1999–2011 (in 2016 NIS)**




Source: Data from the National Insurance Institute (Monthly Bulletin of Statistics) and data processed by the Bank of Israel. The figure refers to allowances in respect of children born prior to the reform. The allowances in respect of children born after the reform were cut even further (see Tables A.1a and A.1b in the Appendix).

When the child allowances were changed, a distinction was made between children born before the reform and those born subsequently (i.e., on or after June 1, 2003). The greatest reduction applied to children born following the reform. The allowance for such a child was initially set at a mere NIS 122 (in real prices) regardless of the child's birth order in the family. Thus, for example, the monthly allowance for a fourth child born before the reform was NIS 531 in 2003 and NIS 419 a year later, while the allowance for a fourth child born after the reform was just NIS 122 in 2004 (see the tables in the Appendix).

Regardless of whether a family's children were born before or after introduction of the reform, it is clear that the effect of the decrease in child allowances was most strongly felt by those families with four or more children whose income from the labor market was small or non-existent (See Figure 2). This mainly comprised ultraorthodox and Arab families.

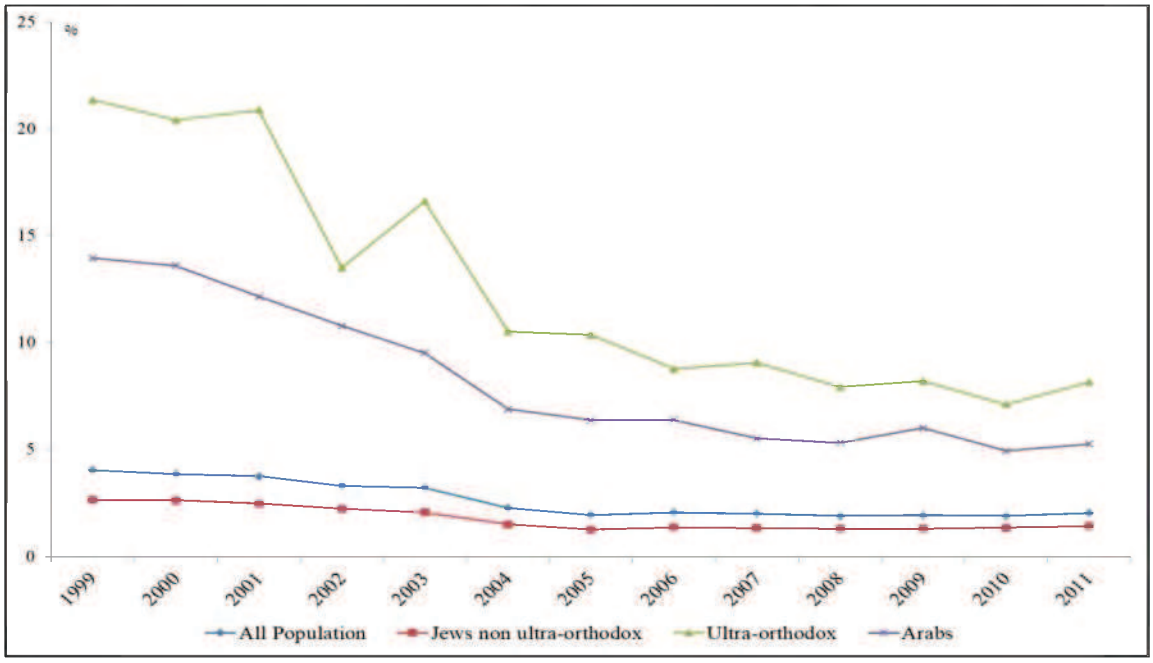
In addition to the child allowance cut, additional changes aimed at increasing labor market participation were instituted during the sample period. Possibly the most important change was the cut in income support and unemployment benefits (Figure 1a).[8] Another set of changes affected income tax rates, including introduction of a "negative income tax" for low-income workers. The measures also included raising the retirement age. Finally, a new law was passed, which offered young ultraorthodox men an option to receive vocational training and then perform military or national service as an alternative to yeshiva study.[9]

[8] For a small subset of the Israeli population those entitlements were replaced by the MEHALEV program in 2004–2007 (MEHALEV stands for "from guaranteed income to secure employment"). In addition, government daycare subsidies were slightly increased.

[9] The Tal Law – formally the Law for Deferral of Service for Yeshiva Students – was passed in the Knesset in 2002 and allowed continued exemption from military service for yeshiva students while opening a path to vocational training, military or national service, and entry into the workforce among ultraorthodox men who preferred not to be full-time yeshiva students. The law was extended by five years in 2007. In 2012, it came before the High Court of Justice, which ruled it unconstitutional.

Most of these changes, including the changes in government subsidies, tax schedules and the retirement age, did not depend on the number of children an individual has. Therefore, these policy changes are not expected to have a differential effect based on the number of one's children, and hence should not affect our results. One possible exception is the effect of changes in income support, which were child-specific to some extent. We will examine later whether this affects our results.

**Figure 2: Child Allowances as a Proportion of Net Income, 1999–2011**




Source: Data from the National Insurance Institute, Central Bureau of Statistics and data processed by the authors.

## 3. The Data

Our data set is based on annual labor force surveys conducted by the Central Bureau of Statistics and covers individuals aged 25–64 (the main working age in Israel). Our sample covers the years 1999–2011, about 20,000 individuals per year and it is a representative sample of the Israeli population. We chose to end the sample in 2011 since after that year the government significantly increased its daycare subsidies, which makes it more difficult to identify the effect of child allowances on women's labor supply.

Table 1 presents descriptive statistics of the main variables used in our study. Our dependent variable – labor force participation – rose from 72 percent to nearly 77 percent during the sample period, mostly due to the increase in women's labor force participation (see Figures A.1a and A.1b in the Appendix).[10] The employment rate rose by a similar rate. During the sample period, there was an increase in employees' average education and a minor decline in average work hours per employee, while the number of children remained roughly the same. Slight demographic changes were recorded in the proportion of Arabs and ultraorthodox Jews in the sample population.

**Table 1: Summary Statistics of the Main Variables, 1999–2011**

| Year | Years of schooling | Employment rate | Participation rate | Hours worked per week | No. of children | Age | New immigrants (%) | Arabs (%) | Ultraorthodox (%) | Families with 4 or more children (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1999 | 12.6 | 66.4 | 72.1 | 36.5 | 2.13 | 41.9 | 17.4 | 13.2 | 4.4 | 7.9 |
| 2000 | 12.7 | 66.9 | 72.4 | 36.7 | 2.11 | 41.9 | 17.6 | 13.4 | 4.4 | 7.4 |
| 2001 | 12.8 | 66.9 | 72.7 | 36.6 | 2.15 | 41.6 | 17.2 | 15.5 | 4.0 | 8.1 |
| 2002 | 12.8 | 66.6 | 73.0 | 36.3 | 2.14 | 41.7 | 15.7 | 15.8 | 4.1 | 8.2 |
| 2003 | 13.0 | 66.7 | 73.4 | 35.8 | 2.13 | 41.7 | 15.2 | 15.8 | 4.5 | 8.0 |
| 2004 | 13.0 | 67.3 | 73.8 | 35.4 | 2.13 | 41.7 | 15.2 | 16.1 | 4.5 | 7.8 |
| 2005 | 13.1 | 68.1 | 73.8 | 35.0 | 2.13 | 41.8 | 14.8 | 16.4 | 4.9 | 7.8 |
| 2006 | 13.2 | 69.1 | 74.3 | 35.4 | 2.13 | 41.9 | 14.0 | 16.6 | 5.4 | 8.1 |
| 2007 | 13.3 | 70.6 | 75.2 | 35.9 | 2.12 | 42.0 | 13.9 | 16.6 | 5.5 | 8.0 |
| 2008 | 13.4 | 71.5 | 75.5 | 35.5 | 2.12 | 42.2 | 13.7 | 16.6 | 5.3 | 7.7 |
| 2009 | 13.4 | 70.7 | 75.8 | 35.4 | 2.09 | 42.3 | 13.8 | 17.1 | 5.2 | 7.5 |
| 2010 | 13.5 | 71.7 | 76.2 | 35.4 | 2.10 | 42.4 | 13.5 | 17.5 | 5.1 | 7.7 |
| 2011 | 13.5 | 72.8 | 76.6 | 35.7 | 2.12 | 42.4 | 13.2 | 17.3 | 5.5 | 8.0 |

Source: Central Bureau of Statistics labor force surveys and data processed by the Bank of Israel. All variables are calculated for the full sample of men and women aged 25–64, except for hours worked, which is calculated for the working population.

## 4. Methodology

Estimating the effect of any policy change on outcomes such as employment and labor force participation is not simple, since we do not know how the outcome variables might have developed without the policy change. One of the accepted methods for coping with this challenge is the difference-in-differences approach. Under this approach, the change

[10] Labor force participation does not reflect changes in the number of work hours per position, but the literature shows that the response of work hours to income and wage changes is relatively low (Blundell et al. 2016).

in the outcome variable for the treatment group (individuals affected by the reform) is compared to that for a control group (similar individuals who were unaffected by the reform), thus simulating outcomes that could have been expected in the treatment group without the reform. In the present case, in the absence of a control group not subject to the reform, our strategy is to compare the labor participation rate among parents with four or five children (under 18 years of age) to parents with two or three children. These families are, overall, relatively similar in most key measures, while differing significantly in terms of the effects on their income of the child allowance reforms, as described above. Parents with four or five children, who experienced the most drastic cuts, thus serve as our treatment group, and parents with two or three children as our comparison group (see Tzur, 2017, for a similar methodology). In an extension to our basic methodology we also use other control and treatment groups, based on the number of children: we compare individuals with two children to those with one child, individuals with three children to those with two children, and so on. We estimate the difference-in-differences model using a linear probability model (LPM), while providing the results of a probit model in the robustness checks.

The basic regression equation we will estimate is as follows:

$$L_{it} = C + \theta D_i + \mu After_t + \alpha[D_i * After_t] + \beta x_{it} + \gamma tz_i + \delta t_t + \varepsilon_{it} \quad [1]$$

where $L_{it}$ is a dummy variable denoting whether or not individual $i$ participates in the labor market in year $t$. $D_i$ is a dummy variable which receives the value 1 for parents with four or five children under 18, and zero for parents with two or three children under 18. $After_t$ is a dummy variable for the period subject to the allowance cuts (2003 and onwards). In the context of the effect of child allowances on labor force participation, the interesting parameter is $\alpha$, which estimates the probability of participation in the labor market of individuals with 4-5 children in the wake of the allowance cuts. $x_{it}$ is a vector

which comprises several individual-level control variables: education, age, squared age, a dummy variable for marital status (married/unmarried), a dummy variable for individuals who immigrated to Israel from 1990 onwards, and dummy variables for belonging to the ultraorthodox and Arab sectors. $t_t$ is year fixed effects. $z_i$ is a vector which includes the individual's education, marital status, and dummy variables for new immigrants and members of the ultraorthodox and Arab sectors. The parameters included in this vector estimate to what extent the correlation between an individual's characteristics (education, marital and immigration status and sector) and labor participation changed over the years. Thus, for example, the interaction between an individual's education and the year enables us to neutralize the effects of education changes over time. Finally, $C$ is the constant of the regression and $\varepsilon_{it}$ is the residual.

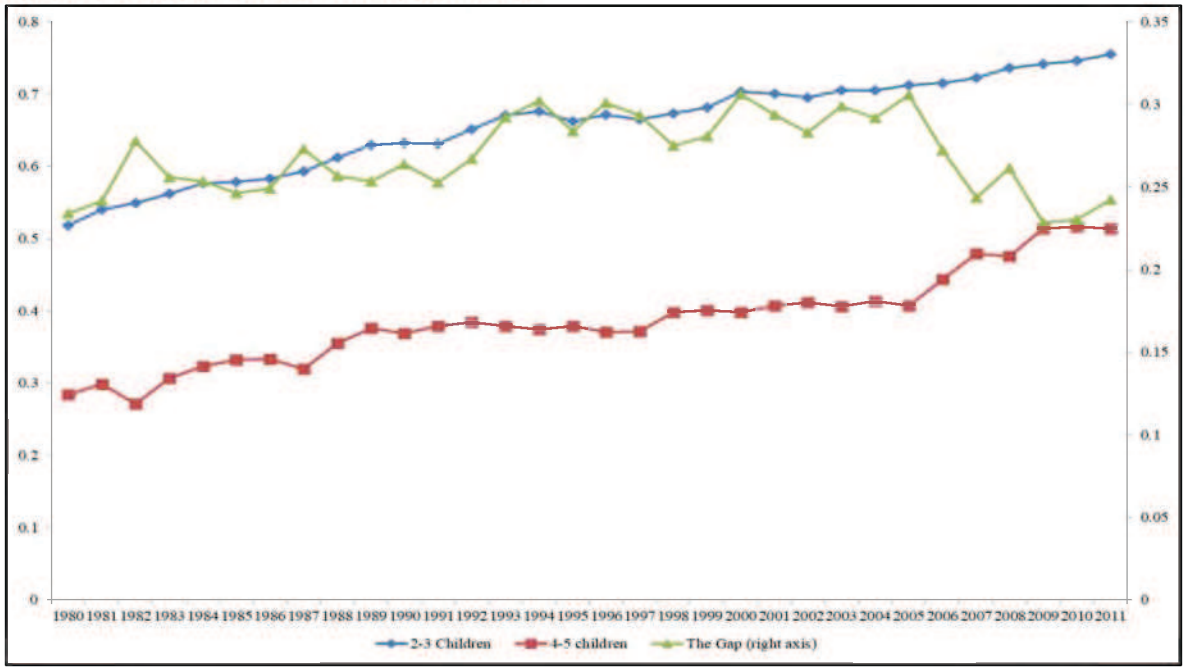
As noted above, we excluded parents of one child or more than five children, in order to try and precisely estimate the effect of the reform by looking on relatively comparable control and treatment groups. The estimates for men and women were made separately. Some of our estimates are done separately for different groups in the Israeli population – non-ultraorthodox Jews, ultraorthodox Jews and Arabs. This is done so that differences between these populations will not affect the results. The regression weights each individual in the sample according to their weight in the population.

The main assumption in econometric estimation using the difference-in-differences method is that the treatment group is similar to the control group – i.e., the behavior of the individuals in the two groups over time without the treatment would be similar. This assumption is called the common trend assumption. To test this assumption, it is common practice to compare the time trends of the outcome variable for the two groups before the treatment. For this purpose, Figures 3a and 3b present trends in the

labor force participation of individuals with four or five children versus two or three children for women and men, respectively.

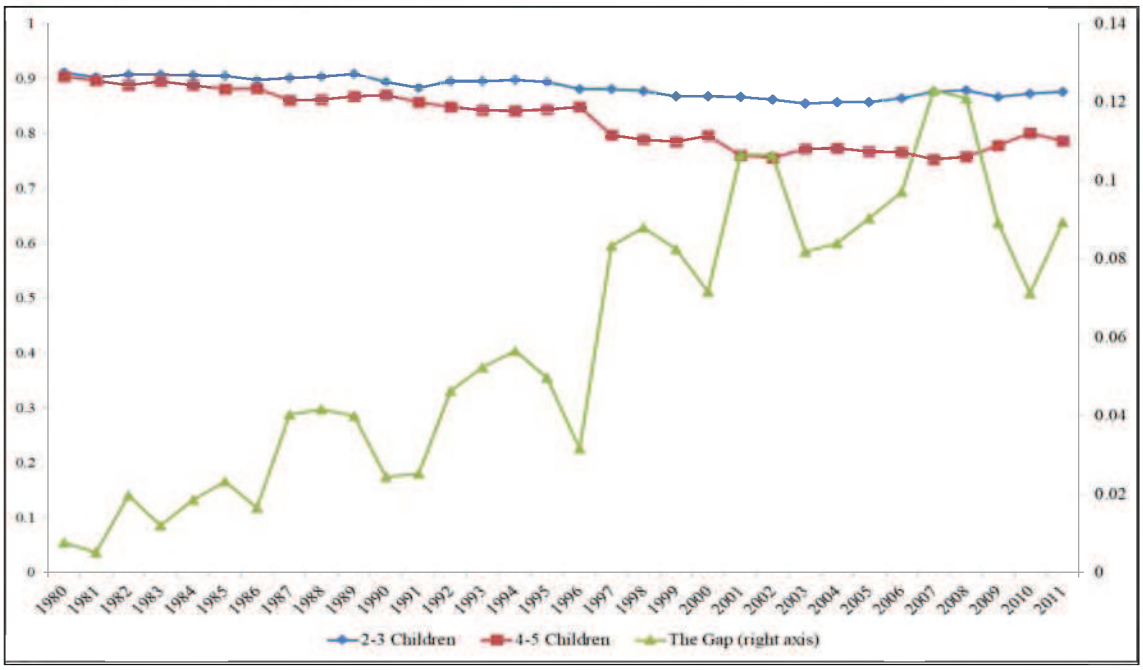
Figure 3a shows that among women, the time trends for both groups were similar until around the time when the massive cuts in allowances were introduced, after which the gap between them narrowed significantly. Among men (Figure 3b) the picture is somewhat different. Here the time trends for the two groups (those with more versus fewer children) were quite similar from 1980 through 1996. After that, the trends diverged. From 1996 until the reform, the participation rate among all fathers declined, but to a greater extent among fathers of four or five children. This could be explained by the small increase in child allowances during that period (see Figure 1a). Following the reform, the trends changed again, and the participation rates of men in the two groups stabilized. The difference in the pre-reform time trends between the men's treatment group and the control group is a limitation of the current study design, which means it is more difficult to interpret its results for men.

**Figure 3a: Women's Labor Force Participation: Mothers of Four or Five Children vs. Mothers of Two or Three Children**




Source: Central Bureau of Statistics labor force surveys and data processed by the authors.

**Figure 3b: Men's Labor Force Participation: Fathers of Four or Five Children vs. Fathers of Two or Three Children**




Source: Central Bureau of Statistics labor force surveys and data processed by the authors.

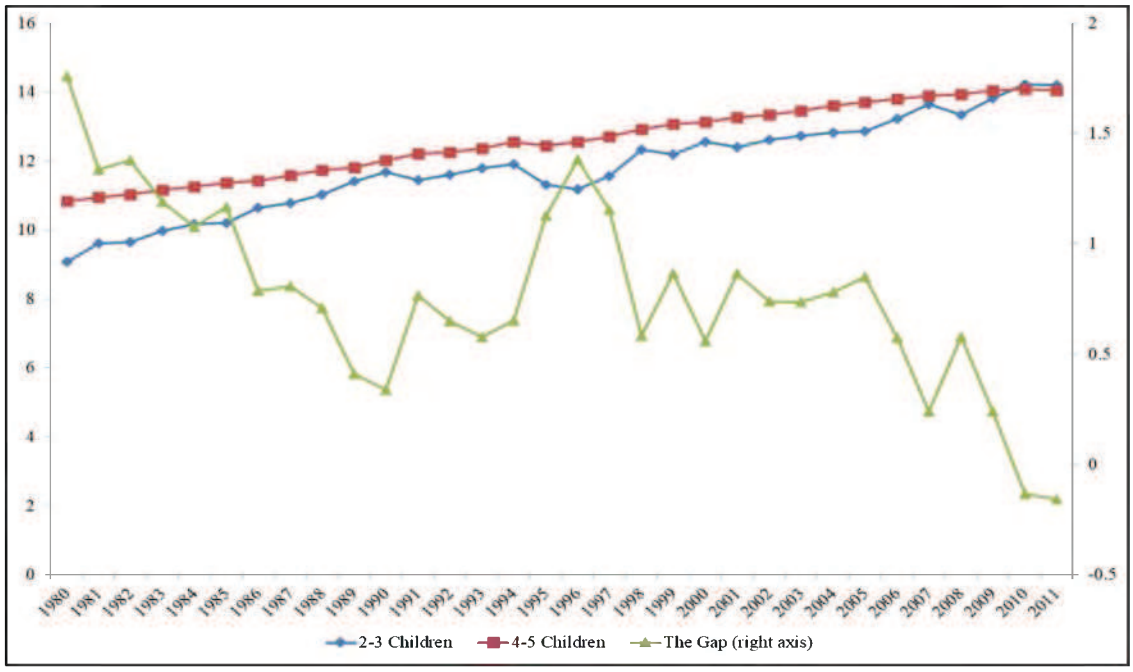
Appendix Figures A.2a and A.2b examine the time trends in labor force participation for individuals with three children versus those with four. The figures show a similar picture to the one suggested in Figures 3a and 3b. Indeed, among women the time trends are identical. Among the men, the two sets of trends differ strongly only for two years, 1997 and 2001.

In general, since our sample is comprised of repeated cross sections (a pseudo-panel), our estimates may be sensitive to changes in the sample composition. One such compositional change has to do with family size. We assume that individuals with the same number of children are similar across time, conditional on the model's control variables. However, it might be the case that fertility choices changed over the years, so that wealthier individuals were more likely to choose to bring up 4-5 children after the reform compared to before the reform. In other words, the increase in the participation rate of mothers with four or five children may have stemmed from affluent families

having more children, rather than from an increase in the participation rate among mothers who had four or five children prior to the policy change. This would potentially bias our results, since the increase in labor force participation may arise from the compositional change and not from changes in the labor force participation of similar individuals.

Figure 4 shows the average years of education among non-ultraorthodox Jewish women by number of children and the difference between women with 4-5 versus 2-3 children. The change in composition is evident, with the trends showing a sharp rise in the education attained by mothers of four or five children, nearly closing the gap with mothers of two or three children. It is unclear whether and to what extent women who were likely to have more children acquired more education, or whether more-educated women tended to have more children during the sample period.[11]

**Figure 4: Years of Education and Gap by Number of Children, Non-ultraorthodox Jewish Mothers**




Source: Central Bureau of Statistics labor force surveys and calculations by the authors.

[11] We note that the number of children in families where the head of the household is highly educated has been rising over the years.

To address this concern, we minimize such changes in composition by dividing the sample based on individuals' municipality of residence. More precisely, we use average education levels in each municipality to divide the sample into individuals living in low- and high-education municipalities. Due to the link between education, socio-economic status and fertility levels. We expect a larger effect of the reform on individuals living in low-education municipalities.

Another variable which can help us with identification is the population's age. We assume that most human capital is accumulated before the age of 30–35. Hence, if we were to follow a "synthetic" age cohort of employees who were older than 30 at the beginning of the decade, it is more likely that changes in their employment behavior patterns would be correlated with the policy changes rather than their education level.[12] Looking at this age cohort is also important if we want to minimize the effect of fertility choices on labor force participation. Therefore, we focus on a sample comprising individuals who were 30 or older in 1999.

Another issue which must be taken into account is the phase of the business cycle in terms of demand. In 2001–2003, the Israeli economy underwent a severe recession, which had a significant impact on employment. In our study, we neutralized this effect by estimating the effect of the allowance cut on labor force participation, which is less sensitive to the business cycle than the employment rate.

Finally, a methodological issue related to the econometric estimation is how to calculate the standard errors. In studies where the treatment is not on the individual level but rather on the group level, the accepted practice is to adjust the standard errors for the differences between the variance within and between the groups. In our case, two features of our data come into play: first, the treatment we estimate is given to varying

[12] In the 1990s there was a launch of a large number of new colleges in Israel, which resulted in an increase in education levels within Israeli society.

extents to individuals with differing numbers of children; and second, our sample comprises various cross-sections sampled in various years. To treat these two issues, we multiplied four groups based on number of children (two, three, four and five children) by 13 (the number of years in the sample) to produce 52 clusters of individuals with the same number of children in the same year. We used these clusters to adjust the standard errors. The resulting standard errors are robust to heteroskedasticity while adjusting for 52 clusters.

## 5. Results

### 5.1 Basic Results – Women

In this section, we describe our main results of estimating Equation 1, for women and men. Table 2 details the results of the estimation for women. The first column describes our basic results. We are interested in the interaction between having four or five children and the $After_t$ variable (representing the period subject to the allowance cuts, i.e. 2003 and onwards), since this interaction captures to what extent the cuts changed the labor force participation of mothers with more children in relation to mothers with fewer children. The coefficient for this interaction is 0.043 and is statistically significant, meaning that following the reform, women with 4-5 children increased their participation in the labor market by 4.3 percentage points on average in comparison to women with 2-3 children. The coefficient for non-ultraorthodox Jewish women is 0.047 (column 2), which means a 4.7 percentage point increase in labor force participation, and is also statistically significant.

Table 2 also provides us results regarding the effect of the various control variables on labor supply. For example, in column 1 we can see that mothers with 4-5 children have relatively low labor force participation rates, and so do Arab women.

Ultraorthodox women tend to work more than the sample average. Education and age are positively associated with labor supply.

**Table 2: Basic Results, Women**

| Explanatory variables | (1) Total | (2) Excluding ultraorthodox and Arab women | (3) Over 12.3 years of schooling | (4) Under 12.3 years of schooling |
|---|---|---|---|---|
| Following the reform | 0.303*** | 0.435*** | 0.060** | 0.437*** |
| (dummy variable) | (0.043) | (0.053) | (0.018) | (0.071) |
| No. of children | -0.121*** | -0.132*** | -0.010* | -0.196*** |
| (dummy variable) | (0.010) | (0.014) | (0.005) | (0.018) |
| **No. of children** | **0.043*** ** | **0.047*** ** | **0.002** | **0.060*** ** |
| ***Following the reform** | **(0.014)** | **(0.016)** | **(0.006)** | **(0.022)** |
| Education | 0.037*** | 0.035*** | 0.004*** | 0.044*** |
| | (0.002) | (0.002) | (0.0004) | (0.002) |
| Arab | -0.368*** | | | |
| | (0.012) | | | |
| Ultraorthodox | 0.123*** | | | |
| | (0.021) | | | |
| New immigrant | -0.041*** | -0.033*** | -0.012 | -0.021 |
| | (0.009) | (0.009) | (0.008) | (0.017) |
| Age | 0.056*** | 0.072*** | 0.009*** | 0.071*** |
| | (0.004) | (0.005) | (0.002) | (0.006) |
| Squared age | -0.0007*** | -0.0009*** | -0.0001*** | -0.001*** |
| | (0.00004) | (0.00005) | (0.00003) | (0.0001) |
| Married | 0.015 | 0.043*** | -0.001 | 0.063*** |
| | (0.012) | (0.010) | (0.006) | (0.014) |
| Arab * Year | -0.012*** | | | |
| | (0.002) | | | |
| Ultraorthodox * Year | -0.009*** | | | |
| | (0.003) | | | |
| New immigrant * Year | 0.005*** | 0.004*** | 0.001 | -0.001 |
| | (0.001) | (0.001) | (0.001) | (0.002) |
| Education * Year | -0.001*** | -0.002*** | -0.0004*** | -0.002*** |
| | (0.0002) | (0.0002) | (0.0001) | (0.0003) |
| Married * Year | -0.002 | -0.003** | 0.001 | -0.007*** |
| | (0.002) | (0.001) | (0.001) | (0.002) |
| No. of observations | 81,506 | 62,182 | 26,184 | 35,998 |
| $R^2$ | 0.335 | 0.106 | 0.006 | 0.167 |

The asterisks, *, **, *** in this table, as well as in all other tables, denote significance levels of 0.1, 0.05, and 0.01, respectively. Columns 3 and 4 present results for non-ultraorthodox Jewish women.

In columns 3 and 4 we again exclude the ultraorthodox and Arab populations from the sample, and divide the remainder into localities based on the median education level for all municipalities, namely 12.3 years of schooling. Columns 3 and 4 present the results for localities with average education levels higher and lower than 12.3 years of schooling, respectively. We see no increase in the labor supply for women living in

localities with a higher education level (column 3), meaning that women with more children residing in these towns did not join the labor market in a statistically significant manner relative to women with fewer children residing in the same towns. However, women with more children living in localities with a lower average education level did significantly increase their labor supply, with a coefficient of 6 percent. This evidence supports our hypothesized pattern of increased labor participation in families of low socioeconomic status who had more children, rather than an increased number of children in families whose labor supply was higher in the first place.

### 5.2. Basic Results – Men

Table 3 presents the results for men. Again, we are interested in the interaction between the dummy variable for having four or five children and the $After_t$ variable, representing the period subject to the allowance cuts, in order to determine to what extent the reform changed the labor force participation of fathers with more children compared to those with fewer children. The interaction's coefficient is positive and statistically significant, though somewhat smaller than seen in the results for women. Following the reform, men with four or five children increased their labor force participation by 2.8 percentage points relative to those with two or three children. The coefficient for non-ultraorthodox Jewish men is almost identical (Column 2).

In columns 3 and 4, we again divide the non-ultraorthodox, non-Arab portion of the sample into localities with average education levels higher and lower than 12.3 years of schooling, respectively. As in the estimation for women, the effect stems from localities in which the average education level is low.

**Table 3: Basic Results, Men**

| Explanatory variables | (1) Total | (2) Excluding ultraorthodox and Arabs | (3) Over 12.3 years of schooling | (4) Under 12.3 years of schooling |
|---|---|---|---|---|
| Following the reform | 0.193*** | 0.123*** | 0.022 | 0.221*** |
| (dummy variable) | (0.036) | (0.033) | (0.021) | (0.042) |
| No. of children | -0.046*** | -0.052*** | -0.005* | -0.086*** |
| (dummy variable) | (0.007) | (0.007) | (0.003) | (0.011) |
| **No. of children** | **0.028*** ** | **0.030*** ** | **-0.002** | **0.044*** ** |
| ***Following the reform** | **(0.008)** | **(0.008)** | **(0.004)** | **(0.013)** |
| Education | 0.012*** | 0.009*** | 0.001*** | 0.015*** |
| | (0.001) | (0.001) | (0.0004) | (0.001) |
| Arab | -0.056*** | | | |
| | (0.008) | | | |
| Ultraorthodox | -0.277*** | | | |
| | (0.024) | | | |
| New immigrant | -0.012 | -0.012 | -0.012** | -0.008 |
| | (0.008) | (0.008) | (0.005) | (0.009) |
| Age | 0.062*** | 0.055*** | 0.005** | 0.077*** |
| | (0.003) | (0.004) | (0.002) | (0.005) |
| Squared age | -0.001*** | -0.0007*** | -0.00006** | -0.001*** |
| | (0.00004) | (0.00004) | (0.00003) | (0.0001) |
| Married | 0.161*** | 0.134*** | 0.015 | 0.206*** |
| | (0.018) | (0.017) | (0.010) | (0.023) |
| Arab * Year | -0.005*** | | | |
| | (0.001) | | | |
| Ultraorthodox * Year | 0.007** | | | |
| | (0.003) | | | |
| New immigrant * Year | 0.002* | 0.003** | 0.0014** | 0.003 |
| | (0.001) | (0.001) | (0.0006) | (0.002) |
| Education * Year | -0.0001 | 0.00001 | -0.00004 | -0.0001 |
| | (0.0001) | (0.0001) | (0.00005) | (0.0002) |
| Married * Year | -0.013*** | -0.010*** | -0.001 | -0.015*** |
| | (0.002) | (0.003) | (0.001) | (0.004) |
| No. of observations | 91,768 | 67,654 | 24,305 | 43,349 |
| $R^2$ | 0.105 | 0.041 | 0.004 | 0.068 |

The asterisks, *, **, *** in this table, as well as in all other tables, denote significance levels of 0.1, 0.05 and 0.01, respectively. Columns 3 and 4 present results for non-ultraorthodox Jewish men.

### 5.3 Additional Tests

Our baseline results compare women and men with 4-5 children to those with 2-3 children. For a more accurate estimation, Table 4 presents results in which the treatment and control groups are formulated to show the effect of incrementally greater numbers of children on labor force participation for women (Panel A) and men (Panel B). Thus, for example, in column 1, we compare the effect of having two children (treatment group) to

the effect of having one child (control group); in column 2 we compare the effect of three children (treatment) to the effect of two (control), and so on.

The first two rows of the table present the difference between the child allowance cuts in each of the treatment groups and each of the control groups for children born prior to and after 2003, respectively. Thus, for example, the cut incurred by parents of four children born prior to the reform was 21 percentage points greater than the cut incurred by parents of three children (column 3). We expect different changes in the labor supply for the different estimations, based on the differences in the child allowance cuts. The most significant differences are found in columns 2–4, for parents of three vs. two children, four vs. three children, and five vs. four children. Parents of five, six and seven children incurred relatively similar cuts in child allowances (columns 5 and 6), and the cut incurred by parents of two children was smaller (in percentage terms) than that incurred by those with a single child (column 1).

The results presented in Table 4 are very consistent with the differences in the child allowance cuts between the various treatment and control groups. Panel A presents the results for women. It can be seen that mothers of two children, who incurred a *smaller* cut than mothers of a single child, *reduced* their labor supply relative to mothers of singletons (column 1). On the other hand, mothers of three children, who incurred a greater cut than mothers of two, *increased* their labor supply relative to mothers of two (column 2). A slightly stronger result is obtained for mothers of four children compared with mothers of three (column 3), while a weaker, non-significant, result is obtained for mothers of five children vs. mothers of four (column 4). The effect of the reform on mothers of six (or seven) children is not materially different than its effect on mothers of five (or six) children.

The results for men (Panel B) are similar to the women's, with two differences. First, unlike mothers, fathers of three children did not increase their post-reform labor supply relative to fathers of two. Second, the coefficient for men with five children is relatively high and statistically significant (column 4), unlike the case for women. One possible explanation for these results is that the decision to participate in the labor market is made at the family level, inter alia due to the need to secure childcare arrangements, so that the probability of an increase in women's participation rates is affected by men's and vice versa.[13] Overall, the results of Table 4 are consistent and very similar in magnitude to our baseline results. They are also consistent with the study hypotheses and with the magnitude of the allowance cut.

**Table 4: Results for Sub-Samples, by No. of Children**

| No. of children | (1)<br>1–2 | (2)<br>2–3 | (3)<br>3–4 | (4)<br>4–5 | (5)<br>5–6 | (6)<br>6–7 |
|---|---|---|---|---|---|---|
| % change in allowances (children born before 2003) | +23% | -20% | -21% | -17% | -7% | -4% |
| % change in allowances (children born after 2003) | +23% | -25% | -34% | -20% | -9% | -5% |
| Panel A. Women | | | | | | |
| **No. of children** | **-0.016*** ** | **0.021*** ** | **0.028** ** | **0.020** | **-0.017** | **-0.008** |
| ***Following the reform** | **(0.005)** | **(0.006)** | **(0.011)** | **(0.018)** | **(0.032)** | **(0.031)** |
| No. of observations | 75,700 | 53,711 | 26,590 | 8,471 | 2,913 | 1,206 |
| $^{2}$R Pseudo | 0.117 | 0.098 | 0.103 | 0.113 | 0.117 | 0.155 |
| Panel B. Men | | | | | | |
| **No. of children** | **-0.008*** ** | **-0.005** | **0.025*** ** | **0.031** ** | **0.0008** | **0.001** |
| ***Following the reform** | **(0.002)** | **(0.004)** | **(0.008)** | **(0.014)** | **(0.0198)** | **(0.025)** |
| No. of observations | 71,315 | 57,724 | 30,116 | 9,930 | 3,497 | 1,456 |
| $R^2$ | 0.059 | 0.039 | 0.040 | 0.052 | 0.069 | 0.097 |

The results in the table are for a sample comprising non-ultraorthodox Jewish individuals who were 30 years or older in 1999.

The baseline results presented the effect of the child allowance reform on labor force participation among the general population of men and women as well as on the non-ultraorthodox Jewish population. For a more complete picture, we present results for ultraorthodox and Israeli-Arab parents below. Table 5 presents the effect of the reform on

[13] We note that the women and men in the sample are from different households and not married to each other.

labor participation among ultraorthodox women, Arab women, ultraorthodox men and Arab men (columns 1–4, respectively). We can see that ultraorthodox women with four or five children were completely unaffected by the reform relative to women with two or three children. Arab women with multiple children were much more responsive to the reform than ultraorthodox women, at a magnitude similar to that of non-ultraorthodox Jewish women.

The results for men were similar. Ultraorthodox fathers with four or five children did not respond to the reform relative to fathers with fewer children (the coefficient, which is not statistically significant, is negative). On the other hand, Arab fathers with four or five children did increase their labor supply relative to Arab fathers with fewer children, similarly to non-ultraorthodox Jewish fathers.

A possible limitation of this finding is that we are examining a sample of different cross-sections each year (i.e., the sample does not constitute a panel), and in the Israeli-Arab and (especially) ultraorthodox populations, where large families are the norm, having just two or three children is most often a temporary situation. As a result, the separation between different households by number of children at any given moment is less clean.

**Table 5: Results for Ultraorthodox and Arab Women and Men with 4-5 vs. 2-3 Children**

| | (1) Ultraorthodox women | (2) Arab women | (3) Ultraorthodox men | (4) Arab men |
|---|---|---|---|---|
| **No. of children** | **0.0007** | **0.040*** ** | **-0.041** | **0.032*** ** |
| ***Following the reform** | **(0.034)** | **(0.014)** | **(0.046)** | **(0.011)** |
| No. of observations | 3,360 | 12,138 | 3,732 | 16,014 |
| $R^2$ | 0.140 | 0.224 | 0.049 | 0.132 |

### 5.4 Robustness Tests

Table 6 presents a robustness test of the results, for a sample which includes only men and women with at least one child born after 2003 – a group for whom the allowance cuts were the steepest. The results of Table 6 are very similar to our baseline results presented in Tables 2 and 3, with an expected increase in the coefficients and their statistical significance.

**Table 6: Families with a Child Born after 2003**

| | (1) Total | (2) Excluding ultraorthodox and Arabs | (3) Over 12.3 years of schooling | (4) Under 12.3 years of schooling |
|---|---|---|---|---|
| Panel A: Women | | | | |
| **With 4-5 children** | **0.055*** ** | **0.071*** ** | **0.005** | **0.086*** ** |
| ***Following the reform** | **(0.016)** | **(0.020)** | **(0.008)** | **(0.026)** |
| No. of observations | 57,091 | 44,250 | 18,319 | 25,931 |
| $R^2$ | 0.324 | 0.109 | 0.006 | 0.173 |
| Panel B: Men | | | | |
| **With 4-5 children** | **0.032*** ** | **0.039*** ** | **-0.007** | **0.059*** ** |
| ***Following the reform** | **(0.009)** | **(0.009)** | **(0.004)** | **(0.014)** |
| No. of observations | 67,032 | 50,002 | 18,222 | 31,780 |
| $R^2$ | 0.106 | 0.041 | 0.005 | 0.068 |

The regressions in the table include the same control variables as in Tables 2 and 3. The coefficients of these variables were omitted for the sake of brevity. Columns 3 and 4 present results for non-ultraorthodox Jewish women and men.

To ensure the results are robust to changes in the specification, we conducted several additional tests. First, a possible limitation of our research design is the fact that the treatment is given at the group level (i.e., based on the year and number of children) and not at the individual level. To ensure that this does not affect the statistical significance of our results, we aggregated the individual-level data to the group level, creating 52 groups by year and number of children (13 years multiplied by four types of families – with two, three, four, or five children). We then averaged all the variables within each group. Table A.2 presents the results of this exercise. The results for the entire sample of women are a bit smaller in magnitude – a coefficient of 2.7% compared

to 4.3% in our baseline results. However, the results for the other groups are very similar to our baseline results, and for the case of non-ultraorthodox Jewish women even larger in magnitude.

Since our dependent variable is discrete, we explored whether using non-linear models affects our results. In Table A.3 we estimate equation 1 using the probit model. The estimates of the probit model are substantially larger than those of the LPM model. For example, the effect of the reform on the entire sample of women is 5.6% (compared to 4.3%) and that of men is 4.7% (compared to 2.8%).

Finally, Table A.4 presents the results of various additional robustness checks for the entire sample of women (panel a) and men (panel b). First, we changed the explanatory variable, using the employment rate in lieu of labor force participation. The effect of the reform on employment seems a bit more modest than its effect on labor force participation, and the coefficients for women and men are 3.7% and 1.9%, respectively (column 1). In column 2 we return to labor force participation and add region fixed effects to examine whether regional differences affect the results, which doesn't turn out to be the case.

Over the sample period, as mentioned above, there were several policy changes, some of which may have impacted the results. To test this, we conducted a number of additional analyses. First, we examined whether the results were affected by changes in the income support allowance. We note in this respect that Israel's income support allowance varies for families with no children, one child or more than one child, but is unaffected by the number of children beyond that. Hence, cuts in this allowance across the entire sample period should not have had a differential effect on families with two or three children versus families with four or five. Nevertheless, changes in the income support allowance may have a differential effect on these cohorts if those receiving

income support were disproportionately represented among individuals with 4-5 children compared to individuals with 2-3 children. If this is indeed the case, the increased participation of those individuals in the labor market could potentially be a consequence of cuts in the income support allowance rather than child allowance. To test this mechanism, we rely on the correlation between the probability of receiving income support and an individual's education. We created a subsample comprising only non-ultraorthodox women and men with exactly 12 years of schooling – a population in which we can expect little difference in the probability of receiving income support between individuals with 4-5 versus 2-3 children. Therefore, if our results for this subsample are weaker than for the sample as a whole, this would suggest that the rise in labor market participation that we observed among individuals with more children was in fact a product of the fall in income support payments rather than child allowances. However, the magnitude of the results for this subsample is not materially different from the results for the full sample – the coefficients for women and men are 5.4% and 2.2%, respectively (Table A.4, column 3). These results are, however, only marginally statistically significant for women, and not statistically significant for men, probably due to the reduced variance in this new subsample.

Another way to address the possible bias in our results due to compositional differences of income support beneficiaries is to provide an approximate calculation as to the maximal bias which may arise from this issue. Therefore, using data from the Israeli National Insurance Institute, we calculate the difference in the proportion of income support recipients between individuals with 2-3 vs. 4-5 children. This number equals 3.4%, which means that the proportion of income support beneficiaries is 3.4 percentage points larger for families with 4-5 children compared with families with 2-3 children. The difference in income support was approximately 20% of such families' average

income. If we assume a relatively large income elasticity, say 0.8, we get an increase in the labor supply of 16% for this population, leading to an increase in the overall labor supply of 0.5% (3.4% multiplied by 16%) – a relatively modest bias out of the 4.4% we observe.

An additional policy change which may have affected the results was the raising of the retirement age, which affected the labor supply of individuals aged 55–64 (Eckstein et al, 2017). To test the effect of this change on our results, we looked at a subsample limited to individuals under 55 years of age. The results are not materially different from our baseline results (Table A.4, Column 4). Thus, we may assume that the increase in the retirement age does not affect our results.

Finally, in column 5 we examine the robustness of our results regarding the ultraorthodox community. The results presented in Table 5 suggest that this community is not affected at all by changes to child allowances – a surprising result, especially given the large estimates obtained for other groups in Israel. A possible limitation of our empirical strategy which applies especially to ultraorthodox families has to do with expected changes in family size. While the vast majority of non-ultraorthodox families have no more than four children, ultraorthodox families are often much larger. This means that comparing ultraorthodox individuals with 2-3 children and those with 4-5 children may not be meaningful, since both sets of families potentially see this stage as transitory. In order to deal with this limitation we look at a subsample of the ultraorthodox community limited to individuals who were 35 years old or older in 1999. This leaves us with individuals who most likely have already reached, or are very close to, the final size of their family. The results for this subsample are presented in column 5 of Table A4. While the figures are somewhat larger than those in Table 5, they are still

indistinguishable from zero. This suggests that the limitation described above probably does not strongly affect our results.

Regarding the other changes which took place in the economy (e.g., introduction of the MEHALEV and negative income tax, and the increase in daycare subsidies), the extent of these programs during the sample period was relatively small. Therefore, it is unlikely that our results were materially affected by them.

A final limitation of our results, which was mentioned earlier, has to do with our inability to substantiate the common trend assumption for Israeli men. In order to address this limitation we follow Kahn-Lang and Lang (2018) and add a linear time trend interacted with the treatment group. This has very little effect on our estimates of the treatment effect (results available upon request). Therefore, we conclude that while we cannot fully account for differences between men with 4-5 children and those with 2-3 children, these differences probably don't affect our results much.

## 6. A Calculation of Labor Supply Elasticity

To calculate the labor supply elasticity with respect to non-labor income, we used the estimates presented in Tables 2 and 3. The estimates include our sample of individuals with 2–5 children who were older than 30 in 1999.

For individuals with four or five children, the child allowance cut led to a 7.1 percent drop in income, compared with a 1.5 percent drop for individuals with two or three children. In other words, the reduction in total income between the two groups following the allowance cut differed by 5.6 percentage points.

To estimate the elasticity of labor supply, we take the estimates of the reform's effect on the labor supply for individuals with four or five children versus those with two or three children – the results found in Tables 2 and 3, column 1 (4.3 percent for women and 2.8 percent for men). We divide those estimates by the difference in the share of

income between the two groups (5.6 percentage points). The results of this division yield -0.77 elasticity for women and -0.5 for men. In other words, a 10 percent decrease in income results in a 7.7 percent increase in the labor supply of women and a 5.0 percent increase in the labor supply of men. These estimates are higher than the elasticity estimates usually reported in the literature (elasticity ranging from 10 to 40 percent), though the estimates for women are very close to those reported in the seminal work of Ashenfelter and Heckman (1974).

## 7. Conclusions

In this study we estimated the effect of reducing child allowances on the labor supply. We found that reducing child allowances had a significant effect on labor force participation. The study found that the reform led to a 4.3 percentage point increase in the labor supply of women and a 2.8 percentage point increase in the labor supply of men belonging to households with four or five children, compared with women and men with two or three children. These estimates translate to income elasticities of -0.77 and -0.5 for women and men, respectively. The labor supply increase is especially significant for the non-ultraorthodox Jewish population and for residents of localities with low average education. The labor force participation of ultraorthodox men and women was not significantly affected by the child allowance cut.

## References


Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics letters*, 80(1), 123-129.

Ashenfelter, O., & Heckman, J. (1974). The estimation of income and substitution effects in a model of family labor supply. *Econometrica: Journal of the Econometric Society*, 73-85.

Banerjee, A. V., R. Hanna, G. E. Kreindler & B. A. Olken (2017). "Debunking the stereotype of the lazy welfare recipient: Evidence from cash transfer programs", *The World Bank Research Observer*, *32*(2), 155–184.

Blundell, R., A. Bozio & G. Laroque (2011). "Labor supply and the extensive margin", *American Economic Review*, 101(3), 486–482..

Blundell, R., M. Costa Dias, C. Meghir & J. Shaw (2016). Female labor supply, human capital, and welfare reform. *Econometrica*, *84*(5), 1705–1753.

Cesarini, D., E. Lindqvist , M. J. Notowidigdo & R. Östling (2017). "The effect of wealth on individual and household labor supply: evidence from Swedish lotteries', *American Economic Review*, *107*(12), 3946–3917.

Cohen, A., R. Dehejia & D. Romanov (2013). "Financial incentives and fertility", *Review of Economics and Statistics*, 95, 1–20.

de Boer, H. W., E. L. Jongen & J. Kabatek (2015). The effectiveness of fiscal stimuli for working parents. IZA discussion paper series

Deutsch, Z. (2017). "The Effect of the 'Tal Law' on the Labor Supply of Ultra-Orthodox Men," *Bank of Israel Survey*, 89, 89-124.

Eckstein, Z., Lifshitz, O. and Larom, T. (2017). Labor Market Changes, Policy Paper 2017.04, Aaron Institute for Economic Policy.

Flug, K. and M. Strawczynski (2007). "Continuous Growth and Macroeconomic Policy," *Bank of Israel Survey* 80, 73-103.

Graham, J. W. & A. H. Beller (1989). "The effect of child support payments on the labor supply of female family heads: An econometric analysis". *Journal of Human Resources*, 24(4), 664–688.

Heckman, J. J. (1993). What has been learned about labor supply in the past twenty years?. *The American Economic Review*, *83*(2), 116-121.

Imbens, G. W., D. B. Rubin & B. I. Sacerdote (2001). "Estimating the effect of unearned income on labor earnings, savings, and consumption: Evidence from a survey of lottery players", *American Economic Review*, *91*(4), 778–794.

Jones, D. & I. Marinescu (2018). The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund (No. w24312). National Bureau of Economic Research.

Kahn-Lang, A., & Lang, K. (2018). *The promise and pitfalls of differences-in-differences: Reflections on '16 and pregnant'and other applications* (No. w24857). National Bureau of Economic Research.

Kumar, A., & Liang, C. Y. (2016). Declining female labor supply elasticities in the United States and implications for tax policy: evidence from panel data. *National Tax Journal*, *69*(3), 481.

Liang, C. Y. (2012). "Nonparametric structural estimation of labor supply in the presence of censoring", *Journal of Public Economics*, *96*(1-2), 89–103.

Price, D. J., & J. Song (2016). *The Long-Term Effects of Cash Assistance*. Working Paper, Stanford University.

Shoresh Institute (2016). *Socio-Economic Implications of the Quality vs. Quantity of Education, Lessons from the Largest Natural Experiment in Israel in the 2000s.*

Toledano, A., Sussman, N., Frisch, R. and Gottlieb, D. (2009). The Effect of Child Allowances on Fertility, *Discussion Papers Series* 101, National Insurance Institute.

Tzur, S. (2017). Liquidity and Human Capital Constraints: The Impact of Policy on Arab Families in Israel, Discussion Paper Series, Bank of Israel 1.

## APPENDIX

### Additional Tables and Figures

**Table A.1a: Child Allowance Amount (NIS per Month at 2016 Rates) according to the Child's Birth Order - 1**

| | For a child born until May 31 2003 | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **1** | **2** | **3** | **4** | **5** | **6** | **For each additional child** |
| **1999** | 169.0 | 169.0 | 338.0 | 683.0 | 574.0 | 633.0 | 591.0 |
| **2000** | 171.0 | 171.0 | 342.0 | 693.0 | 582.0 | 642.0 | 599.0 |
| **2001** | 171.0 | 171.0 | 343.0 | 694.0 | 856.0 | 856.0 | 856.0 |
| **2002** | 152.3 | 152.3 | 301.8 | 613.5 | 758.0 | 758.0 | 758.0 |
| **2003** | 145.2 | 145.2 | 249.8 | 531.0 | 639.8 | 639.8 | 639.8 |
| **2004** | 122.0 | 122.0 | 169.5 | 419.0 | 480.5 | 480.5 | 480.5 |
| **2005** | 120.0 | 120.0 | 156.0 | 360.0 | 401.0 | 401.0 | 401.0 |
| **2006** | 148.0 | 148.0 | 178.0 | 329.0 | 329.0 | 329.0 | 329.0 |
| **2007** | 148.0 | 148.0 | 178.0 | 329.0 | 329.0 | 329.0 | 329.0 |
| **2008** | 152.0 | 152.0 | 182.0 | 337.0 | 337.0 | 337.0 | 337.0 |
| **2009** | 159.0 | 159.0 | 221.0 | 399.5 | 353.0 | 353.0 | 353.0 |
| **2010** | 165.0 | 180.0 | 267.5 | 446.0 | 366.0 | 366.0 | 366.0 |
| **2011** | 169.0 | 237.8 | 284.0 | 446.0 | 375.0 | 375.0 | 375.0 |

Source: Monthly Bulletin of the National Insurance Institute and data processed by the authors. The table describes the allowances for children born no later than May 31, 2003.

**Table A.1b: Child Allowance Amount (NIS per Month at 2016 Rates) according to the Child's Birth Order - 2**

| | For a child born from June 1 2003 and onwards | | | | | |
|---|---|---|---|---|---|---|
| **Year** | **1** | **2** | **3** | **4** | **5** | **For each additional child** |
| **2004** | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 |
| **2005** | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 | 120.0 |
| **2006** | 148.0 | 148.0 | 148.0 | 148.0 | 148.0 | 148.0 |
| **2007** | 148.0 | 148.0 | 148.0 | 148.0 | 148.0 | 148.0 |
| **2008** | 152.0 | 152.0 | 152.0 | 152.0 | 152.0 | 152.0 |
| **2009** | 159.0 | 159.0 | 189.0 | 205.5 | 159.0 | 159.0 |
| **2010** | 165.0 | 180.0 | 235.5 | 252.0 | 165.0 | 165.0 |
| **2011** | 169.0 | 237.8 | 252.0 | 252.0 | 169.0 | 169.0 |

Source: Monthly Bulletin of the National Insurance Institute and data processed by the authors. The table describes the allowances for children born on June 1, 2003, and onwards.

**Table A.2: Aggregated regressions**

| | (1) All women | (2) Non-orthodox Jewish women | (3) All men | (4) Non-orthodox Jewish men |
|---|---|---|---|---|
| **No. of children** | 0.027* | 0.060*** | 0.027*** | 0.038*** |
| ***Following the reform** | (0.016) | (0.022) | (0.007) | (0.009) |
| No. of observations | 52 | 52 | 52 | 52 |
| Adjusted $R^2$ | 0.974 | 0.855 | 0.945 | 0.724 |

Note: the observations were aggregated by year and number of children, resulting in 52 groups. All regressions estimate equation 1, including the full set of control variables.

**Table A.3: Probit regressions**

| | (1) All women | (2) Non-orthodox Jewish women | (3) All men | (4) Non-orthodox Jewish men |
|---|---|---|---|---|
| **No. of children** | 0.056*** | 0.081*** | 0.047*** | 0.047*** |
| ***Following the reform** | (0.012) | (0.016) | (0.008) | (0.010) |
| No. of observations | 81,506 | 62,182 | 91,768 | 67,654 |
| Pseudo $R^2$ | 0.283 | 0.098 | 0.110 | 0.050 |

Note: the interaction is calculated as a marginal effect based on the method suggested by Ai and Norton (2003)

**Table A4: Additional robustness checks**

| | (1) Employment | (2) Region | (3) 12 years of schooling | (4) Below 55 | (5) Ultraorthodox above 35 |
|---|---|---|---|---|---|
| **Panel A: Women** | | | | | |
| **With 4-5 children** | **0.037**** | **0.043***** | **0.054*** | **0.044***** | **0.014** |
| ***Following the reform** | **(0.014)** | **(0.013)** | **(0.028)** | **(0.014)** | **(0.040)** |
| No. of observations | 81,506 | 81,506 | 19,544 | 80,716 | 3,041 |
| $R^2$ | 0.294 | 0.338 | 0.034 | 0.331 | 0.143 |
| **Panel B: Men** | | | | | |
| **With 4-5 children** | **0.019**** | **0.027***** | **0.022** | **0.029***** | **0.016** |
| ***Following the reform** | **(0.009)** | **(0.008)** | **(0.014)** | **(0.008)** | **(0.050)** |
| No. of observations | 91,768 | 91,768 | 20,401 | 90,641 | 3,495 |
| $R^2$ | 0.105 | 0.107 | 0.023 | 0.093 | 0.043 |

Note: Column 1 uses employment instead of labor force participation as the dependent variable. Column 2 adds region fixed-effects to the specification of equation 1. Column 3 estimates equation 1 for a sub-sample which includes only individuals with exactly 12 years of schooling. Column 4 excludes from the sample individuals older than 55. Column 5 estimates equation 1 for a subsample of ultraorthodox Jews who were 35 or above in 1999.

**Published papers** (in English)

| | |
|---|---|
| R. Melnick and Y. Golan - Measurement of Business Fluctuations in Israel. | 91.01 |
| M. Sokoler - Seigniorage and Real Rates of Return in a Banking Economy. | 91.03 |
| E.K. Offenbacher - Tax Smoothing and Tests of Ricardian Equivalence Israel 1961-1988. | 91.04 |
| M. Beenstock, Y. Lavi and S. Ribon - The Supply and Demand for Exports in Israel. | 91.07 |
| R. Ablin - The Current Recession and Steps Required for Sustained Sustained Recovery and Growth. | 91.08 |
| M. Beenstock - Business Sector Production in the Short and Long Run in Israel: A Cointegrated Analysis. | 91.10 |
| A. Marom - The Black-Market Dollar Premium: The Case of Israel. | 91.13 |
| A. Bar-Ilan and A. Levy - Endogenous and Exoqenous Restrictions on Search for Employment. | 91.14 |
| M. Beentstock and S. Ribon - The Market for Labor in Israel. | 91.15 |
| O. Bar Efrat - Interest Rate Determination and Liberalization of International Capital Movement: Israel 1973-1990. | 92.02 |
| Z. Sussman and D.Zakai - Wage Gaps between Senior and Junior Physicians and Crises in Public Health in Israel, 1974-1990. | 92.03 |
| O. L iviatan - The Impact of Real Shocks on Fiscal Redistribution and Their Long-Term Aftermath. | 92.05 |
| A. Bregman, M. Fuss and H. Regev - The Production and Cost Structure of the Israeli Industry: Evidence from Individual Firm Data. | 92.06 |
| M. Beenstock, Y. Lavi and A. Offenbacher - A Macroeconometric - Model for Israel 1962-1990: A Market Equilibrium Approach to Aggregate Demand and Supply. | 92.07 |
| R. Melnick - Financial Services, Cointegration and the Demand for Money in Israel. | 92.09 |
| R. Melnick - Forecasting Short-Run Business Fluctuations in Israel | 92.12 |
| K. Flug, N. Kasir and G. Ofer - The Absorption of Soviet Immigrants in to the Labor Market from 1990 Onwards: Aspects of Occupational Substitution and Retention. | 92.13 |

B. Eden - How to Subsidize Education and Achieve Voluntary Integration: An Analysis of Voucher Systems. 93.01

A.Arnon, D. Gottlieb - An Economic Analysis of the Palestinian Economy: The West Bank and Gaza, 1968-1991. 93.07

K. Flug, N. Kasir - The Absorption in the Labor Market of Immigrants from the CIS - the Short Run. 93.09

R. Ablin - Exchange Rate Systems, Incomes Policy and Stabilization Some Short and Long-Run Considerations. 94.01

B.Eden - The Adjustment of Prices to Monetary Shocks When Trade is Uncertain and Sequential. 94.02

K. Flug, Z. Hercowitz and A. Levi - A Small -Open-Economy Analysis of Migration. 94.04

R. Melnick and E. Yashiv - The Macroeconomic Effects of Financial Innovation: The Case of Israel. 94.05

A. Blass - Are Israeli Stock Prices Too High? 94.09

Arnon and J. Weinblatt - The Potential for Trade Between Israel the Palestinians, and Jordan. 94.10

B. Eden - Inflation and Price Dispersion: An Analysis of Micro Data. 94.13

B. Eden - Time Rigidities in The Adjustment of Prices to Monetary Shocks: An Analysis of Micro Data. 94.16

O. Yosha - Privatizing Multi-Product Banks. 94.17

B. Eden - Optimal Fiscal and Monetary Policy in a Baumol-Tobin Model. 95.01

B. Bar-Nathan, M. Beenstock and Y. Haitovsky - An Econometric Model of The Israeli Housing Market. 95.02

A. Arnon and A. Spivak - A Seigniorage Perspective on the Introduction of a Palestinian Currency. 95.04

M. Bruno and R. Melnick - High Inflation Dynamics: Integrating Short-Run Accommodation and Long-Run Steady-States. 95.06

M. Strawczynski - Capital Accumulation in a Bequest Economy. 95.08

A. Arnon and A. Spivak - Monetary Integration Between the Israeli, Jordanian and Palestinian Economies. 95.11

| | |
|---|---|
| A. Blass and R. S. Grossman - A Harmful Guarantee? The 1983 Israel Bank Shares Crisis Revisited. | 96.03 |
| Z. Sussman and D. Zakai - The Decentralization of Collective Bargaining and Changes in the Compensation Structure in Israeli`s Public Sector. | 96.04 |
| M. Strawczynski - Precautionary Savings and The Demand for Annuities. | 96.05 |
| Y. Lavi and A. Spivak - The Impact of Pension Schemes on Saving in Israel: Empirical Analysis. | 96.09 |
| M. Strawczynski - Social Insurance and The Optimum Piecewise Linear Income Tax. | 96.10 |
| M. Dahan and M. Strawczynski - The Optimal Non-Linear Income Tax. | 97.02 |
| H. Ber, Y. Yafeh and O. Yosha - Conflict of Interest in Universal Banking: Evidence from the Post-Issue Performance of IPO Firms. | 97.05 |
| A. Blass, Y. Yafeh and O. Yosha - Corporate Governance in an Emerging Market: The Case of Israel. | 97.08 |
| N. Liviatan and R. Melnick - Inflation and Disinflation by Steps in Israel. | 98.01 |
| A. Blass, Y. Yafeh - Vagabond Shoes Longing to Stray - Why Israeli Firms List in New York - Causes and Implications. | 98.02 |
| G. Bufman, L. Leiderman - Monetary Policy and Inflation in Israel. | 98.04 |
| Z. Hercowitz and M. Strawczynski - On the Cyclical Bias in Government Spending. | 98.06 |
| A. Brender - The Effect of Fiscal Performance on Local Government Election Results in Israel: 1989-1998. | 99.04 |
| S. Ribon and O. Yosha - Financial Liberalization and Competition In Banking: An Empirical Investigation. | 99.05 |
| L. Leiderman and H. Bar-Or - Monetary Policy Rules and Transmission Mechanisms Under Inflation Targeting in Israel. | 2000.01 |
| Z. Hercowitz and M. Strawczynski - Public-Debt / Output Guidelines: the Case of Israel. | 2000.03 |

Y. Menashe and Y. Mealem - Measuring the Output Gap and its Influence on The Import Surplus. 2000.04

J. Djivre and S. Ribon - Inflation, Unemployment, the Exchange Rate and Monetary Policy in Israel 1990-1999: A SVAR Approach. 2000.06

J. Djivre and S. Ribon - Monetary Policy, the Output Gap and Inflation: A Closer Look at the Monetary Policy Transmission Mechanism in Israel 1989-1999. 2000.09

J. Braude - Age Structure and the Real Exchange Rate. 2000.10

Z. Sussman and D. Zakai - From Promoting the Worthy to Promoting All: The Public Sector in Israel 1975-1999. 2000.11

H. Ber, A. Blass and O. Yosha - Monetary Transmission in an Open Economy: The Differential Impact on Exporting and Non-Exporting Firms. 2001.01

N. Liviatan - Tight Money and Central Bank Intervention (A selective analytical survey). 2001.03

Y. Lavi, N. Sussman - The Determination of Real Wages in the Long Run and its Changes in the Short Run - Evidence from Israel: 1968-1998. 2001.04

J. Braude - Generational Conflict? Some Cross-Country Evidence. 2001.06

Z. Hercowitz and M. Strawczynski, - Cyclical Ratcheting in Government Spending: Evidence from the OECD. 2001.09

D. Romanov and N. Zussman - On the Dark Side of Welfare: Estimation of Welfare Recipients Labor Supply and Fraud. 2001.12

A. Blass O. Peled and Y. Yafeh - The Determinants of Israel's Cost of Capital: Globalization, Reforms and Politics. 2002.03

N. Liviatan - The Money-Injection Function of the Bank of Israel and the Inflation Process. 2002.04

Y. Menashe - Investment under Productivity Uncertainty. 2002.07

T. Suchoy and A. Friedman - The NAIRU in Israel: an Unobserved Components Approach. 2002.08

R. Frish and N. Klein – Rules versus Discretion - A Disinflation Case. 2002.09

S. Ribon - Is it labor, technology or monetary policy? The Israeli economy 1989-2002. 2003.02

A. Marom, Y. Menashe and T. Suchoy - The State-of-The-Economy Index and The probability of Recession: The Markov Regime-Switching Model. 2003.05

N. Liviatan and R. Frish – Public Debt in a Long Term Discretionary Model. 2003.07

D. Romanov - The Real Exchange Rate and the Balassa-Samuelson Hypothesis: An Appraisal of Israel's Case Since 1986. 2003.09

R. Frish - Restricting capital outflow - the political economy perspective. 2003.10

H. Ber and Y. Yafeh - Venture Capital Funds and Post-IPO Performance in Booms and Busts: Evidence from Israeli IPO's in the US in the 1990s. 2003.12

N. Klein - Reputation and Indexation in an Inflation Targeting Framework. 2003.13

N. Liviatan - Fiscal Dominance and Monetary Dominance in the Israeli Monetary Experience. 2003.17

A. Blass and S. Ribon - What Determines a Firm's Debt Composition – An Empirical Investigation. 2004.04

R. Sharabany - Business Failures and Macroeconomic Risk Factors. 2004.06

N. Klein - Collective Bargaining and Its Effect on the Central Bank Conservatism: Theory and Some Evidence. 2004.07

J. Braude and Y. Menashe - Does the Capital Intensity of Structural Change Matter for Growth? 2004.10

S. Ribon - A New Phillips Curve for Israel. 2004.11

A. Barnea and J. Djivre - Changes in Monetary and Exchange Rate Policies and the Transmission Mechanism in Israel, 1989.IV – 2002.I. 2004.13

M. Dahan and M. Strawczynski - The Optimal Asymptotic Income Tax Rate. 2004.15

N. Klein - Long-Term Contracts as a Strategic Device. 2004.16

D. Romanov - The corporation as a tax shelter: evidence from recent Israeli tax changes. 2004.17

T. Suchoy - Does the Israeli Yield Spread Contain Leading Signals? A Trial of Dynamic Ordered Probit. 2004.18

| | |
|---|---|
| A. Brender - Ethnic Segregation and the Quality of Local Government in the Minorities Localities: Local Tax Collection in the Israeli-Arab Municipalities as a Case Study. | 2005.01 |
| A. Zussman and N. Zussman - Targeted Killings: Evaluating the Effectiveness of a Counterterrorism Policy. | 2005.02 |
| N. Liviatan and R. Frish - Interest on reserves and inflation. | 2005.03 |
| A. Brender and A. Drazen - Political Budget Cycles in New versus Established Democracies. | 2005.04 |
| Z. Hercowitz and M. Strawczynski - Government Spending Adjustment: The OECD Since the 1990s. | 2005.09 |
| Y. Menashe - Is the Firm-Level Relationship between Uncertainty and Irreversible Investment Non- Linear? | 2005.12 |
| A. Friedman - Wage Distribution and Economic Growth. | 2005.13 |
| E. Barnea and N. Liviatan - Nominal Anchor: Economic and Statistical Aspects. | 2006.01 |
| A. Zussman, N. Zussman and M. Ørregaard Nielsen - Asset Market Perspectives on the Israeli-Palestinian Conflict. | 2006.02 |
| N. Presman and A. Arnon - Commuting patterns in Israel 1991-2004. | 2006.04 |
| G. Navon and I. Tojerow - The Effects of Rent-sharing On the Gender Wage Gap in the Israeli Manufacturing Sector. | 2006.05 |
| S. Abo Zaid - The Trade–Growth Relationship in Israel Revisited: Evidence from Annual Data, 1960-2004. | 2006.11 |
| M. Strawczynski and J. Zeira - Cyclicality of Fiscal Policy In Israel. | 2007.04 |
| A. Friedman - A Cross-Country Comparison of the Minimum Wage. | 2007.05 |
| K. Flug and M. Strawczynski - Persistent Growth Episodes and Macroeconomic Policy Performance in Israel. | 2007.08 |
| S. Miaari, A. Zussman and N. Zussman – Ethnic Conflict and Job Separations. | 2008.04 |
| Y. Mazar – Testing Self-Selection in Transitions between the Public Sector and the Business Sector | 2008.07 |

A. Brender and L. Gallo – The Response of Voluntary and Involuntary Female Part-Time Workers to Changes in Labor-Market Conditions. 2008.08

A. Friedman – Taxation and Wage Subsidies in a Search-Equilibrium Labor Market. 2008.10

N. Zussman and S. Tsur – The Effect of Students' Socioeconomic Background on Their Achievements in Matriculation Examinations. 2008.11

R. Frish and N. Zussman – The Causal Effect of Parents' Childhood Environment and Education on Their Children's Education. 2009.02

E. Argov – The Choice of a Foreign Price Measure in a Bayesian Estimated New-Keynesian Model for Israel. 2009.04

G. Navon – Human Capital Spillovers in the Workplace: Labor Diversity and Productivity. 2009.05

T. Suhoy – Query Indices and a 2008 Downturn: Israeli Data. 2009.06

J. Djivre and Y. Menashe – Testing for Constant Returns to Scale and Perfect Competition in the Israeli Economy, 1980–2006. 2009.07

S. Ribon – Core Inflation Indices for Israel 2009.08

A. Brender – Distributive Effects of Israel's Pension System. 2009.10

R. Frish and G. Navon – The Effect of Israel's Encouragement of Capital Investments in Industry Law on Product, Employment, and Investment: an Empirical Analysis of Micro Data. 2009.12

E. Toledano, R. Frish, N. Zussman, and D. Gottlieb – The Effect of Child Allowances on Fertility. 2009.13

D. Nathan – An Upgrade of the Models Used To Forecast the Distribution of the Exchange Rate. 2010.01

A. Sorezcky - Real Effects of Financial Signals and Surprises. 2010.02

B. Z. Schreiber – Decomposition of the ILS/USD Exchange Rate into Global and Local Components. 2010.03

E. Azoulay and S. Ribon – A Basic Structural VAR of Monetary Policy in Israel Using Monthly Frequency Data. 2010.04

S. Tsur and N. Zussman – The Contribution of Vocational High School Studies to Educational Achievement and Success in the Labor Market. 2010.05

Y. Menashe and Y. Lavi – The Long- and Short-Term Factors Affecting Investment in Israel's Business-Sector, 1968-2008. 2010.06

Y. Mazar – The Effect of Fiscal Policy and its Components on GDP in Israel. 2010.07

P. Dovman – Business Cycles in Israel and Macroeconomic Crises—Their Duration and Severity. 2010.08

T. Suhoy – Monthly Assessments of Private Consumption. 2010.09

A. Sorezcky – Did the Bank of Israel Influence the Exchange Rate? 2010.10

Y. Djivre and Y. Yakhin – A Constrained Dynamic Model for Macroeconomic Projection in Israel. 2010.11

Y. Mazar and N. Michelson – The Wage Differentials between Men and Women in Public Administration in Israel – An Analysis Based on Cross-Sectional and Panel Data. 2010.12

A. Friedman and Z. Hercowitz – A Real Model of the Israeli Economy. 2010.13

M. Graham – CEO Compensation at Publicly Traded Companies. 2010.14

E. Azoulay and R. Shahrabani – The Level of Leverage in Quoted Companies and Its Relation to Various Economic Factors. 2010.15

G. Dafnai and J. Sidi – Nowcasting Israel GDP Using High Frequency Macroeconomic Disaggregates. 2010.16

E. Toledano, N. Zussman, R. Frish and D. Gottleib – Family Income and Birth Weight. 2010.17

N. Blass, S. Tsur and N. Zussman – The Allocation of Teachers' Working Hours in Primary Education, 2001–2009. 2010.18

T. Krief – A Nowcasting Model for GDP and its Components. 2011.01

W. Nagar – Persistent Undershooting of the Inflation Target During Disinflation in Israel: Inflation Avoidance Preferences or a HiddenTarget? 2011.02

R. Stein – Estimating the Expected Natural Interest Rate Using Affine Term-Structure Models: The Case of Israel. 2011.03

R. Sharabani and Y. Menashe – The Hotel Market in Israel. 2011.04

A. Brender – First Year of the Mandatory Pension Arrangement: Compliance with the Arrangement as an Indication of its Potential Implications for Labor Supply. 2011.05

P. Dovman, S. Ribon and Y. Yakhin – The Housing Market in Israel 2008-2010: Are Housing Prices a "Bubble"? 2011.06

N. Steinberg and Y. Porath – Chasing Their Tails: Inflow Momentum and Yield Chasing among Provident Fund Investors in Israel. 2011.07

L. Gallo – Export and Productivity – Evidence From Israel. 2011.08

I. Gamrasni – The Effect of the 2006 Market Makers Reform on the Liquidity of Local-Currency Unindexed Israeli Government Bonds in the Secondary Market. 2011.09

H. Etkes – The Impact of Employment in Israel on the Palestinian Labor Force. 2011.11

S. Ribon – The Effect of Monetary Policy on Inflation: A Factor Augmented VAR Approach using disaggregated data. 2011.12

A. Sasi-Brodesky – Assessing Default Risk of Israeli Companies Using a Structural Model. 2011.13

Y. Mazar and O. Peled – The Minimum Wage, Wage Distribution and the Gender Wage Gap in Israel 1990–2009. 2012.01

N. Michelson – The Effect of Personal Contracts in Public Administration in Israel on Length of Service. 2012.02

S. Miaari, A. Zussman and N. Zussman – Employment Restrictions and Political Violence in the Israeli-Palestinian Conflict. 2012.04

E. Yashiv and N. K. (Kaliner) – Arab Women in the Israeli Labor Market: Characteristics and Policy Proposals. 2012.05

E. Argov, E. Barnea, A. Binyamini, E. Borenstein, D. Elkayam and I. Rozenshtrom – MOISE: A DSGE Model for the Israeli Economy. 2012.06

E. Argov, A. Binyamini, E. Borenstein and I. Rozenshtrom – Ex-Post Evaluation of Monetary Policy. 2012.07

G. Yeshurun – A Long School Day and Mothers' Labor Supply. 2012.08

Y. Mazar and M. Haran – Fiscal Policy and the Current Account. 2012.09

E. Toledano and N. Zussman – Terror and Birth Weight. 2012.10

A. Binyamini and T. Larom – Encouraging Participation in a Labor Market with Search and Matching Frictions. 2012.11

E. Shachar –The Effect of Childcare Cost on the Labor Supply of Mothers with Young Children. 2012.12

G. Navon and D. Chernichovsky – Private Expenditure on Healthcare, Income Distribution, and Poverty in Israel. 2012.13

Z. Naor – Heterogeneous Discount Factor, Education Subsidy, and Inequality. 2012.14

H. Zalkinder – Measuring Stress and Risks to the Financial System in Israel on a Radar Chart. 2012.15

Y. Saadon and M. Graham – A Composite Index for Tracking Financial Markets in Israel. 2013.01

A. Binyamini – Labor Market Frictions and Optimal Monetary Policy. 2013.02

E. Borenstein and D. Elkayam – The equity premium in a small open economy, and an application to Israel. 2013.03

D. Elkayam and A. Ilek – Estimating the NAIRU for Israel, 1992–2011. 2013.04

Y. Yakhin and N. Presman – A Flow-Accounting Model of the Labor Market: An Application to Israel. 2013.05

M. Kahn and S. Ribon – The Effect of Home and Rent Prices on Private Consumption in Israel—A Micro Data Analysis. 2013.06

S. Ribon and D. Sayag – Price Setting Behavior in Israel – An Empirical Analysis Using Microdata. 2013.07

D. Orpaig (Flikier) – The Weighting of the Bank of Israel CPI Forecast—a Unified Model. 2013.08

O. Sade, R. Stein and Z. Wiener – Israeli Treasury Auction Reform. 2013.09

D. Elkayam and A. Ilek– Estimating the NAIRU using both the Phillips and the Beveridge curves. 2013.10

| | |
|---|---|
| A. Ilek and G. Segal – Optimal monetary policy under heterogeneous beliefs of the central bank and the public. | 2014.01 |
| A. Brender and M. Strawczynski – Government Support for Young Families in Israel. | 2014.02 |
| Y. Mazar – The Development of Wages in the Public Sector and their Correlation with Wages in the Private Sector. | 2014.03 |
| H. Etkes – Do Monthly Labor Force Surveys Affect Interviewees' Labor Market Behavior? Evidence from Israel's Transition from Quarterly to Monthly Surveys. | 2014.06 |
| N. Blass, S. Tsur and N. Zussman – Segregation of students in primary and middle schools. | 2014.07 |
| A. Brender and E. Politzer – The Effect of Legislated Tax Changes on Tax Revenues in Israel. | 2014.08 |
| D. Sayag and N. Zussman – The Distribution of Rental Assistance Between Tenants and Landlords: The Case of Students in Central Jerusalem. | 2015.01 |
| A. Brender and S. Ribon –The Effect of Fiscal and Monetary Policies and the Global Economy on Real Yields of Israel Government Bonds. | 2015.02 |
| I. Caspi – Testing for a Housing Bubble at the National and Regional Level: The Case of Israel. | 2015.05 |
| E. Barnea and Y. Menashe – Banks Strategies and Credit Spreads as Leading Indicators for the Real Business Cycles Fluctuations. | 2015.07 |
| R. Frish – Currency Crises and Real Exchange Rate Depreciation. | 2016.01 |
| V. Lavy and E. Sand – On the Origins of Gender Gaps in Human Capital: Short and Long Term Consequences of Teachers' Biases. | 2016.02 |
| R. Frish – The Real Exchange Rate in the Long Term. | 2016.03 |
| A. Mantzura and B. Schrieber – Carry trade attractiveness: A time-varying currency risk premium approach. | 2016.04 |

| | |
|---|---|
| I. Caspi and M Graham – Testing for Bubbles in Stock Markets With Irregular Dividend Distribution. | 2016.06 |
| E. Borenstein, and D. Elkayam – Financial Distress and Unconventional Monetary Policy in Financially Open Economies. | 2016.09 |
| S. Afek and N. Steinberg – The Foreign Exposure of Public Companies Traded on the Tel Aviv Stock Exchange. | 2016.10 |
| R. Stein – Review of the Reference Rate in Israel: Telbor and Makam Markets. | 2016.12 |
| N. Sussmana and O. Zoharb – Has Inflation Targeting Become Less Credible? Oil Prices, Global Aggregate Demand and Inflation Expectations during the Global Financial Crisis. | 2016.13 |
| E. Demalach, D. Genesove A. Zussman and N Zussman – The Effect of Proximity to Cellular Sites on Housing Prices in Israel. | 2016.14 |
| E. Argov – The Development of Education in Israel and its Contribution to Long-Term Growth Discussion Paper. | 2016.15 |
| S. Tsur – Liquidity Constraints and Human Capital: The Impact of Welfare Policy on Arab Families in Israel. | 2017.01 |
| G. Segal – Interest Rate in the Objective Function of the Central Bank and Monetary Policy Design. | 2017.02 |
| N. Tzur-Ilan – The Effect of Credit Constraints on Housing Choices: The Case of LTV limit. | 2017.03 |
| A. Barak – The private consumption function in Israel | 2017.04 |
| S. Ribon – Why the Bank of Israel Intervenes in the Foreign Exchange Market, and What Happens to the Exchange Rate. | 2017.04 |
| E. Chen, I. Gavious and N. Steinberg – Dividends from Unrealized Earnings and Default Risk. | 2017.05 |

| | |
|---|---|
| A. Ilek and I. Rozenshtrom – The Term Premium in a Small Open Economy: A Micro-Founded Approach. | 2017.06 |
| A Sasi-Brodesky – Recovery Rates in the Israeli Corporate Bond Market 2008–2015. | 2017.07 |
| D. Orfaig – A Structural VAR Model for Estimating the Link between Monetary Policy and Home Prices in Israel. | 2017.09 |
| M. Haran Rosen and O. Sade – Does Financial Regulation Unintentionally Ignore Less Privileged Populations? The Investigation of a Regulatory Fintech Advancement, Objective and Subjective Financial Literacy. | 2017.10 |
| E. Demalach and N. Zussman – The Effect of Vocational Education on Short- and Long-Term Outcomes of Students: Evidence from the Arab Education System in Israel. | 2017.11 |
| S. Igdalov, R. Frish and N. Zussman – The Wage Response to a Reduction in Income Tax Rates: The 2003–2009 Tax Reform in Israel. | 2017.14 |
| Y. Mazar – Differences in Skill Levels of Educated Workers between the Public and Private Sectors, the Return to Skills and the Connection between them: Evidence from the PIAAC Surveys. | 2018.01 |
| Itamar Caspi, Amit Friedman, and Sigal Ribon – The Immediate Impact and Persistent Effect of FX Purchases on the Exchange Rate. | 2018.04 |
| D. Elkayam and G Segal – Estimated Natural Rate of Interest in an Open Economy: The Case of Israel. | 2018.05 |
| Y. Mazar and Y. Reingewertz – The Effect of Child Allowances on Labor Supply Evidence from Israel. | 2018.07 |