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Chapter Author: Francine D. Blau

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4 The Fertility of Immigrant Women: Evidence from High-Fertility Source Countries

Francine D. Blau

Although women have constituted the majority of immigrant flows during most of the post–World War II period,[1] surprisingly little attention has been devoted to them in the research on immigrants by economists. This study addresses this research need by examining immigrant women's fertility behavior. I focus on immigrants from the Middle East, Asia, Latin America, and the Caribbean. This is a particularly interesting group to study for two reasons. First, immigration from these areas has increased considerably in recent years, from 29 percent of immigrants in the 1950s to 77 percent in the 1970s (Blau 1986).[2] Second, fertility rates in many, although not all, of these source countries are considerably higher than those in the United States, averaging in excess of 5.5 children per woman during the early 1960s and 1970s, in comparison to 3.3 and 2.0 children per woman, respectively, for these periods in

Francine D. Blau is professor of economics and labor and industrial relations at the University of Illinois at Urbana-Champaign and a research associate of the National Bureau of Economic Research.

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1. This situation appears to have changed in the 1980s, when women made up slightly less than half of immigrants (U.S. Immigration and Naturalization Service 1986; U.S. Bureau of the Census 1980).

2. Immigrants from Africa were not included in this study both because they constitute a very small proportion of the total and because South Africa and Egypt are the only African countries separately identified in the 1970 Census (and Egypt has been included here as part of the Middle East).

the United States.[3] If these extremely high fertility rates were maintained by immigrant women in the United States, the implications for the average rate of natural increase of the U.S. population would be substantial.

The fertility decisions of immigrant women and their families are also of interest owing to their effect on the economic status of the family. Since fertility tends to be inversely related to female labor force participation (see, e.g., Smith 1980), large family size may be expected to have an adverse effect on family income. Further, at any given level of family resources, more children imply smaller levels of investment per child and thus lower child quality and reduced earnings for subsequent generations (Becker 1981; Chiswick 1988).

But do these immigrant women differ significantly from the native born in their fertility behavior? The answer to this question is far from obvious but will depend on the selectivity of immigrants relative to the source country population, the effect of source country characteristics on immigrants' behavior in the United States, and the extent and speed of immigrants' adaptation to conditions in the United States. In addressing these issues, previous research on immigrant women's fertility (e.g., Bloom and Killingsworth 1985; Kahn 1988; and Ford 1990) has relied on cross-sectional analyses of the data, measuring the effect of length of time in the United States by differences in fertility among immigrants who have resided in the United States for varying lengths of time.[4] However, using this approach, it is not possible to distinguish between the true effect of U.S. residence on fertility (i.e., changes over time in the fertility behavior of a given cohort of immigrants as they reside in the United States for additional years) and cohort effects (i.e., cross-sectional differences in the fertility behavior of immigrants who arrived in the United States at different points in time). Given shifts over time in economic and political conditions in source countries and changes in U.S. immigration policies affecting who is admitted into this country, the possibility of cohort effects is a very real one.

A particularly interesting feature of this study is that I analyze immigrant-native differences in fertility within a framework initially developed by Borjas (1987) for analyzing male earnings. Through the use of two cross sections of data, the effect of length of residence can be distinguished from cohort effects. In addition, I examine the influence of a wide range of source country char-

3. Fertility is measured by the total fertility rate. The immigrant average is weighted by the representation of women from that country in the 1970 and 1980 Censuses.

4. An exception is a study of Gorwaney et al. (1989) that calculates incremental fertility between the 1970 and the 1980 Censuses for a number of immigrant groups. The information provided by this study is limited, however, because, apart from age, no factors are controlled for and because no baseline measure of immigrant fertility relative to native fertility is obtained (i.e., natives are not included in the study). So, e.g., the authors claim that larger incremental fertility over the period for immigrants who were recent arrivals in 1970 than for longer-term residents is indicative of assimilation. However, without an initial comparison of fertility to otherwise similar natives or a knowledge of incremental fertility of natives over the period, it is not possible to ascertain which of a number of alternative views of immigration (discussed below) this finding supports.

acteristics on immigrant women's fertility. I also compare the fertility of immigrants to that of otherwise similar natives. Studies by demographers have tended to focus solely on immigrants (e.g., Kahn 1988; Gorwaney et al. 1989; Ford 1990). The comparison to natives is not only of interest from a policy perspective but, as we shall see, is essential to distinguishing among alternative views of immigrant women's fertility behavior.

The plan of the paper is as follows. I begin with an overview of the data and of the immigrant-native fertility comparisons. In the next section, I consider alternative views of immigrant fertility behavior. I then present the framework for the empirical analysis followed by my findings regarding immigrant-native fertility differences, the effect of years of residence on immigrant fertility, and the effect of source country variables on immigrant fertility. I conclude with a summary of findings and a discussion of their implications.

4.1 Overview of Data and Immigrant-Native Comparisons

Fertility is analyzed using data from the 1 Percent County Group Public Use Sample of the 1980 Census and the 1 Percent State Public Use Sample of the 1970 Census. The sample is restricted to women aged 18–54, and inmates in group quarters are excluded. Native-born women are also excluded if they were born abroad, at sea, or in outlying areas of the United States. Immigrant women are excluded if information on the period of their immigration is missing.[5] The complete sample was used in creating the immigrant extracts; however, random samples were employed for some native race/ethnic groups.[6]

An overview of immigrant-native fertility differences by length of residence is presented separately for all women and for married spouse-present women in table 4.1. Fertility is measured by number of children ever born. The unadjusted figures are simply the observed means. We also show results adjusted for age on the basis of regression equations controlling only for age and (for immigrants) dummy variables for years since migration (YSM). The regressions are evaluated at the immigrant mean age in each year. While overall immigrant-native differences in age are small, YSM is highly positively correlated with age. Thus, in order to identify fertility patterns by YSM group, it is important to net out age effects.

The most striking result of the table is the relatively small difference in fertility between immigrants and natives in each year. In 1970, the fertility of

5. This exclusion is required to ensure consistency between the two Censuses. In the 1970 Census, "not reported" is explicitly listed as a code for the period of immigration variable, whereas, in the 1980 Census, period of immigration was imputed in such cases.

6. The following sampling percentages were employed: 0.1 percent of Hispanics and non-Hispanic Indians and 0.05 percent of non-Hispanic blacks and whites. The full (1 Percent) sample of non-Hispanic other nonwhites was included. In the results presented below, native means are weighted by the inverse of the sample probabilities.

Table 4.1 **Overview of Immigrant-Native Differences in Fertility by Length of Residence**

	1970		1980	
	All	Married	All	Married
	Means			
Unadjusted:				
Natives	2.098	2.508	1.764	2.225
Immigrants	2.028	2.454	1.943	2.357
Adjusted for age:[a]				
Natives	2.196	2.571	1.812	2.168
Immigrants	2.029	2.454	1.943	2.351
YSM 0–5	1.776	2.172	1.983	2.401
YSM 6–10	1.939	2.322	2.023	2.440
YSM 11–15	2.208	2.647	1.808	2.207
YSM 16–20	2.313	2.759	1.771	2.188
YSM 20+	2.636	3.049	1.999	2.426
	Differentials			
Unadjusted	−.070	−.054	.179	.132
Adjusted for age:[a]				
All cohorts	−.167	−.117	.124	.183
YSM 0–5	−.419	−.399	.171	.233
YSM 6–10	−.257	−.249	.211	.272
YSM 11–15	.012	.076	−.004	.039
YSM 16–20	.117	.188	−.041	.020
YSM 20+	.440	.478	.186	.258

[a]Based on fertility regressions, including controls for age, age squared, and (for immigrants) dummy variables for length of residence, evaluated at the immigrant means in each year.

immigrants was about the same as natives; in 1980, it was only .18 higher. These small unadjusted differentials are surprising in light of the high average fertility rates in the countries of origin and the substantial differences in the individual characteristics of immigrants and natives detailed below. One important focus of my empirical work will be to shed light on the reasons for the relatively small immigrant-native differences in fertility. This finding of small unadjusted differentials is important in and of itself in that, from a policy perspective, it is to some extent the unadjusted differentials that are of particular interest.[7] That is, fertility differences between immigrants and natives have potential effects on the domestic economy regardless of whether they are

7. This finding must be regarded with some caution, however, given the censored nature of the fertility variable. Many of the women in the sample have not yet completed their fertility, and, as we shall see, the fertility of immigrant women may follow a very different time path than that of native women. Thus, even after adjusting for age, cross-sectional comparisons may give a misleading picture of eventual fertility outcomes. This issue is considered in greater detail below.

due to differences in the characteristics (means) of the two groups or to differences in the immigrant-native response to those characteristics (coefficients).

The immigrant-native differentials for 1970 and 1980 also indicate that relative immigrant fertility trended upward over the 1970s. Table 4.1 indicates that this was the result of larger declines in fertility for natives than for immigrants over the decade. The age-adjusted fertility of natives declined by .384 among all women and by .403 among married spouse-present (MSP) women compared to declines of .086 and .103, respectively, for immigrants. The trends among immigrants were in turn tied to an increase in the relative fertility of new arrivals (YSM 0–10), who had higher fertility compared to natives in 1980 than in 1970 and whose fertility was absolutely greater in 1980 than that of new arrivals in 1970. The reason for these trends and their implications for future immigrant-native fertility differences will be considered below.

Finally, the data in table 4.1 suggest that cross-sectional differences in age-adjusted fertility by YSM group may not be a very good indication of the actual effect of years of residence on fertility. Cross-sectional comparisons in 1970 suggest that fertility increased with years of residence, while the 1980 figures suggest roughly declining fertility with longer residence. However, when we compare the relative fertility of recent arrivals in 1970 (YSM 0–5 and YSM 6–10) to the relative fertility of the same group in 1980 (YSM 11–15 and YSM 16–20), we find that fertility compared to natives increased over the decade. This pattern is consistent with the notion that immigration initially disrupts fertility. Temporal patterns of immigrant fertility will be analyzed in considerably greater detail below, holding constant a variety of other determinants of fertility.

4.2 Immigration and Fertility: Alternative Views

Economic models of fertility (see, e.g., Becker 1981; and Schultz 1981) suggest that the major determinants of the demand for children are the woman's potential market wage, her husband's income (if she is married) or other sources of nonlabor income, costs of market inputs into producing children, and the tastes for children of the woman and her family. Increases in the woman's own wage and her husband's income have both income and substitution effects on the demand for children. Given the traditional division of labor in most families, with the wife providing the major time inputs into child rearing, however, the wife's wage is expected to serve primarily as an indicator of the (opportunity) cost of time inputs. Thus, the effect of increases in the wife's wage on the demand for children is expected to be negative, ceteris paribus (Butz and Ward 1979). Husband's income, on the other hand, is expected to represent primarily the income available to the family. Its sign is uncertain a priori since an increase in income is expected to raise the demand for child quality as well as child quantity and thus to have an ambiguous effect on the number of children (Becker 1981).

In the context of this model, immigrant fertility may differ from that of otherwise similar native-born women owing to differences in tastes or differences in wages (and husbands' incomes) of immigrant and native women with similar characteristics. The prevailing view in the few previous economic analyses of immigrant fertility emphasizes what I shall term the *assimilation model* (Ben-Porath 1973; Bloom and Killingsworth 1985). In the case of high-fertility source countries, immigrant women's fertility is expected to exceed that of their native-born counterparts initially (reflecting conditions in the country of origin) but to approach native fertility over time with increasing residence in the United States.[8] Kahn (1988) finds cross-sectional evidence from the 1980 Census that is consistent with the notion of assimilation. Ben-Porath (1973) presents evidence from Israel that also supports this model.[9]

This is certainly an intuitively appealing view. The climate in which a woman is reared is likely to influence her tastes and preferences for children. In addition, the type of human capital investments made by women in high-fertility countries (controlling for their level) may be less market oriented, thus lowering their potential market wages and the opportunity cost of children. Finally, women who emigrate after reaching adulthood may have already begun their families, thus imparting a fairly direct relation between immigrant women's fertility and conditions in the source country. Over time, we would expect these differences to diminish as immigrant women respond to economic conditions and opportunities in the United States and are increasingly exposed to prevailing attitudes toward fertility. This reasoning also suggests that the effect of source country characteristics should be greater for women who emigrated to the United States as adults.

The assimilation model contains three separable although interdependent sets of predictions regarding (1) the initial level and time path of relative immigrant fertility, (2) (somewhat more indirectly) the level of overall fertility of a cross section of immigrants relative to otherwise similar natives, and (3) the effect of source country characteristics on immigrant fertility in the United States. While the assimilation model is intuitively appealing, there are plausible alternatives with respect to each of these components that need to be considered.[10] The picture of immigrant-native differences in fertility and of the immigrant fertility adjustment process may in fact be quite different than that suggested by the assimilation model. I consider each of these predictions, and the corresponding alternatives, below.

First, with respect to the initial level and time path of immigrant fertility,

8. Average fertility in the country of origin may be influenced by such underlying economic conditions as infant mortality rates and per capita income levels and as well as by tastes for children. The consequences of the reason for the higher fertility rates in the source country for immigrant fertility behavior in the United States are considered below.

9. See also the findings of Gorwaney et al. (1989).

10. Some of these are derived from the demographic literature. For useful summaries, see Kahn (1988) and Gorwaney et al. (1989).

the pattern predicted by the assimilation model may not be observed if the process of immigration results in a disruption or postponement of fertility. Such disruption may occur for two sets of reasons. First, there may be what can be termed *economic disruption:* wife's wage and husband's income may initially be depressed. While lower wife's wage could be associated with greater fertility (owing to a lower opportunity cost), lower husband's income may temporarily decrease fertility, depending on the sign of the income effect. Second, disruption may arise because of such demographic factors as delayed marriages or temporary separations of husbands and wives. If economic or demographic disruption occurs, the observed fertility of recent immigrants will be below their desired levels, and their relative fertility is expected to increase over time as actual fertility is adjusted to desired levels. While the assimilation model carries the strong prediction that the initial fertility of immigrants is above that of otherwise similar natives, the disruption model is focused solely on the time path of fertility and is consistent with either a positive or a negative initial differential. Ford (1990) and Bloom and Killingsworth (1985) find cross-sectional evidence that is consistent with disruption.[11]

Second, with respect to the overall level of ceteris paribus immigrant-native fertility differentials, the assimilation model implies that, unless assimilation is virtually instantaneous (see below), the overall fertility of a cross section of immigrants from high-fertility source countries will be higher than that of otherwise similar natives since the fertility of more recent cohorts is expected to be unambiguously higher than that of natives, while the fertility of earlier cohorts will approach (but presumably not fall below) that of natives. On the other hand, if disruption is pronounced or has permanent consequences (women whose fertility is delayed may never attain desired levels), the overall fertility of immigrant women may be lower than that of natives after controlling for observed characteristics.

Additional insight into immigrant-native differentials may be gained by considering the selectivity hypothesis. Immigrant women may be a self-selected group whose fertility is low relative to others in the source country owing either to tastes or to characteristics associated with labor market success. This may simply be the case because women who (for whatever reason) have fewer children are more mobile. In addition, where immigration is selective of relatively highly educated women, overall country average fertility rates are less likely to reflect the labor market opportunities and preferences of the group of women who actually emigrate to the United States.[12]

Consideration of the selectivity hypothesis suggests an additional factor

11. In Bloom and Killingsworth (1985), fertility is modeled solely as a function of age. As noted above, in Ford's (1990) study the fertility of recent immigrants is compared only to that of longer-term immigrants, not to that of natives.

12. Kahn (1988) finds that, the more selective immigration is of college-educated women, the lower the fertility of the group in the United States.

that would work to lower the fertility of immigrants relative to women in the country of origin. Immigration may be viewed as a form of human capital investment (Chiswick 1978). Thus, it may be selective not only of those who for various reasons have higher benefits relative to costs but also of individuals who are more future oriented (i.e., have lower discount rates). Such individuals may be more prone to engage in other types of human capital investments as well. This may be one reason why immigrants tend to have above-average levels of education relative to those prevailing in their countries of origin.[13] An additional manifestation of this future orientedness might be a greater willingness to invest in child quality.[14] This could result in lower fertility levels not only relative to women in the country of origin but also relative to otherwise similar women in the United States.

A final reason for expecting small fertility differences for immigrant women even initially is quite straightforward. To the extent that immigration is anticipated, it is possible that immigrant women's fertility is adjusted to conditions in the United States prior to immigration. We may term this the *instantaneous assimilation model.* To the extent that this is the case, initial immigrant-native differences would be reduced, as would the responsiveness of immigrant women's fertility to time spent in the United States.

Third, a reasonable implication of the assimilation model is that, within the group of immigrants, fertility will vary systematically with source country characteristics, the most obvious one being the fertility rate in the country of origin. That is, the assimilation model suggests that source country variables will influence the fertility behavior of immigrant women in the United States. As a consequence, immigrants from different nationality groups may exhibit quite different fertility behavior in the United States, depending on conditions in their country of origin. An effect of source country characteristics on immigrant fertility behavior is also consistent with the disruption and selection models. It is not, however, consistent with the instantaneous adjustment model.

4.3 Empirical Framework

The empirical work can be divided into two major sections. In the first, I estimate individual level fertility regressions in each year separately for immigrants and natives. These regression results are first used to shed light on

13. For evidence of this, see Borjas (1991) as well as the results presented in table 4.3 below.

14. Schultz (1984) presents cross-sectional evidence consistent with this view. He finds that, while the children of recent immigrants have fewer years of schooling than children of otherwise similar natives, children of earlier immigrant cohorts receive somewhat more schooling than the children of native parents. He also finds that "virtually every measure of child health limitation, condition and disability is found less frequently among children of immigrant parents than among children of native parents" (p. 281), although, as Schultz points out, these subjective measures of health as reported by parents may be subject to cultural biases.

the extent of ceteris paribus immigrant-native fertility differentials. This is of interest in light of the second prediction of the assimilation model discussed above. A key question here is whether immigrants from these on average high-fertility source countries do indeed have higher overall fertility than natives, ceteris paribus, or whether, owing to disruption or self-selection, they constitute a low-fertility group relative to otherwise similar natives. I also consider the sources of observed trends over the period in the fertility of immigrants relative to natives (i.e., the rising relative fertility of immigrants over the period 1970–80). The regression results are then used to investigate the effect of years of residence in the United States on immigrant women's fertility by constructing synthetic cohorts. This portion of the analysis is of interest in light of the first prediction of the assimilation model discussed above that immigrant women's fertility will initially be high relative to natives but will approach that of native women over time. In the second portion of the analysis, a two-stage procedure is employed to examine the effect of source country variables on ceteris paribus fertility differentials by nationality among immigrants.

The synthetic cohort approach (Borjas 1987) involves utilizing two nationally representative cross sections of data, in this case the 1970 and the 1980 Censuses, to track a particular cohort over time. The fertility of otherwise similar natives is used to determine the period effect. A drawback of this approach for which there is no obvious solution is that this comparison may be biased by the selectivity of the group included in each year owing to return migration on the one hand (see, e.g., Jasso and Rosenzweig 1990) and the 1970 Census undercount on the other.[15]

As noted above, an assimilation effect would be implied if immigrant women's initial fertility is high relative to their native-born counterparts but approaches that of native-born women over time. Alternatively, if immigrant women's fertility tends to increase over time relative to otherwise similar natives (regardless of its initial level), disruption will be suggested. Finally, where considerable adjustment to conditions in the United States occurs prior to immigration, initial immigrant-native differences will be small, and there is expected to be little effect of length of residence on immigrant-native fertility differentials.

The synthetic cohort approach is also helpful in addressing a problem that arises owing to the censored nature of the fertility variable. While some of the

15. On net, the undercount appears quantitatively more important than return migration for immigrants from these regions. The number of immigrant women aged 18–44 in 1970 who arrived in the United States before 1970, was 7,747 in the 1980 Census sample, compared to 7,317 in the 1970 Census sample. On the other hand, the number of native women aged 18–44 in 1970 in the sample declined slightly over the period (from 19,371 to 18,969), as would be expected owing to mortality and out-migration. The potential bias due to return migration or the undercount will depend on whether those who leave the United States and those who were omitted from the 1970 Census but included in the 1980 Census are a self-selected group with respect to their fertility behavior.

women in the sample will have completed their fertility, the reproductive life of many is ongoing. In addition, for the reasons indicated, the fertility of immigrant women may follow a very different time path than that of native women so that cross-sectional comparisons, even between women with similar observed characteristics, may give a misleading picture of eventual fertility outcomes. Following a given cohort over time sheds light on the direction and magnitude of any differences in fertility between immigrants and natives that are likely to result as the assimilation or disruption process plays itself out.

To make the analysis of individual fertility as comprehensive as possible, I estimate a reduced-form fertility model for all women, regardless of current marital status. I also estimate both reduced-form and structural fertility models for married spouse-present (MSP) women, a group for whom the determinants of fertility are better understood and better measured. The following equations are estimated separately for immigrants and natives in each year using ordinary least squares (OLS):

$$(1) \quad \text{FERTILITY}_i = \text{AGE}_i B_1 + \text{AGE-H}_i B_2 + \text{EDUCATION}_i B_3 + X_i B_x + \text{YSM}_i B_{\text{YSM}} + e_{i1},$$

$$(2) \quad \text{FERTILITY}_i = \text{AGE}_i b_1 + \text{LNYHAT-H}_i b_Y + \text{LNWGHAT}_i b_W + X_i b_X + \text{YSM}_i b_{\text{YSM}} + e_{i2},$$

where FERTILITY_i is a measure of cumulative fertility (number of children ever born) for individual i,[16] AGE and AGE-H denotes the age and age squared of the woman and her husband (where present), EDUCATION includes the education of the woman and her husband (where present), X is a vector of control variables, YSM is a vector of years-since-migration dummy variables included for immigrants, LNYHAT-H and LNWGHAT are predicted values of the natural log of husband's income and wife's wage,[17] and e_{i1} and e_{i2} are stochastic error terms. The reduced-form model includes controls for the underlying determinants of the woman's potential wage and her husband's income. The structural model explicitly includes the predicted values of LNWGHAT and LNYHAT-H as explanatory variables to understand their role in determining fertility patterns better. Variable definitions and means are shown in table 4.2.

16. The measure of fertility is truncated at zero. However, when selected specifications were estimated using tobit, a more appropriate technique under these circumstances, the results were quite similar.

17. LNYHAT-H and LNWGHAT were estimated on the basis of regression equations including controls for the individual's education, potential experience and potential experience squared, disability status, race/ethnicity, and years of residence in the United States (for immigrants), as well as region and standard metropolitan statistical area (SMSA) residence. Separate regressions were estimated for immigrants and natives (and their spouses) in each year. When a selectivity-bias correction was included in the LNWGHAT regression (see Heckman 1980), it was found to be significant; however, the estimated magnitudes of the coefficients were implausibly large for some groups when FERTILITY was omitted from the first-stage regression (as would be appropriate in this case) and quite sensitive to specification. Given general concerns over the lack of robustness of this correction (Manski 1989), the OLS results were used.

The woman's own age is obviously an important determinant of her cumulative fertility given the life-cycle pattern of childbearing. In the reduced form, the age and education variables are included as determinants of the wages of women (and the incomes of their husbands). The husband's age and the education variables of the woman and her husband are thus excluded from the structural model. The control variables include race and ethnicity (HISPANIC, BLACK, and OTHERNW) as well as the nativity of the husband (FOREIGN-H), included for both immigrant and native women, as proxies for group differences in tastes (and incomes in the reduced form). I also include marital history (AGEMAR and TMSMAR) and marital status (MSP) variables to adjust for differences in tastes for children and in the costs and benefits of childbearing across these various states. Finally, location variables (SOUTH, NCENT, WEST, and SMSA) are used to control for differences in the costs of market inputs across locations. Since the marital history variables—age at first marriage (AGEMAR) and whether married more than once (TMSMAR)—may plausibly be outcomes rather than determinants of women's fertility choices (Schultz 1981), I also estimate reduced-form equations excluding these variables.[18]

Following Ben-Porath (1973), I explore the issue of the effect of level of maturity at the time of immigration by distinguishing between immigrant women whose first marriage occurred abroad (MARABR = 1) and those whose first marriage occurred in the United States (MARHERE = 1).[19] Not only has the former group been subject to the effect of conditions in the source country for a longer period of time, but in addition these women may have begun childbearing before immigrating to the United States. They are also more likely to be "tied movers," a factor that would lower their expected market wage in the United States (Mincer 1978). Since the Census variables giving information on when the woman arrived in the United States specify only the interval during which immigration occurred (e.g., between 1975 and 1980), I also define a group for whom it is not possible to determine whether the woman's first marriage occurred in the United States or abroad (MARSAME = 1). Since slope coefficients may differ across these groups, I examine their effects by estimating additional regressions separately for each group.

The variable means shown in table 4.2 indicate that a high proportion of immigrant women from these source countries were recent arrivals in each year. In 1970, 65 percent had arrived in the preceding ten years; this was true of 58 percent in 1980. In addition, in each year approximately three-quarters of the married women arrived in the United States subsequent to or at about the same time as their first marriage. A review of the other variable means indicates that, compared to natives, immigrant women from these areas had lower average levels of education (1.6 years less in 1970 and 1.7 years less in

18. Ben-Porath (1973), on the other hand, favors the inclusion of marriage age since it may be exogenously delayed for immigrants.

19. See also the findings of Kahn (1988) regarding "adult" vs. "child" immigrants.

Table 4.2 Means of Individual Variables

Variables	1970 All Immigrants	1970 All Natives	1970 Married Immigrants	1970 Married Natives	1980 All Immigrants	1980 All Natives	1980 Married Immigrants	1980 Married Natives
FERTILITY = number of children ever born	2.028	2.098	2.454	2.508	1.943	1.764	2.347	2.225
AGE = age	33.911	34.536	35.155	36.377	33.515	33.271	34.939	35.962
AGE^2 = age squared (100s)	12.445	13.137	13.145	14.262	12.189	12.192	13.011	13.898
AGE-H = age of husband if married; 0 otherwise	26.765	27.599	39.203	39.519	25.594	23.953	38.825	38.853
AGE^2-H = age squared of husband if married (100s); 0 otherwise	11.264	11.792	16.499	16.884	10.676	10.042	16.195	16.288
EDUCATION = years of school completed	10.019	11.591	9.872	11.584	10.717	12.388	10.606	12.375
EDUCATION-H = education of husband if married; 0 otherwise	7.345	8.088	10.775	11.582	7.6650	7.816	11.620	12.677
LNYHAT-H = predicted natural log of husband's income in 1979 dollars (1,000s)	. . .	. . .	2.502	2.703	. . .	. . .	2.446	2.695
LNWGHAT = predicted natural log of women's hourly wage in 1979 dollars	. . .	. . .	1.452	1.492	. . .	. . .	1.448	1.457
TMSMAR = 1 if married more than once; 0 otherwise	.074	.109	.085	.123	.063	.124	.070	.154
AGEMAR = age at first marriage if ever married; 0 otherwise	18.485	16.902	22.790	20.531	18.092	15.624	22.800	20.524
MSP = 1 if married spouse present; 0 otherwise	.683	.698	. . .	. . .	.659	.617	. . .	. . .
OTHMAR = 1 if separated, divorced, or widowed; 0 otherwise	.130	.126	. . .	. . .	.136	.149	. . .	. . .
HISPANIC = 1 if Hispanic; 0 otherwise	.592	.029	.590	.028	.532	.036	.524	.033
BLACK = 1 if black non-Hispanic; 0 otherwise	.056	.111	.037	.080	.075	.127	.050	.076
OTHERNW = 1 if other nonwhite non-Hispanic; 0 otherwise	.224	.010	.244	.009	.317	.012	.347	.011

SOUTH = 1 if South; 0 otherwise	.241	.319	.243	.322	.244	.342	.258	.350
NCENT = 1 if North Central; 0 otherwise	.106	.277	.114	.286	.101	.263	.110	.273
WEST = 1 if West; 0 otherwise	.370	.168	.384	.169	.417	.184	.421	.181
SMSA = 1 if SMSA resident; 0 otherwise	.869	.631	.857	.616	.942	.747	.934	.715
FOREIGN-H = 1 if immigrant husband; 0 otherwise	.446	.015	.653	.021	.489	.014	.742	.023
YSM 0–5 = 1 if 0–5 years since immigration; 0 otherwise	.393	...	.353	...	.316	...	.293	...
YSM 6–10 = 1 if 6–10 years since immigration; 0 otherwise	.254	...	.266	...	.263	...	.271	...
YSM 11–15 = 1 if 11–15 years since immigration; 0 otherwise	.150	...	.161	...	.190	...	.193	...
YSM 16–20 = 1 if 16–20 years since immigration; 0 otherwise	.089	...	.094	...	.120	...	.121	...
YSM 21–25 = 1 if 21–25 years since immigration; 0 otherwise	.053	...	.059	...	...	...	...	...
YSM 25 + = 1 if more than 25 years since immigration; 0 otherwise	.062	...	.067	...	...	...	...	...
YSM 21–30 = 1 if 21–30 years since immigration; 0 otherwise	...	...	...	...	.090	...	.097	...
YSM 30 + = 1 if more than 30 years since immigration; 0 otherwise	...	...	...	...	.022	...	.024	...
MARABR = 1 if first marriage occurred before immigration; 0 otherwise	...	...	.374	...	...	...	.337	...
MARSAME = 1 if first marriage occurred at the same time as immigration; 0 otherwise	...	...	.385	...	...	...	.403	...
MARHERE = 1 if first marriage occurred after immigration; 0 otherwise	...	...	.240	...	...	...	.259	...
N	8,838	25,549	6,034	17,697	22,786	30,298	15,021	18,402

Note: Native means are weighted in inverse proportion to sampling probabilities.

1980) and a greater representation of Hispanics and other nonwhites. As might be expected on the basis of these differences in personal characteristics, they had lower husband's income and own wages, although the magnitude of the latter difference is surprisingly small given the size of the immigrant-native educational differential. They were also, in 1980, more likely to be married spouse present and, in both years, tended to get married later—over two years later on average.

I now turn to a description of my examination of the effect of source country variables on immigrant fertility. The analysis proceeds in two stages. In the first stage, reduced-form immigrant fertility functions are estimated including country dummy variables for each of the source countries identified in both the 1970 and 1980 Censuses. The following regressions were estimated separately by Census year (1970 and 1980) for all women and, for the MSP group, both combined and separately by the stage in the life cycle when they immigrated (i.e., MARHERE = 1, MARABR = 1, and MARSAME = 1):

$$\text{FERTILITY}_i = X_i B + D_i C + e_i, \tag{3}$$

where FERTILITY_i is the fertility of individual i, X includes the explanatory variables in (1) above, D is a vector of dummy variables for each source country, and e_i is a stochastic error term.[20] Since equation (3) does not include a constant term, C is essentially a vector of country-specific constant terms. The included countries as well as the frequencies of the immigrant sample by country are shown in appendix table 4A.1. The sample is reduced somewhat in these analyses, primarily because the 1970 Census identifies considerably fewer specific source countries than does the 1980 Census.[21] However, 93 percent of the original sample in each year is included, and the means of the country sample are quite similar to the full sample (see app. table 4A.2).

In the second stage of the analysis, the coefficients on the country dummy variables, C_{nt}, are regressed on source country variables in a pooled 1970 and 1980 regression in order to explain ceteris paribus differences in fertility by nationality group. The following country-level regressions are run separately for each group (i.e., all women and MSP = 1, MARHERE = 1, MARABR = 1, and MARSAME = 1):

$$C_{nt} = Z_{nt} B_z + \text{YR70}_t T + e_{nt}, \tag{4}$$

where C_{nt} is the coefficient on the country dummy variable for nationality n in year t estimated from equation (3), Z is a vector of source country variables,

20. AGEMAR and TMSMAR are excluded from these regressions so that the effect of intercountry differences in these factors on fertility will be captured by the country dummies. In addition, the race/ethnicity variables are excluded from these regressions because they may be considered to some extent an intrinsic characteristic of the country of origin.

21. Immigrants from Paraguay were deleted from this analysis because there were too few of them to permit meaningful analysis.

YR70 is a dummy variable for 1970, and e_{nt} is a stochastic error term.[22] No substantive interpretation is given to differences in the level of the country dummies between 1970 and 1980.

Sources, definitions, and means of the source country variables are shown in table 4.3. As may be seen in the variable definitions, source country variables were measured at different points in time, depending on the period of immigration. Table 4.3 reports means weighted by the number of individuals in each source country–YSM cell in each Census year. The number of observations is given as the number of individuals (rather than countries). The source country variables employed in the country regression analyses are computed by weighting the level of the source country variables in each source country–YSM cell by the distribution of immigrants of that nationality across YSM categories. This was done separately for each group: all immigrants as well as those who were married spouse present (MSP = 1), married in the United States (MARHERE = 1), married at about the same time as immigration (MARSAME = 1), and married abroad (MARABR = 1).

Following previous work (Kahn 1988; Ford 1990), I include a measure of source country fertility, the total fertility rate (TFR), to capture the effect of the source country environment on immigrant women' taste for children. Obviously, a positive sign is anticipated and has been obtained in previous work. However, high fertility in the source country may be due not only to tastes but also to economic conditions. It seems reasonable to expect that immigrant women's fertility will respond relatively quickly to changing economic conditions but that it will take considerably longer for their tastes to adapt. By controlling for the major economic determinants of the source country fertility rate, per capita GNP (GNP),[23] and infant mortality rate (MORT), we can better measure the effect of the relatively more permanent taste effect of source country TFR on immigrant women's fertility. The inclusion of these source country variables is expected to increase the estimated coefficient on TFR by making it a better measure of tastes. PROPEDUC, the proportion of women in the source country with the same or a higher level of educational attainment,[24]

22. Regressions are weighted by the inverse of the standard errors of the dependent variable. An alternative approach would have been to include the source country variables directly as explanatory variables in (3). However, it is likely that the regression errors will be correlated within groups (countries), in which case Moulton (1986) has shown that the (downward) bias in OLS standard errors on group-level variables (i.e., the source country variables) can be quite large (see also Borjas 1990). By aggregating up to the country level, this problem is eliminated.

23. Unfortunately, reliable price-adjusted GNP data were not available for many of the source countries prior to the 1960s.

24. Note that this measure is based on enrollment data and does not take completion of the indicated level of schooling into account. Unfortunately, prior to 1960, enrollment ratios (as opposed to levels) for higher education are not available. In addition, it was frequently not possible to obtain enrollment data separately by sex for many of these countries in the pre-1960 period. The sex breakdown is important in that there are substantial differences in enrollment rates by gender in many cases.

Table 4.3 Weighted Means and Sources of Country Variables

Variables	1970	1980
TFR = the total fertility rate: the average number of children that would be born to a hypothetical cohort of women if they experienced throughout their reproductive years the age-specific fertility rates prevailing in the indicated period: 1970–75 (1970s immigrant cohort), 1960–65 (1960s immigrant cohort), 1950–55 (pre-1960 immigrant cohort). (*Source:* United Nations, *Demographic Indicators of Countries: Estimates and Projections as Assessed in 1980* [New York, 1982], and *Demographic Yearbook* [New York], various issues.)[a]	5.690	5.528
GNP = average per capita GNP in 1979 U.S. dollars for 1973–75 (1970s immigrant cohort) or 1963–65 (pre-1970s immigrant cohort). (*Source:* U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers: 1971–80* [Washington, D.C.], and *World Military Expenditures and Arms Transfers: 1963–73* [Washington, D.C.].)	1.149	1.258
MORT = annual number of deaths of infants under 1 year per 1,000 live births for 1970–75 (1970s immigrant cohort), 1960–65 (1960s immigrant cohort), and 1950–55 (pre-1960 immigrant cohort). (*Source:* United Nations Secretariat, "Infant Mortality: World Estimates and Projections, 1950–2025," *Population Bulletin of the United Nations* 14 [1982]; and United Nations, *Demographic Yearbook* [New York], various issues.)	.910	.795
PROPEDUC = the proportion of women in the source country with the same or higher educational attainment as the respondent. Estimated on the basis of enrollment data by level (i.e., primary, secondary, and higher) for 1970 (1970s immigrant cohort) and 1960 (pre-1970 immigrant cohort). (*Source:* Unesco, *Trends and Projections of Enrollment by Level of Education and by Age,* [September 1977], and *Statistical Yearbook,* various issues.)	.334	.333
DISTANCE = number of kilometers direct distance (in thousands) between the country's capital and the nearest U.S. gateway (Los Angeles, Miami, or New York). (*Source:* Gary L. Fitzpatrick and Marilyn J. Modlin, *Direct-Line Distances,* international ed., [Metuchen, N.J.: Scarecrow, 1986].)	4.586	5.278
RT = refugees as a proportion of total immigrants during the 1970s (1970s immigrant cohort), 1960s (1960s immigrant cohort), 1950s (1950s immigrant cohort), and 1940s (pre-1950 immigrant cohort). (*Source:* U.S. Immigration and Naturalization Service, *Statistical Yearbook of the Immigration and Naturalization Service,* various issues, and *Annual Report,* various issues.)	.091	.086
No. of individuals	8,274	21,232

Note: Means are weighted by the number of individuals in each source country–YSM cell in each Census year. Sources listed were supplemented by World Bank, *World Development Report* (Washington, D.C.), various issues; and *Statistical Yearbook of the Republic of China,* various issues.

[a]The total fertility rate was not available for some countries or periods. In order to have a consistent series, it was approximated by the gross reproduction rate multiplied 1/.488 in all cases.

is an inverse measure of the educational selectivity of immigrants and is expected to be positively related to fertility.

Source country infant mortality rate (MORT) is expected to be inversely related to the fertility of immigrant women in that, at given levels of TFR, an increase in MORT reflects a smaller expected number of surviving children and presumably a lower demand for children. Since in most cases the United States infant mortality rate is considerably below that in the source country, this would reduce fertility in the United States. Since the fertility behavior of immigrant women who arrive as refugees may differ from that of economic immigrants, I include a measure of the proportion of the group composed of refugees (RT).[25] It is unclear a priori whether a positive or a negative sign on RT is expected. On the one hand, the conditions that give rise to refugee flows may be expected to disrupt fertility leading to temporarily or permanently lower levels. On the other hand, immigration is less likely to be anticipated for this group than for economic immigrants; thus, they are more likely to have adjusted their fertility to the higher levels that are appropriate to source country conditions. They are also more likely to anticipate permanent immigration to the United States, although it is unclear whether this factor would increase or reduce their fertility.[26] Finally, the direct distance between the source country and the United States (DISTANCE) is also included as a proxy for permanency of residence in the United States.

The means of the source country variables suggest that there were no major shifts in average source country characteristics between the two Census years among immigrants from these areas. The increases in GNP per capita and declines in infant mortality probably reflect the effect of secular trends. There was also an increase in DISTANCE due to the increased proportion of immigrants from Asian countries (see app. table 4A.1). It may be noted that, while immigrant women have considerably less education on average than the native born, they are a positively selected group relative to other women in the source country: in each Census year immigrant women were on average from about the top third of the source country educational distribution. Refugees comprised about 9 percent of total immigrants in each year.

25. An obvious weakness of this measure is that it relies on official definitions of refugees.

26. On the one hand, those who anticipate return migration may be less likely to "put down roots" in the United States and may postpone some or all of their childbearing. On the other hand, their fertility levels may be determined by source country conditions to a greater extent than that of permanent immigrants. In addition to measuring the substantive effect of MORT and RT on immigrant women's fertility, the coefficients on these variables may also reflect underreporting of number of children ever born when the child dies in infancy or lives in other households (owing to the separation of family members among refugees). The omission of children who have died or who live in other households is the most important source of error in fertility measures of this kind (United Nations 1983). My inclusion of MORT and RT controls for this possible bias in measuring the effect of other source country characteristics on fertility.

Table 4.4 **Regression Results for the Reduced-Form Model**

	1970				1980			
	Immigrants		Natives		Immigrants		Natives	
Variables	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*
	All Women							
AGE	.196	12.16	.276	30.84	.147	16.69	.115	16.30
AGE^2	−.200	−8.96	−.330	−26.77	−.091	−7.51	−.071	−7.29
AGE-H	.142	10.70	.163	20.20	.170	21.13	.150	20.25
AGE^2-H	−.145	−9.55	−.171	−17.97	−.182	−19.53	−.164	−18.30
EDUCATION	−.060	−11.00	−.077	−17.03	−.078	−26.55	−.094	−25.91
EDUCATION-H	−.052	−8.69	−.038	−8.82	−.039	−12.14	−.021	−5.98
TMSMAR	−.435	−5.96	−.292	−8.44	−.257	−6.02	−.020	−.81
AGEMAR	−.118	−29.16	−.113	−38.46	−.116	−51.15	−.094	−38.80
MSP	1.562	5.27	.770	4.50	.495	2.85	.273	1.81
OTHMAR	3.952	34.91	3.668	50.44	3.587	57.88	3.001	52.45
HISPANIC	.216	3.57	.540	11.16	.263	6.52	.510	15.09
BLACK	.408	4.20	.718	20.00	.682	12.72	.682	26.18
OTHERNW	−.009	−.13	.170	4.28	.057	1.40	.077	2.67
SOUTH	.186	3.49	−.095	−3.22	.130	4.29	−.137	−5.95
NCENT	.374	5.53	.127	4.26	.283	7.31	.079	3.29
WEST	.413	8.38	.025	.76	.337	12.16	.016	.65
SMSA	−.172	−3.11	−.209	−9.65	−.362	−8.35	−.168	−8.90
FOREIGN-H	.024	.48	.165	2.27	.205	6.87	.108	1.88
YSM 6–10	.004	.08	...	...	.001	.04	...	...
YSM 11–15	.229	3.96	...	...	−.150	−4.89	...	...
YSM 16–20	.305	4.30	...	...	−.211	−5.83	...	...
YSM 21–25/ 21–30	.403	4.51	...	...	−.106	−2.55	...	...
YSM 25+/ 30+	.595	6.59	...	...	−.006	−.08	...	...
Constant	−3.023	−10.98	−3.411	−22.45	−1.973	−12.60	−.920	−7.94
Adjusted R^2	.383		.377		.456		.458	
N	8,838		25,539		22,786		30,298	
	Married Women							
AGE	.427	17.73	.470	33.01	.385	27.64	.294	22.97
AGE^2	−.460	−14.46	−.539	−30.01	−.363	−20.02	−.266	−16.40
AGE-H	.035	2.30	.038	3.52	.058	6.07	.029	2.80
AGE^2-H	−.047	−2.79	−.058	−4.94	−.075	−7.07	−.048	−4.18
EDUCATION	−.061	−8.31	−.079	−12.57	−.068	−17.11	−.088	−16.01
EDUCATION-H	−.043	−6.24	−.036	−7.28	−.042	−11.09	−.024	−5.69
TMSMAR	−.744	−8.77	−.442	−11.02	−.537	−10.64	−.161	−5.29
AGEMAR	−.146	−29.83	−.127	−37.13	−.142	−51.56	−.107	−36.46
HISPANIC	.313	4.15	.596	9.85	.328	6.59	.653	13.84
BLACK	.512	3.69	.767	15.14	.716	9.71	.674	15.66
OTHERNW	−.008	−.09	.115	2.26	.077	1.54	.069	1.68
SOUTH	.203	3.01	−.131	−3.54	.131	3.40	−.170	−5.39
NCENT	.456	5.51	.134	3.60	.330	6.95	.095	2.90
WEST	.505	8.14	.048	1.15	.365	10.32	.021	.60
SMSA	−.157	−2.37	−.231	−8.68	−.373	−7.32	−.157	−6.43

Table 4.4 (continued)

	1970				1980			
	Immigrants		Natives		Immigrants		Natives	
	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*
	Married Women							
FOREIGN-H	.023	.44	.197	2.60	.150	4.82	.108	1.78
YSM 6–10	−.012	−.20	−.231	−8.68	−.072	−2.10	−.157	−6.43
YSM 11–15	.244	3.38	.197	2.60	−.299	−7.64	.108	1.78
YSM 16–20	.282	3.18	. . .	. . .	−.408	−8.77	. . .	. . .
YSM 21–25/ 21–30	.307	2.83	. . .	. . .	−.285	−5.48	. . .	. . .
YSM 25+/ 30+	.570	5.11	. . .	. . .	−.209	−2.33	. . .	. . .
Constant	−3.161	−8.14	−3.394	−17.32	−2.998	−13.82	−1.298	−7.76
Adjusted R^2	.336		.281		.407		.347	
N	6,034		17,697		15,021		18,402	

4.4 An Analysis of Immigrant-Native Differences

The reduced-form regression results for the estimation of equation (1) are shown in table 4.4 for all women and married women, separately. Looking first at the results for the years since migration (YSM) variables in 1980, we see a pattern that appears to support the assimilation model. Controlling for the individual characteristics of the immigrants (including age at first marriage), fertility is highest for recent arrivals and declines with time spent in the United States. However, the findings for 1970 show a very different picture. Fertility appears to be lowest for recent arrivals and to increase with additional time in the United States. Reduced-form results omitting the marital history variables (AGEMAR and TMSMAR) are shown in appendix table 4A.3. The coefficients on the years since migration dummy variables are considerably increased by the exclusion of age at first marriage (AGEMAR). Although age at first marriage was actually fairly constant across immigration cohorts, owing to the high proportion of married women whose first marriage occurred at or prior to the period of migration, the YSM variables tend to become proxies for marital duration when AGEMAR is omitted. In other respects, the results for both reduced-form specifications are quite similar.

Finally, the regression results for the structural model estimated for married women are shown in table 4.5. For both immigrants and natives, husband's income and wife's wage (LNYHAT-H and LNWGHAT) are found to have significant negative effects on fertility. The former finding is consistent with considerable cross-sectional evidence and suggests a larger income elasticity of demand for child quality than for child quantity (Becker 1981). The coefficients

Table 4.5 Regression Results for the Structural Model: Married Women

	1970				1980			
	Immigrants		Natives		Immigrants		Natives	
Variables	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*
AGE	.493	23.30	.544	48.75	.515	43.43	.377	38.77
AGE²	−.549	−19.04	−.640	−42.86	−.542	−33.67	−.377	−29.38
LNYHAT-H	−.385	−4.29	−.200	−3.83	−.334	−7.38	−.204	−4.84
LYWGHAT	−1.646	−11.25	−1.083	−14.90	−2.128	−23.24	−1.176	−17.59
TMSMAR	−.763	−9.00	−.450	−11.20	−.559	−11.08	−.178	−5.84
AGEMAR	−.148	−30.71	−.127	−37.61	−.145	−53.56	−.109	−37.41
HISPANIC	.065	.79	.556	9.01	.168	3.29	.690	14.58
BLACK	.523	3.70	.586	10.65	.714	9.56	.694	14.90
OTHERNW	−.209	−2.54	.203	3.93	.088	1.76	.138	3.32
SOUTH	−.197	−2.70	−.292	−7.57	−.164	−4.06	−.267	−8.32
NCENT	.411	4.93	.050	1.33	.407	8.49	.077	2.32
WEST	.275	4.12	−.029	−.70	.389	11.03	.029	.81
SMSA	.078	1.14	−.082	−2.83	−.084	−1.60	.023	.86
FOREIGN-H	−.016	−.29	.151	2.01	.152	4.85	.088	1.44
YSM 6–10	.147	2.38	...	...	.315	8.52	..	...
YSM 11–15	.616	8.11	...	...	.253	5.64	...	...
YSM 16–20	.621	6.75	...	...	.204	3.83	...	...
YSM 21–25/ 21–30	.604	5.45	...	...	.424	7.05	...	...
YSM 25+/30+	.968	8.30	...	...	.653	6.72	...	...
Constant	−1.339	−3.27	−3.265	−16.78	−1.920	−8.99	−1.619	−10.02
Adjusted R^2	.334		.278		.405		.344	
N	6,034		17,697		15,021		18,402	

on the years since migration dummies (YSM) are considerably increased when controls for husband's income and women's wage are included. The difference between the coefficients on the YSM variables in the reduced-form and structural models reflects the indirect effect of years since migration on fertility via its effect on wages and incomes. This indirect effect appears to be strongly negative: increases in wages and incomes across immigration cohorts lower fertility. Further clarification of the relation of these findings to the time pattern of immigrant fertility will be gained when I explicitly track the various immigration cohorts across the two Censuses below. Here, I focus on the magnitude of immigrant-native differences in the cross section of each Census as well as on trends over time in the magnitude of this difference.

Table 4.6 decomposes the immigrant-native fertility differential into a portion accounted for by immigrant-native differences in means and a portion that is "unexplained," that is, is due to differences in the response of immigrants and natives to the same characteristics. It may be recalled that immigrant-native differences in fertility were found to be relatively small. In this portion

Table 4.6 **Decomposition of Immigrant-Native Differences in Fertility (native functions)**

	All Women, Reduced Form		Married Women		
			Reduced Form		Structural
	(1)[a]	(2)[b]	(1)[a]	(2)[b]	(3)
			1970		
Due to means	.462	.306	.557	.327	.281
Age	.027	−.168	.071	−.249	−.238
Education	.198	.148	.238	.164	. . .
Marital status	.025	.012	. . .	.017	.017
Race/ethnicity	.278	.372	.315	.453	.430
Location	−.066	−.059	−.067	−.058	−.012
Income/wages	. . .	. . .	. . .	. . .	.083
Unexplained	−.530	−.373	−.608	−.379	−.333
Total	−.068	−.068	−.052	−.052	−.052
			1980		
Due to means	.457	.337	.420	.264	.230
Age	.171	−.062	−.044	−.305	−.299
Education	.201	.160	.257	.180	. . .
Marital status	−.077	−.025	. . .	.013	.015
Race/ethnicity	.198	.292	.250	.404	.429
Location	−.037	−.028	−.043	−.029	.024
Income/wages	. . .	. . .	. . .	. . .	.061
Unexplained	−.274	−.154	−.284	−.129	−.095
Total	.182	.182	.135	.135	.135

Note: The immigrant-native difference due to means is $M = \Sigma_i B_{iN}X_{iI} - \Sigma_i B_{iN}X_{iN}$, where X_i and B_i are the mean and estimated regression coefficient of variable *i*, and subscripts *N* and *I* denote natives and immigrants, respectively. The remainder of the total differential (*T*) is considered unexplained (*U*), i.e., $U = T - M$. *Age* includes AGE, AGE^2, AGE-H, AGE^2-H, and AGEMAR. *Education* includes EDUCATION and EDUCATION-H. *Marital status* includes TMSMAR and also MSP and OTHMAR (where applicable). *Race/ethnicity* includes HISPANIC, BLACK, OTHERNW, and FOREIGN-H. *Location* includes SOUTH, NCENT, WEST, and SMSA. *Income/wages* includes LNYHAT-H and LNWGHAT.

[a]Excludes AGEMAR and TMSMAR.

[b]Includes AGEMAR and TMSMAR.

of the analysis, we may ascertain whether this is due to a similarity (or offsetting differences) in characteristics or whether it appears to be due to behavioral differences. The latter would suggest some form of selectivity, while a comparison of the reduced-form and structural models will shed light on the relative importance of selection associated with labor market outcomes and that associated with tastes. It was also found that immigrant fertility had increased relative to native fertility over the period. This trend may similarly be related to changes in characteristics of immigrants relative to natives or to shifts in the responses of each group to these characteristics.

Looking at the reduced-form results for specification (1) excluding the marital history variables—age at first marriage (AGEMAR) and whether married more than once (TMSMAR)—we see that immigrants have characteristics that are associated with higher fertility; that is, substantial positive mean effects are obtained. The lower education of immigrant women and their husbands and the effect of immigrant-native differences in race/ethnicity—chiefly, the considerably higher representation of Hispanic women (a high-fertility group) among immigrants—are the primary factors working to increase immigrant women's fertility relative to natives. In both years, however, immigrant women had fewer children ever born than otherwise similar natives—that is, negative coefficient effects were obtained. Immigrant fertility was .553 (all women) to .608 (married women) lower in 1970 and .274 (all women) to .284 (married women) lower in 1980.

A comparison of the unexplained differentials under the various specifications shown in table 4.6 suggests some of the factors that are responsible for these large ceteris paribus immigrant-native differences. With respect to marital history, there are effects in opposing directions. The higher age at first marriage of immigrants tends to lower their fertility relative to natives, while their lower incidence of marital breakup increases their fertility. On net, however, immigrant-native differences in marital histories lower relative immigrant fertility and thus can account for a substantial portion of the unexplained differential. Among married women, when AGEMAR and TMSMAR are included (specification 2), the unexplained differential is decreased in absolute valu by 37.7 percent (from −.608 to −.379) in 1970 and by 54.5 percent (from −.284 to −.129) in 1980. Finally, comparing the results from the structural model (specification 3) for married women, we find that, in each year, the unexplained difference between immigrants and natives is somewhat smaller in absolute value in the structural model than in the reduced-form model (specification 2): the unexplained differential is now −.333 for married women in 1970 and −.095 in 1980. This suggests that selection of immigrants with respect to unobserved characteristics associated with labor market outcomes does play a role in reducing their fertility relative to otherwise similar natives. The remaining unexplained difference is presumably due to self-selection with respect to tastes (although large disruption effects could also contribute to this; see below).

An examination of the structural model results suggests one important source of such unexplained differences. The coefficients on the income/wage variables are considerably larger in absolute value for immigrants. Differences in these two coefficients alone are more than sufficient to account for the unexplained differential. Evaluated at the immigrant means, immigrant-native differences in the coefficients on LNYHAT-H and LNWGHAT would work to reduce the fertility of immigrants relative to natives by over one child in each year. This is indirect evidence in support of the view that immigrants have a higher demand for child quality than otherwise similar natives, with the larger negative coefficient on LNWGHAT for immigrants further suggesting that immigrant women are more responsive to labor market opportunity costs than their native-born counterparts.

4.5 Trends in the Immigrant-Native Differential

We now consider the sources of the increase in the fertility of immigrants relative to the native born that occurred between 1970 and 1980. (The total predicted differential increased by .250 among all women and .187 among married women.) The results in table 4.6 indicate that this was principally due to a decline in the absolute value of the unexplained differential over the period and, by implication, a reduction in the extent of immigrant self-selection relative to natives. However, it is not clear whether this decrease was due to shifts in immigrant behavior or shifts in native behavior or a combination of both. Some light can be shed on this issue by considering fertility levels of immigrants relative to similar natives by years of residence in each of the two years.

In table 4.7, the immigrant and native fertility functions are evaluated at the immigrant means. The results are presented separately by years-since-migration group and for reduced-form (specification 2 in table 4.6) and structural (specification 3 in table 4.6) models. I focus initially on the reduced-form model and on fertility levels (rather than immigrant-native differences). The figures suggest that the trend toward increasing relative fertility of immigrants may reflect period shifts in fertility behavior within the United States to a greater extent than changes in the selectivity of immigrants relative to others in the source country. Over the decade, the predicted fertility of a native woman with mean immigrant characteristics declined by .304 among all women and by .348 among married women. At the same time, among immigrants, fertility decreased as well, but to a lesser extent, by .085 among all women and by .097 among married women. The trend toward lower fertility among the native born of course reflects declining domestic birth rates as the "baby bust" followed the "baby boom" in the United States. There was, however, no comparable trend in average fertility in these source countries—although there were declines in individual cases. Thus, while TFR for the United States fell from 3.32 in the early 1960s to 1.97 in the early 1970s, average source country TFR remained roughly constant at 5.53–5.69.

Two additional pieces of data support the notion that conflicting fertility trends in the United States and source countries are responsible for the rising relative fertility of immigrants. First, the relative increase in immigrant fertility that occurred over the decade was primarily due to an increase in the fertility of recent arrivals compared to otherwise similar natives. Whereas, all else equal, recent arrivals (YSM 0–10) had about half a child less than natives in 1970, in 1980 they had about the same number of children among married women and only .09 fewer among all women. There was, however, no nar-

Table 4.7 **Adjusted Immigrant-Native Differences in Fertility by Years since Migration (immigrant means)**

	All Women		Married Women			
	1970	1980	1970		1980	
	RF	RF	RF	Struct.	RF	Struct.
			Predicted Means			
Natives:						
Native means	2.096	1.761	2.506	2.506	2.222	2.221
Immigrant means	2.401	2.097	2.833	2.787	2.485	2.452
All immigrants	2.018	1.943	2.454	2.454	2.357	2.357
YSM 0–5	1.908	2.006	2.335	2.157	2.516	2.141
YSM 6–10	1.912	2.007	2.323	2.305	2.444	2.456
YSM 11–15	2.136	1.856	2.579	2.773	2.217	2.394
YSM 16–20	2.213	1.795	2.618	2.779	2.109	2.345
YSM 20+	2.414	1.920	2.783	2.955	2.246	2.610
			Adjusted Differentials			
All immigrants	−.373	−.154	−.379	−.333	−.129	−.095
YSM 0–5	−.494	−.091	−.498	−.630	.031	−.311
YSM 6–10	−.490	−.090	−.510	−.483	−.041	−.005
YSM 11–15	−.265	−.242	−.254	−.014	−.268	−.058
YSM 16–20	−.188	−.303	−.216	−.009	−.377	−.107
YSM 20+	.013	−.178	−.051	.168	−.240	.158

Note: Adjusted immigrant-native differences are equal to $\Sigma_i B_{iI} X_{iI} - \Sigma_i B_{iN} X_{iI}$, where X_i and B_i are the mean and estimated regression coefficient of variable i, and subscripts N and I denote natives and immigrants, respectively. The reduced-form model includes controls for AGE, AGE^2, AGE-H, AGE^2-H, EDUCATION, EDUCATION-H, TMSMAR, AGEMAR, MSP, OTHMAR, HISPANIC, BLACK, OTHERNW, SOUTH, NCENT, WEST, SMSA, and FOREIGN-H. The structural model includes controls for LNYHAT-H and LNWGHAT as well as AGE, AGE^2, TMSMAR, AGEMAR, HISPANIC, BLACK, OTHERNW, SOUTH, NCENT, WEST, SMSA, and FOREIGN-H. Combined YSM categories are weighted averages of the relevant YSM categories where the weights are based on the immigrant frequencies across categories in each year. RF = reduced form; Struc. = structural.

rowing of the ceteris paribus immigrant-native differential in the case of longer-term residents. The findings for the structural model show a similar picture of rising relative fertility of recent arrivals relative to natives, all else equal.

While U.S. trends appear to be relatively more important in generating the increase in the fertility of immigrants relative to comparable natives, differences in the degree of selectivity of immigrants relative to the source country population may also have played a role. The fertility of recent arrivals (YSM 0–10) with mean immigrant characteristics increased over the period, by about .10 among all women and .12 (YSM 6–10) to .18 (YSM 0–5) among married women for the reduced-form results. There was also a small increase for the YSM 6–10 category for the structural model.

Table 4.8 **Adjusted Immigrant-Native Differences in Fertility by YSM Category and Where Married**

	1970			1980		
	MARHERE	MARABR	MARSAME	MARHERE	MARABR	MARSAME
	Predicted Means					
Natives:						
Native means	2.506	2.506	2.506	2.222	2.222	2.222
Immigrant means:						
Age only[a]	2.326	2.894	2.397	1.892	2.565	2.014
All variables[b]	2.405	3.514	2.440	2.077	3.171	2.175
Immigrants	2.252	3.058	1.994	1.778	3.310	1.931
	Differentials					
Unadjusted	−.254	.552	−.512	−.443	1.088	−.290
Adjusted for:						
Age only[a]	−.074	.164	−.403	−.114	.745	−.083
All variables[b]	−.152	−.456	−.446	−.298	.139	−.244

[a]Estimated from regression equations including controls for AGE and AGE^2 only.

[b]Estimated from regression equations including controls for all variables in the reduced-form model (eq. [1]).

A second piece of data supporting the notion of conflicting fertility trends is given in table 4.8, which shows ceteris paribus immigrant-native fertility differentials separately by the stage of the life cycle at which immigration occurred. Recall that we expect women who were married prior to or at approximately the same time as immigration to exhibit the strongest influence of source country characteristics on their fertility. Thus, if differences in fertility trends between the United States and source countries were responsible for the rise in relative immigrant fertility over the period, we would expect this to be manifested by rising relative fertility of the married-abroad group (MARABR = 1) and, to a lesser extent, of the group who married at about the same time as immigration (MARSAME = 1) rather than the group who married in the United States (MARHERE = 1). This is indeed precisely what we find.

All three groups of immigrants had lower fertility than otherwise similar natives in 1970. However, the fertility of the MARABR and MARSAME groups increased relative to natives over the period, while the fertility of the MARHERE group decreased further relative to natives, all else equal. By 1980, the fertility of the MARABR group was .14 higher than otherwise similar natives, and the fertility differential between the MARSAME group and comparable natives had been cut by almost 50 percent. Trends in the United States appear to be responsible for the decreased immigrant-native fertility differential for the MARSAME group. The fertility of these women declined somewhat over the period, but not as rapidly as that of natives with similar characteristics. As in the case of recent arrivals, however, there is evidence that both period effects in the United States and shifts in the degree of selectivity of immigrants played a role in increasing the relative fertility of immigrant women who were married abroad. While the fertility of natives with the mean characteristics of the MARABR group declined by .34 over the period, the fertility of the MARABR group was .25 higher in 1980 than in 1970.

Finally, as noted above, from a policy perspective, immigrant-native differences due to differences in characteristics are also of interest. Adjusting only for age, we find that, among married immigrants, women whose first marriage occurred in the United States or at about the same time as immigration have lower fertility than natives in both years. However, the fertility of women who were married abroad was .164 higher than natives in 1970 and .745 higher in 1980. The latter constitutes a substantial difference.

4.6 The Effect of Years of Residence: Assimilation versus Disruption

As we have seen, the assimilation model predicts that the fertility of immigrants from high-fertility source countries will initially exceed that of otherwise similar natives but will approach that of the native born over time. The instantaneous assimilation model suggests that initial immigrant-native differences will be small and relatively constant over time. Finally, the disruption model leads us to expect that, since immigrant women's fertility is initially below desired levels, regardless of its initial level, it will increase relative to otherwise similar natives over time. The results in table 4.7 above are not consistent with the prediction that immigrants from these, on average, high-fertility source countries will have relatively high ceteris paribus fertility on arrival in the United States. In 1970, recent immigrants exhibit lower fertility than native-born women with similar characteristics. Although the extent of this difference declined over the decade, even in 1980 the fertility of recent immigrant women was no higher than that of their native counterparts. This is powerful evidence against the assimilation model, for even if we were to find declining relative fertility of immigrants over time, the notion of *assimilation* would not make much sense if immigrant fertility were not approaching native fertility.

In order to examine the fertility behavior over time of given immigration cohorts, we must take into account the results from both the 1970 and the 1980 cross sections. Assuming that the underlying parameters are constant over time, the intertemporal pattern can be ascertained by comparing immigrant-native differentials for the particular cohort in 1970 to the differential that prevailed for that group in 1980 (Heckman and Robb 1985; Borjas 1987). These results are presented for the reduced-form[27] and structural models in table 4.9. Note that immigration cohort is given by year of arrival (ARR) variables.

27. The reduced-form specification includes controls for AGEMAR and TMSMAR.

Table 4.9 **Synthetic Panel Estimates of Immigrant-Native Differences in Fertility with and without Aging, 1970–80 (1970 immigrant means)**

	Without Aging[a]				With Aging[b]			
		Married				Married		
	All, RF	RF	Structural (1)	Structural (2)	All, RF	RF	Structural (1)	Structural (2)
				1970				
ARR 65–70	−.494	−.498	−.630	−.537	−.581	−.668	−.723	−.630
ARR 60–64	−.490	−.510	−.483	−.478	−.577	−.680	−.576	−.571
ARR 50–59	−.236	−.240	−.012	−.081	−.324	−.410	−.105	−.175
ARR PRE-50	.013	−.051	.168	.082	−.075	−.220	.074	−.012
All	−.373	−.379	−.333	. . .	−.460	−.549	−.426	. . .
				1980				
ARR 65–70	−.253	−.289	−.107	−.079	−.205	−.197	−.126	−.098
ARR 60–64	−.314	−.397	−.156	−.167	−.266	−.305	−.175	−.186
ARR 50–59	−.208	−.275	.064	.007	−.160	−.183	.045	−.012
ARR PRE-50	−.108	−.198	.293	.179	−.060	−.106	.274	.160
All	−.236	−.298	−.023	. . .	−.193	−.211	−.045	. . .
				Change 1970–80				
ARR 65–70	.241	.209	.523	.458	.376	.471	.597	.532
ARR 60–64	.176	.113	.327	.311	.311	.375	.401	.385
ARR 50–59	.028	−.035	.076	.088	.164	.227	.150	.162
ARR PRE-50	−.121	−.147	.125	.097	.015	.114	.200	.172
All	.137	.081	.310	. . .	.267	.338	.381	. . .

Note: RF = reduced form.

[a]Fertility, husband's income, and wage functions for each group (natives and immigrants) and each year (1970 and 1980) are evaluated using 1970 immigrant means, including the 1970 distribution across period of arrival categories. In structural specification 1, LNYHAT-H and LNWGHAT are evaluated at their overall mean levels for immigrants arriving prior to or during 1970. In structural specification 2, LNYHAT-H and LNWGHAT are evaluated for immigrant women and their husbands who arrived during the indicated period (1965–70, 1960–64, etc.).

[b]Computed as above but evaluating the immigrant and native functions at AGE = 25 and AGE-H = 28.142 in 1970 and AGE = 35 and AGE-H = 38.142 in 1980. The age difference between husband and wife is based on the 1970 differential for immigrants. In addition, in the structural model, LNYHAT-H is evaluated at 11.367 years of potential experience in 1970 and 21.367 years in 1980. LNWGHAT is evaluated at 9.128 years of potential experience in 1970 and 19.128 years in 1980. Potential experience at the indicated ages is calculated on the basis of immigrant means for education in 1970.

Fertility, husband's income, and wage functions are evaluated at 1970 immigrant means throughout. Two formulations are employed. The first, "without aging," simply matches up the appropriate cohorts across the Censuses. Thus, for example, the cohort that arrived in 1965–70 had YSM 0–5 in 1970 and YSM 11–15 in 1980. The results are similar to those given in table 4.7;

however, some additional computations are performed for YSM groups not included in that table (e.g., the YSM 30+/ARR PRE-50 group in 1980), and 1970 immigrant means are employed. In the second formulation, aging is allowed for by evaluating the fertility functions at AGE = 25 in 1970 and AGE = 35 in 1980. Other variables, including the age of the husband and the potential experience at which LNYHAT-H and LNWGHAT are evaluated, are set at appropriate levels to correspond with these ages, given 1970 immigrant means. In addition, the evaluation of the structural model is presented in two ways. In specification 1, LNYHAT-H and LNWGHAT are evaluated at the mean level for all immigrants arriving during or prior to 1970, given the distribution of immigrants across YSM categories in 1970. In specification 2, LNYHAT-H and LNWGHAT are evaluated for immigrant women and their husbands who arrived during each indicated period (i.e., 1965–70, 1960–64, etc.).[28] The results for specification 2 reflect the tendency of incomes and wages to increase across immigrant cohorts who have resided in the United States longer.

The results in table 4.9 are strongly consistent with the disruption model. The relative fertility of immigrants tended to increase over the decade, with the largest and most consistent increases obtained for the recent arrivals in 1970 (ARR 60–70), the group most likely to have had its fertility disrupted by the immigration process.[29] A comparison of the results for the reduced-form and structural models suggests that demographic rather than economic factors underlie the observed pattern of disruption. We find that estimates of disruption (gains in relative fertility over the period) are actually larger in the structural model, where wages and husband's income are controlled for. This is inconsistent with the view that disruption is caused by initial economic dislocation. On the contrary, the indirect effect of the economic assimilation of immigrants (their rising relative wages and husbands' incomes) over time appears to have a negative effect on their fertility.[30] This result is not surprising in that negative coefficients on both LNYHAT-H and LNWGHAT were obtained in the structural model.

Finally, we may address the issue of selectivity by asking whether immigrant fertility remains below that of otherwise similar natives as this disruption process is worked out or whether it eventually catches up to and even exceeds native fertility. The reduced-form results in table 4.9 indicate that immigrant fertility remains below that of natives with similar personal characteristics, although 1980 immigrant fertility is higher relative to natives

28. These estimates are obtained using the estimated coefficients on the YSM variables and assuming the overall 1970 immigrant means for the remaining explanatory variables.

29. Evidence of disruption is also obtained for the reduced-form model estimated excluding AGEMAR and TMSMAR. For the estimates without aging, this specification produces somewhat larger estimates of disruption than those reported for the reduced-form model in table 4.9. For the estimates with aging, this specification produces somewhat smaller estimates.

30. The direct effects of immigration cohort (ARR) on fertility given by the structural results are larger than the total effects given by the reduced-form results. This implies a negative indirect effect on fertility via wages and incomes.

when aging is taken into account than when it is not. Nonetheless, these results suggest that some of the lower ceteris paribus fertility of immigrants observed in the 1970 cross section, particularly for the relatively recent arrivals, represents the effect of disruption. Overall, when fertility is evaluated at age 25 in 1970, immigrant women are estimated to have .46 fewer children than native women with similar characteristics. By 1980, at age 35, women in these immigration cohorts are estimated to have only .193 fewer children. Immigrant fertility is also found to rise relative to natives in the estimates without aging effects, although the estimated 1970–80 increase is smaller (.137 vs. .267).

While the findings for the reduced-form model imply that immigrant fertility remained below that of natives with similar personal characteristics, the results from the structural model suggest that, by 1980, immigrants who arrived during or prior to 1970 had about the same fertility as natives with similar wages and husband's income. This in turn implies that, for married women, immigrant-native differences in labor market outcomes are sufficient to explain the remaining lower fertility of immigrants with similar personal characteristics in 1980. The structural results further indicate that immigrant fertility may eventually surpass that of natives with similar wages and husband's incomes; specifically, a positive immigrant-native difference is obtained for immigrants who arrived before 1950. However, these differences are relatively small (.16–.18 children) when structural specification 2 is employed, that is, when incomes and wages are evaluated for immigrant women and their husbands who arrived during the indicated period.

Broadly, I take these results as consistent with the notion of selectivity of immigrants as a low-fertility group due to unobserved characteristics associated with labor market outcomes. The fact that immigrant women appear to be a selected low-fertility group relative both to source country populations (see below) and to natives with similar personal characteristics does not mean, however, that they have the same fertility as they would have had in their countries of origin. The pattern of disruption makes it difficult to discern the process by which immigrant women adapt their desired family size to economic conditions in the United States, and particularly the speed with which this adaptation occurs, but it does not necessarily mean that such adaptation is absent. Some further light is shed on these issues in my consideration of the effect of source country characteristics on immigrant women's fertility below.

My finding of a substantial disruption effect among the cohort of immigrants who arrived in the 1960s raises the issue of the future fertility of immigrant women from these source countries who arrived in the 1970s. As we have seen, they had higher adjusted fertility relative to both natives and longer-term immigrants in 1980 than had recent arrivals in 1970. If the fertility of recent arrivals in 1980 follows the disruption model, as did that of their predecessors in 1970, their fertility relative to natives could increase considerably over the next decade. On the other hand, the fact that their initial fertility level is comparable to that of similar natives (rather than below the native level, as had been the case in 1970) may exert some downward pressure on the extent of their relative fertility increase, even if it follows the disruption model.

4.7 The Effect of Source Country Variables

The potential importance of source country characteristics is indicated by the results presented in table 4.10, which are based on fertility regressions including country dummy variables. Specification 1 controls only for the women's own age (and the YSM variables) and specification 2 for all variables included in the reduced-form model (see eq. [3] above).[31] In order to compare immigrant women's fertility in the United States to source country fertility measured by the total fertility rate (TFR), a proxy for completed fertility, the equations have been evaluated at age 45 for women and, in specification 2, at 48.142 for husbands (if present). (The latter figure reflects the husband-wife age difference among immigrants in 1970.) It may be noted that, in times of shifting fertility patterns, the use of the coefficients on the age variables in this fashion has similar drawbacks to the use of the YSM variables to measure the effect of residence on immigrant women's fertility. That is, to some extent age measures the effect of belonging to a cohort that had its children during a period of relatively high or low fertility. Since fertility was decreasing during this period, completed fertility is likely to be overstated.

Selectivity of immigrants relative to women in the source countries, as well as their adaptation to conditions in the United States, is suggested by the large number of cases in which the estimated completed fertility of immigrants is considerably lower than the overall average for the source country during the relevant period. Since the estimate of immigrant women's completed fertility is most likely overstated, these may be considered conservative estimates of the true differences in fertility.

The results for specification 2 in table 4.10 also suggest that there exist considerable differences in fertility by source country, even after controlling for individual characteristics. These differences are examined in my estimation of equation (4) shown in table 4.11 for all women and in table 4.12 for all married women and separately for the MARHERE, MARABR, and MARSAME groups. It may be recalled that the dependent variable in this analysis is C_{nt}, the coefficient on the dummy variable for country n from a regression controlling for individual characteristics estimated for the indicated group of immigrants in year t (t = 1970, 1980); see equation (3) above.

Looking first at the findings for all women shown in table 4.11, the first specification presents the results including only a measure of source country

31. For the reasons noted above, AGEMAR, TMSMAR, and the race/ethnicity variables are excluded from these regressions.

Table 4.10 **Predicted Fertility of Immigrant Women at Age 45 by Country of Origin: All Women**

Source Country	TFR 1960–65	Predicted Fertility 1970 (1)	Predicted Fertility 1970 (2)	TFR 1970–75	Predicted Fertility 1980 (1)	Predicted Fertility 1980 (2)
Argentina	3.074	2.376	2.239	2.951	2.547	2.389
Bolivia	6.617	2.686	2.735	6.494	2.858	2.897
Brazil	6.148	2.278	2.268	5.080	2.498	2.532
Chile	5.020	2.474	2.542	3.320	2.798	2.629
China	5.216	2.776	2.556	3.859	2.760	2.656
Columbia	6.721	2.704	2.581	4.775	2.694	2.563
Costa Rica	6.947	2.875	2.884	4.262	2.891	2.717
Cuba	4.652	2.343	2.080	3.463	2.470	2.182
Dominican Republic	7.498	3.117	2.735	6.189	3.323	2.968
Ecuador	6.988	2.706	2.499	6.496	3.082	2.932
Egypt	5.982	2.472	2.374	5.123	2.646	2.588
El Salvador	6.844	2.314	2.238	6.332	3.109	2.937
Guatemala	6.844	2.267	2.339	6.148	3.103	2.894
Haiti	6.148	2.809	2.791	6.064	3.146	3.156
Honduras	7.357	2.873	2.703	7.377	3.017	2.703
India	6.283	2.548	2.550	5.635	2.715	2.681
Iran	7.254	2.671	2.420	6.537	2.712	2.709
Israel	3.832	2.583	2.544	3.750	3.110	3.011
Jamaica	5.451	2.521	2.630	5.428	3.063	3.146
Japan	2.008	2.322	2.273	2.070	2.268	2.267
Jordan	7.172	4.015	3.320	7.377	3.512	3.179
Korea	5.430	2.618	2.450	4.426	2.694	2.570
Lebanon	6.352	2.488	2.461	4.916	3.245	2.953
Mexico	6.742	4.009	3.425	6.189	4.113	3.429
Nicaragua	7.316	2.894	2.753	6.924	3.090	2.876
Pakistan	7.032	2.546	2.607	6.755	3.071	2.844
Panama	5.738	2.578	2.485	4.836	3.086	3.087
Peru	6.844	2.719	2.575	5.840	2.679	2.702
Philippines	6.617	2.668	2.722	5.490	2.806	2.961
Syria	7.459	3.073	2.860	7.480	2.893	2.592
Trinidad & Tobago	4.939	2.546	2.536	3.379	2.978	3.045
Turkey	6.002	2.296	2.106	5.307	2.694	2.445
Uruguay	2.928	1.876	1.789	2.992	2.195	2.169
Venezuela	6.701	2.352	2.297	5.143	2.751	2.825
Vietnam	5.799	3.062	2.847	5.717	3.432	3.222
Immigrant average	5.690	2.950	2.695	5.528	3.189	2.920
United States	3.320	3.017	2.728	1.967	2.915	2.624

Note: Predicted fertility is estimated on the basis of regression equations including country dummy variables. Specification 1 is calculated from regression equations that include controls for AGE and AGE^2 and the YSM variables only. Specification 2 is calculated from regression equations that include controls for AGE, AGE^2, AGE-H, AGE^2-H, EDUCATION, EDUCATION-H, MSP, OTHMAR, SOUTH, NCENT, WEST, SMSA, FOREIGN-H, and the YSM variables. Equations are evaluated for women who are age 45 and whose husbands (if present) are age 48.142. This reflects the average age difference among husbands and wives for immigrants in 1970. The remaining variables are fixed at their mean values for immigrants in each year. (Predicted fertility for the United States is based on native regression coefficients and native means.) The immigrant average for TFR is weighted by immigrant frequencies across source countries in each Census year.

Table 4.11 Regression Results Including Source Country Variables: All Women

	(1)		(2)		(3)	
Variables	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*
TFR	.117	4.71	.167	4.48	.159	4.00
GNP	...	...	.007	.15	−.023	−.51
MORT	...	...	−.216	−.196	.007	.05
PROPEDUC	...	...	...	...	1.179	3.54
RT	...	...	...	...	−.236	−1.07
DISTANCE	...	...	...	...	.011	1.38
Adjusted R^2	.893		.896		.910	
N	70		70		70	

Note: Regressions include a constant term and a year dummy variable.

Table 4.12 Regression Results Including Source Country Variables: Married Women

	MSP = 1		MARHERE = 1		MARABR = 1		MARSAME = 1	
Variables	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*	Coeff.	*t*
TFR	.177	3.36	−.007	−.10	.328	3.66	.126	2.47
GNP	−.028	−.47	−.118	−1.33	.0002	.002	−.053	−.91
MORT	.072	.43	.096	.49	−.013	−.04	−.110	−.68
PROPEDUC	1.325	3.11	.562	.81	1.274	2.18	.677	1.79
RT	−.246	−.82	−.718	−1.40	−.438	−.89	−.530	−1.66
DISTANCE	.019	1.77	.011	.76	.017	.87	.009	.90
Adjusted R^2	.793		.576		.354		.214	
N	70		69		69		70	

Note: Regressions include a constant term and a year dummy variable.

fertility (TFR). Specification 2 presents the results when source country per capita GNP and infant mortality rate (MORT) are added, and specification 3 includes the full set of source country variables.[32]

In general, source country characteristics are found to be significant determinants of immigrant women's fertility. As expected, the coefficient on TFR is significantly positive and increases in magnitude when controls for its major source country determinants (GNP and MORT) are added, so it represents a pure taste effect to a greater extent. TFR remains significant and of roughly similar magnitude when the full set of source country variables is included (specification 3). We find that, all else equal, an increase of one child in the source country TFR is associated with an increase of .16–.17 children for immigrant women in the United States. In specification 2, MORT is found to be signifi-

32. Interactions of the source country variables with the year dummy were not found to be significant.

cantly negative, although it becomes insignificant when additional variables are added to the regression owing to problems of multicollinearity and small sample size. At given levels of TFR, an increase in infant mortality in the source country is associated with a smaller number of surviving children. To the extent that this reflects source country differences in desired family size, fertility in the United States, where the infant mortality rate is, in most cases, considerably lower, would be reduced.

The findings for the specification incorporating the full set of explanatory variables are quite similar for all women and married women (see tables 4.11 and 4.12). In addition to the positive and highly significant effect of TFR, the most important result is the positive and significant coefficient on PROPEDUC, the inverse measure of educational selectivity: all else equal, the higher the rank of women of a particular nationality in the source country educational distribution, the lower their fertility in the United States. The coefficient on DISTANCE is positive and significant in the regression for married women and larger than its standard error in the regression for all women. This effect may be due to an increased propensity to remain in the United States (i.e., a lower probability of return migration) under the assumption that groups that intend to remain will have more children (i.e., be more likely to "put down roots"). Finally, while the proportion of immigrants who are refugees (RT) is not significant in either regression, it is negative in both and larger than its standard error in the regression for all women. The lower fertility of refugees may reflect the disruptive conditions in the source country at the time of immigration.[33]

Finally, I examine the extent to which the influence of source country characteristics depends on the effect of the stage of the life cycle reached at the time of immigration. Table 4.12 presents the results of estimating separate regressions for the MARHERE, MARABR, and MARSAME groups. The results strongly suggest that the effect of source country characteristics is influenced by maturity at the time of immigration. The increasing effect of source country TFR with increasing maturity is particularly notable. The coefficient on TFR is small and insignificant in the MARHERE regression but positive and significant for the MARABR and MARSAME groups and larger for the former (.33) than for the latter (.13). A similar pattern emerges for PROPEDUC. There is one interesting exception to the pattern of larger effects of source country variables for immigrants who were married abroad. Although the coefficient on RT is not significant in any of the regressions, it is considerably larger than its standard error for women who were married here or at about the same time as immigration. This suggests that refugee conditions are most likely to disrupt the fertility of women who are unmarried or recently married at the time of immigration, possibly by inhibiting them from starting their families.

33. The negative coefficients on MORT and RT may also reflect biases in the fertility variable due to the omission of children who have died in infancy or who live in other households.

My examination of the effect of source country characteristics on immigrant women's fertility suggests that fertility differences across nationality groups in the United States are related to conditions in the country of origin. It is particularly notable that higher fertility rates in the source country do appear to increase the fertility of immigrant women in the United States. The results in this section also lend support to the view that both self-selection and assimilation affect immigrant women's fertility in the United States. Evidence for the former is found in the significant positive effect on fertility of PROPEDUC, my inverse measure of the educational selectivity of immigrants relative to the source country population. At the same time, while the coefficients on source country TFR are positive and significant, they are considerably less than one. (The largest coefficient, obtained for women who were married abroad, is .33.) This suggests an attenuation of the taste effect in response to the U.S. environment.

4.8 Conclusion

Using data from the 1970 and 1980 Censuses, I examined the fertility of immigrant women from the Middle East, Asia, Latin America, and the Caribbean, where fertility rates averaged in excess of 5.5 children per woman during the period of immigration to the United States. Perhaps the most interesting finding of this study is that immigrants from these on average high-fertility source countries were found to have very similar unadjusted fertility to native-born women. The number of children ever born was .07 lower for immigrants than natives in 1970 and only .18 higher in 1980. This finding of small unadjusted differentials is important in that, from a policy perspective, it is the unadjusted differentials that are to some extent of particular interest.

The small immigrant-native differential appears to reflect self-selection of immigrants as a low-fertility group relative both to source country populations and to native-born women with similar personal characteristics. Evidence in support of the former is the finding that, as a group, immigrant women are positively selected in terms of education, coming on average from the top third of the source country educational distribution. Controlling for years of schooling and other variables, the higher the average ranking of women of a particular nationality in the source country educational distribution, the lower their fertility. Evidence for the latter is the finding that immigrant women have fewer children than native women with similar characteristics (a relatively high-fertility group), .37–.53 fewer in 1970 and .15–.27 fewer in 1980. The finding that immigrants have lower fertility than otherwise similar natives is in turn consistent with a higher demand for child quality among immigrants. Indirect evidence for this possibility is provided by the finding that, for married women, the negative coefficient on husband's income is larger in absolute value for immigrants than for natives, as is the negative coefficient on wife's wage. The latter further suggests that immigrant women tend to be more responsive to labor market opportunity costs than their native counterparts.

Immigrant fertility is also depressed relative to natives in the 1970 cross section by the tendency of immigration to disrupt fertility. In 1970, new arrivals to the United States (those arriving in the past decade) had considerably lower fertility than natives, ceteris paribus. Tracking the relative fertility of synthetic cohorts of immigrants across the 1970 and 1980 Censuses, I found evidence in support of the disruption model: immigrant fertility, especially of the most recent cohort of immigrants in 1970, increased relative to natives over the decade. Despite this increase in relative fertility, reduced-form results indicated that the fertility of these immigrants remained below that of natives with similar personal characteristics in 1980. However, findings from the structural model estimated for married women indicated that, by 1980, the fertility of immigrant women was roughly the same as natives with similar wages and husband's incomes, all else equal. I take these results as consistent with the notion of selectivity of immigrants as a low-fertility group due to unobserved characteristics associated with labor market outcomes.

The pattern of disruption makes it difficult to discern the process by which immigrant women adapt their desired family size to economic conditions in the United States and particularly the speed with which this adaptation occurs, but it does not mean that such adaptation is absent. Some indirect evidence suggesting that immigrant women have fewer children in the United States than they would have had in the source country is suggested by the finding that, while level of source country fertility (TFR) is positively associated with a nationality's fertility in the United States, all else equal, its coefficient is considerably less than one. This suggests an attenuation of the taste effect in response to the U.S. environment.

A consideration of the disruption effect raises the issue of the relative fertility of immigrant women from these source countries in the future. One trend of interest is that recent arrivals had higher adjusted fertility relative to both natives and longer-term immigrants in 1980 than in 1970. This in part represents the effect of declining birth rates in the United States, a trend in which immigrants residing in this country appear to have participated. However, source country fertility rates remained on average fairly constant over this period, and this appears to have resulted in an increase in the fertility of new arrivals relative to the native born. Regardless of the sources of this increase, if the fertility of recent arrivals in 1980 follows the disruption model, as did that of their predecessors in 1970, the relative fertility of immigrant women could have increased considerably over the 1980s. On the other hand, the fact that their initial fertility level was comparable to that of similar natives in 1980 (rather than below the native level, as had been the case in 1970) may exert some downward pressure on the extent of their relative fertility increase, even if it adheres to the disruption model.

Appendix

Table 4A.1 Frequencies of Immigrants by Country of Origin: 1970 and 1980

	1970		1980	
Country	All	Married	All	Married
Argentina	.017	.018	.011	.012
Bolivia	.003	.003	.003	.002
Brazil	.008	.009	.007	.007
Chile	.008	.008	.007	.007
China	.072	.078	.069	.075
Colombia	.029	.023	.027	.023
Costa Rica	.010	.008	.006	.006
Cuba	.175	.177	.095	.093
Dominican Republic	.024	.021	.030	.022
Ecuador	.016	.017	.016	.014
Egypt	.007	.008	.006	.007
El Salvador	.007	.006	.018	.012
Guatemala	.011	.007	.010	.008
Haiti	.013	.009	.015	.011
Honduras	.007	.007	.007	.007
India	.017	.020	.033	.042
Iran	.006	.007	.014	.012
Israel	.012	.012	.009	.010
Jamaica	.034	.021	.033	.022
Japan	.079	.089	.046	.053
Jordan	.003	.003	.002	.002
Korea	.025	.030	.055	.063
Lebanon	.004	.003	.005	.005
Mexico	.274	.289	.297	.313
Nicaragua	.008	.007	.009	.006
Pakistan	.002	.002	.004	.006
Panama	.014	.011	.011	.010
Peru	.011	.010	.009	.009
Philippines	.071	.068	.088	.090
Syria	.003	.003	.003	.004
Trinidad & Tobago	.008	.006	.012	.009
Turkey	.008	.008	.004	.005
Uruguay	.003	.004	.002	.002
Venezuela	.005	.005	.006	.004
Vietnam	.005	.004	.030	.027
N	8,274	5,688	21,232	14,108

Table 4A.2 Means of Individual Variables for Immigrants: Country Sample

	1970		1980	
Variables	All	Married	All	Married
FERTILITY	2.055	2.471	1.952	2.363
AGE	33.988	35.168	33.571	34.995
$AGE^2/100$	12.496	13.149	12.229	13.054
AGE-H	26.964	39.222	25.839	38.886
AGE^2-H/100	11.350	16.511	10.794	16.245
EDUCATION	9.921	9.782	10.685	10.594
EDUCATION-H	7.332	10.666	7.680	11.558
TMSMAR	.075	.086	.064	.071
AGEMAR	18.570	22.764	18.183	22.786
MSP	.687	. . .	.664	. . .
OTHMAR	.130	. . .	.135	. . .
HISPANIC	.618	.614	.565	.552
BLACK	.045	.028	.057	.038
OTHERNW	.220	.242	.309	.339
SOUTH	.248	.250	.248	.263
NCENT	.103	.111	.099	.107
WEST	.376	.389	.426	.429
SMSA	.867	.856	.942	.933
FOREIGN-H	.448	.651	.493	.742
YSM 6–10	.253	.267	.263	.271
YSM 11–15	.152	.162	.192	.196
YSM 16–20	.090	.095	.122	.123
YSM 21–25/21–30	.053	.058	.093	.100
YSM 25+/30+	.061	.066	.022	.025
N	8,274	5,688	21,232	14,108

Table 4A.3 **Reduced-Form Regression Results Excluding AGEMAR and TMSMAR**

	1970				1980			
	Immigrants		Natives		Immigrants		Natives	
Variables	Coeff	t	Coeff	t	Coeff	t	Coeff	t
				All Women				
AGE	.165	9.80	.283	30.81	.102	11.03	.115	15.96
AGE^2/100	−.192	−8.21	−.360	−28.48	−.061	−4.79	−.081	−8.16
AGE-H	.152	10.95	.156	18.81	.186	21.91	.150	19.70
AGE^2-H/100	−.154	−9.71	−.162	−16.47	−.198	−20.16	−.162	−17.59
EDUCATION	−.077	−13.50	−.103	−22.49	−.096	−31.18	−.117	−32.13
EDUCATION-H	−.058	−9.28	−.050	−11.30	−.043	−12.70	−.035	−9.84
MSP	−1.261	−4.30	−1.250	−7.45	−2.411	−13.91	−1.462	−9.92
OTHMAR	1.473	18.80	1.429	31.74	1.176	27.86	1.166	36.12
HISPANIC	.189	2.98	.474	9.53	.199	4.67	.457	13.19
BLACK	.227	2.23	.640	17.34	.536	9.48	.612	22.99
OTHERNW	−.089	−1.29	.029	.71	−.033	−.76	−.006	−.20
SOUTH	.197	3.53	−.025	−.81	.177	5.55	−.080	−3.39
NCENT	.372	5.26	.175	5.72	.321	7.85	.122	4.97
WEST	.394	7.63	.087	2.56	.345	11.81	.061	2.35
SMSA	−.205	−3.55	−.232	−10.41	−.390	−8.54	−.202	−10.44
FOREIGN-H	.151	2.88	.093	1.25	.367	11.81	.011	.19
YSM 6–10	.054	1.09	...	...	.009	.32	...	...
YSM 11–15	.296	4.90	...	...	−.117	−3.62	...	...
YSM 16–20	.458	6.18	...	...	−.109	−2.85	...	...
YSM 21–25/21–30	.678	7.30	...	...	.116	2.66	...	...
YSM 25+/30+	.925	9.87	...	...	.306	3.96	...	...

Constant	−2.045	−7.16	−3.063	−19.64	−.752	−4.61	−.536	−4.55
Adjusted R^2	.323		.341		.393		.430	
N	8,838		25,539		22,786		30,298	
				Married Women				
AGE	.2818	11.15	.4256	28.89	.203	13.91	.241	18.44
AGE²/100	−.3418	−10.11	−.5213	−27.97	−.193	−10.02	−.222	−13.33
AGE-H	.1064	6.51	.0686	6.16	.149	14.58	.066	6.22
AGE²-H/100	−.1089	−6.04	−.0791	−6.53	−.157	−13.87	−.080	−6.77
EDUCATION	−.0873	−11.16	−.1185	−18.46	−.097	−22.78	−.125	−22.58
EDUCATION-H	−.0477	−6.42	−.0432	−8.51	−.042	−10.28	−.033	−7.67
HISPANIC	.2403	2.97	.5164	8.22	.237	4.40	.576	11.80
BLACK	.1258	.85	.6257	11.92	.431	5.41	.550	12.38
OTHERNW	−.1270	−1.47	−.1023	−1.94	−.018	−.34	−.077	−1.83
SOUTH	.2485	3.44	−.0404	−1.06	.206	4.95	−.088	−2.71
NCENT	.4601	5.19	.2008	5.22	.387	7.51	.159	4.71
WEST	.4809	7.23	.1351	3.14	.380	9.90	.092	2.55
SMSA	−.2181	−3.08	−.2683	−9.71	−.432	−7.81	−.218	−8.61
FOREIGN-H	.2164	3.80	.1198	1.53	.385	11.68	.011	.17
YSM 6–10	.0967	1.51	...	...	.001	.04	...	...
YSM 11–15	.4147	5.39	...	...	−.172	−4.06	...	...
YSM 16–20	.6058	6.41	...	...	−.142	−2.83	...	...
YSM 21–25	.7984	6.96	...	...	.135	2.41	...	...
YSM 25 +	1.1155	9.47	...	...	.320	3.31	...	...
Constant	−4.5980	−11.15	−5.0134	−25.29	−4.201	−17.95	−2.560	−15.11
Adjusted R^2	.2376		.2242		.302		.300	
N	6,034		17,697		15,021		18,402	

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