NBER WORKING PAPER SERIES

DO FINANCIAL INCENTIVES AFFECT FERTILITY?

Alma Cohen
Rajeev Dehejia
Dmitri Romanov

Working Paper 13700
http://www.nber.org/papers/w13700

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
December 2007

We thank Michal Goltzman for excellent research assistance, Zvika Eckstein, Manuel Trajtenberg, and Yoram Weiss for helpful conversations, Yuri Homenko of the Central Bureau of Statistics for assistance in preparing the data, and Anat Katz and David Gordon of the Central Bureau of Statistics for facilitating our work on the project at the Central Bureau of Statistics Alma Cohen also gratefully acknowledges the financial support of the Foerder Institute for Economic Research. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

Do Financial Incentives Affect Fertility?
Alma Cohen, Rajeev Dehejia, and Dmitri Romanov
NBER Working Paper No. 13700
December 2007
JEL No. D1,H31,I38,J13,K36

ABSTRACT

This paper investigates empirically whether financial incentives, and in particular governmental child subsidies, affect fertility. We use a comprehensive, nonpublic, individual-level panel dataset that includes fertility histories and detailed individual controls for all married Israeli women with two or more children from 1999-2005, a period with substantial variation in the level of governmental child subsidies but no changes in eligibility and coverage. We find a significant positive effect on fertility, with the mean level of child subsidies producing a 7.8 percent increase in fertility. The positive effect of child subsidies on fertility is concentrated in the bottom half of the income distribution. It is present across all religious groups, including the ultra-Orthodox Jewish population whose religious principles forbid birth control and family planning. Using a differences-in-differences specification, we find that a large, unanticipated reduction in child subsidies that occurred in 2003 had a substantial negative impact on fertility. Overall, our results support the view that fertility responds to financial incentives and indicate that the child subsidy policies used in many countries can have a significant influence on incremental fertility decisions.

Alma Cohen
The Eitan Berglas School of Economics
Tel Aviv University
Ramat-Aviv, Tel-Aviv
ISRAEL
and NBER
almac@post.tau.ac.il

Rajeev Dehejia
Department of Economics
and the Fletcher School
Tufts University
114A Braker Hall
8 Upper Campus Road
Medford, MA 02155-6722
rdehejia@nber.org

Dmitri Romanov
Central Bureau of Statistics
66 Kanfei Nesharim,
Corner Bachi str.
Jerusalem 95464 Israel
dromanov@cbs.gov.il

1. Introduction

This paper investigates empirically the effect of financial incentives on individual fertility decisions using a comprehensive, nonpublic, individual-level data set at Israel's Central Bureau of Statistics (CBS). Our data contains fertility history and detailed individual controls for all married Israeli women with two or more children during the six-year period 1999-2005. During this period, there was substantial variation in the level of governmental child subsidies, including one large and unanticipated reduction in levels, but no changes in eligibility or coverage.

Our empirical analysis shows that child subsidies do have a significant positive effect on fertility. The effect of child subsidies on fertility is stronger for households in the bottom half of the income distribution and for new immigrants – the groups from whom the allowances are more economically meaningful. The positive effect of child subsidies is present across all religious groups, including the ultra-Orthodox Jewish population whose religious principles forbid birth control and family planning.

There are at least two motivations for studying the relationship between economic incentives and fertility. First, since the now-canonical Becker (1960) fertility model, there has been significant interest among researchers in whether and to what extent fertility responds to financial incentives. Some researchers continue to believe that fertility decisions are shaped by social, religious, and cultural forces, and that financial incentives of the magnitude used in many countries cannot be expected to have a meaningful effect on such decisions (Gauthier (1996)). In this context, we examine a key prediction of the model: that fertility will respond to changes in the price of children.

Second, the question of whether fertility is responsive to financial incentives is not only of theoretical interest but also has significant policy implications. Facing sharp declines in the birthrate in the latter half of the twentieth century, many developed economies have adopted either explicitly pro-natalist policies (France, Germany, Sweden, and the Canadian province of Quebec) or implicit subsidies to children through childcare (most Western European countries, the United States, and Canada). Despite the prevalence of these polices, the evidence of their impact on fertility (reviewed in Section 2) is inconclusive.

Fertility rates in Israel (2.84 children per woman) are high relative to those in the United States (2.07) and Europe (significantly below 2 for most countries). Nonetheless, Israel has since 1959 maintained a generous system of child subsidies, referred to as "child allowances," paid monthly to eligible families with children. The total amounts paid as child allowances comprised 1.5% of Israel's GDP in 2000.

The period we study (1999-2005) is of interest for two reasons. First, whereas child allowance benefits had been trending up over time prior to 2003, there was in 2003 a large, unanticipated reduction (discussed in detail in Section 3.2) in the generosity of the child allowance. Second, although there is substantial variation in the level of child allowance during the period we study, there were no changes in eligibility. This situation creates an ideal setting for examining the impact of the child allowance on fertility.

We merge several nonpublic data sets that Israel's CBS maintains, with certain restricted access allowed for research work done in the CBS's central office. We create in this way a unique and comprehensive individual-level panel data set that includes the fertility history of all married women with two or more children between 1999 and 2005. In

addition to fertility histories, our data set contains detailed individual controls including education, religion, immigrant status, and income for both the woman and her husband. Because our panel data set enables us to control for a rich set of individual characteristics and to examine a sequence of comparable changes in financial incentives, it has significant advantages over the data used in prior empirical work on the subject (reviewed in Section 2).

We use two approaches to identify the effect of the child allowance on fertility. First, we use variation across each of the six years in child allowance, controlling for the number of previous children, along with income, education, religion, immigrant status, and a time trend. This approach the between-year variation in the level of child allowance for a given number of children. We find that the mean level of monthly child allowance for an incremental child (363 NIS, about $83[1]) leads to a 0.8 percent increase in the probability of an incremental pregnancy, or a 7.8 percent increase in fertility compared to the baseline probability of pregnancy. The effect is robust to controlling for time dummies and religion-specific time trends.

We find significant effects within each religious group (secular Jewish, religious Jewish, ultra-Orthodox Jewish, Arab Muslim, Arab Christian, and Druze and other), with the largest effect among the ultra-Orthodox and Arab Muslims. This is notable because of religious injunctions against birth control and family planning among the ultra-Orthodox. We find that the effect is largest in the lower two quartiles of the income distribution, and that it is relatively small in the top income quartile.

Our second approach is to use the 2003 change in child allowance, which was the largest and most unexpected change in child allowance in this period. Based on our

[1] During the period of our study, the average exchange rate of NIS to US dollars was 4.4.

findings of a small effect in the top income quartile and a large effect in the bottom quartile, we use these as our comparison and treatment groups in a diffs-in-diffs specification. For a range of time windows, we find that the 2003 reduction in child allowance had a large, negative, and significant effect on fertility.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of the literature. Section 3 describes our data set and the child allowance program in Israel. Section 4 discusses our identification strategy and specifications. Section 5 presents our results, and Section 6 concludes.

2. Literature Review

The seminal theoretical reference on fertility as an economic decision is Becker (1960). This canonical model has been extended in various directions by, for example, introducing family transfers (Cigno (1986)) and social dynamics (Manski and Mayshar (2003)). Some researchers, however, continue to believe that financial incentives – at least incentives with the magnitude of those in fact used by governments – do not have a meaningful effect on fertility decisions which are instead shaped by social, religious, and cultural factors (Gauthier (1996)). Thus, it is important empirically to test whether and to what extent fertility responds to financial incentives. Researchers seeking to address this question have used both cross-country data sets and individual data within a single country.

Cross-Country Studies: Birth rates are now below or close to the replacement level in many developed countries, and some countries have adopted policies that subsidize fertility directly, seeking to reverse some of the demographic trends toward lower birth rates. Demeny (1986) reviews the mixed evidence on pro-fertility policies in France,

Romania, Germany, and Hungary. Gauthier and Hatzius (1997) provide cross-country evidence from 22 OECD countries; they find a small but significant effect of direct cash benefits, but an insignificant effect of maternity benefits in their analysis.

Studies Using Individual Data: A number of recent studies use individual data and exogenous variation in policy variables to investigate the impact of financial incentives on fertility. Milligan (2005) examines the impact of a child subsidy introduced in the province of Quebec in Canada in the mid-1990s. He uses a differences-in-differences strategy comparing Quebec and other provinces, and finds a significant effect of the policy in the expected direction. Laroque and Salanié (2005) use cross-sectional French data and variation in the French tax code, concluding that tax incentives have an effect on fertility decisions in France.[2]

Although the United States does not offer direct child subsidies, it provides subsidies for childcare. Several studies examine the effect on fertility created by the tax code, social security, and other childcare benefits in the United States. Whittington (1992) examines the effect of tax incentives and finds a positive effect. Blau and Robbins (1989) find that a greater availability of childcare encourages fertility. Several papers exploit changes in the Aid to Families with Dependent Children program and recent welfare reforms to study potential effects on fertility (see Acs [1996] Fairlee and London [1997], Rosenzweig [1999], Joyce, Kaestner, and Korenman [2002], and Kearny [2002]). Overall, this literature finds no, or modest, effects.[3]

[2] In addition, Schellekens (2006) examines data from the period 1983-1995 in Israel and seeks to estimate the effect of the child allowance on the hazard rate of childbirth. The length of the period examined makes it difficult for this study to disentangle the effect of child allowances from that of long-run fertility trends.

[3] In addition to single-country studies that use individual data, there are some studies that discuss the potential effects of child subsidies on the basis of aggregate data. One noteworthy study is

Our Contribution: Our data set enables us to carry out an analysis that has a number of advantages over previous work. First, Laroque and Salanié (2005) argue that existing studies are unable to control with sufficient detail for individual characteristics and family structure. Our access to a range of comprehensive, nonpublic CBS data sets allows us to address this issue. We are able to control for a rich set of individual and household covariates, as well as to study how the responsiveness of fertility to financial incentives varies across religious, income, and immigrant-status groups.

Second, our panel data set covering a six-year period enables us to examine multiple changes in allowance levels in both directions. This variation improves our ability to identify the effect of child allowances on fertility.

Third, the unanticipated and large 2003 reduction in allowance level, and the nature of our data set, provide us with a good setting for difference-in-difference examination. Because we are able to observe the exact date of birth, and thus the likelihood of incremental pregnancies just before and just after the reform, we can focus on a relatively short time period, which mitigates the problem of long-run fertility trends that could be confounded with the effects of the child allowance reform.

3. The Data and Institutional Background

3.1 The Data

We use nonpublic individual-level data sets that Israel's CBS maintains and to which the CBS allows restricted access in its central office. Our extract from the data contains

---

Manski and Mayshar (2003), which discusses why fertility rates in Israel could decline in the overall population while at the same time increase in the ultra-Orthodox Jewish population.

information on all women in Israel who were married, under 45, and had at least 2 children during the period 1999-2005.[4] We restrict the sample in this way because there was little variation during our period in the child allowance for first- and second-born children (see Table 3) and most third and higher-parity births are to married women. The data follow each woman from the time she satisfied the conditions for inclusion in the data until 2005 or until the woman turned 45 (if earlier).

We merged a number of data sets, each separately maintained by the CBS, to create a comprehensive data set that includes fertility history, education, religious affiliation, ethnicity, and income (a detailed list of variables is presented in Appendix A). Below we describe briefly the process we follow.

Fertility History and Basic Demographic Characteristics: From the Population Register's data set maintained by the CBS, we obtain information on the following: the woman's date of birth, country of origin and year of immigration for individuals not born in Israel, the country of origin and year of immigration for parents of Israel-born women, the number of children and their birth dates, a locality identifier, and information about the husband – date of birth, country of origin and year of immigration for men not born in Israel, and the country of origin and year of immigration for parents of Israel-born men.

Education: We compile data on education of mothers and husbands from various data sets maintained by the CBS. From the administrative records of Israel's higher-education institutions, we obtain information on the mother's and husband's most recent academic degrees and the institutions from which they obtained their degrees. For those missing in the higher education records, we gather the information on education from the

[4] Current results are based on a 40 percent random sample. Results based on the full population will be available in 2008.

school registry record (created when parents register their children in public schools and public kindergartens). In Israel, virtually all primary schools and pre-school kindergartens are supported with public funds. Thus, information on parents' school years was obtained for parents who had children already enrolled in primary school or public kindergartens and did not fail to record information regarding their years of schooling. For new immigrants who do not have information regarding education in one of the above sources, we obtain data on years of schooling from the immigration registry (data they are required to provide when immigrating to Israel). Because of difficulties comparing years of education among immigrants from different countries and those educated in Israel, and in order to make the data on higher education degrees and years of schooling from the school/kindergarten registration process comparable, we code the mother's and husband's education as a categorical variable ranging from 1 to 4 (for primary school, high school graduate, college, and post-graduate education).

Religion: We infer the degree of religiosity for the Jewish population by using information on the kind of kindergarten and school that their children attend. Since in Israel the state maintains for each sector its own primary and secondary education systems, the choice of school identifies the parents' ethnic group (Arab or Jewish) and degree of religiosity for the Jewish population (secular, religious, ultra-Orthodox). Each public kindergarten and school is coded as being secular, state-religious, ultra-Orthodox, or Arab-education (where the first three concern the Jewish population).

Income: Finally, income data was obtained from the matched employer-employee database, based on income tax files, that is maintained by the CBS. For both the mother and the husband, we have the following information: employment status (self-employed or

wage earners), the number of jobs held, the number of months worked, gross income, industry of employment, income tax, mandatory health insurance contributions, and social security contributions. We use these data to create socio-economic controls.

3.2 Institutional Background: The Child Allowance System in Israel

The child allowance is one of Israel's most important welfare expenditures. In 2004, 947,000 families received child allowances, paid to support approximately 2.2 million children. The child allowances payment in 2004 totaled 4.6 billion NIS, which accounted for 0.9 percent of GDP. Child allowances amount to 1.5 percent of GDP in 2000, but this fraction was substantially reduced in the 2003 reforms we describe below.[5]

The child allowance was first introduced in Israel in 1959, and since then has undergone many changes in coverage (age, family size, veteran status) and levels. The program began with coverage for children below age 14, which was extended to age 18 in 1965. Coverage was initially limited to families with four or more children, but it was extended in 1972 to families with three or more children and in 1975 (the so-called Ben-Shahar Reform) to all children under age 18. In the 1990s, child allowances for the first (and eventually second) child of families with three or fewer children were repealed, but eventually reinstated. Another feature of the program that has varied is eligibility based on military veteran status, which was required until 1994-1996 but not afterwards.

The period we study (1999-2005) has many changes in the level of child allowances (see Table 3) but not in eligibility and coverage. In addition to incremental increases in the child allowance (mostly linked to inflation adjustment), there were two significant policy

[5] For a review of the child allowance system and a wealth of descriptive statistics about it, see Frish (2004).

reforms that took place. First, the Halpert Law, implemented in November 2000, increased the benefit for fifth and higher-parity births by 33 to 47 percent.

The second, largest and most unanticipated change in child allowance levels came in June 2003, following the unexpected appointment of Benjamin Netanyahu to the post of finance minister in the new government headed by Ariel Sharon. With Israel facing a difficult fiscal situation, which was brought about in part by the second Intifada in the West Bank and Gaza Strip, Netanyahu succeeded in passing a sweeping package of economic reforms including a substantial overhaul of the child allowance system. The passage of the reform bill, which was by no means guaranteed, produced a large, plausibly unanticipated shock to the child allowance system.

Under the 2003 reform bill, mothers of children born after June 2003 receive an allowance equivalent to that of the first two children in the family regardless of their birth parity. The bill established a transition for children born prior to the reform bill: It gradually decreased child allowances over the subsequent seven years (i.e., from 2003 to 2009) so that by 2009 every child will receive a uniform allowance irrespective of his or her birth parity. Although child allowances were reduced across the board, given the pre-2003 non-linearity in the allowance, the biggest reduction in benefits post-2003 was for large families.

For example, a family with seven children received approximately 2500 NIS following the 2003 reform, compared to 3600 NIS in 2002. Furthermore, children born after 2003 all received 144 NIS regardless of the birth parity, whereas prior to 2003, all newborns to families with more than four children received 782 NIS. These are meaningful

changes for many of the affected families, especially bearing in mind that the highest fertility groups (the ultra-Orthodox and Arab Muslims) are also the poorest.

4. Theoretical and Empirical Framework

4.1 Theoretical Framework

We view the fertility decision within the Becker (1960) framework. There is a demand for children along with other commodities. In this context, variation in the child allowance will have two effects. First, decreases in the child allowance increase the price of the marginal child and are expected to reduce fertility. Second, reductions in the child allowance decrease payments received for intra-marginal children, leading to a reduction in income. For example: a family that had 6 children in 2002 received an allowance of 3078 NIS, whereas such a family received 1556 NIS in 2005 and will receive only 862 NIS in 2009. Thus, reductions in the child allowance also have an income effect which, assuming that children are normal goods, can also be expected to reduce the demand for children.

Much attention has been devoted to the quantity-quality tradeoff in fertility (see Angrist, Lavy, and Schlosser (2006) and Black, Devereux and Salvanes (2007)). In this regard, an important feature of our strategy is that benefits, and our estimate of their impact on fertility, are conditional on the number of children. This means that parents cannot use incremental child allowance income to reduce fertility and increase the quality of their children. Of course, it does not rule out the opposite possibility, namely that families can choose to increase the quantity of children at the expense of child quality.

There is also scope, potentially, for dynamic fertility effects and for effects on completed family size. Given the largely unanticipated nature of changes in the child

allowance during the period we study, we believe that anticipation effects will be limited. The short time window of six years makes it difficult to study delayed fertility and completed family size.

4.2. Empirical Strategy

Our empirical strategy is based on examining the relationship between the fertility decision and child allowance. Thus, we time births to the month of conception and use an indicator for having become pregnant in that year as the outcome.

Our key right-hand-side variable is the child allowance for the incremental child, i.e., the child allowance a woman would expect to receive for her next child given her fertility up to that point. Thus, the incremental child allowance varies by number of prior children and year. As discussed above, there is a substantial variation in the child allowance in this period. There are several reasons why we believe it is reasonable to think of the incremental child allowance as being exogenous with respect to fertility choices.

First, incremental child allowance is not directly tied to the work and income decisions of the household, and thus is independent of labor decisions. Second, we address the concern that, since households choose their level of fertility and that prior to 2003 there were much higher child allowances for high-parity births, households are implicitly choosing their level of child allowance. We address this concern by including a full set of dummies for the number of previous children. This implies that the remaining variation is between years and not between high and lower fertility individuals. Third, we examine a period in which there were a number of unanticipated changes in the child allowance.

We also include a broad set of household controls: education (from the school registry), income quartile and work status (from social security data), and detailed controls for religion (as described above: secular Jewish, religious Jewish, ultra-Orthodox Jewish, Arab Muslim, Arab Christian, and Druze and others). As mentioned above, we also include a full set of dummies for the number of previous children. This is important for deal with not only selection effects mentioned above but also omitted variable bias with respect to fertility.

With respect to the issue of confounding time effects in the data, it is worth noting that there are no strong time trends in fertility apparent in this time period (see Figure 1). It is also worth noting that child allowance both increased and decreased in this period, which helps to identify its effect as distinct from a time trend. Furthermore, in our main specification, we include both a time trend and time-varying macro controls:

$$Pregnancy_{it} = \alpha + Child\ allowance_{it}\delta + X_{it}\beta + Time\ Trend\,\tau + \varepsilon_{it},$$

where we use a probit specification. Time-varying factors that could affect fertility and that we control for include the unemployment rate and GDP growth. As a robustness check to our main specification, we also present results using time fixed effects:

$$Pregnancy_{it} = \alpha + Child\ allowance_{it}\delta + X_{it}\beta + \tau_t + \varepsilon_{it}.$$

When time fixed effects are included, our identification is based on the differential variation between years in the child allowance at different numbers of children. In particular, this exploits the fact that the child allowance declined much more dramatically for households with a large number of children.

We also consider a differences-in-differences specification that uses only variation around the policy change in 2003, which was the largest and most unanticipated change in

child allowance during the period we examine. In particular, we compare the fertility of low-income women in a three- or four-month window before and after the policy change (pre- and post-May 2003), using top income quartile women as a comparison group:

$$Pregnancy_{i,t} = \alpha + Low\ Income_{it}\beta + After_{it}\tau + Low\ Income_{it} \times After_{it}\delta + \varepsilon_{it}.$$

Our findings using our first approach indicate that the high-income quartile of women is least affected by the change in child allowance (which is plausible given the magnitudes). Accordingly, we view the top income quartile as a plausible comparison group for the women most likely to be affected by the policy change, namely the lowest-income quartile.

5. Results

5.1 Summary Statistics

Table 1 presents summary statistics for our sample. The main sample consists of approximately 1.5 million person-year observations, of which half are secular Jewish, 10 percent each are religious and ultra-Orthodox, 20 percent are Arab Muslim, and a small fraction are Arab Christian and Druze and other. The average age of the sample is 35. Household income is approximately 100,000 NIS. It is notable that household income is 30 percent higher for the secular Jewish population and much lower for both the ultra-Orthodox Jewish and Arab Muslims. This is partly due to very low participation rates of ultra-Orthodox men and Arab women (51 percent and 22 percent respectively).

Table 1 indicates that the average number of children per woman is 3.28, and Table 2 indicates that this variable greatly varies by religious group. Whereas the probability of pregnancy in a given year is 5 percent in the secular Jewish population, it is 18 and 26 percent respectively among Arab Muslims and the ultra-Orthodox. Not surprisingly, the

table shows that the probability of high-order births is much greater among the ultra-Orthodox and Arab Muslims than among other groups. For example, the probability of observing a third pregnancy conditional on having already two children is 6 percent in the secular Jewish population, 16 percent in the religious Jewish population, 28 percent among Arab Muslims, and 30 percent among the ultra-Orthodox. It is notable that the probability of an incremental child remains high among the ultra-Orthodox even after high parity births.

5.2 Baseline Specification

In Table 4, column (1), we present our baseline specification. Because we are interested in the effect of child allowance on fertility, we time births by the date (year) of conception. The dependent variable is an indicator for conceiving in a given year.

Demographic controls include the mother's age and education and the father's age and education. Income and work controls include a dummy for whether the mother and father were working in the previous year and income quartile dummies. Since the unit of observation is a person-year and is timed by conception, it is unlikely that the mother's work is simultaneously determined with fertility. We include a full set of dummies for the number of previous children and for religious and ethnic group. We also include as a control the difference between the number of children a woman has and the average number of children in her area. Finally, we include a year trend.

We see that there is a positive and significant effect of the incremental child allowance on the probability of pregnancy. The size of the coefficient implies that the mean level of child allowance (363 NIS) leads to a 0.8 percent increase in the probability of

pregnancy. Compared to the overall probability of pregnancy in the population (10.1 percent), this corresponds to a 7.8 percent increase in fertility for a typical woman. Table 4 and subsequent tables summarize the magnitude of the child allowance effect using a similar calculation.

It is also instructive to scale the effect by changes in the level of child allowance experienced by mothers due to the 2003 reform. For example, from Table 3, we can see that the child allowance for the fourth child paid to a woman with three children went down by 489 NIS between 2002 and 2003. This leads to a 1.4 percent reduction in the probability of pregnancy. (We split the sample, and obtain specific estimates for each religious group, in Section 5.2.) We can compare this in Table 2 to the baseline probability of having a fourth child conditional on already having three children, which in 2002 is 3 percent in the secular Jewish population, 11 percent in the religious Jewish population, 28 percent in the ultra-Orthodox Jewish population, and 20 percent among Arab Muslims.

In thinking about the magnitude of the effect of the child allowance on fertility, it might also be useful to scale our results into income elasticity. For our baseline specification, a 3 percent decrease in average household income leads to an eight percent decrease in fertility, which seems large at first glance. However, if we scale our results by below-median family income the elasticities appear plausible: Child allowance can account for 20 or 30 percent of income in poor households. Furthermore, our results are for marginal income and an incremental child. If childcare technology consists of high fixed costs (e.g., the time spent supervising one child could just as easily be spent supervising ten) and low marginal costs (e.g., food), then a small absolute reduction in childcare incentives could plausibly have a significant impact on fertility for an incremental child.

The sign of other coefficients in the specification is largely in the direction we would expect. We find that both the mother's and the husband's age are negatively associated with pregnancy. The probability of pregnancy is 6.8 percent lower if the woman was pregnant in the previous year. The indicators for the number of previous children show an interesting pattern. Low-parity births (3 to 5 children) are associated with a reduction in the probability of pregnancy, but higher-party births are associated with an increased probability of pregnancy. This reflects the fact that in the secular Jewish population typical family size is 3 or 4, and that the sample of women who have 6 or more children is highly selected, with overrepresentation of the ultra-Orthodox and Arab Muslims.

The coefficients on the income quartile dummies indicate that the probability of pregnancy increases with household income. This is consistent with children being a normal good, although of course needs to be interpreted with caution since income and fertility are potentially jointly determined. To the extent that fertility reduces income, as women stay out of the labor force or reduce work in anticipation of pregnancy, we would expect a downward bias in the coefficient. One of the reasons we use income-quartile dummies rather than actual income as a control is that a household is less likely to shift income quartiles in anticipation of pregnancy than to experience some reduction in income.

Column (1) also shows the anticipated pattern of fertility by religion: Relative to the default category of the secular Jewish population, the probability of pregnancy is 6 percent higher in the religious Jewish population and 15 percent higher for the ultra-Orthodox. Another variable that captures social norms with respect to fertility is the "child gap" – the gap between the woman's number of children and the average number of children in her

locality; although this variable is not significant in the base specification, we will see that it is significant when the sample is split by religious groups.

Column (2) includes a control for the highest level of education in the household, i.e., the maximum of the woman's education and her husband's education; we use this formulation because it allows us to deal with some observations in which one of the education variables is missing and since the two are positively correlated when both are observed. The coefficient on this variable is positive and significant.

In columns (3) and (4), we repeat the specifications of columns (1) and (2) using time dummies rather than a time trend. Our results are very similar in sign, significance, and magnitude. Given the similarity of the two sets of results, we use a time trend in subsequent specifications since this allows us to exploit more of the variation in child allowance.

5.2 The Effect by Religious Group, Income Quartile, and Immigrant Status

In this section, we consider the effect of child allowance in subgroups defined by religion, income, and immigrant status.

There are several motivations for this. First, it is widely recognized in Israel that fertility patterns vary widely by religion, and it is important to ascertain whether our results are driven by any one particular group. Second, splitting the sample by income quartile provides an important plausibility check of our results. With the child allowance accounting for at most 3 percent of household income in the top income quartile, as opposed to 10 to 20 percent in the bottom two quartiles, it would be surprising if its impact on fertility was as large for the relatively rich as for the relatively poor. Third, to the extent

that there is a differential effect of child allowance on immigrants, this will shed light on the process of fertility transition among immigrants.

The results of splitting the sample by population groups are presented in Tables 5-8. In Table 5, looking at the dummies for the previous number of children, it is notable that except at very high birth parities (9 or higher) the ultra-Orthodox have a significantly higher probability of pregnancy: The probability of a pregnancy given that there are 3 children is 1.7 percentage points lower in the secular Jewish population and 2.6 percentage points higher among the ultra-Orthodox. This reflects the fact that there is a large subset of high fertility ultra-Orthodox, i.e., conditional on having 8 children, it is quite likely that the woman is part of the high fertility subset and hence there is a relatively high probability that there will be a 9^{th} child.

Table 5 shows that the child allowance has a positive and significant effect within each of the six religious groups, with magnitudes ranging from 6.8 percent to 15.6 percent. The absolute effect is largest for the ultra-Orthodox and Arab Muslims, almost four times as large as the effect for the secular Jewish population. Ultra-Orthodox and Arab Muslim mothers also typically experienced much greater reductions in child allowance in 2003, since the reform most drastically cut the benefits for newborns relative to fourth and higher parity births. For example, a woman with four children would have received an additional 782 NIS for a fifth child in 2002 but only 144 NIS in 2003. This change brought about a 2.6 percent reduction in the probability of pregnancy among the ultra-Orthodox population and a 2.2 percent reduction in the probability of pregnancy among Arab Muslims. These reductions should be compared to the baseline probability of having a fifth child conditional on four, which is 24 percent and 13 percent for the ultra-Orthodox and Arab

Muslims respectively (see Table 2). Given the religious discouragement of birth control and family planning and encouragement of large families among the ultra-Orthodox, the large and significant effect we find for this group is noteworthy.

Another feature of Table 5 is that the child gap shows up as positive and statistically significant in the secular, religious, and ultra-Orthodox Jewish population as well as for Arab Christians. For example, a secular Jewish woman who has two children in a neighborhood where the norm is three children is 0.6 percent points more likely to become pregnant (relative to a baseline probability of 4 to 5 percent). This finding is consistent with social norms playing a significant role in explaining patterns of fertility.

Table 6 examines the child allowance effect when the sample is split by income groups. We find that the effect is positive and significant for each quartile, but the magnitude of the effect is much smaller for the top two income quartiles (5 to 6 percent) than for the bottom two quartiles (8 to 10 percent).

In Table 7, we provide the breakdown by income quartile within religious groups. We find a similar pattern: a significant effect for the bottom two quartiles, and either a small or an insignificant effect for the top two quartiles. Indeed, the breakdown by religious group reveals that the effect in the top quartile is driven mostly by the ultra-Orthodox and Arab Muslims. However, since income quartiles are defined within religious groups in Table 7, it is worth noting that the top income quartile among the ultra-Orthodox and Arab Muslims corresponds to a relatively low income level in the overall population.

The child gap variable is positive and significant for the first three income quartiles, but is insignificant for the top quartile. This suggests that women in the top income quartile are less susceptible to both financial and social pressures in making their fertility decisions.

Finally, in Table 8 we examine the differential impact of child allowance among new immigrants. From the first row, we see that new immigrants have much lower fertility rates than residents who are not new immigrants. This is consistent with the fact that in the 1990s the main source of new immigrants was Russia and the former Soviet Union, countries that have had low fertility rates for several decades. The main effect of child allowance (among non-new immigrants) is 0.000011, which is comparable to the effect of child allowance in the secular Jewish population in Table 5. The interaction term is positive and significant at the 1 percent level: New immigrants are more responsive to changes in the child allowance than non-immigrants. Furthermore, the magnitude is large (0.000075); for example, new immigrants are more responsive to changes in the child allowance than any of the religion or income groups examined in Tables 5 to 7.

These results are interesting for two reasons. First, to the extent that new immigrants have a below-median income or have less wealth and family resources to draw on, Table 8 amplifies our conclusion from Tables 6 and 7 that child allowances have a greater effect on the fertility of population groups for which they are more economically meaningful. Second, the results indicate that the child allowance is one mechanism that leads the fertility of new immigrants to move toward the fertility of non-immigrants.

5.3 Differences-in-Differences Estimation

In this section, we present results for a difference-in-differences specification that uses just variation around the 2003 change in child allowance. As is evident from Table 2, there were many changes in the level of the child allowance during the period we examine but the change brought about by the 2003 reform was the most dramatic. Furthermore, as

discussed in Section 3.2, the 2003 reform was also the most unanticipated of the policy changes during the period we study. Thus, the 2003 reform provides an ideal window for examining the effect of the child allowance.

We adopt a differences-in-differences approach building on our results from Tables 6 and 7. The results in these tables suggest that the effect of child allowance is much smaller for the top income quartile than for the bottom quartile. Indeed, when we split by religious group and income, the bottom-quartile effect is between 1.5 and 7 times larger than the top-quartile effect. This suggests a strategy of using women in the top income quartile as a comparison group for the treatment group of women in the lowest income quartile. To the extent that top income quartile women do respond somewhat to changes in the child allowance, our differences-in-differences estimator will subtract out both the time effect and some reduction in fertility due to the reduction in child allowance in 2003 and thus will tend to underestimate the true effect of the 2003 policy change.

We consider the proportion of women who became pregnant among those women who could have become pregnant (i.e., who were not currently pregnant or had not just given birth) over three-month and fourth-month windows prior to and following the reform. We choose these windows because the decision to avoid pregnancy can be timed more precisely than the decision to become pregnant; the former could be instantaneously implemented whereas the latter can take significant time. The pre-reform period we use begins in January 2003, and we consider two post-periods – the first starting in June (immediately after the policy change), and the second starting in December (allowing enough time to elapse for the policy change to become credible).

The results are presented in Table 9. The fertility of treatment group declines significantly relative to the control group. The magnitude of the effect is large, ranging from -0.78 percent to -1.45 percent depending on the specification used. Thus, our differences-in-differences results confirm the findings of our analysis of the full set of changes in child allowance from 1999 to 2005.

6. Conclusion

This paper has examined the effect of changes in child allowance levels on fertility using a panel data set from Israel. By merging several comprehensive individual-level data sets maintained by Israel's CBS for restricted use, we are able to match fertility histories with a rich set of individual and household controls.

We find a positive and statistically significant effect of the child allowance on fertility. The effect is concentrated among women with below median income and is stronger among new immigrants. There is a significant effect for women in each of the six religious types we observe, including in religious groups whose principles forbid family planning. Using a differences-in-differences specification to analyze the effect of the 2003 reform, we find a significant reduction in fertility associated with the reduction in child allowance.

Our results are important for several reasons. First, within the context of Israel our results show that the child allowance has provided an incentive for increased fertility. Second, in the broader context of fertility programs – for countries trying to achieve higher birth rates – our results indicate that such programs can significantly contribute to

increasing birth rates. Finally, our results confirm one of the key predictions of the Becker model of fertility.

Appendix A: Description of Variables

Variable	Description
Pregnant	Equal to 1 if the woman was pregnant in the calendar year and 0 otherwise. It is calculated by timing 39 weeks back from the child's birth date.
Number of children	The number of children the women had at the beginning of the calendar year.
Mother age	The age of the mother in years.
Father age	The age of the father in years.
Religion	Equal to 1 for secular Jewish, 2 for religious Jewish, 3 for ultra-Orthodox Jewish, 4 for Arab Muslim, 5 for Arab Christian, and 6 for Druze and other
Mother immigrant	Equal to 1 if the mother is Jewish born in one of the following places: Middle East, Asia, North Africa, Morocco, Ethiopia, or Africa. If the mother is Israeli native then we look at her father's place of birth. Defined only for the Jewish population.
Father immigrant	Equal to 1 if the father is Jewish and born in one of the following places: Middle East, Asia, North Africa, Morocco, Ethiopia, or Africa. If the father was born in Israel we look at his father's place of birth. Defined only for the Jewish population.
New immigrant	Equal to 1 if either the mother or the father is Jewish and immigrated to Israel after 1990.
Max household education	Maximum of father's and mother's years of education. Equal to 1 for primary school, 2 for high school graduate, 3 for college, and 4 for post-graduate education.
Mother working	Equal to 1 if the mother had a positive annual salary and 0 otherwise.
Father working	Equal to 1 if the father had a positive annual salary and 0 otherwise
Pregnant previous year	Mother was pregnant in the previous year.
Child allowance	The value of child allowance that will be given to the next child if born.
Net income	Parents' total income minus tax, plus annual child allowance for existing children
Income quartiles	Are computed separately in each year, and are computed by religious group when the specification is split by religion.
Gap with average kids in locality	The gap between the number of children in the family and the average number of children women belonging to the same religious group, same income quartile, and living in the same locality.
Year	Calendar year time trend.
Unemployment rate	Unemployment rate by year.
GDP change	GDP growth by year.

References

Acs, Gregory (1996) "The impact of welfare on young mothers' subsequent childbearing decisions," *Journal of Human Resources*, Vol. 31,pp. 898–915.

Angrist, Josha, Victor Lavy, and Analia Schlosser (2006), "Multiple Experiments for the Causal Link Between the Quantity and Quality of Children," Massachusetts Institute of Technology, manuscript.

Becker, Gary S. (1960), "An Economic Analysis of Fertility," *in Demographic and Economic Change in Developed Countries*, National Bureau of Economic Research Series, Number 11, Princeton, NJ: Princeton University Press, pp. 209 –231.

Black, Sandra, Paul Devereux, and Kjell Salvanes (2007), "Small Family, Smart Family? Family Size and the IQ Scores of Young Men," National Bureau of Economic Research, Working Paper No. 13336.

Blau, F.D. (1992), "The Fertility of Immigrant Women: Evidence from High Fertility Source Countries," in George Borjas and Richard Freeman (eds.), *Immigration and the Workforce: Economic Consequences for the United States and Source Areas*, Chicago: University of Chicago Press.

Cigno, A. (1986), "Fertility and the Tax-Benefit System: A Reconsideration of the Theory of Family Taxation," *Economic Journal*, 96, 1035-1051.

Demeny, Paul (1986), "Pronatalist Policies in Low-Fertility Countries: Patterns, Performance, and Prospects," *Population and Development Review*, Vol. 12, Supplement, pp. 225-358.

Fairlie, Robert W., and Rebecca A. London (1997), "The effect of incremental benefit levels on births to AFDC recipients., *Journal of Human Resources*, Vol.16, No. 4, pp. 575–597.

Frish, Roni (2004), "Child Allowance and its affect on Fertility Rate in Israel," Research Department, Bank of Israel. (in Hebrew)

Gauthier, A. (1996), *The State and the Family*. Oxford University Press.

Gautheir, Anne Helene, and Jan Hatzius (1997), "Family Benefits and Fertility: An Econometric Analysis," *Population Studies*, Volume 51, Number 3, pp. 295-306.

Joyce, Theodore, Robert Kaestner, and Sanders Korenman (2002), "Welfare Reform and Non-Marital Fertility in the 1990s: Evidence from Birth Records," National Bureau of Economic Research, Working Paper No. 9406.

Kearny, Melissa (2002), "Is There an Effect of Incremental Welfare Benefits on Fertility Behavior? A Look at the Family Cap," National Bureau of Economic Research, Working Paper No. 9093.

Laroque, Guy, and Bernard Salanié (2005), "Does Fertility Respond to Financial Incentives?," mimeo.

Mayshar, Joram and Charles F. Manski (2003), "Private Incentives and Social Interactions: Fertility Puzzles in Israel," Journal of the European Economic Association Vol. 1, No. 1, pp: 181-211.

Mayshar, Joram and Charles F. Manski (2000), "Child Allowances and Fertilities in Israel: Preliminary Findings," The Economic Quarterly, Vol. 47, pp: 535-565 (in Hebrew).

Milligan, Kevin (2005), "Subsidizing the Stork: New Evidence on Tax Incentives and Fertility," *Review of Economics and Statistics*, Vol. 87, No. 3, pp: 539-555

Population Division of the Department of Economic and Social Affairs of the United Nation Secretariat (2005). World Population Prospect: The 2004 Revision. Highlights. New-York: United Nation. http://www.un.org/esa/population/publications/WPP2004/ 2004Highlights_finalrevised.pdf

Rosenzweig, Mark R. (1999), "Welfare, marital prospects, and nonmarital childbearing," *Journal of Political Economy*, Volume 107, Number 6, pp. S3–S32.

Schellekens, Jona (2006), "Family Allowances and Fertility: Socio-Economic and Religious Differentials," Hebrew University of Jerusalem, manuscript.

Whittington, L.A. (1992), "Taxes and the Family: The Impact of the Tax Exemption for Dependents on Marital Fertility," *Demography*, Volume 29, Number 2, pp. 215-226.

Table 1: Descriptive Statistics

	Full sample	Secular Jews	Religious Jews	Orthodox Jews	Arabs Muslim	Arab Christians	Druze and others
Number of children	3.28	2.63	3.41	4.61	4.14	3.02	3.63
	(1.44)	(0.82)	(1.38)	(2.44)	(1.91)	(1.07)	(1.58)
Age	35.27	36.77	35.19	32.95	32.84	35.19	33.79
	(5.74)	(4.95)	(5.58)	(6.16)	(6.22)	(5.58)	(5.82)
Husband's age	38.98	40.16	39.07	35.84	37.30	40.47	38.44
	(6.56)	(5.88)	(6.58)	(6.99)	(7.06)	(6.39)	(6.58)
Education	2.39	2.71	2.57	2.05	1.67	2.32	1.94
	(1.02)	(1.07)	(1.12)	(0.33)	(1.08)	(1.16)	(0.95)
Household income	104021	136679	113400	56924	44445	80754	67654
	(264,625)	(341,147)	(215,263)	(96,900)	(50,569)	(87,386)	(60,831)
Mother Working	0.61	0.76	0.73	0.55	0.22	0.49	0.33
	(0.46)	(0.43)	(0.44)	(0.5)	(0.41)	(0.50)	(0.47)
Husband working	0.743	0.80	0.80	0.51	0.69	0.76	0.78
	(0.43)	(0.4)	(0.4)	(0.5)	(0.46)	(0.43)	(0.41)
Sample size	1,575,117	824,842	193,080	183,748	302,693	39,100	31,654

Table 2: Probabiity of Pregnancy by Year and Religious Group

	All mothers with 2 or more children						
	1999	2000	2001	2002	2003	2004	2005
Secular Jews, n=	120,986	120,477	118,435	117,490	116,431	115,658	115,365
Probabiity of pregnancy	0.05	0.04	0.04	0.05	0.05	0.05	0.05
Pr(3rd child | 2nd child)	0.06	0.06	0.06	0.07	0.06	0.07	0.07
Pr(4th child | 3rd child)	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Pr(5th child | 4th child)	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Pr(6th child | 5th child)	0.03	0.02	0.04	0.03	0.03	0.03	0.03
Pr(7th child | 6th child)	0.04	0.04	0.05	0.05	0.06	0.05	0.06
Religious Jews, n=	26,632	26,899	26,935	27,340	27,776	28,484	29,014
Probabiity of pregnancy	0.11	0.10	0.11	0.11	0.11	0.11	0.11
Pr(3rd child | 2nd child)	0.16	0.15	0.16	0.17	0.16	0.16	0.16
Pr(4th child | 3rd child)	0.11	0.10	0.11	0.11	0.10	0.10	0.11
Pr(5th child | 4th child)	0.07	0.07	0.07	0.08	0.07	0.08	0.07
Pr(6th child | 5th child)	0.08	0.07	0.07	0.07	0.07	0.08	0.08
Pr(7th child | 6th child)	0.10	0.09	0.09	0.09	0.09	0.09	0.08
Ultra-Orthodox Jews, n=	22,647	23,842	24,826	26,237	27,548	28,822	29,826
Probabiity of pregnancy	0.26	0.26	0.26	0.26	0.25	0.25	0.24
Pr(3rd child | 2nd child)	0.30	0.31	0.29	0.30	0.30	0.29	0.28
Pr(4th child | 3rd child)	0.28	0.28	0.28	0.28	0.28	0.27	0.27
Pr(5th child | 4th child)	0.24	0.24	0.25	0.25	0.24	0.24	0.24
Pr(6th child | 5th child)	0.25	0.23	0.24	0.22	0.23	0.23	0.22
Pr(7th child | 6th child)	0.24	0.24	0.23	0.24	0.23	0.23	0.22
Arab Muslims, n=	38,965	40,609	41,950	43,357	44,654	46,029	47,129
Probabiity of pregnancy	0.18	0.18	0.17	0.16	0.15	0.14	0.13
Pr(3rd child | 2nd child)	0.28	0.27	0.26	0.26	0.24	0.23	0.22
Pr(4th child | 3rd child)	0.03	0.21	0.21	0.20	0.19	0.17	0.16
Pr(5th child | 4th child)	0.15	0.14	0.15	0.13	0.12	0.10	0.11
Pr(6th child | 5th child)	0.12	0.12	0.12	0.11	0.10	0.10	0.09
Pr(7th child | 6th child)	0.12	0.12	0.12	0.12	0.11	0.10	0.10
Arab Chrisitans, n=	5,459	5,543	5,560	5,593	5,620	5,630	5,695
Probabiity of pregnancy	0.07	0.07	0.07	0.06	0.05	0.05	0.05
Pr(3rd child | 2nd child)	0.10	0.10	0.10	0.09	0.09	0.08	0.08
Pr(4th child | 3rd child)	0.06	0.07	0.05	0.05	0.04	0.03	0.04
Pr(5th child | 4th child)	0.04	0.03	0.03	0.03	0.02	0.02	0.03
Pr(6th child | 5th child)	0.04	0.03	0.03	0.03	0.02	0.02	0.02
Pr(7th child | 6th child)	0.03	0.02	0.03	0.04	0.01	0.05	0.05
Druze and others, n=	4,170	4,282	4,406	4,532	4,657	4,760	4,847
Probabiity of pregnancy	0.12	0.10	0.10	0.09	0.09	0.07	0.08
Pr(3rd child | 2nd child)	0.19	0.15	0.17	0.14	0.15	0.13	0.14
Pr(4th child | 3rd child)	0.14	0.11	0.12	0.11	0.10	0.07	0.08
Pr(5th child | 4th child)	0.10	0.09	0.06	0.07	0.05	0.04	0.04
Pr(6th child | 5th child)	0.06	0.05	0.05	0.04	0.04	0.04	0.04
Pr(7th child | 6th child)	0.06	0.03	0.03	0.03	0.02	0.02	0.02

Table 3: The Evolution of the Child Allowance: Annual Per Child Allowanced Based on Family Size

Number of children	1998	1999	2000	2001	2002	2003	2004	2005
1	157	169	171	171	157	144	120	120
2	157	169	171	171	157	144	120	120
3	314	338	342	343	312	195	168	156
4	637	683	693	694	633	454	417	360
5	534	574	582	856	782	522	479	401
6	589	633	642	856	782	522	479	401
7+	569	591	599	856	782	522	479	401
newborns, post 2003	--	--	--	--	--	144	120	120

Table 4: Average effect of Child Allowance on the Probability of Pregnancy

	Year trends		Year dummies	
	coef/se	coef/se		
Child allowance	0.000022***	0.000022***	0.000019***	0.000020***
	(0.000001)	(0.000001)	(0.000002)	(0.000002)
Mother's age	-0.007190***	-0.007220***	-0.007203***	-0.007230***
	(0.000066)	(0.000066)	(0.000066)	(0.000066)
Father's age	-0.003229***	-0.003227***	-0.003235***	-0.003233***
	(0.000056)	(0.000056)	(0.000056)	(0.000056)
Mother working	-0.012889***	-0.013045***	-0.012989***	-0.013130***
	(0.000524)	(0.000525)	(0.000524)	(0.000525)
Father working	-0.016706***	-0.016632***	-0.017077***	-0.017000***
	(0.000649)	(0.000648)	(0.000651)	(0.000651)
Pregnant previous year	-0.068302***	-0.068227***	-0.068610***	-0.068537***
	(0.000293)	(0.000293)	(0.000292)	(0.000293)
Gap with avg kids in locality	0.000113	0.000322	0.000143	0.000339
	(0.000256)	(0.000260)	(0.000256)	(0.000260)
3 previous children	-0.016559***	-0.016449***	-0.016039***	-0.016026***
	(0.000579)	(0.000579)	(0.000636)	(0.000636)
4 previous children	-0.016538***	-0.016246***	-0.015982***	-0.015797***
	(0.000749)	(0.000753)	(0.000796)	(0.000798)
5 previous children	-0.007828***	-0.007266***	-0.007195***	-0.006768***
	(0.001062)	(0.001075)	(0.001110)	(0.001118)
6 previous children	0.005113***	0.006042***	0.005816***	0.006582***
	(0.001517)	(0.001541)	(0.001559)	(0.001579)
7 previous children	0.021687***	0.022938***	0.022549***	0.023602***
	(0.002051)	(0.002086)	(0.002096)	(0.002126)
8 previous children	0.034924***	0.036647***	0.035922***	0.037407***
	(0.002760)	(0.002814)	(0.002808)	(0.002854)
9 previous children	0.059467***	0.061871***	0.060669***	0.062774***
	(0.003961)	(0.004042)	(0.004014)	(0.004084)
10 previous children	0.076658***	0.080215***	0.078100***	0.081280***
	(0.004572)	(0.004701)	(0.004629)	(0.004745)
2nd income quartile	0.007426***	0.007166***	0.007625***	0.007375***
	(0.000702)	(0.000703)	(0.000703)	(0.000704)
3rd income quartile	0.015377***	0.014812***	0.015662***	0.015120***
	(0.000809)	(0.000815)	(0.000810)	(0.000817)
4th income quartile	0.028061***	0.026695***	0.028468***	0.027167***
	(0.001271)	(0.001289)	(0.001275)	(0.001294)
Religious Jew	0.063548***	0.063331***	0.063510***	0.063305***
	(0.001025)	(0.001025)	(0.001024)	(0.001024)
Ultra-Orthodox Jew	0.146580***	0.146318***	0.146226***	0.145983***
	(0.001933)	(0.001932)	(0.001932)	(0.001931)
Arab Muslim	0.060634***	0.061217***	0.060367***	0.060917***
	(0.001179)	(0.001188)	(0.001178)	(0.001186)
Arab Christian	-0.000530	-0.000310	-0.000615	-0.000408
	(0.001483)	(0.001486)	(0.001481)	(0.001484)
Druze or other	0.018291***	0.018564***	0.018176***	0.018431***
	(0.001791)	(0.001795)	(0.001788)	(0.001793)
Max household education		0.001071***		0.001005***
		(0.000216)		(0.000216)
% effect at mean CA	*7.8%*	*7.9%*	*6.9%*	*7.2%*
Year trend	Yes	Yes	No	No
Year dummies	No	No	Yes	Yes
Number of observations	1,573,634	1,573,634	1,573,634	1,573,634
Adjusted R-squared	0.161	0.161	0.161	0.161

note: .01 - ***; .05 - **; .1 - *;
Marginal probit coefficients are presented.

Table 5: Average effect of Child Allowance on the Probability of Pregnancy by Religious Group

	Secular Jews	Religious Jews	Orthodox Jews	Arab Muslim	Arab Christian	Druze and others
Child allowance	0.000011***	0.000021***	0.000044***	0.000037***	0.000025***	0.000020*
	(0.000002)	(0.000004)	(0.000006)	(0.000004)	(0.000007)	(0.000010)
Mother's age	-0.004079***	-0.010484***	-0.019835***	-0.010017***	-0.005593***	-0.004579***
	(0.000065)	(0.000220)	(0.000415)	(0.000191)	(0.000284)	(0.000480)
Father's age	-0.001162***	-0.002538***	-0.008227***	-0.006653***	-0.001012***	-0.002733***
	(0.000055)	(0.000183)	(0.000349)	(0.000161)	(0.000254)	(0.000397)
Mother working	-0.007029***	-0.014239***	-0.029719***	-0.019322***	-0.012422***	0.000021
	(0.000552)	(0.001751)	(0.002508)	(0.001663)	(0.002339)	(0.003286)
Father working	-0.002755***	-0.009095***	-0.056576***	-0.010758***	-0.001152	-0.006719
	(0.000669)	(0.002221)	(0.002699)	(0.002013)	(0.003450)	(0.005297)
Pregnant previous year	-0.031912***	-0.086154***	-0.236226***	-0.114861***	-0.035851***	-0.073327***
	(0.000301)	(0.001035)	(0.001618)	(0.001084)	(0.001619)	(0.002326)
Father immigrant	0.007010***	0.003906**	0.009218***			
	(0.000442)	(0.001609)	(0.002686)			
Mother Immigrant	0.004468***	-0.000511	-0.000471			
	(0.000437)	(0.001612)	(0.002717)			
New immigrant	-0.022276***	-0.021482***	-0.024791***			
	(0.000410)	(0.001678)	(0.003209)			
Gap with avg kids in locality	0.006213***	0.005648***	0.002567***	0.000262	0.005883***	0.002198
	(0.000789)	(0.001414)	(0.000944)	(0.000884)	(0.002072)	(0.003366)
3 previous children	-0.017603***	-0.005823***	0.026042***	-0.013418***	-0.013569***	-0.012916***
	(0.000844)	(0.002197)	(0.003531)	(0.002025)	(0.002949)	(0.004950)
4 previous children	-0.013950***	-0.010431***	0.058217***	-0.025714***	-0.021197***	-0.028249***
	(0.001289)	(0.003244)	(0.004268)	(0.002508)	(0.003783)	(0.006855)
5 previous children	0.007375**	0.011685**	0.091255***	-0.020755***	-0.011004*	-0.033166***
	(0.003294)	(0.005195)	(0.005447)	(0.003423)	(0.006358)	(0.008551)
6 previous children	0.037655***	0.039592***	0.129987***	0.000555	-0.000750	-0.041784***
	(0.007450)	(0.008259)	(0.006909)	(0.004597)	(0.011853)	(0.009448)
7 previous children	0.101536***	0.089055***	0.171177***	0.024244***	0.044513	-0.034217***
	(0.016881)	(0.013287)	(0.007898)	(0.005817)	(0.031095)	(0.012680)
8 previous children	0.152328***	0.126009***	0.212049***	0.042479***	0.103081	-0.023431
	(0.030145)	(0.019742)	(0.009464)	(0.007653)	(0.065974)	(0.019429)
9 previous children	0.207647***	0.187645***	0.279532***	0.069296***	0.172649	-0.012881
	(0.050480)	(0.029925)	(0.011426)	(0.010430)	(0.123730)	(0.028053)
10 previous children	0.303676***	0.275982***	0.313719***	0.118322***	0.421701*	-0.045476**
	(0.064401)	(0.038151)	(0.012643)	(0.013284)	(0.247011)	(0.020334)
2nd income quartile	0.000377	0.001403	0.014296***	-0.001385	0.004960	-0.002484
	(0.000688)	(0.002268)	(0.003636)	(0.002298)	(0.003805)	(0.005861)
3rd income quartile	0.004801***	0.011199***	0.020286***	-0.006624**	0.003812	-0.001097
	(0.000778)	(0.002552)	(0.004451)	(0.002793)	(0.004217)	(0.006317)
4th income quartile	0.016294***	0.019936***	0.015872***	-0.003376	0.013720**	-0.009046
	(0.001262)	(0.003759)	(0.006157)	(0.003540)	(0.006560)	(0.007544)
Max household education	0.003933***	0.011270***	0.029839***	-0.003977***	0.000648	0.002804
	(0.000208)	(0.000670)	(0.003151)	(0.000672)	(0.000948)	(0.001752)
Year trend	0.002333***	0.004780***	0.005916***	-0.001181**	0.000603	-0.001969*
	(0.000155)	(0.000528)	(0.000804)	(0.000510)	(0.000794)	(0.001176)
% effect at mean CA	*8.1%*	*7.3%*	*6.8%*	*9.2%*	*15.6%*	*8.2%*
Number of observations	819,954	192,484	183,551	302,273	38,831	31,523
Adjusted R-squared	0.094	0.091	0.126	0.099	0.108	0.081

Notes: ***= 1 percent level of significance; **=5 percent level of significance; *=10 percent level of signifiance.
Marginal probit coefficients are presented.

Table 7: Effect of Child Allowance by Economic Group and by Religious Group

	Income Quartile 1	Income Quartile 2	Income Quartile 3	Income Quartile 4
Secular Jews	0.000011***	0.000012***	0.000012***	0.000006
	(0.000004)	(0.000003)	(0.000003)	(0.000005)
% effect	*8.3%*	*9.2%*	*8.5%*	*4.6%*
Religious Jews	0.000035***	0.000042***	0.0000005	0.000002
	(0.000010)	(0.000008)	(0.000007)	(0.000011)
% effect	*11.3%*	*14.1%*	*0.2%*	*1.0%*
Ultra-Orthodox Jews	0.000078***	0.000071***	0.000023**	0.000010
	(0.000017)	(0.000012)	(0.000009)	(0.000015)
% effect	*8.6%*	*9.9%*	*4.0%*	*2.6%*
Arab Muslims	0.000044***	0.000035***	0.000037***	0.000029***
	(0.000011)	(0.000007)	(0.000006)	(0.000010)
% effect	*8.1%*	*8.7%*	*10.1%*	*11.0%*
Arab Christians	0.000030*	0.000029**	0.000026**	0.000014
	(0.000017)	(0.000014)	(0.000011)	(0.000020)
% effect	*18.1%*	*15.9%*	*17.7%*	*11.8%*
Druze and others	0.000044	0.000018	0.000010	-0.000008
	(0.000027)	(0.000019)	(0.000015)	(0.000025)
% effect	*15.0%*	*7.1%*	*4.5%*	*-4.9%*

Notes: Additional controls include year trends, education controls, mother's age, fathers, age, mother's work status, mother's lagged pregnancy status. Marginal probit coefficients are presented.

Table 8: The Differential Effect of Child Allowance on Immigrants

	Baseline specification with interactions
New immigrant	-0.040822***
	(0.000677)
Child allowance	0.000011***
	(0.000001)
Child Alowance x new immigrant	0.000064***
	(0.000003)
Year trend	0.003103***
	(0.000163)
Number of observations	1,195,989
Adjusted R-squared	0.181

Notes: ***= 1 percent level of significance; **=5 percent level of significance; *=10 percent level of signifiance.Marginal probit coefficients are presented.

Table 9: Difference in Differences Effect, 2003 reform

	Fourth-month window		
	Pre-period Starts January 2003	Post-period Starts June 2003	Treatment-Comparison difference
Comparison: Income Quartile 4	0.0239	0.0274	0.0035
Treatment: Income Quartile 1	0.0654	0.0587	-0.0067
Difference in differences			-0.0102***
			(0.0026)

	Fourth-month window		
	Pre-period Starts January 2003	Post-period Starts December 2003	Treatment-Comparison difference
Comparison: Income Quartile 4	0.0239	0.0211	-0.0028
Treatment: Income Quartile 1	0.0654	0.0481	-0.0173
Difference in differences			-0.0145***
			(0.0024)

	Three-month window		
	Pre-period Starts January 2003	Post-period Starts June 2003	Treatment-Comparison difference
Comparison: Income Quartile 4	0.0188	0.0226	0.0038
Treatment: Income Quartile 1	0.0537	0.0470	-0.0067
Difference in differences			-0.014***
			(0.0023)

	Three-month window		
	Pre-period Starts January 2003	Post-period Starts December 2003	Treatment-Comparison difference
Comparison: Income Quartile 4	0.0188	0.0211	0.0022
Treatment: Income Quartile 1	0.0537	0.0481	-0.0056
Difference in differences			-0.0078***
			(0.0023)

Figure 1: Fertility Trends, 1999-2005