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FERTILITY, MIGRATION AND ALTRUISM

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ABSTRACT

Consider migration to a higher income region as a human capital investment in which parents bear migration costs and children share returns. Migrants from a population with heterogeneous intergenerational discount rates will be self-selected on intergenerational altruism. Thus, immigrants may be self-selected on fertility. Soviet Jews who migrate to Israel despite high migration costs have significantly more children than members of the same birth cohort who migrate later when costs are low. We distinguish selection from treatment effects using a comparison group of women who migrate after childbearing age. We also find that immigrants favor bequests more and spend more time with their grandchildren in the U.S. Health and Retirement Survey. Selection on altruism can explain why historically immigrant-absorbing countries like the U.S. have higher fertility than other countries at comparable income levels. It provides an alternative explanation for Chiswick's classic earnings-overtaking result. Selection on altruism also implies that immigrant-absorbing regions will grow faster, or have higher per capita income, or both.

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I. Introduction

The recent transition of much of the OECD to negative population growth raises interesting questions about fertility in the developed world.[1] Many middle and high income countries display persistent differences in fertility unexplained by differences in per capita income or by women's labor force participation. Are these due to persistent differences in preferences and norms or a response to local economic and social conditions? How much can local conditions influence intimate decisions like family size? The apparent assimilation of local fertility rates by immigrants (Blau, 1992) provides apparent evidence that they do. Yet assimilation is hard to distinguish from self-selection. An alternative explanation for apparent assimilation is congregation of similar types to the same countries.

In this paper we pursue an economic theory of self-selection on fertility, based on Becker's (1981) notion of intergenerational altruism. We view migration as a human capital investment in which the welfare of descendants is a critical concern. In the face of high migration costs and returns that are disproportionately realized by descendants, intergenerationally altruistic families are more likely to migrate. The importance of intergenerational altruism in migration decisions has appeared in the work of Borjas (1993) and Tcha (1996).[2] Our innovation is to observe that immigrant families self-selected on altruism are likely to either have more children, or to have higher quality children (depending on relative prices). Thus, self-selection of immigrants on fertility is suggested by theory. Selection on altruism could also explain Chiswick's (1978) classic finding that the earnings of immigrants eventually exceeding those of natives,[3] but we will concentrate on the implications for fertility.

Figure 1 illustrates the fertility of countries at different income levels, graphing total fertility rates[4] against 1992 per capita income for a sample of countries with GDP per capita above $2000. The line illustrates the well-known negative correlation of income and fertility, fitted here as a linear regression of the logarithm of fertility on the logarithm of per capita GDP. The negative time series correlation for individual countries, the "fertility transition" is also well established. With the exception of Sweden and Ireland all the European countries in this sample and Japan are below replacement levels of total fertility while the U.S. (at TFR=2.1) is above. If these differences persist, they imply strong divergence in population.

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[1] Andorka (1986) surveys the literature on declining European fertility.

[2] Tcha (1996) argues that altruism towards children explains why general wages in the destination region of internal migrants are more highly correlated with migration flow than occupation-specific wages of the migrant. Mincer (1978) analyzes the role of altruism towards spouses in internal migration decisions.

[3] That finding has spawned some debate about the role of omitted country of origin and cohort effect on apparent overtaking. See Borjas (1987) and Lalonde and Topel (1991).

[4] The total fertility rate is the sum of current age-specific birthrates across all ages. Here and throughout this paper we use the term fertility to refer to bearing of children who survive their first few months of life. Infant mortality rates in the Soviet Union and Israel in this period are low.

Two categories of countries are disproportionately above the fertility transition line. The first are predominantly Muslim countries. The economics of pronatalism in radical Islam is discussed elsewhere (Berman 2000). The second category are countries historically populated almost entirely by voluntary migration over the last few centuries: the Western Hemisphere, Australia and Israel.[5] That positive correlation between historical immigrant-absorption and fertility motivates the rest of this paper.

Is that positive correlation due to the effect of living in a particular place, or to selection? Migration between countries with differing fertility rates can provide information about selection. Immigrants from low income, high fertility countries to the United States who arrive as young women have fertility rates very similar to those of American women (Blau, 1992). This is often interpreted as *assimilation*. Yet they also have observable characteristics that predict negative *selection* on fertility such as high education and income, when compared with women who remain in their country of birth.

In studying self-selection Jewish immigrants to Israel from Eastern Europe are interesting for three reasons.[6] First, they come from countries with unusually low fertility, considering their relatively low income per capita, as shown in Figure 1. Second, Soviet Jewish women have high rates of educational attainment. This may reduce the possibility for positive self-selection of migrants on education, which would imply negative selection on fertility that apparently occurred in previous studies. Third, and most important, they provide large samples of immigrants from waves of migration by the same birth cohorts, but at different migration costs. The first wave migrated at very high and uncertain costs in the 70s and early 80s, while the second wave exploited a surprise opportunity to migrate at relatively low cost from 1989 onwards. This allows us to test a key implication of our model, that selection on intergenerational altruism increases when migration costs are high (so that the net present value of the migration investment is low).

In the Figure Israel is a positive outlier, with high fertility (2.8 lifetime births per woman) for its income. Friedlander and Feldmann (1993) point out that among Israeli Jews this high fertility rate is due mainly to the fertility of the Orthodox and Ultra-Orthodox communities, who average 4.5 and 7 births per woman respectively. Israel's secular Jewish majority averages about 2.1 births per woman, like the U.S.

We find that women immigrating from Eastern Europe to Israel differ from immigrants to the U.S. in the literature in three important ways: First, their fertility increases as they move from a low to a high-fertility country. Second, earlier waves of Eastern European immigrants do much

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[5] Many European countries currently have higher proportions of foreign born among residents than do countries in the Western hemisphere. The migration costs incurred to the Western hemisphere were probably larger, both in direct costs and in the loss of country specific human capital such as language.

[6] Other aspects of this migration have attracted the attention of labor economists. The remarkably successful integration of the huge recent influx of (formerly) Soviet immigrants into the Israeli labor market is the subject of studies by Flug and Kasir (1993), Eckstein and Weiss (1998), Friedberg (1997), Weiss and Gotlibovski (1995). The roles of language acquisition and education in the economic assimilation of previous waves of migration has been studied by Chiswick (1993) and Friedberg (2000), respectively.

better than "assimilating" the local fertility rate. They eventually "overtake" the natives in fertility, averaging 2.5 children per woman, as opposed to 2.1 (for secular Jewish women), just as Chiswick's immigrants to the U.S. overtake the natives in earnings. Third, in the recent wave of immigrants we observe the fertility of those women left behind. Consider two arrival cohorts, both born around 1950. Those who arrived in the 1970s and 1980s, spending some fertile years in Israel, had 2.5 children by the 1990s. Women from the same birth cohort who arrived in the 1990s, after spending their fertile years abroad, have 1.7 lifetime children (which is close the USSR urban TFR of 1.7.[7])

Can we interpret this 0.8 child difference in fertility between arrival cohorts as the effect of moving to a Western economy? Such an effect is plausible, since housing is less cramped and basic household goods are supplied reliably at lower prices. If so, that migration effect on fertility could imply a large baby boom in former communist countries when their economic transition is finally completed. The same prediction may apply to emigrants from those countries. Thus, the distinction between treatment and selection effects in the fertility of migrants is important.

We use as a comparison group women who migrate early (during the high cost period) who are too old to experience a treatment effect. They allow us to separately identify treatment and selection effects. *That method reveals that the 0.8 child difference in fertility is mostly due to self-selection.*

To validate that estimate we develop an alternative estimation method which separately identifies treatment and selection effects by imposing a functional form on years since migration and "fertile" years since migration. This second method allows us to gain precision by using more data and to gain accuracy by using more controls. The literature has stressed the importance of country of birth in measuring selection effects in wages (Borjas 1987, 1994; Friedberg 2000). This method allows us to control for both country of birth and birth cohort effects. Like the first approach, it also yields large estimated selection effects.

Evidence for positive self selection of migrants in fertility is consistent with intergenerational altruism playing an important role in migration decisions. Selection on altruism implies, in turn, that immigrant-absorbing countries will tend to behave like doting parents, investing more in the welfare of their children either through faster accumulation of human and physical capital, or through higher fertility, or both. That mechanism suggests permanent differences in population growth or per-capita income, or both, between the immigrant absorbing regions and other regions.

To distinguish selection on altruism from other reasons for selection on fertility we examine other testable implications of the model, finding in the U.S. Health and Retirement Survey that immigrants are significantly more likely to: a) believe that bequests are important and b) spend time with their grandchildren. Those effects are robust to the inclusion of controls for the shadow value of time and other socioeconomic characteristics.

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[7] The aggregate USSR TFR dropped in the mid 1990s to 1.5, but was stable at 1.7 during the 1980s. The drop was due to reduced fertility of cohorts younger than those we report on.

Section II presents a theory linking migration and altruism, which is a straightforward extension of Becker (1981). Section III describes waves of Soviet migration to Israel. In section IV we present estimates of selection and treatment effects on fertility for Soviet immigrants to Israel. Section V examines evidence on the altruism of immigrants. Section VI concludes.

II. Self-selection of Immigrants on Altruism and Fertility

Migration is at least partially an investment in human capital. Even the wealthiest immigrants can hardly ignore the economic aspects of a migration decision for themselves and their children. Migration is expensive and expensive to reverse, especially for immigrants from Eastern Europe before 1989. Thus the appropriate investment horizon is intergenerational.

To illustrate how altruism links fertility and migration, consider the following two-period maximization problem for a family of potential immigrants. Two parents have an intergenerational utility function in the tradition of Becker (1981), Razin and Ben-Zion (1975) and Becker and Barro (1988)[8]

$$U = 2v(c_0) + \rho(n+2)v(c_1) ,$$

where the couple has n children. The parents consume c_0 each in period 0. They and the children consume c_1 each in period 1. The function v(.) is assumed to be concave. Here ρ represents both intergenerational altruism and a discount factor for future utility but we call it altruism as that resonates well with our theme.

The couple can intertemporally save by investing in migration, *m*, or by having children at cost *k* per child. Investment cost *m* includes all pecuniary and nonpecuniary costs of migration, including language acquisition and loss of country specific human capital. The migration investment has a return *r* for both parents and children, all of whom will realize a higher wage in the destination country. Parents work in the first period at wage w_0 and all family members work in the second period at wage w_1, yielding consumption as a function of the migration and fertility decisions

$$c_0 = w_0 - kn - m ,$$

$$c_1 = w_1(1+rm) ,$$

where we restrict both migration investment *m* and the number of children *n* to be nonnegative. For simplicity, we rule out migration or other investments by children. Though migration is a discrete choice we treat it as continuous to illustrate the nature of the solution. (Alternatively, we could imagine a continuum of places to migrate to, with a linear envelope of costs and returns.)

Maximizing utility by choice of number of children, *n*, and investment in migration, *m*, yields the first order conditions:

$$2kv'(c_0) = \rho\ v(c_1)$$

[8] See Altonji et al (1992) for a caveat on the importance of intergenerational altruism in families.

$$2v'(c_0) = \rho(n+2)w_1 rv'(c_1)$$

That is, the cost of a child in foregone utility equals the discounted benefit, and investment in migration is equal to its discounted return.

Now consider heterogeneity in altruism.[9] In the neighborhood of the maximum (assuming an interior solution), second order conditions can be shown to yield[10]

$$\frac{dm}{d\rho} > 0 \quad and \quad \frac{dn}{d\rho} > 0 \quad .$$

The result is intuitive: immigrants self select on altruism and altruistic couples prefer more children, implying positive selection of immigrants in fertility. Thus heterogeneity in altruism and self-selection together will generate a positive correlation between fertility and the decision to migrate.

The prediction that immigrants have higher fertility comes with some caveats. First, not all immigrants are self-selected. In particular, with low enough migration costs or high enough returns everyone will choose to migrate, regardless of ρ. Second, in a more general model that allows for other forms of saving or for investment in child quality that positive correlation can be dampened or reversed, depending on the returns to investments in quality, quantity and migration.[11] Our intention is not to argue that immigrants should always have higher fertility than natives, but rather to point out that self-selection on altruism links migration and fertility decisions. That link motivates our empirical analysis.

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[9] We assume that spouses share the same ρ. Mating of likes seems plausible here, since co-ordinated consumption within a couple argues for agreement on savings decisions.

[10] See Appendix for a proof. The second derivatives $U_{n\rho}$ and $U_{m\rho}$ are positive but the cross-partial $U_{nm} = 2kv''(c_0) + \rho w_1 rv'(c_1)$ has an ambiguous sign. The first term is negative, reflecting the higher forgone income associated with migration cost a for large families due to the concavity of $v(c_0)$. The second term is positive, reflecting the higher returns to migration for larger families. In the neighborhood of a maximum the first two cross-partial derivatives must dominate, which is key to the result.

[11] The positive effect of altruism on fertility generalizes to some but not all models that allow investment in both quality and quantity of children. If we think of child quality as capital per capita then the Ramsey growth model with endogenous fertility is a generalization. In some versions of that model fertility increases in altruism (e.g. Becker and Barro (1988); Barro and Becker (1989)) while in others the effect is ambiguous (Razin and Sadka (1995)).

III. The Institution: High and Low Cost Waves of East Block Migration

Changes in emigration policy in the Soviet Union allow us to compare immigrants to Israel in high and low migration cost regimes. In that sense they provide a "natural experiment" (i.e., a plausibly exogenous source of variation) to study how migration costs affect self-selection on fertility. Figure 2 illustrates the time series of immigration to Israel from the (former) Soviet Union from 1960 through 1996. This is voluntary migration. It occurred in spurts, responding to changes in the home country policy toward migration on the one hand and to changes in the perceived risk of staying on the other. Over time Israel became a more attractive destination, as per capita income surpassed that in the Soviet Union and her security stabilized. Exit permits began to be granted in significant numbers in the early 1970s, though at high cost. From 1982 till 1989 the flow of immigrants shifted to the U.S., which temporarily expanded its definition of refugee status. In 1989 the CIS conducted a major policy shift, removing restrictions and allowing free migration of Jews to Israel, while the U.S. reduced access.

It is important to stress that migration from the East Block up till 1989 was a fairly expensive venture: Property was often confiscated; An applicant's right to work was often suspended; Heavy fees were imposed; and the status of relatives in the communist party may have been compromised. In contrast, migration to Israel since 1989 has been much easier, both because of reduced restrictions in the countries of origin and because of surprisingly rapid economic assimilation of immigrants in Israel.

Data

The Israel Labor Force Survey (LFS) randomly samples approximately 22,000 households per year, surveying household members aged 15 and older to generate about 100,000 annual observations. We pool LFS incoming cohorts from 1974 through 1996 to generate 32,308 observations of Eastern European immigrants for analysis. Our measure of fertility is the number of children currently at home, which is available in the LFS by grouped age category.

IV. Migration and Selection: Evidence from East Block Migration to Israel

Conceptually, we are interested in two separate effects on the fertility of immigrants. The first is the "treatment" effect of spending time in the destination country. The second is the effect of self-selection of people with high planned fertility into immigration. Self-selection will be stronger the higher the cost of migration since when the net return to migration is low only the very altruistic will choose to migrate.

In this section we use two different methods to separately identify treatment and self-selection. The first involves using an early arrival cohort who arrived too old to have children in Israel to identify the selection effect, (and identifying the treatment effect as the complement). The second method estimates the treatment effect as a function of time in Israel and fertile years in Israel (and identifying the selection effect as the complement).

To illustrate our first identification strategy, consider a concrete example with birth cohorts 1940 and 1950 and arrival cohorts 1980 and 1990. The 1980 arrival cohort faces high costs while the 1990 cohort faces low costs, so the model predicts altruism for the early arrivals. Some women born in 1950 immigrate early, at age 30, in 1980. The rest arrive late, at age 40, in 1990. The difference in their observed fertility at age 40, in 1990 is

(1) $f_{\text{early, young}} - f_{\text{late, young}}$.

That difference can include both a treatment effect of ten years residence in Israel during their fertile thirties and a selection effect due to differing costs of migration.

Now consider the older, 1940, cohort who migrated in the same two periods, some at age 40 in 1980 and others at age 50 in 1990. These women could not have experienced a treatment effect, as they were essentially past their fertility window in 1980 before arriving in Israel. Differences in the fertility of these two groups would be due only to selection and can be measured by

(2) $f_{\text{early, old}} - f_{\text{late, old}}$.

Now assuming that the selection effect is the same for the young and old cohorts, we can identify the treatment effect by "differences in differences" as (1) - (2).

Unfortunately, the data don't quite allow this method, as the late, old group (arrived in 1990, born in 1940) are not observed till arrival at age 50, by which time we have a very poor measure of their fertility, since most of the children have left home. Fortunately, Russian fertility during this period is apparently stable across birth cohorts. Note that if the fertility of late arrivals were the same for young and old

(3) $f_{\text{late, young}} = f_{\text{late, old}}$,

we could identify both treatment and selection effects. We offer some evidence below to support that assumption, showing that fertility rates were stable for these cohorts in Russia.

Restated as an estimating equation,

(4) $f = \alpha + \beta \text{ early} + \gamma \text{ young} + \delta \text{ early young} + \epsilon,$

$\text{Cov}(\text{early}, \epsilon) = \text{Cov}(\text{young}, \epsilon) = \text{Cov}(\text{early young}, \epsilon) = 0$.

Here β is the effect of selection. The parameter δ is the treatment effect of spending a fertile period in Israel (that is, the effect that would have been observed had early migration been randomly assigned among eventual immigrants). Both can be identified if the birth cohort effect, γ, is assumed to be zero, as in (3).

To achieve precision we define early and late arrivals and young and old women more broadly than in this example. Early arrivals immigrate by 1982. Late arrivals immigrate between 1989 and 1996. We ignore the few immigrants in the 1983-88 period to avoid the possible confounding effects of selection between the U.S. and Israel as destinations. Young women are born in 1948-52. Old are born in 1938-42.

A. Measuring fertility

The LFS allows us to draw large samples of immigrants from different cohorts, but unfortunately it does not ask how many children a woman has had in her lifetime. The survey does ask how many children a woman has currently at home between the ages of 0 and 17, with subcategories for 0-1, 2-4, 5-9, 10-14 and 15-17 (10-13 and 14-17 before 1987).[12] Children aged 18 and older are not reported as they are usually in the military. The age of persons aged 18-24 is suppressed.

To estimate lifetime fertility we use the distribution of children aged 0-17 currently at home. Let f(a) be the number of children (so far), where a is mother's age. Let g(a) be the number of children aged 0-17, which we can measure. Assume that the youngest age of mothers at first birth is 16 (there are only a few at age 15 in the sample), so that children begin to outgrow our measurement when the mother is 34. So

$f(a) = g(a)$ if $a < 34$

$f(a) = g(a) + g(a\text{-}18)$ if $a \geq 34$

We approximate g(a-18) by using information from the closest birth cohort available for women aged 34 and over, calculate its mean and add it to the reported number of children aged 0-17 to predict f(a).[13]

Figure 3 illustrates this procedure, graphing the means of observed number of children and the predicted number of children f(a) for East Block immigrants aged 25 and older. While f(a) should increase monotonically, it actually decreases sometimes. This is mostly due to difficulty distributing children to ages within age brackets. Fertility levels off at around age 38 at 97% of its eventual level. The slight drop after age 40 reflects a weakness in the procedure, which may be due to a small cohort effect in fertility or simply to measurement error. We exploit that flat portion of the distribution and use the predicted number of children at ages 38-47 as a measure of lifetime fertility.

B. Results

Table 1 compares descriptive statistics for early and late arrivals from the former Soviet Union, both young and old. Women in the "young" group were born, on average, in 1950. The average early arrival was in 1977-78, while the average late arrival was in 1990. In this table we have restricted attention to arrivals from the former Soviet Union to allow comparability with the "late" migration, which is 98% Soviet.[14]

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[12] In 1974-79 the "own children" is unavailable. We use instead a predicted value based on a measure of *all* children in the household of the same ages. That prediction can be done with R-squared values above .9 in the 1980-96 data, which includes both "own children" and "all children" measures.

[13] Details of this calculation are available from the authors upon request.

[14] Over the entire period since 1955 two-thirds of immigrants from Eastern Europe have come from the Soviet Union, another 23% from Romania and 8% from Poland. Early migrants from other countries

The table allows direct calculation of our restricted differences in differences estimator. The difference in predicted children between early, young immigrants and late, young is

$$(2.49\text{-}1.71) = 0.78 .$$

This large 0.78 difference in fertility between arrival cohorts potentially includes both treatment and selection effects.

Assuming no cohort effect on fertility in the Soviet Union for these birth cohorts (equation (3)), we can isolate the selection effect by comparing the fertility of old, early arrivals (assuming that they arrived old to have a treatment effect) to that of young, late arrivals:

$$(2.45\text{-}1.71) = 0.74 .$$

This is a very large selection effect. Almost the entire 0.78 child difference in fertility by arrival cohort is due to self-selection. The difference between these two yields an estimated treatment effect of

$$(0.78\text{-}0.74) = 0.04,$$

which is quite small.

The selection effect, on the other hand, is quite large. A 0.7 child difference exceeds the difference between the TFR of U.S. Canada and Australia (at about 2) and the Western European average (of about 1.5). For societies with total fertility rates in the neighborhood of the replacement rate of two, that selection effect is enough to make the difference between stable and rapidly shrinking population in the long run.

Are there other observable differences between arrival cohorts in Table 1 that could account for differences in fertility? (Note that in comparing cohorts the usual "natural" experiment practice of arguing that the treatment and comparison groups should have similar observable characteristics does not apply. The estimated selection effect could not have occurred under random assignment of early migration by definition.) Earlier arrival cohorts are more likely to be (self-classified as) Jewish, more likely to be married, less educated (by about 1.5 years for the later birth years) and slightly more likely to be Ultra-Orthodox. All of these differences are associated with higher fertility for the earlier arrival cohort, but are unlikely to be the cause of the gap in fertility. The differences are either too small to explain the large difference in fertility (in the case of education, Ultra-Orthodoxy or Jewish) or more likely to be reflections of higher preference for children (more currently married and fewer years of education).

Table 2 reports the same analysis in the regression format of equation (4), reporting standard errors. For post 1960 arrivals the selection effect of 0.74 children is estimated with a standard error of 0.12, which is enough precision to dramatically reject the hypothesis of no selection. Allowing for earlier arrival cohorts (dating back to 1955) has no effect on this estimate. The estimated treatment effect is positive but statistically zero in both samples.

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are much less likely to be self-selected because migration costs were not always as high. In fact, most Jews had emigrated from Poland and Romania by the 1980s.

These estimates rely on the assumption that there was no cohort effect in Soviet Jewish fertility for 38-47 year olds between the pre-82 and post-88 periods (i.e., that $\gamma=0$ in equation (4)). To investigate that assumption we examine cohort-specific fertility for urban Russians. We think of them as a proxy for Soviet Jews, who were mostly urban and highly assimilated. Table 3 reports observed fertility for urban Russians in both 1982 and 1992. Reported is the number of children born so far for cohorts aged 35-39 and 40-44.[15] Reading across rows reveals that fertility was stable for these cohorts from the late 70s to early 90s at 1.9 to 2.0 children per woman.[16] The fertility rate of urban Russians in 1992 is similar to that of Jews of the same age immigrating from the CIS in 1989-96. We read this as evidence supporting the assumption that there was no cohort specific decline in fertility in the 1980s for Soviet Jews.

Overall, this method provides strong evidence of large selection effects in fertility by arrival cohorts of immigrants. High cost immigrants have between 0.78 and 0.85 more children in this sample and most of that effect is due to self-selection.

C. Predicting Children at Home: An Alternative Approach

An alternative to predicting eventual fertility using current children at home is to measure fertility using children at home directly, estimate the effect of selection on children at home and interpret the results in terms of lifetime fertility. This method allows us to use observations of younger women that will add precision, free us of assumptions about cohort effects and allow us to introduce geographic controls.

Figure 4 illustrates the difference in fertility between early and late arrival cohorts from all East Block countries, by age, pooling observations across 23 years of data. Early arrivals have more children at almost all ages. Averaged across ages, this gap is 0.376 children at home.

To interpret that gap and the results that follow we require a way to convert observed children at home into lifetime fertility. We use the identity

$$k(a) = p(a) \times l\ ,$$

where $k(a)$ is the count of children at home at mother's age a, $p(a)$ is the sample probability that a given child will be at home and l is lifetime fertility. Summing over all ages,

$$\sum_a p(a) = d\ ,$$

[15] Calculated from the reported fertility of synthetic cohorts at five year intervals reported in Vishevsky (1996) (Table 1.13 and Figure 1.1).

[16] Stable fertility rates for this cohort contrast with the rapid decline in Russian fertility from 2.22 in 1987 to 1.39 in 1994 (Vishnevsky, 1996). That decline is due to reduced fertility of younger women.

where d is the average duration of residence at home for children. So, summing the identity over ages and dividing by duration, lifetime fertility is

$$l = \frac{\sum_a k(a)}{d} .$$

We observe k in most sample years only for women aged 25 and older, but know that 92.6% of the stock of children-years at home is spent with mothers aged 25 to 60.[17] Assuming that children spend all 18 years at home, (of which we observe 92.6%) over the 36 years between 25 and 60 (inclusive) we can convert the average number of children at home into an estimate of lifetime fertility as,

$$l = \frac{\frac{1}{36}\sum_{25}^{60} k(a)}{\frac{1}{36}.926d} = \frac{\bar{k}}{\frac{1}{36}.926(18)} = 2.16\bar{k}.$$

So a 0.376 child gap in k (which represents an average across ages) translates into a gap of 0.376*2.16 = .81 lifetime children. This figure is reassuringly close to the estimated difference in predicted lifetime children between early and late arrival cohorts (0.86) reported in Table 2 for immigrants from the former Soviet Union only.

Using the "children at home" measure allows us to exploit data from mothers at all ages, greatly increasing precision. It also allows controls for birth cohorts and country (or even republic) of birth, freeing us of the identifying assumptions above. To separate the gap in children at home into treatment and selection effects we adopt an alternative to the simple old/young classification above. Treatment effects are posited to be a monotonic function of years since migration and of fertile years since migration,

$$\theta = \theta\,(y,f) .$$

Years since migration (y) capture the effects of assimilation of local culture, increased lifetime income and access to higher wages through accumulation of local human capital, such as language. Fertile, or childbearing, years since migration (f) are measured as the number of years between ages 17 and 42 spent in Israel. (At these ages the birth rate exceeds 1% for the early arrival cohort). It should capture the (treatment) effect of local prices, wages and other environmental conditions on childbearing decisions during the years at which a woman is most at risk of having children. It seems plausible that these effects will be monotonic.

The stock of children at home is then estimated as

(5) $$k = g(a) + \theta\,(y,f) + \beta \text{ early} + X\gamma + \epsilon .$$

[17] Author's calculation based on LFS 1974-1996.

The first term represents the effect of age on fertility and the exit rate of children at age 18 (or possibly earlier). The second term is the treatment effect of residence in Israel. β measures the effect of early migration on children at home, conditional on treatment, which we interpret as the effect of selection on altruism, or ρ. X is a matrix of demographic characteristics: decade of birth and country of origin. All these can be identified using repeated cross-sections assuming no year (of observation) effects, which is plausible since we count a stock of children generally born in other years.

Table 4 reports descriptive statistics for the data available for this exercise. Columns labeled "full sample" describe a sample of 32,308 observations from the LFS, of which 81% arrived in the early (high cost) period.[18] Six percent of immigrants are sampled in the year of arrival or in the following year. The population of immigrants displays considerable variance in age and in country of origin. Fully 46% of arrivals are from the former Soviet Union, 17% from Poland and 28% from Romania. Birth cohorts date back to the 1910s, but some are as recent as the 1970s. Since birth cohorts and country of origin could predict fertility and be correlated with arrival time, it will be important to control for these variables in estimation.

Table 5 contains the results of estimating equation (5). The left four columns reports the coefficient on the "early" arrival indicator for the high migration cost era (arrival by 1982) which reflects both treatment and selection effects. Age effects on "children at home" are estimated nonparametrically using a full set of age indicators for g(a). The age-adjusted arrival cohort effect, reported in the leftmost column of results, is 0.376 children at home, which translates to a fertility difference between early and late arrivals of (2.16*.376 =) 0.81 lifetime births. The following column adds an indicator for arrival in the year of observation or in the previous year, in order to estimate the "impact" effect of transition on fertility. The literature has reported a propensity of immigrants to delay childbirth till after they settle in the new country (Blau, 1992). If ignored, that transition effect could potentially bias our estimates, as late arrivals are disproportionately sampled soon after arrival. Estimated transition effects are generally negative, as expected, but small. Their inclusion has little effect on the estimated early arrival effect, reducing it slightly to 0.367.

Successively adding country indicators and birth decade indicators increases the estimated gap between early and late arrival cohorts to 0.410 and 0.490 children at home, respectively. The age-adjusted estimate (0.81 lifetime births) using women of all ages is quite close to the simpler estimate in Table 2 of combined treatment and selection effects (0.78) based only on women aged 38 or more. Adjusting for country of origin and birth cohort only increases the estimated fertility advantage of early arrivals, as they tend to come from low fertility countries and low fertility birth cohorts. Thus the age, country and birth-cohort controlled estimate of the early-late arrival gap in fertility is (0.490 x 2.16 =)1.06 lifetime children, which is quite large.

The right three columns report the decomposition of the fertility gap between early and late arrivals into selection and treatment effects, using years since migration, y, and childbearing

---

[18] Note that this sample overstates the population share of early arrivals as they are at repeated risk of sampling in the LFS in each year of residence in Israel.

years since migration, f, to represent treatment. Years since migration has a large and concave effect, accounting for a third of the difference in fertility by itself (column 4), leaving an estimated selection effect of 0.327 children at home. Childbearing years since migration turn out to have a tiny effect (column 5). The results are unchanged by adding quartic terms. The Table provides clear evidence of both large selection and treatment effects, both significantly different from zero. Selection is about twice as important as treatment, even controlling for country of origin. In terms of lifetime children, these results can be interpreted as (0.323 x 2.16 =) 0.70 children due to selection and 0.36 children due to treatment.

The former Soviet Union included a large number of disparate republics, including south-central Asian republics that tend to high fertility and European republics with lower fertility. The 1995 and 1996 LFS identify 13 republics of origin, allowing us to control for potential biases due to a shift of migration from high to low fertility republics over time. Table 6 reports estimates of equation (5) using only the 1995 and 1996 data for the USSR and Poland, though including all survey years for other countries. (A full list of republics is included in the note to Table 6.) Summary statistics for these data are reported in the right panel of Table 4.

The first four columns of Table 6 report adjusted coefficients on "early" for the subsample of data with information on Soviet republics. Once adjusted for age, transition effects of early arrival, place of origin and birth cohort, the coefficient on early arrival rises to 0.503 children at home, or 1.09 lifetime births, slightly more than in the larger sample. In this subsample estimated treatment effects are larger, as indicated by the relatively small estimated selection effects. Interpreted in terms of lifetime children, the 1.09 child gap between early and late arrivals is the sum of a (0.202 x 2.16 =) 0.44 child self-selection effect and a 0.65 child treatment effect of residence in Israel. The difference in the effects of years since migration between the two samples seems to be due to the exclusion of early Soviet immigrants (for whom we lack information on republics) rather than to omitted variable bias in republics of origin. It may be that either treatment or selection work somewhat differently for more recent Soviet immigrants than for previous cohorts.

To summarize the results from both methods of estimation, Tables 2, 5 and 6 consistently reveal large, statistically significant self-selection effects, ranging from 0.4 to 0.8 children, a finding robust to changes in sample and specification. While the two methods disagree on the size of the treatment effect, we are more convinced by those in Tables 5 and 6 as they allow a much richer set of controls. If the early/late gap could be properly adjusted for age and origin controls the (noisy) estimates of treatment effects in Table 2 may not be statistically smaller than those in Tables 5 and 6. We conclude that the age and origin-adjusted fertility gap between high and low migration cost arrival cohorts is extremely large, probably more than a child, of which about half is due to selection and about half to treatment. This large selection effect supports the hypothesis that immigrants self-select on altruism.

In considering the evidence from both methods, it is worth bearing in mind that many women who arrived young came as children whose parents made the migration decision. To the extent that these children were less altruistic than their parents (perhaps because of regression to the mean) the estimates offered above *underestimate* the true immigrant self-selection effect on fertility. Alternatively, altruism (or other factors influencing fertility) could be fully heritable, in which case the estimates reported above are accurate. We return to the implications of heritable altruism in the conclusions.

V. Altruism of Immigrants: Bequests and Doting Grandmothers in the U.S.

We have shown so far that self-selection by immigrants has a fertility effect, as predicted by the model, but have not provided any evidence that the mechanism is altruism. While no other plausible mechanisms come to mind, we can further test our approach by examining its implications for other indicators of intergenerational altruism. The U.S. Health and Retirement Study (HRS) provides two such indicators: attitudes about bequests and time spent with grandchildren. The 1992 wave interviewed a representative sample of 7,600 persons aged 51-61 in 1992, and spouses, (12,600 persons in all). It asked a set of questions designed to analyze interrelationships between retirement, health, income and wealth.[19]

Table 7 reports descriptive statistics for our two measures of altruism and a set of possible predictors. The left panel reports means and standard deviations for the 6686 observations for which observations on the full set of variables were available. Respondents were asked to choose if leaving an inheritance was 1 - “not important,” 2- “somewhat important,” or 3- “very important.” The mean is 1.96. 10% of respondents are immigrants, 49% are women and average net worth is $210,000. The right panel reports on the 551 working grandmothers who reported nonzero hours worked per week and answered all these questions. They averaged 832 annual hours with their grandchildren and 7% were immigrants.

The left panel of Table 8 reports a linear regression of the bequest measure on potential predictors. The first specification includes only the immigrant indicator and the religious observance measure. Both coefficients are positive and significant. The coefficient on “immigrant,” is statistically significant, at .175. To get an impression of the size of this effect, immigrant status predicts more altruism (according to this noisy measure) than does a shift from the lowest to the highest category of religious observance.[20] Including measures of wealth, schooling and the wealth of children does little to change the coefficient on immigrant status. It is also robust to including the number of children and grandchildren. Note that bequests are at best a flawed indicator of altruism, as true altruists may make transfers *in vivo*. As such, the positive coefficients reported are likely an underestimate the propensity of immigrants to make transfers to their children.

[19] Questions included cover demographics, financial and housing status, employment and retirement plans, health insurance, life insurance and relationship with siblings. For details about the HRS see http://www.umich.edu/~hrswww/overview.

[20] The categorical nature of the inheritance variable suggests using limited dependent variable analysis rather than linear regression. We chose report linear regression results as they are more easily interpreted. The statistical content of the estimates in Tables 8 and 9 is essentially the same when ordered probit equations are estimated instead.

The HRS also asks individuals if they will leave a large inheritance. Answers are coded in order of increasing inheritance from one to five. This is a problematic measure of intergenerational altruism as it will be influenced by wealth and children's anticipated wealth, which we do not fully observe. The model suggests that immigrant families will have faster asset accumulation across generations than others in both human and physical capital. Intergenerational consumption smoothing in that case may imply pecuniary transfers from children to parents rather than inheritance. Nevertheless, in the interests of full disclosure, the right panel of Table 8 reports similar regressions predicting the answer to the inheritance question. For comparability, these results are reported in the same format as those in the left panel. Though the coefficient on immigrant is negative in the leftmost column of the right panel, it becomes less so when net worth is included and becomes positive when a measure of children's wealth is included. Nowhere is it statistically significant.

Table 9 reports on our favorite measure of altruism, the hours a grandmother spends with her grandchildren. The leftmost column reports that immigrant grandmothers average 203 more annual hours with grandchildren than native grandmothers. That estimate is robust to conditioning on hours worked. Adding age, marital status and especially "years since migration" increases that estimate to 759 hours a year more with grandchildren, which is reduced by 18 hours in each year since migration. The years since migration coefficient is important, as a possible alternative explanation for immigrant grandmothers spending time with grandchildren is that they tend to live with their children in the first years after arrival. An 18-hour reduction per year since migration implies that only after 40 years since arrival would the new immigrant living arrangement effect wear off, which is implausibly long. Accounting for net worth and grandchildren increases the estimate to 1160 hours per year (in the first year), while adding schooling, children and especially children's wealth, reduces the estimate to 963 hours per year. Schooling has a negative coefficient, perhaps reflecting higher shadow value of time. Children's wealth also has a negative coefficient, suggesting specialization within the family in child care. Overall the Table indicates that no matter what controls are used, immigrant grandmothers spend much more time with their grandchildren than do native grandmothers. Estimates in the first, third and fourth columns are significantly positive at the 5% level.

We are at a loss to think of an explanation other than selection on altruism to explain these patterns. The evidence in Tables 8 and 9 cannot be interpreted as irrefutable proof that immigrants are disproportionately altruistic since we cannot rule out the possibility that some key variable has been omitted. Yet most reasonable candidates have been included, though, so these results are highly suggestive. They are consistent with images of immigrant parents saving for their children and of immigrant mothers moving into college dormitories to cook and clean at exam time.

An important shortcoming of these data is that not all immigrants are self-selected. If the net present value of migration is high enough, even people with high discount rates will invest in migration. That may be the case for migration of refugees or migration under the reunification of families criteria, for example. That would allow inclusion of the high discount (low altruism) individuals that will tend to mute evidence of self-selection on altruism in the aggregate.

VI. Interpretation and Conclusion

We have argued that intergenerational concerns are key to migration decisions and that heterogeneity in intergenerational altruism induces self-selection of immigrants on fertility, since both fertility and immigration are affected by altruism. Our estimates report large positive selection effects. These effects are large enough to explain the average half-child per woman difference in total fertility between the shrinking populations of Western Europe and the stable (non immigrant) populations of U.S., Australia and Canada. The selection on altruism model is also supported by evidence that immigrants to the U.S. are more likely than natives to value inheritance and are also more likely to spend time with their grandchildren.

The literature on immigrant fertility has stressed the fact that immigrants assimilate the local fertility pattern (Blau, 1992; Ford, 1990). Considering that Eastern European immigrants arrived with a very secular background, a fertility increase from 1.7 children to the 2.0 child fertility levels of secular Jewish Israelis would be predicted by the assimilation model. This is roughly consistent with our estimated treatment effects. Self-selection implies overshooting (in the Chiswick (1978) sense) by the early, young immigrants, assuming that Jews from Eastern Europe and the CIS have the same distribution of altruism. Compared with secular Israeli Jews we see strong evidence of overshooting, with the combined assimilation and self-selection effects giving the early, young immigrants a fertility rate of 2.5.

If self-selection on altruism and intergenerational concerns are truly central to migration decisions then how can we explain the lack of overshooting reported in the rest of this literature? A possible explanation is that for immigrants to the U.S. countervailing effects are at play. First, there is evidence of positive selection on predictors of low fertility such as wealth and education (Blau, 1992). Second, the transition also involves a large increase in women's wages. Jewish immigrants from the former East Block are for the most part not selected on education or wealth and experience a smaller transition in wage levels. *Once those effects are muted, selection on altruism may become the dominant phenomenon.* That insight may become a key factor in understanding the fertility choices of the current generation of high income residents of the developed world.

Self-selection of immigrants on intergenerational altruism provides an alternative explanation for Chiswick's classic finding that earnings of immigrants rise over time to eventually overtake the earnings of natives (Chiswick, 1978). That is a straightforward prediction of the Ben Porath human capital investment model (Ben Porath, 1967) where investment is increasing in patience. Selection on altruism is also consistent with Borjas (1987), which finds a positive correlation between the eventual income of individuals in the United States and average income in the country of origin (conditional on measured skills). The lower the net return to migration the greater the altruism (low discount rate) required to justify migration. The cohort of Soviets who immigrated to the US during the high cost period of the 1980s also assimilated economically quite successfully (Chiswick 1993b). Conditions of migration matter that foster selection, as in the Roy model, may matter as much as country of origin.

Heterogeneity in intergenerational altruism has three important implications if this altruism is heritable in families or ethnic groups. First, since natural selection favors intergenerationally altruistic dynasties, their growing proportion in the population will increase aggregate fertility. Thus populations with total fertility rates currently below two need not eventually disappear as long as they contain a sufficiently altruistic subpopulation. The patient dynasties may increase their population share, increasing the aggregate total fertility rate and eventually inheriting the developed world.

A second implication of altruistic dynasties is that countries who received voluntary immigrants over the last century may have higher average levels of altruism and thus higher long term fertility rates, holding income constant. This observation is consistent with the large gap between the total fertility rates of Australia, Canada and the United States (1.9, 1.9 and 2.1 respectively) and the OECD average (about 1.6).

Finally, in the Ramsey growth model a high level of intergenerational altruism implies greater GDP on the steady state growth path both through larger population and through greater investment. It may also imply greater income per capita in the steady state and faster convergence to steady state levels of per capita income.[21] That should also be true of countries who received voluntary immigrants over the last century. This observation is consistent with income levels above the OECD average for Australia, Canada and especially the United States. Thus Solow convergence in per capita income may be limited by differences in the distribution of altruism (patience) in national populations. Selective migration implies that the distribution of altruism is in turn due to historic differences in per capita income. A small historical advantage in per-capita income could thus be amplified by self-selected altruistic immigrants to yield a permanent gap in income and in population growth rates.

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[21] In the steady state of a Ramsey growth model with exogenous fertility, per capita income increases in intergenerational altruism if the interest rate is decreasing in per capita capital. With endogenous fertility the countervailing influences of altruism on capital accumulation and population growth make the result ambiguous. See, for example, Barro-Becker (1989) and Becker-Barro (1988).

Appendix: Comparative Statics for Section II
The Effects of Altruism on Fertility and Migration

Substituting constraints into the utility function, couples choose (*n,m*) to solve

$$
\begin{aligned}
&Max\ U(c_0,c_1) = 2v(w_0 - kn - m) + \rho(n + 2)v(w_1(1+rm)) \\
&\quad such\ that\ \ m \geq 0,\ k \geq 0\ .
\end{aligned}
$$

First order conditions are:

$$
\begin{aligned}
0 &= U_n = -2kv'(c_0) + \rho v(c_1) \\
0 &= U_a = -2v'(c_0) + \rho(n+2)w_1 r v'(c_1)
\end{aligned}
$$

Second order conditions are:

$$
\begin{aligned}
U_{nn} &= 2k^2 v''(c_0) < 0\ , \\
U_{mm} &= 2v''(c_0) + \rho(n+2)w_1^2 r^2 v''(c_1) < 0\ , \\
\Delta &\equiv U_{nn}U_{mm} - U_{mn}^2 > 0\ , \\
where\ U_{mn} &= 2kv''(c_0) + \rho v'(c_1)w_1 r\ .
\end{aligned}
$$

To solve the comparative static effects of changing ρ, we use the following simplifying result.

$$
\begin{aligned}
&U_{n\rho} = v(c_1) > 0 \\
&and\ U_{m\rho} = (n+2)w_1 r v'(c_1) > 0 \\
&so\ applying\ the\ first\ order\ conditions\ yields \\
&U_{n\rho} = kU_{m\rho}\ .
\end{aligned}
$$

Now applying Cramer's rule yields positive effects of altruism on both *n* and *m* in the neighborhood of a maximum.

$$\begin{aligned}\frac{dn}{d\rho} &= \frac{[U_{nm}U_{m\rho} - U_{n\rho}U_{mm}]}{\Delta} \\ &= \frac{U_{m\rho}}{\Delta}[U_{nm} - kU_{mm}] \\ &= \frac{U_{m\rho}}{\Delta}[2kv''(c_0) + \rho v'(c_1)w_1 r - k(2v''(c_0) + \rho(n+2)w_1^2 r^2 v''(c_1))] \\ &= \frac{U_{m\rho}}{\Delta}\rho w_1 r[v'(c_1) - k(n+2)w_1 r v''(c_1)] > 0 .\end{aligned}$$

$$\begin{aligned}\frac{dm}{d\rho} &= \frac{[U_{nm}U_{n\rho} - U_{m\rho}U_{nn}]}{\Delta} \\ &= \frac{U_{m\rho}}{\Delta}[U_{nm}k - U_{nn}] \\ &= \frac{U_{m\rho}}{\Delta}[k(2kv''(c_0) + \rho v'(c_1)w_1 r) - 2k^2 v''(c_0)] \\ &= \frac{U_{m\rho}}{\Delta}k\rho w_1 r v'(c_1) > 0 .\end{aligned}$$

These are the results reported in Section II.

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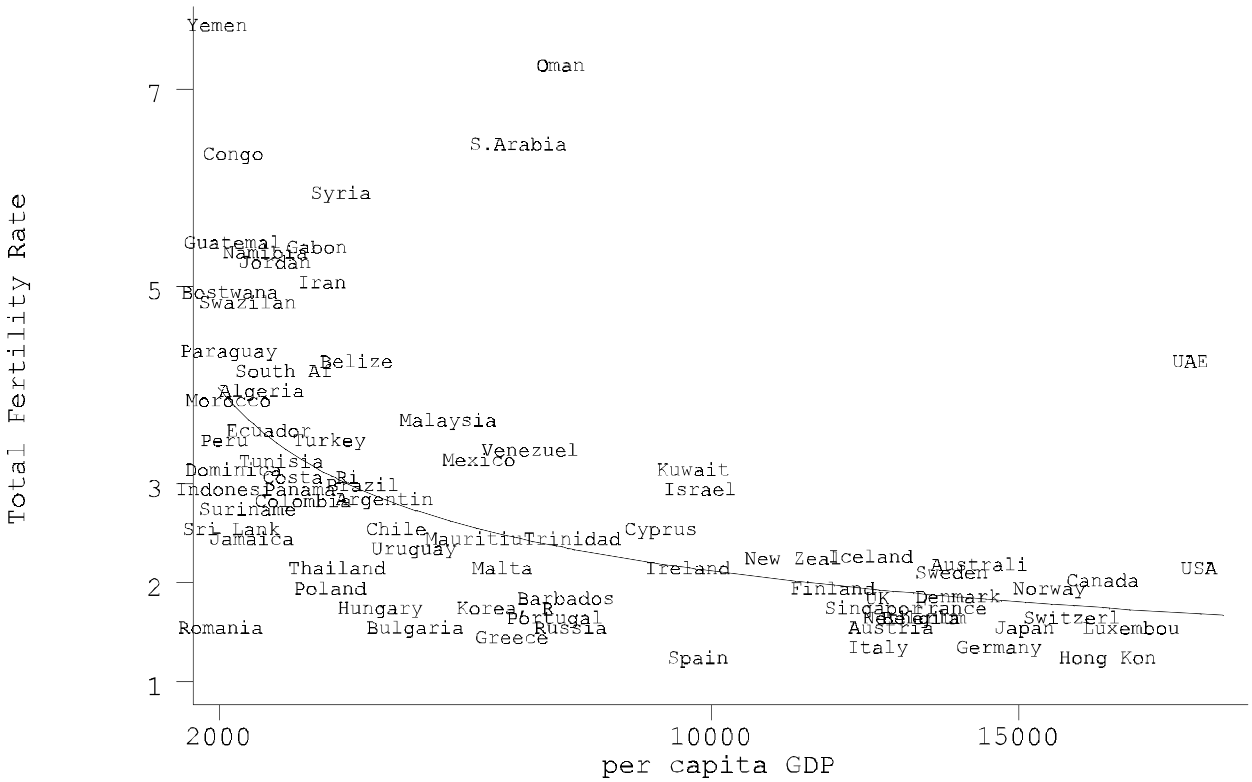

Figure 1: Fertility and Income, 1992

Source: UN Demographic Yearbook, 1994; World Tables 1995.

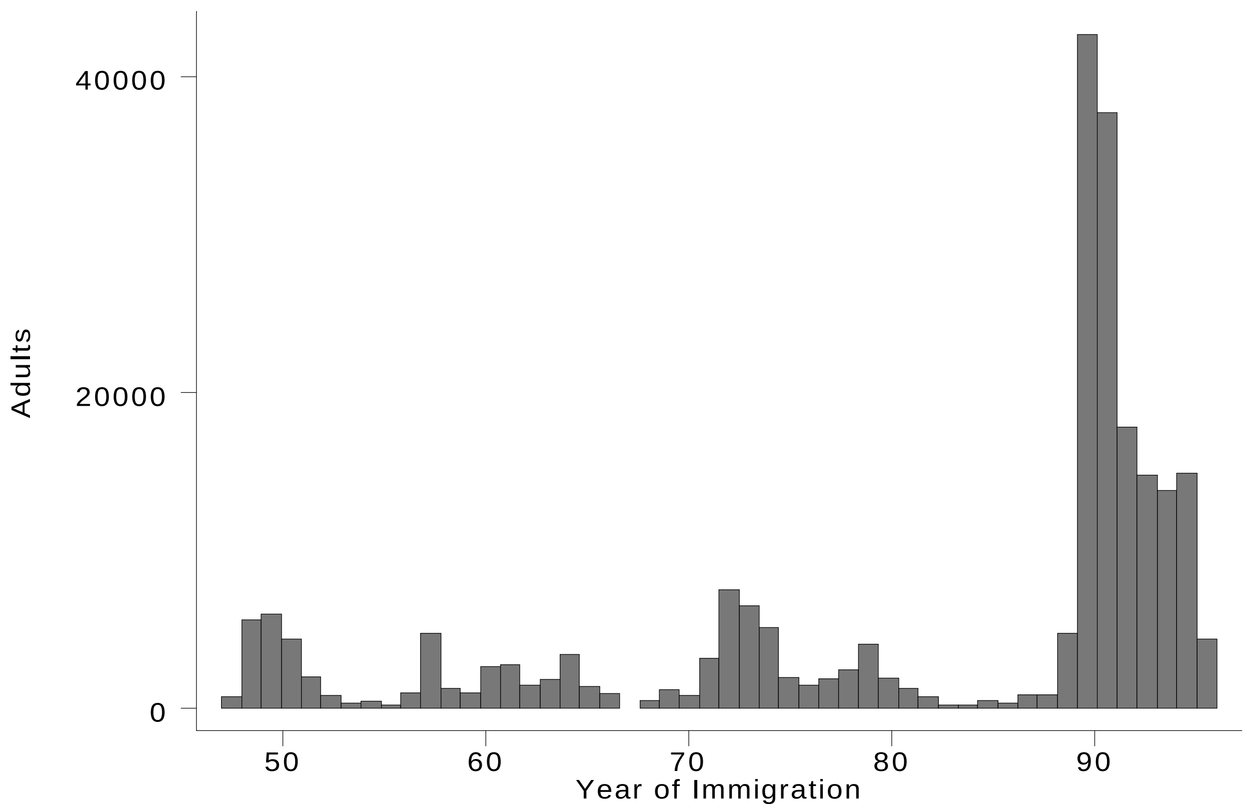

Figure 2: Adult Immigrants from Eastern Europe: 1945-96
Source: Israel Labor Force Survey, 1996.

Note: The Figure represents the distribution of arrival years for immigrants aged 25 and over in 1996. Eastern Europe refers to the former USSR, Poland, Romania, the former Yugoslavia, Bulgaria, Albania and the former Czechoslovakia.

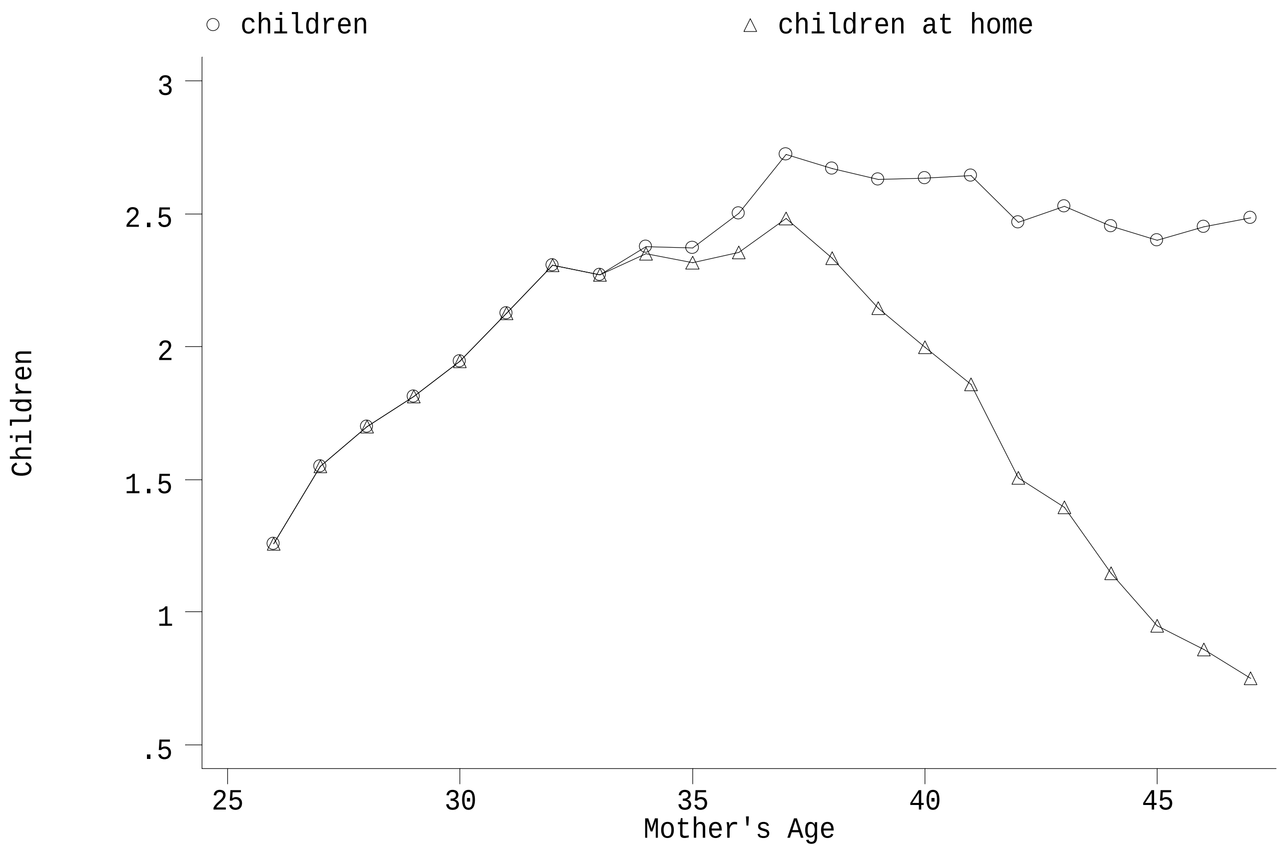

Figure 3: Estimated Fertility Using Children at Home
Source: Israel Labor Force Survey 1974-1996, author's calculations.

Note: Children at home are aged 0-17. "Children" is estimated for mothers aged 33 and older by adding their observed children at home to an estimate of unobserved children based on observed children at home for younger mothers. See Section III.A for details.

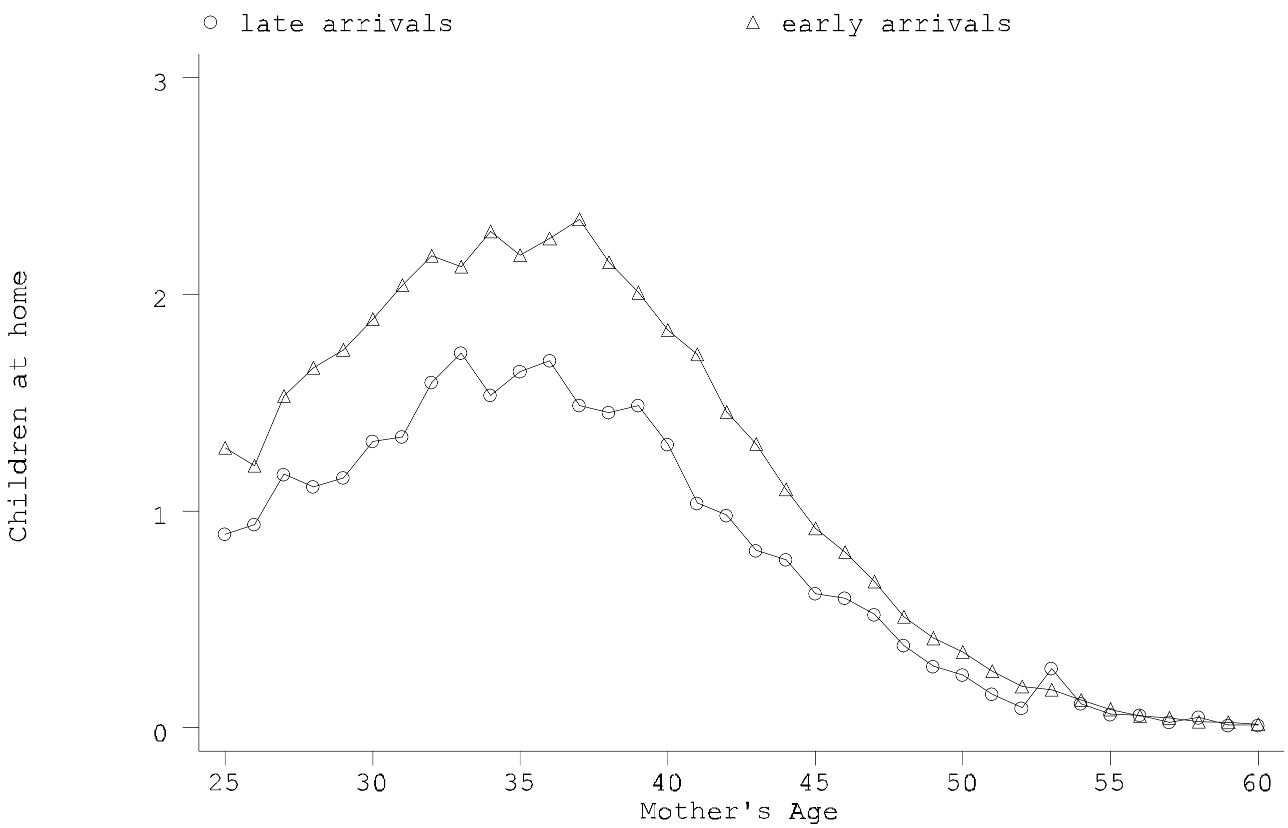

Figure 4: Children of High and Low Cost Arrival Cohorts from Eastern Europe
Source: Israel Labor Force Survey: 1974-1996

Note: Children at home are aged 0-17, so they underestimate lifetime fertility. “Early” (high cost) cohorts arrive by 1982. “Late” (low cost) cohorts arrive beginning in 1989. Eastern Europe refers to the former USSR, Poland, Romania, the former Yugoslavia, Bulgaria, Albania and the former Czechoslovakia.

Table 1: Characteristics of Late and Early Arrivals

Women aged 38-47 born in former Soviet Union, observed in Israel

Variable	Arrived 1989-96 (aged 38 or more on arrival)	Arrived 1960-82 (aged 35 or more on arrival)	Arrived 1960-82 (aged 20 or less on arrival)
Year of Birth	1949.6	1939.9	1951.6
	(0.08)	(0.15)	(0.28)
Children at home aged 0-17	0.91	1.43	1.74
	(0.03)	(0.13)	(0.10)
aged 10-17	0.65	0.53	1.18
	(0.02)	(0.07)	(0.07)
Predicted children	1.71	2.45	2.49
(all ages)	(0.02)	(0.12)	(0.09)
Year observed	1993.4	1983.0	1992.8
	(0.06)	(0.25)	(0.23)
Year of Immigration	1991.1	1977.3	1968.3
	(0.05)	(0.18)	(0.37)
Jewish	0.93	1	0.995
	(0.08)	(0)	(0.005)
Currently Married	0.77	0.80	0.86
	(0.01)	(0.03)	(0.03)
Years of Education	14.3	12.2	12.8
	(0.09)	(0.33)	(0.23)
Ultra-Orthodox	0.002	0*	0.02
	(0.002)	(0)	(0.01)
Observations	939	148	186

Source: Israel Labor Force Survey micro data 1974-96. Sample includes immigrant women from the former U.S.S.R.. Weighted with sampling weights.
 * based on 132 observations

Table 2: Treatment and Selection Effects on Fertility

Post 1989 Soviet immigrants compared with pre 1982 immigrants

Left hand variable: Predicted number of children

explanatory variables	1960+	all years
selection:	0.74	0.74
arrived early (by 1982)	(0.12)	(0.12)
treatment:	0.04	0.11
arrived early and young	(0.15)	(0.12)
(aged ≤ 20 on arrival)		
constant	1.71	1.71
	(0.02)	(0.02)
Root MSE	0.90	0.93
R-squared	0.11	0.16
Observations	1273	1739

Source: See Table 1 for a description of the sample.
Note: Estimating equation (4) is described in text. Identification requires assuming that the main effect of being a member of the "young" birth cohort is zero, following the discussion of equation (3) in text. Heteroskedasticity-consistent standard errors in parentheses. All specifications weighted using sampling weights.

Table 3: Observed Fertility of Urban Russians

Children per woman through reported age

	year		
age group	1977	1982	1992
35-39	2.0	1.9	1.9
(birth-years)	(1938-42)	(1943-47)	(1948-52)
40-44	NA	2.0	2.0
(birth-years)		(1938-42)	(1943-47)

Authors' calculation of observed fertility for synthetic cohorts. Based on age-specific fertility rates reported at five year intervals, beginning at ages 15-19 in Vishnevsky (1996), Figure 1.1. For example,1982 figure for 35-39 year-olds calculated by adding age specific fertility rates recorded in 1962, 1967, 1972, 1977 and 1982.

Table 4: Summary Statistics for Predicting Children at Home

	Full sample		Sample with USSR republic information	
variable	mean	standard deviation	mean	standard deviation
Children aged 0-17 at home	0.91	1.15	0.81	1.11
arrived early (by 1982)	0.81	0.39	0.82	0.38
arrived this year or last	0.06	0.25	0.03	0.17
y (Years since migration)	20.8	14.1	24.3	13.4
y^2	630	648	773	650
y^3	21793	29632	27161	30530
f (Childbearing years since migration: 17-42)	9.3	6.7	10.9	6.5
f^2	132	124	161	123
f^3	2048	2153	2534	2179
Birth decade:				
1910s	0.04	0.19	0.04	0.20
1920s	0.22	0.41	0.24	0.43
1930s	0.24	0.43	0.25	0.44
1940s	0.26	0.44	0.24	0.43
1950s	0.17	0.38	0.14	0.35
1960s	0.08	0.26	0.07	0.26
1970s	0.003	0.056	0.005	0.071
Country of Origin:				
USSR	0.46	0.50	0.23	0.42
Poland	0.17	0.38	0.25	0.43
Romania	0.28	0.45	0.40	0.49
Yugoslavia	0.01	0.10	0.01	0.11
Bulgaria	0.05	0.21	0.07	0.25
Albania	0.00003	0.006	-	-
Czechoslovakia	0.03	0.17	0.04	0.21
Observations	32308		23129	

Source: Israel Labor Force Survey 1974-1996. Children at home are "own children" aged 0-17, living at home, for women aged 25-42. In 1974-79 "own children" is not reported, but children in household is reported instead. For that period "own children" is predicted using the coefficient estimated from regression of "own children" on household children in the later period (a=-0.008, b=0.98, R^2 = 0.96.) Weighted using sampling weights. The LFS has a - 2 quarter in, 2 quarter out, 2 quarter in - rotation group structure. The "full sample" includes all households once, resulting in an oversampling of the initial survey year, 1974, and draws incoming rotations for 1975-1996. The sample with republic information has the same structure but includes only survey years 1995 and 1996 for immigrants from USSR, and oversamples 1995 (when republic information is available) while not sampling survey year 1994 and the fourth quarter of 1993 to include households only once.

Table 5: Treatment and Selection Effects on Children at Home

Left hand variable: Children aged 0-17 living at home

explanatory variables	"arrived early" reflects both treatment and self-selection				"arrived early" reflects only self-selection		
arrived early	**0.376**	**0.367**	**0.410**	**0.490**	**0.327**	**0.331**	**0.323**
(by 1982)	(0.014)	(0.016)	(0.018)	(0.021)	(0.026)	(0.026)	(0.028)
y (Years since migration)					0.018	0.030	0.020
					(0.002)	(0.002)	(0.004)
y^2					-0.00026	-0.00037	0.00004
					(0.00003)	(0.00003)	(0.00019)
y^3							-0.000004
							(0.000002)
f (Childbearing years						-0.031	-0.136
since migration: 17-42)						(0.005)	(0.010)
f^2						0.00076	0.018
						(0.00023)	(0.001)
f^3							-0.00069
							(0.00006)
Arrived this year		-0.031	-0.036	-0.016	0.043	0.037	-0.055
or last		(0.025)	(0.025)	(0.025)	(0.026)	(0.026)	(0.028)
age indicators (36)	✔	✔	✔	✔	✔	✔	✔
country indicators (6)			✔	✔	✔	✔	✔
birth decade indicators (6)				✔	✔	✔	✔
R-squared	0.472	0.472	0.473	0.476	0.478	0.480	0.483
Observations	32308	32308	32308	32308	32308	32308	32308

Source: Israel Labor Force Survey 1974-1996. Includes all observations in 1974 and incoming rotations in other years.
Note: The left hand variable is "own children" aged 0-17, living at home, for women aged 25-42. Multiply by 2.16 to convert to lifetime fertility (as explained in Section IV). In 1974-79 "own children" is not reported, but children in household is reported instead. For that period we predict "own children" using the coefficient estimated from regression of "own children" on household children in the later period (a=-0.008, b=0.98, R^2 = 0.96.) The seven birth decades are 1910s through 1970s. The seven country groups are USSR, Poland, Romania, Yugoslavia, Bulgaria, Albania, Czechoslovakia.
Heteroskedasticity-consistent standard errors in parentheses. All specifications weighted using sampling weights.

Table 6: Treatment and Selection Effects on Children at Home Including Republic Effects

Left hand variable: Children aged 0-17 living at home

explanatory variables	"arrived early" reflects both treatment and self-selection				"arrived early" reflects only self-selection		
arrived early	**0.342**	**0.336**	**0.511**	**0.503**	**0.264**	**0.247**	**0.202**
(by 1982)	(0.018)	(0.018)	(0.038)	(0.038)	(0.045)	(0.046)	(0.047)
y (Years since migration)					0.021	0.040	0.039
					(0.002)	(0.003)	(0.006)
y^2					-0.00030	-0.00049	-0.00046
					(0.00004)	(0.00004)	(0.00024)
y^3							-0.000001
							(0.000003)
f (Childbearing years						-0.041	-0.158
since migration: 17-42)						(0.005)	(0.012)
f^2						0.0009	0.020
						(0.0003)	(0.002)
f^3							-0.0007
							(0.0001)
Arrived this year		-0.043	-0.038	-0.037	0.047	0.052	-0.036
or last		(0.044)	(0.044)	(0.044)	(0.045)	(0.045)	(0.049)
age indicators (36)	✔	✔	✔	✔	✔	✔	✔
country and republic indicators (19)			✔	✔	✔	✔	✔
birth decade indicators (6)				✔	✔	✔	✔
R-squared	0.488	0.488	0.493	0.497	0.499	0.502	0.505
Observations	23129	23129	23129	23129	23129	23129	23129

Source: Israel Labor Force Survey 1974-1996. See note to Table 4 for a description of sample.
Note: The left hand variable is "own children" aged 0-17, living at home, for women aged 25-42. In 1974-79 "own children" is not reported, but children in household is reported instead. For that period "own children" is predicted using the coefficient estimated from regression of "own children" on household children in the later period (a = -0.008, b = 0.98, R^2 = 0.96.) The seven birth decades are 1910s through 1970s. The six country groups are USSR, Poland, Romania, Yugoslavia, Bulgaria, Czechoslovakia. The 13 republics are Lithuania, Latvia, Estonia, Belorussia, Ukraine, Russia, Moldavia, Azherbaijan, Kazhakastan, Turkimenistan, Tajikistan, Uzbekistan, Kirgistan.
Heteroskedasticity-consistent standard errors in parentheses. All specifications weighted using sampling weights.

Table 7: Immigrants and Indicators of Altruism: Descriptive Statistics

U.S. Health and Retirement Survey

	Full sample, including spouses		Sample of working grandmothers	
	Mean	Std. Deviation	Mean	Std. Deviation
Inheritance important[1]	1.96	0.74		
Will leave large inheritance[2]	2.53	1.38		
Annual hours with grandchildren			832	1059
Immigrant	0.10	0.29	0.07	0.25
Age	56.1	4.9	54.6	4.1
Female	0.49	0.50		
Currently married	0.65	0.48	0.57	0.50
Years since migration (immigrants only)	25.2	11.9	26.2	12.1
Religious observance[3]	2.9	1.4	3.0	1.3
Net Worth ($1000s)	210	483	139	301
Grandchildren	2.4	4.3	5.1	4.5
Years of schooling completed[4]	12.5	3.8	12.4	2.9
Children	1.8	2.3	3.6	1.9
Children with annual income above $30,000	0.2	0.3	0.4	0.4
Weekly work hours			37.2	11.2
Observations	6686		551	

Source: U.S. Health and Retirement Survey, 1992 wave.

Notes: [1] "Inheritance important" is coded as 1- "not important," 2 - "somewhat important" or 3 - "very important."

[2] "Will leave large inheritance" coded from 1 to 5 in increasing inheritance. 6709 observations.

[3] Religious observance is an index with values ranging from 1 to 5 in ascending order of observance.

[4] Years of schooling completed is recorded for years 0-16, with postgraduate study recorded as 20.

Table 8: Predictors of Altruism: Inheritance

U.S. Health and Retirement Survey

Left hand variable: Indicator of Altruism	Importance of Inheritance (Scale from 1 to 3)			Will leave "sizeable" Inheritance (Scale from 1 to 5)		
Immigrant	**0.175**	**0.182**	**0.148**	**-0.176**	**-0.104**	**0.040**
	(0.071)	(0.071)	(0.071)	(0.116)	(0.110)	(0.109)
Religious observance	0.035	0.035	0.035	0.063	0.064	0.063
	(0.007)	(0.007)	(0.007)	(0.012)	(0.012)	(0.012)
Net worth ($1000s)		0.0001	0.0001		0.00068	0.00063
		(0.00002)	(0.00002)		(0.00005)	(0.00005)
Grandchildren		-0.0004	-0.0025		-0.020	-0.006
		(0.0025)	(0.0036)		(0.004)	(0.006)
Years of schooling			-0.007			0.034
			(0.003)			(0.005)
Children			0.002			-0.021
			(0.007)			(0.013)
Children with annual income above $25,000			-0.094			0.200
			(0.030)			(0.054)
Constant	2.01	2.01	2.01	2.55	2.53	2.11
	(0.11)	(0.11)	(0.11)	(0.20)	(0.20)	(0.21)
Root mean sq. error	0.73	0.73	0.73	1.36	1.32	1.31
R-squared	0.009	0.013	0.013	0.028	0.091	0.101
Observations	6686	6686	6686	6903	6903	6903

Source: U.S. Health and Retirement Survey, 1992 wave. See Table 7 for descriptive statistics. All specifications include age, years since migration and indicators of marital status and gender.

Table 9: Predictors of Altruism: Time with Grandchildren

U.S. Health and Retirement Survey

Left hand variable: Indicator of Altruism	Hours spent with grandchildren				
	All Grandmothers	Working Grandmothers			
Immigrant	**203**	**237**	**759**	**1160**	**963**
	(99)	(155)	(376)	(565)	(565)
Weekly hours		-3.91	-5.52	-2.35	-1.07
		(2.74)	(2.82)	(3.90)	(3.96)
Age			-12.9	-26.9	-14.9
			(7.2)	(12.2)	(12.6)
Currently Married			-130	-87.3	-62.3
			(77)	(91.4)	(91.7)
Years Since Migration			-18.0 (10.8)	-22.9 (16.1)	-20.5 (16.1)
Religious observance			9.3 (25.6)	28.0 (34.2)	32.6 (33.0)
Net worth ($1000s)				-0.055 (0.152)	-0.082 (0.166)
Grandchildren				6.2 (9.8)	2.1 (14.9)
Years of schooling					-41.3
					(19.8)
Children					-16.1
					(32.4)
Children with annual income above $25,000					-301 (118)
Constant	866	914	1727	2290	2277
	(26)	(107)	(429)	(687)	(732)
Root mean sq. error	1121	1041	1017	1050	1037
R-squared	0.003	0.005	0.015	0.033	0.060
Observations	2046	1034	978	551	551

Source: HRS, 1992. See Table 7 for descriptive statistics.