GENDER, SOURCE COUNTRY CHARACTERISTICS, AND LABOR MARKET ASSIMILATION AMONG IMMIGRANTS

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Abstract—Using 1980–2000 Census data to study the impact of source country characteristics on married adult immigrants' labor supply assimilation profiles, we find that immigrant women from countries with high female labor supply persistently work more than those from low-female-supply countries. While both groups of women work less than comparable natives on arrival, women from high-female-participation countries eventually close the gap with natives entirely, and women from low-female-labor supply countries eliminate most of it. Men's labor supply is unaffected by source country female participation, suggesting that the findings on women reflect notions of gender roles.

I. Introduction

A STEADY flow of new immigration has resulted in an increase in the foreign-born share of the U.S. population from 4.8% in 1970 to 11.1% in 2000. Perhaps more dramatically, the percentage of the foreign-born population that came from Europe or Canada fell from 70.4% to 18.4% between 1970 and 2000, with a corresponding increase in the Asian and Latin American share from 28.3% in 1970 to 52.4% in 1980 and 78.2% in 2000.[1] An additional feature of the immigrant population that is less frequently noted is that immigrants typically come from countries with a more traditional division of labor by gender than the United States. Moreover, during the 1980–2000 period, the gender gap in labor supply in the United States narrowed much more than in immigrant source countries. If immigrant women's labor supply behavior mirrors that in their home countries, rising shares of the U.S. population composed of immigrants from countries with more traditional gender roles will cause the U.S. female labor force participation rate to be lower than otherwise. On the other hand, if immigrant women's labor supply eventually assimilates to U.S. levels, this effect would be lessened.

While some evidence suggests that source country female participation does influence immigrant women's labor supply behavior in the United States (Antecol, 2000), little is known about its effect on the assimilation process. The assimilation profile can shed light on what will happen in the long run as these women are exposed to labor market conditions and social norms in the United States. For example, suppose women from a more traditional source country have on average a 20% shortfall in hours relative to comparable immigrant women from less traditional countries. This could reflect a substantial and persistent 20% shortfall throughout their time in the United States or, say, a 40% shortfall during the early stages of their time in the United States, which falls to 0 with longer residence. The two scenarios have different implications for convergence of the group to comparable natives and may affect the labor supply behavior of the second generation of immigrants as well.

In this paper, we study the impact of traditional gender roles in immigrant source countries on the assimilation of married immigrant women and men into the U.S. labor market. This paper also contributes to a broader literature examining the impact of "culture" or preferences and beliefs developed in a different time or place on current economic behavior (Fernández, 2008), and, in particular, the impact of source country characteristics on immigrant women's behavior in the United States. We build on Antecol (2000), who found, using the 1990 Census, that source country female labor force participation rates were positively correlated with U.S. labor force participation of immigrant women, even controlling for human capital characteristics. In addition, Blau's (1992) study of the effect of source country fertility rates on immigrant women's fertility also suggests an impact of gender roles in source countries on the behavior of immigrant women in the United States. Also of interest is Antecol's finding of a positive, though weaker, correlation between U.S. and source country participation for "second- and higher-generation" immigrants, defined by their answer to the census question on ancestry. Similarly, the labor supply and fertility behavior of U.S.-born daughters of immigrants (the second generation) has been found to be positively associated with both female participation and fertility rates in their parents' country of origin (Fernández & Fogli, 2009) and the participation and fertility patterns of immigrants from those origin countries (Blau, Kahn, Liu et al., 2008).

To examine the impact of source country characteristics on immigrant women's assimilation into the U.S. labor

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[1] These figures on the presence and source region of the foreign born were taken from http://www.census.gov/population/www/documentation/twps0029/tab02.html and http://www.census.gov/population/www/socdemo/foreign/STP-159-2000tl.html.

market, we use the 1980–2000 U.S. censuses, which we augment with an extensive set of source country characteristics, as described in the appendix. These include two indicators of the extent of traditional gender roles in the source country: female relative to male labor force participation and women's completed fertility. In addition, in contrast to most earlier work,[2] we control for a variety of other source country characteristics that may affect immigrants' labor supply behavior in the United States, thus increasing the likelihood that our models estimate the true effect of source country female labor supply and fertility rather than the impact of omitted factors that are correlated with these variables. Moreover, results for the impact of these control variables on the assimilation profile are of considerable interest in themselves in shedding light on the economics of immigration generally. Our design allows us to characterize the impact of these source country characteristics on the entire labor supply assimilation profile, an analysis that previous research on immigrant assimilation has not performed. We measure source country characteristics at the time each immigrant came to the United States, although our results are robust to alternative specifications. This is appropriate, since we would like a measure of the tastes or economic incentives one left behind in deciding to migrate and changes in the strength of their effect over time in the United States. We focus on married immigrants for whom gender roles are expected to have a greater effect and in order to explicitly consider the division of labor in the family among immigrants compared to natives.

Higher female labor force participation rates in the United States than in many immigrant source countries may ultimately be due to tastes and beliefs about women's appropriate roles in society, although they may also be due to different economic incentives (e.g., higher female relative wages) in the United States than in the countries of origin. If differences in labor supply behavior between immigrant women from high and low participation source countries tend to persist over time in the United States, cultural factors may indeed be important. If, however, the labor supply of women from both groups tends to converge as both assimilate to the U.S. native levels, one might conclude that the hold of home country beliefs on women's appropriate roles is relatively weak in the face of U.S. work incentives and possibly a U.S. market work-oriented culture. By investigating the impact of source country relative female labor supply on the labor supply assimilation profiles of immigrant women, we provide an explicit test of the persistence of these effects and hence of the potential role and strength of source country culture on immigrant behavior in the United States. Because immigrants are likely to differ from natives in significant unmeasured ways, comparing labor supply assimilation paths of immigrants from more and less traditional source countries is a useful way to study the impact of cultural factors. The great variety of immigrant source countries from which immigrants to the United States originate, spanning such diverse cultures as those in Scandinavia, Latin America, Asia, and the Middle East, provides considerable variation in the source country gender division of labor. Our research design uses this variation to study the issue of assimilation.

In addition to its focus on the assimilation process, our research design provides new evidence on the impact of source country culture in a number of other ways. First, we examine the effect of female relative labor supply in the source country on immigrant male labor supply behavior. An effect of traditional source country patterns that is unique to or stronger for women than men suggests that the effect for women reflects source country gender roles rather than other unmeasured factors that may be expected to have a similar effect for both men and women. Second, we investigate the impact of source country relative female participation of immigrant men on the labor supply behavior of their native-born wives. A positive correlation between immigrant husbands' source country female participation and the labor supply of native-born wives may be due to immigrant men selecting marital partners with similar preferences or directly affecting the labor supply behavior of their wives, for example, by being more or less helpful with family chores or supporting or opposing their labor force entry or career commitment. In either case, an effect of husband's source characteristics on these wives is suggestive of an effect of source country culture on U.S. behavior.[3] Finally, unlike previous work on immigrants, we distinguish between the effects of a woman's own source country from that of her husband's country of origin in the cases where the couple migrated from different countries. This sheds light on the relative importance of wives' and husbands' source country characteristics in influencing wives' labor supply when both spouses are foreign born.

A study of the impact of source country characteristics on immigrant women's labor supply assimilation raises the question of the shape of that profile and how (or if) it may differ between women from more and less traditional source countries. The standard expectation might be that the assimilation profile would be upward sloping for both husbands and wives, where the immigrant would start at a disadvantage relative to otherwise similar natives due to the disruptions of immigration that could lead to difficulty in finding a job or to temporarily working positive but less-than-desired hours. The impact of these disruptions is expected to decrease over time, and immigrant labor supply is expected to approach that of natives. A period of disruption may be even more likely for married women than married men to the extent women are "tied movers" (Mincer, 1978). In addition, some visas obtained by husbands (gener-

[2] Blau (1992) is an exception.

[3] This is similar to Fernández, Fogli, and Olivetti's (2004) finding of a positive effect on wife's labor supply of a husband coming from a family in which his mother worked, a result that they interpret as evidence of an impact of culture. See also Fernández and Fogli (2009) for an analogous analysis to ours for the second generation.

ally the primary earner) may not permit their spouse to work.[4]

An alternative possibility is raised by the family migration model proposed by Baker and Benjamin (1997) that predicts women will initially take dead-end jobs to finance their husbands' human capital investments and eventually drop out of the labor market or reduce their labor supply as their husbands' labor market outcomes improve. Rather than convergence toward native labor supply levels, this model predicts a negatively sloped labor supply profile for immigrant women relative to natives, a finding that has been observed for Canada (Baker & Benjamin, 1997) but not for the United States (Blau et al., 2003). A recent study by Cobb-Clark and Crossley (2004), using Australian data, focuses on immigrant families who migrated together and examines the behavior of the secondary worker (the spouse of the family member who applied for admission to the country) in such families. When the secondary worker in the family is a woman, she works more on arrival than immigrant women in mixed (immigrant-native) families, supporting the family migration model; but when the secondary worker is male, he works less than in mixed families, a finding inconsistent with the model.[5]

The logic of the family migration model, as well as the findings by Cobb-Clark and Crossley (2004), suggest that gender roles within the family are potentially important in determining its applicability. One might expect the family migration model to hold more strongly for families coming from countries with a more traditional division of labor by gender. If so, couples migrating from such countries may be expected to exhibit more specialization by gender, implying that immigrant women's assimilation profiles will have a higher intercept and more negative slope the more traditional the source country is. While a complete test of the family migration model is outside the scope of this study, we may contribute to the literature on this topic by providing evidence on this hypothesis.

II. Data and Descriptive Patterns

Our basic data sources are the 1980, 1990, and 2000 U.S. Census of Population public use microsamples. In addition, we assembled a time-series, cross-sectional database on source country characteristics, which we merged into the census microdata for immigrants based on their country of origin and the date they arrived in the United States. Because of changes in the list of countries across censuses, it was necessary in some cases to aggregate countries and compute appropriately weighted country characteristics. We also performed some imputations for missing data. (See the appendix for further details.) Note that the measure of source country female labor supply we employ is women's labor force participation relative to men's (female LFP/male LFP). This relative measure is appropriate in that it captures the gender division of labor explicitly. A further advantage is that it implicitly adjusts for problems in measuring the labor force, particularly at different levels of economic development, at least to the extent that such problems affect men's and women's measured participation rates similarly.

We focus on individuals aged 18 to 65 who are married to someone aged 18 to 65 and restrict the immigrant sample (respondents and spouses) to those who migrated as adults—age 18 or over.[6] This is desirable because our empirical approach relies on within-immigrant arrival cohort changes to estimate assimilation effects. If child immigrants are included, some immigrants who recently arrived in the United States as children will be excluded from the sample of those aged 18 to 65 in an initial census but will have attained age 18, and therefore eligibility for sample inclusion in subsequent censuses. Thus, the composition of the immigrant sample would change with time in the United States, as those arriving as children comprise a higher share of those with a longer duration of residence (Friedberg, 1993). This is likely to bias the results because those migrating to the United States as children may be less affected by home country characteristics and more similar to native-born Americans when they reach adulthood than those migrating as adults. This also implies that adult immigrants, the large majority of immigrants, are the more appropriate sample on which to study the assimilation process in any case. We use all immigrants for whom we can match source country characteristics, and, for tractability, we take a 4% sample of natives, whom we appropriately weight in all analyses. Overall, we were able to match over 99% of immigrants who had valid, nonallocated values for country of birth and year entering the United States to source countries for which we were able to obtain the source country variables.

Table 1 contains descriptive information on labor market outcomes and personal characteristics in our sample of married individuals for (adult) immigrants and natives in the 1980 and 2000 Censuses, although we additionally use the 1990 Census in the regression analyses. Table 1 indicates that in both years, immigrant women have lower labor supply (measured by either the probability of positive hours or average annual work hours, including those with 0 hours) and more children than U.S. women, even though they are about the same age. Moreover, while both immigrant and

[4] We do not have data on visa type, which may be correlated with country-of-origin characteristics. However, in one of our specifications, we control for source country fixed effects, which may absorb some of the effects of visa requirements, thus making the interpretation of the measured country characteristics stronger than otherwise.

[5] The data did not allow Cobb-Clark and Crossley (2004) to compare immigrant labor supply to that of natives or to follow the immigrants over a long time period, thus preventing analysis of long-term changes in immigrant labor supply.

[6] The spouse restriction means that natives or adult immigrants who are married to child immigrants are excluded from the sample.

TABLE 1.—MEAN VALUES OF SELECTED VARIABLES FOR IMMIGRANTS AND U.S. NATIVES, 1980 AND 2000 (MARRIED INDIVIDUALS)

Variables	1980		2000	
	Immigrants	U.S. Born	Immigrants	U.S. Born
A. Women				
Annual work hours	822.51	887.13	983.06	1301.98
Participated in labor market	0.542	0.608	0.578	0.758
Number of children under 18	1.401	1.157	1.220	1.043
Speaks English well	0.697	0.996	0.652	0.995
Age	40.814	39.231	40.942	41.574
High school dropout	0.395	0.221	0.249	0.061
Exactly high school diploma	0.286	0.470	0.247	0.312
Some college	0.148	0.177	0.184	0.340
College graduate	0.171	0.133	0.320	0.287
White, non-Hispanic	0.418	0.891	0.229	0.867
Black, non-Hispanic	0.037	0.066	0.051	0.065
Other, non-Hispanic	0.268	0.010	0.404	0.022
Hispanic	0.277	0.032	0.316	0.046
Sample size	69,431	76,940	111,283	71,198
B. Men				
Annual work hours	1823.52	1969.47	1855.07	2052.51
Participated in labor market	0.905	0.922	0.889	0.912
Speaks English well	0.731	0.996	0.704	0.996
Age	43.617	41.755	43.521	43.658
High school dropout	0.383	0.248	0.238	0.081
Exactly high school diploma	0.191	0.366	0.211	0.300
Some college	0.130	0.174	0.159	0.306
College graduate	0.296	0.212	0.392	0.314
White, non-Hispanic	0.407	0.891	0.240	0.867
Black, non-Hispanic	0.050	0.067	0.061	0.069
Other non-Hispanic	0.236	0.011	0.372	0.020
Hispanic	0.307	0.031	0.327	0.044
Sample size	60,259	86,112	104,866	77,615

Immigrant samples include only those from countries with observations in each census year and only adult immigrants.

native women increased their labor supply between 1980 and 2000, the native-immigrant gap grew considerably: in 1980, natives worked 66 hours (8%) more than immigrants; by 2000, the gap was 319 hours (32%). In contrast to women, immigrant men worked only 8% fewer hours than native men in 1980, a gap that increased only slightly (to 11%) by 2000. Thus, the gender gap in labor supply fell much more for natives than for immigrants. Table 1 also shows a widening educational gap between immigrants and natives and an increase in the relative share of minorities among immigrants.

The finding of a growing immigrant-native labor supply gap among women in the United States raises the question of whether there are similar trends when female labor supply in immigrant source countries is compared to that in the United States. To the extent that source country labor supply patterns mirror the growing native-immigrant gap in labor supply, we may also ask whether this is associated with a shift in the composition of countries from which immigrants originate versus different time trends within sending countries and the United States. These questions are addressed in table 2, based on our sample of 106 countries, which shows the mean characteristics of source countries of immigrant women for 1980 and 2000, with source country characteristics measured at the time immigrants migrated to the United States. (We omit a corresponding table for men, since the source countries of immigrant men and women tend to be quite similar.) The table also shows the corresponding means for the United States, similarly weighted by the number of immigrants in each arrival period cell. For immigrants, two sets of weights are employed: contemporary-year weights (1980 in 1980 and 2000 in 2000) and fixed-year weights that hold the mix of source countries constant at the indicated year (1980 or 2000).

Looking first at the results for contemporary-year weights (columns 1 and 5 for immigrants; columns 3 and 6 for the natives), table 2 indicates that in each year, the average immigrant woman came from a country that, at the time of her arrival in the United States, had lower relative female labor force participation and higher fertility than the United States had at the same time. Moreover, although average home country relative female labor supply at the time of arrival increased over the period, the corresponding U.S. value increased by considerably more, resulting in a growing gap between U.S. and source country relative female labor force participation—mirroring what we found for immigrant-native differences in the United States. Similarly, source country fertility at time of arrival is higher than U.S. fertility in each year and fell, but by less than the corresponding U.S. fertility decline. We note, however, that for recent immigrants (those who arrived in the past five years), source country fertility decreased substantially relative to U.S. fertility and was only 44% above the U.S. level for recent immigrants in 2000, compared to 2.3 times the

TABLE 2.—MEAN VALUES OF SELECTED SOURCE COUNTRY CHARACTERISTICS, 1980 AND 2000 (MARRIED WOMEN)

	1980			2000		
	Source Countries		United States	Source Countries		United States
Variables	1980 Weights (1)	2000 Weights (2)	1980 Weights (3)	1980 Weights (4)	2000 Weights (5)	2000 Weights (6)
Total fertility rate	4.473	5.301	2.817	3.055	3.663	1.957
GDP per capita (1995 US$)	4,768.3	3,012.4	16,807.3	7,919.3	4,705.6	25,786.9
Female LFP/male LFP	0.445	0.464	0.513	0.572	0.566	0.716
Percentage refugees	0.061	0.057	0.000	0.105	0.117	0.000
Primary school enrollment rate	98.73	94.00	100.05	102.55	100.59	100.40
Secondary school enrollment rate	41.57	34.68	89.42	70.12	58.78	94.92
English-speaking country	0.157	0.091	1.000	0.157	0.091	1.000
English official language (non–English speaking)	0.105	0.169	0.000	0.105	0.169	0.000
Miles from country	3,834.5	4,247.7	0.0	3,834.5	4,247.7	0.0

Source country characteristics are measured as of each immigrant's arrival period and averaged across immigrants. Country weights are fixed by giving each immigrant a weight for her source country corresponding to the frequency of immigrants from that source country in the indicated year (1980 or 2000). U.S. characteristics are weighted by the number of immigrants in each arrival period cell in the indicated year. Census sampling weights are taken into account. Immigrant samples include only those from countries with observations in each census year and only adults.

U.S. level in 1980 (results not shown).[7] Thus, although origin countries have higher fertility than the United States, the gap is closing at the margin. Table 2 also indicates that had the distribution of origin countries stayed the same, source country fertility would have been reduced considerably (compare column 2 with 1 and column 5 with 4). However, the relative female participation rate—the key variable for our study—is not senstitive to source country mix.

There were some trends in the control variables as well. The gap between U.S. and source country GDP per capita increased both absolutely and relatively; this trend was fueled by shifts in source country mix. Immigrants were less likely to have come from English-speaking countries in 2000 than in 1980, and average distance between the United States and the source country increased. (Since these variables are fixed over time, these shifts were entirely due to the shifting composition of source countries.) On the other hand, secondary enrollment gaps between the United States and immigrant source countries have narrowed. However, the convergence would have been greater had the source country mix remained constant and, moreover, the secondary enrollment gap remains quite large.

III. Empirical Procedures

Our analysis of the impact of source country characteristics on the labor supply assimilation of immigrants compares immigrants to natives with the same observable characteristics. Thus, assimilation here refers to the degree to which immigrants' labor supply patterns converge to those of otherwise comparable natives. We estimate equations of the following form on our pooled census microdata separately for men and women:

$$H_{it} = B'X_{it} + \sum_c a_c A^o_{cit} + \sum_y b_y T^o_{yit} + \sum_{y,j} d_{yj} T^o_{yit} Z^o_{jit} + \sum_c e_c A^s_{cit} + \sum_y f_y T^s_{yit} + \sum_{y,j} g_{yj} T^s_{yit} Z^s_{jit} + k_{90} C90_{it} + k_{00} C00_{it} + u_{it}, \quad (1)$$

where for individual i in immigrant arrival cohort c, immigrant years since migration category y, and census year t (t = 1980, 1990, or 2000), H is annual hours worked in the previous year (usual weekly hours times weeks worked, including those with 0 hours), X is a vector of controls, A^o_{cit} and A^s_{cit} are a series of own and spouse (o and s superscripts) immigrant cohort-of-arrival dummy variables, T^o_{yit} and T^s_{yit} are a series of dummy variables referring to own and spouse years since migration (YSM), Z^o_{jit} and Z^s_{jit} are a series of own and spouse source country characteristics indexed by j, $C90_{it}$ and $C00_{it}$ are year dummies for 1990 and 2000, and u_{it} is an error term.[8] The dummy variables for immigrant arrival cohort and years since migration category (A^o_{cit}, A^s_{cit}, T^o_{yit}, and T^s_{yit}) and the immigrant source country characteristics (Z^o_{jit} and Z^s_{jit}) are all set to 0 for native-born respondents or spouses. We cluster the standard errors at the respondent's year of arrival–source country level, treating the United States as a source country for natives. We cluster in this way because this is the level of variation of our group-level explanatory variables; however, results were robust to alternative assumptions, including clustering at the source country and source country–census year level. After creating sampling weights to reflect the random sample of natives and taking into account census sampling weights for 1990 and 2000, we adjust each year's weights so that the total weight of each year's observations is the same.

We define the cohort of arrival and years-since-migration variables for immigrants and their spouses as follows. Since the immigrant arrival period is defined in interval form in

[7] When we used recent arrival weights (the U.S. values for five years before each census), U.S. fertility fell between 1980 and 1990 and then rose back to its 1980 level by 2000.

[8] We also interact own and spouse education with the YSM dummies.

the 1980 and 1990 Censuses, we define sets of cohort of arrival and years-since-migration dummy variables that are consistent across the three censuses. We specify the years-since-migration variables as dummies rather than forming a continuous variable (say, by evaluating the intervals at their midpoints) in order to capture all the available information in the most flexible form. The full set of years-since-migration dummies is included: 0–5, 6–10, 11–15, 16–20, and 21–30 years in the United States (these are the T^o_{yit} and T^s_{yit} dummies). The sum of the years-since-migration (YSM) dummy variables for the respondent (the T^o_{yit}) would be identical to a respondent immigrant dummy variable, and the sum of the spouse years-since-migration dummies (the T^s_{yit}) would be identical to a spouse immigrant dummy variable; therefore, respondent and spouse immigration indicators are not separately included in equation (1). Using the full set of years-since-migration dummies requires us to omit one of the possible arrival cohort dummy variable categories; we have omitted the 1950–1959 cohort for both the respondent and spouse. Thus, the cohort of arrival dummies are 1995–2000, 1991–1994, 1985–1990, 1980–1984, 1975–1979, 1970–1974, 1965–1969, and 1960–1964 (these are the A^o_{cit} and A^s_{cit} dummies). Pooling the sample across three census years and assuming common period effects for immigrants and natives together allow us to separately identify immigrant cohort and assimilation effects (Borjas, 1985).

The interval form of the arrival period in the 1980 and 1990 Censuses also affects our restriction of the sample to adult immigrant respondents and spouses. For each arrival interval, we include only immigrants who we can definitely conclude were at least 18 years old on arrival in the United States.[9] For comparability, similar procedures are followed for the 2000 Census data. This requires us to exclude individuals in the open-ended arrival category in the earlier censuses (pre-1950), since we cannot ascertain whether they migrated as children or adults. The resulting maximum years since migration is thus thirty for 1980, and, for comparability, a maximum of thirty years since migration is also set for 1990 and 2000. This explains why the above years-since-migration dummies exhaust the sample of adult immigrants.

The source country characteristics Z^o_{jit} and Z^s_{jit} are measured at the time the individual migrated to the United States and are set equal to 0 for natives. Thus, they are in effect interactions between an immigrant dummy variable and the source country characteristics. Because the years-since-migration dummies (T^o_{yit} and T^s_{yit}) add up to 1 for each immigrant respondent or immigrant spouse, for each country characteristic, the sum of its interactions with the years-since-migration variables equals the country characteristic itself. Therefore, we do not include main country characteristics effects (Z^o_{jit} and Z^s_{jit}). The specification in equation (1) allows the source country variables to affect both the level of labor supply and the impact of time in the United States on labor supply.

Source country variables were selected to serve as indicators of the degree to which the home country has a traditional division of labor by gender and the extent of labor market preparedness of men and women and to address possible issues of selective migration. They include the female labor force participation rate/male labor force participation rate; the total fertility rate (an estimate of completed female fertility); GDP per capita in 2000 U.S. dollars; the proportion of immigrants arriving in the period who were refugees; the female (female regression) or male (male regression) enrollment rates in primary school and secondary school; a dummy variable for whether the country is English speaking; a dummy variable for countries that are not English speaking but in which English is an official language;[10] and the distance between the source country and the United States.

Female relative labor supply and fertility rates in the source country are indicators of traditional gender roles in the source country. Moreover, these variables, as well as GDP per capita, education, and use of English, are all likely to be related to preparedness for work in the U.S. labor market. In addition, migration likely involves a disruption of work patterns due to housing and job search in the United States. Refugees and those who have come a long distance may suffer the largest disruption, possibly steepening their work assimilation profiles. Alternatively, because of the fixed costs of migration, those who come from a greater distance are likely to have higher labor market returns to migration than those coming shorter distances, all else equal (Chiswick, 1978), and this potential selectivity could also be reflected in work assimilation patterns. For example, migrants moving from a longer distance may be more likely to have jobs lined up in the United States (contributing to their higher rate of return to migration), thus raising their work hours at entry and flattening their assimilation profiles (i.e., the opposite predictions from the disruption mechanism). Thus, the impact of distance on assimilation profiles is theoretically ambiguous.

The combination of the cohort and years-since-migration dummies allows us to completely characterize immigrant labor supply over time in the United States relative to that of natives, controlling for the X variables and year effects. The X variables include the following for respondent and spouse: age, age squared, three education dummies (high school diploma, some college, and college degree, with less than high school as the omitted category), interactions between the YSM dummies and the three education dummies, and three race/Hispanic origin dummy variables

[9] That is, if the immigrant arrived between A_0 and A_1, we take only individuals for whom $(A_0 - BY) \geq 18$, where BY is birth year as calculated from the individual's reported age. An alternative would have been to evaluate the arrival intervals at their midpoints and calculate age of arrival accordingly. We follow the former procedure due to its greater accuracy in excluding child immigrants (see Bleakley & Chin, 2004).

[10] The English-speaking and English official variables are from Bleakley and Chin (2004).

(black non-Hispanic, other non-Hispanic, and Hispanic, with white non-Hispanic the omitted category). *X* also includes eight census region dummies and dummy variables for each of California, Texas, New York, Florida, Illinois, and New Jersey, the states with the largest immigrant populations. Of special note in our controls is the inclusion of YSM-education and spouse YSM-education interaction terms.[11] These variables allow the impact of education on labor supply to be affected by whether the education was obtained in the United States and further allow an immigrant's (or immigrant spouse's) level of education to affect the assimilation process. In addition, because we have included source country school enrollment levels, these interactions in effect transform the immigrant and spouse immigrant education impacts into effects relative to source country schooling. Implicitly, then, these variables control for self-selection of immigrants by education, as well as for the substantive effect of education. Immigrants who are higher up in the educational distribution of their country of origin may differ in their unmeasured characteristics from those with an equal level of education who place lower in their home country's educational distribution. To the extent this type of selection is controlled for by our specification, we expect to obtain estimates of the effects of other explanatory variables that are less biased by selectivity. We also note that equation (1) is a reduced-form specification. We seek to estimate the total effects of the source country variables on the immigrant assimilation process in the United States. We exclude variables such as number of children and wages, which may be considered endogenous to the assimilation process.[12]

We initially estimate equation (1) for all married women and all married men in order to characterize the overall effects of source country characteristics on the married immigrant population's labor supply assimilation profiles. These estimates pool a number of immigrant family types—immigrants married to immigrants from the same and different countries, as well as immigrants married to natives—with our reference group of natives married to natives. In addition to estimating our models on these subsamples, we implement a number of robustness checks and alternative specifications on the basic sample of married women. These include breaking up annual labor supply into the intensive (hours given employment) and extensive (incidence of employment) margins, measuring source country characteristics as of age 17 (a perhaps formative age), measuring them as of the current period (perhaps reflecting changing norms in one's source country), and adding country dummy variables (in order to eliminate any possible correlation between omitted country-specific factors and the key country characteristics examined). Moreover, in one analysis, we use all adults—married and nonmarried (in order to address the possibly changing selection into marriage).

IV. Results

A. *Source Country Characteristics and Assimilation Profiles for Labor Supply: All Married Couples*

The basic findings from estimating equation (1) are summarized in table 3 and figure 1 for women and table 4 and figure 2 for men. We focus on the sum of the own and spouse effects of the source country characteristics. The sum corresponds to an experiment in which we compare a married couple who migrated together from one source country to an otherwise similar couple who migrated together from a different source country. This is a reasonable way to summarize the results in that data from the 1980 Census suggest that a couple migrating together from the same source county is the modal family type for immigrant couples. In 1980, we have information on individuals' age at first marriage and the number of times they have been married. (Unfortunately, there is no comparable information in the 1990 and 2000 Censuses.) Among immigrant women who were in their first marriage (91.0% of married immigrant women), 73.8% were married to immigrants. Of these women, between 62.9% and 78.4% were married before arriving in the United States to a spouse who arrived at the same time. (This range occurs because the arrival year is coded in intervals.)[13] For both estimates, 89% of the women identified as married at arrival were from the same source country as their husband. A further reason for summarizing our results by summing the coefficients for respondents and spouses is precisely because a high proportion of immigrant couples do come from the same source country; pooling all census years, 90.3% of immigrant women married to immigrant men came from the same source country as their husband. This results in considerable collinearity between respondent and spouse source country characteristics among immigrant couples; for example, the correlation between wives' and husbands' source country female relative activity rate is 0.942,[14] making precise estimates of their individual effects problematic in the specification that pools all family types. Below, we investigate this issue by looking at various family types separately (e.g., immigrants migrating from different source countries or immigrants married to natives).

Looking first at the results for relative female labor supply in the female regressions, we see that the source country relative activity rate has a positive, significant effect on annual hours in each YSM category. Thus, source country

[11] Recall that since the own and spouse cohort YSM dummies add up to an own and a spouse immigrant dummy, respectively, we do not include main effects for immigrant and spouse immigrant.

[12] Results are broadly similar in models including these variables; see Blau, Kahn, and Papps (2008).

[13] The lower figure uses the start point of each arrival interval; the higher figure uses the end point.

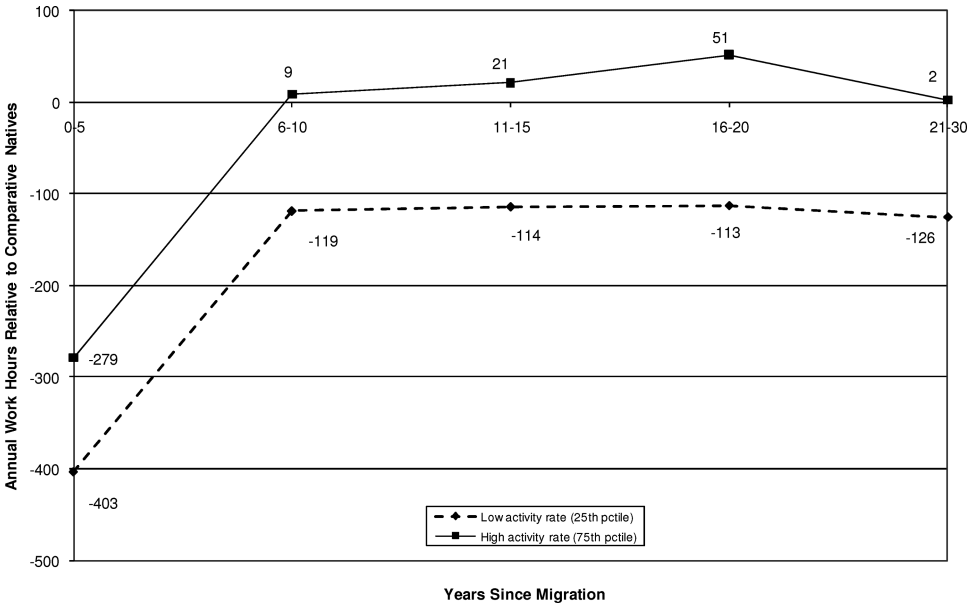
[14] This high correlation also partly reflects a substantial correlation (0.429) between wives' and husbands' female relative activity rate even among immigrants married to immigrants from different source countries.

TABLE 3.—SUM OF OWN AND SPOUSE EFFECTS ON ANNUAL WORK HOURS FOR MODELS INCLUDING SOURCE COUNTRY INTERACTIONS, MARRIED WOMEN, SELECTED VARIABLES

Variable	0–5 Years	6–10 Years	11–15 Years	16–20 Years	21–30 Years
Fertility rate	−25.304	−55.094*	−59.015**†	−43.161**	−37.180**
	(19.829)	(22.741)	(17.460)	(14.039)	(13.336)
GDP per capita	−0.023**	−0.037**††	−0.050**††	−0.037**†	−0.026**
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Activity rate ratio	464.656**	476.427**	506.396**	614.289**	476.716**
	(101.708)	(122.639)	(96.208)	(90.313)	(76.358)
Refugee proportion	−122.953	−95.503	−60.999	−58.982	−162.381**
	(81.161)	(100.055)	(74.057)	(52.989)	(55.254)
Primary enrollment rate	1.215	1.474	3.572**	3.850**	3.253**
	(1.426)	(1.257)	(1.134)	(0.999)	(0.822)
Secondary enrollment rate	1.064	1.523	1.095	−0.010	−0.953†
	(1.314)	(1.479)	(1.126)	(0.954)	(0.858)
English-speaking country	145.288**	104.985*	78.503	68.430	114.505**
	(46.724)	(51.190)	(47.035)	(44.064)	(31.250)
English-official country	244.429**	233.019**	234.421**	156.219**	85.371††
	(79.532)	(66.247)	(59.633)	(57.896)	(62.062)
Miles from home country	−0.029**	−0.013†	−0.017	−0.009†	0.007††
	(0.008)	(0.010)	(0.010)	(0.008)	(0.006)
Immigrant × high school	−137.091*	−133.062*	−125.533*	−86.181	−98.029
	(54.434)	(58.426)	(58.041)	(59.656)	(53.946)
Immigrant × some college	−259.760**	−181.136*†	−180.449**†	−92.290††	−104.491††
	(63.288)	(70.264)	(64.322)	(73.111)	(58.749)
Immigrant × college	−338.209**	−111.660††	−139.472††	−94.509††	−24.270††
	(77.202)	(86.335)	(80.039)	(74.487)	(70.008)
Observations			490,939		
R^2			0.09		

Immigrants are restricted to adult immigrants only. All models also include own and spouse variables for age, age squared, five-years-since-migration dummies, eight arrival cohort dummies, three education dummies, and three race/Hispanic origin dummies, as well as eight region, six state, and two year dummies. Standard errors are clustered at the country-arrival year level. * and ** denote significance levels of 5% and 1%, respectively; † and †† denote significance levels of the difference between the indicated coefficient and the corresponding effect at 0–5 years since migration, 5% and 1%, respectively.

FIGURE 1.—SIMULATED PROFILES, ANNUAL WORK HOURS, MARRIED ADULT IMMIGRANT WOMEN, BY SOURCE COUNTRY RELATIVE FEMALE ACTIVITY RATE



Profiles assume the same cohort arrival values, years since migration, and source country characteristics for women and spouses.

female labor supply is strongly positively associated with immigrant women's labor supply behavior in the United States. Table 3 indicates that this effect is roughly stable across YSM categories; the effect of the activity rate ratio on labor supply at 6–10 through 21–30 years since migration is not significantly different from its effect at arrival (0–5 years), although the point estimate rises somewhat through the 16–20 year category before dropping back in the 21–30 year group.

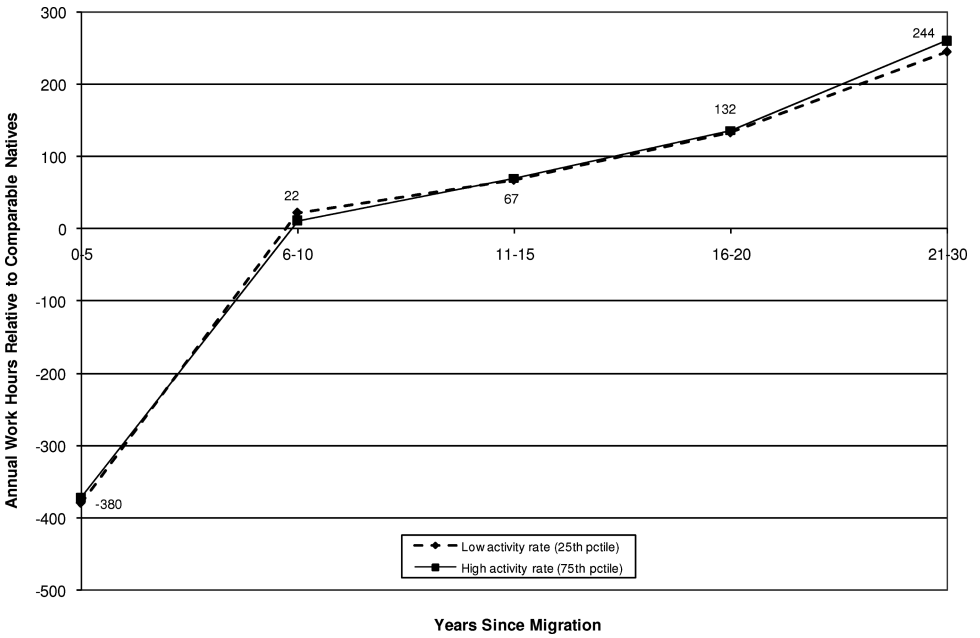
These effects and the relationship of immigrant women's labor supply to the native-born reference group are illustrated in figure 1. The figure shows simulated assimilation

TABLE 4.—SUM OF OWN AND SPOUSE EFFECTS ON ANNUAL WORK HOURS FOR MODELS INCLUDING SOURCE COUNTRY INTERACTIONS, MARRIED MEN, SELECTED VARIABLES

Variable	0–5 Years	6–10 Years	11–15 Years	16–20 Years	21–30 Years
Fertility rate	−41.517**	−65.100**	−32.310**	−56.701**	−40.331**
	(14.985)	(16.670)	(11.412)	(16.230)	(15.364)
GDP per capita	0.017**	−0.002††	−0.001††	−0.006††	−0.002††
	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)
Activity rate ratio	28.845	−39.190	10.258	10.513	59.368
	(112.415)	(105.507)	(74.384)	(93.415)	(74.686)
Refugee proportion	−430.768**	−309.112**	−273.005**	−175.966	−215.118*
	(119.940)	(93.214)	(92.224)	(133.265)	(108.341)
Primary enrollment rate	1.931	0.240	0.458	1.336	1.069
	(1.226)	(0.972)	(0.877)	(0.934)	(0.818)
Secondary enrollment rate	−2.834	−0.585	0.062	−2.322*	−2.319*
	(1.556)	(1.202)	(1.007)	(1.104)	(0.948)
English-speaking country	120.359*	52.887	16.392	62.106	2.552
	(56.527)	(35.624)	(31.894)	(36.785)	(32.357)
English-official country	370.358**	118.107**††	18.505††	−18.639††	−72.810††
	(58.918)	(39.509)	(38.464)	(55.201)	(63.633)
Miles from home country	−0.035**	−0.008†	0.006††	0.014††	0.004††
	(0.011)	(0.008)	(0.009)	(0.011)	(0.009)
Immigrant × high school	−219.416**	−111.804*††	−112.898**††	−119.238**††	−105.256**††
	(48.801)	(45.033)	(40.328)	(39.203)	(37.376)
Immigrant × some college	−345.472**	−176.690**††	−157.331*††	−116.512††	−92.634††
	(74.931)	(64.969)	(65.385)	(68.128)	(63.260)
Immigrant × college	−376.920**	−188.083*††	−165.535††	−66.687††	12.613††
	(95.688)	(88.581)	(87.732)	(85.581)	(83.109)
Observations			490,939		
R^2			0.15		

Immigrants are restricted to adult immigrants only. All models also include own and spouse variables for age, age squared, five-years-since-migration dummies, eight arrival cohort dummies, three education dummies, and three race/Hispanic origin dummies, as well as eight region, six state, and two year dummies. Standard errors are clustered at the country-arrival year level. * and ** denote significance levels of 5% and 1%, respectively; † and †† denote significance levels of the difference between the indicated coefficient and the corresponding effect at 0–5 years since migration, 5% and 1%, respectively.

FIGURE 2.—SIMULATED ASSIMILATION PROFILES, ANNUAL WORK HOURS, MARRIED ADULT IMMIGRANT MEN, BY FEMALE RELATIVE ACTIVITY RATE



Profiles assume the same cohort arrival values, years since migration, and source country characteristics for men and spouses.

profiles for adult immigrant women married to adult immigrant men who came to the United States from the same country and at the same time, assuming the couple migrates from a country with a high female relative activity rate, at the 75th percentile of our sample, or a low female activity rate, at the 25th percentile. This calculation uses individual immigrants, not individual source countries, as the unit of analysis, thereby giving countries sending larger numbers of immigrants more weight in computing the percentiles. The 75th percentile figure is 0.636 and corresponds roughly to the Austrian value for the relative female activity rate for 1996, while the 25th percentile is 0.368 and roughly the

level for Pakistan in 1994.[15] In order to construct the profiles, we assume the sample averages for the cohort arrival dummies and the source country characteristics apart from the female relative activity rate.

As may be seen in the figure, there is a substantial and persistent gap between the annual hours of women from high- and low-activity-rate countries: an unweighted average of 136 hours across YSM categories, corresponding to 14% of immigrant women's mean hours of 939. Both groups of women work less than comparable natives on arrival: 279 hours less for women coming from a high-female-activity-rate country and 403 hours less for those migrating from a low-female-activity-rate country. These are sizable deficits of 26% and 37% relative to the sample average work hours (including natives) of 1,093. Work hours for women from both types of countries assimilate dramatically over time relative to comparable natives. Women from high-female-labor-supply countries work roughly the same number of hours as natives after 6 to 10 years and work at or above the native levels thereafter. Women in families migrating from low-female-labor-supply countries continue to work less than natives throughout their residence in the United States, but after 6–10 years, the deficit is only 11–12%. These upward-sloping assimilation profiles for women from both high- and low-female-labor-supply source countries are not consistent with the family migration model.

The assimilation results for married adult immigrant women can be compared to those for married men, as shown in table 4 and figure 2. The activity rate ratio interactions are not significant, and, in the figure, the profiles for men born in high- and low-female-labor-supply countries are virtually identical. Thus, source country female labor supply clearly has a much more important effect on immigrant women's than immigrant men's labor supply. The gender difference in findings is suggestive of an impact of culture and norms of the source country rather than unmeasured factors associated with labor supply that might be expected to affect men and women similarly.

A further indicator of a traditional source country division of labor is its fertility rate. Tables 3 and 4 indicate that for each YSM category, work hours are negatively related to source country fertility for both men and women. These differences are significant for men in each case and for women in four of the five cases (all but the 0–5 years since migration category). Evaluating these effects at the 25th (2.49 children, or roughly Chile's 1996 value) and 75th percentiles (5.63 children, or roughly Iran's 1990 level) of the source country fertility rates yields an impact of between 79 and 185 hours for women (8–20% of the immigrant mean) and 101 and 204 hours for men (5–11% of the immigrant mean). There is no evidence that the effect of source country fertility differs with time in the United States for men; for women, the effect of fertility is significantly more negative at 11 to 15 years since migration than at arrival. Thus, as in the case of the activity rate, we find substantial and persistent differences in the labor supply behavior of women from high- and low-fertility-source countries; however, in this case, we find similar evidence for men as well.

In addition to the effect of traditional gender roles (i.e., relative female activity rates and fertility), tables 3 and 4 show some interesting effects of other source country characteristics on immigrants' labor supply assimilation profiles. First, coming from a country where English is an official language has large, statistically significant positive effects on both women's and men's labor supply on arrival: 244 hours for women (26% of the immigrant mean) and 370 hours for men (20% of the immigrant mean). For both men and women, this difference falls dramatically with years since migration. For men, the interactions with YSM are no longer significant after 10 years in the United States; for women the interactions remain significant until the YSM category of 21 to 30 years. The impact of coming from an English-speaking country also shows a pattern of positive effects on men's and women's labor supply that decline with time in the United States, although coefficients are smaller and less often significant.

Second, for both men and women, coming from a greater distance significantly reduces work hours at arrival. For example, increasing the distance by 5,000 miles (roughly the difference between Canada's distance and Japan's distance to the United States) reduces women's work hours at arrival by 145 and men's by 175. However, for both men and women, the interactions of distance with YSM category are no longer significant by 6 to 10 years and are smaller in absolute value than the effect at arrival. Thus, coming from a long distance appears to produce an initial disruption for both men and women that is made up after a relatively short time in the United States. Since distance does not affect long-run work hours for either men or women, it does not appear to be an indicator of positive or negative selection with regard to work behavior. It is also worth noting that refugee proportion has a negative effect on labor supply that is substantial and significant for men. The effect for males falls in magnitude from -431 at arrival to -215 after 21 to 30 years, consistent with a disruptive effect of leaving as a refugee (as argued earlier); however, this difference (between the effect at arrival and at 21 to 30 years) is not statistically significant.

Third, the assimilation profiles differ in interesting ways by level of schooling. For both men and women, the immigrant-native gap in work hours at arrival (immigrant hours minus native hours, all else equal) is much more negative for immigrants with at least a high school diploma than it is for high school dropouts, and these differences are large and highly significant. Moreover, the gap increases in magnitude with level of education and is largest for college graduates. For each education category, these effects relative to high school dropouts diminish in magnitude with

[15] For these and other examples in the text of the countries corresponding to the percentiles, we sometimes refer to interpolated data.

TABLE 5.—SELECTED RESULTS FOR ANNUAL WORK HOURS FOR MODELS INCLUDING SOURCE COUNTRY INTERACTIONS, MARRIED WOMEN, BY FAMILY TYPE

Family Type/Sample	0–5 Years	6–10 Years	11–15 Years	16–20 Years	21–30 Years
1. Immigrants married to immigrants (sum of own and spouse coefficients)[a]					
Fertility rate	−29.824	−63.493**	−63.244**	−40.921**	−35.776**
	(20.304)	(22.149)	(17.279)	(12.621)	(12.067)
Activity rate ratio	414.490**	454.375**	451.660**	605.092**	378.508**
	(106.636)	(122.912)	(108.563)	(91.752)	(80.362)
2. Immigrants married to immigrants arriving at same time from same country (own source country effects)[b]					
Fertility rate	−26.774	−59.675*	−63.401**	−40.632**	−29.615*
	(22.776)	(24.707)	(15.751)	(13.586)	(12.710)
Activity rate ratio	464.493**	472.357**	452.270**	642.027**	338.758**
	(110.365)	(134.520)	(104.152)	(98.706)	(92.494)
3. Immigrants married to natives (own source country effects)[b]					
Fertility rate	0.239	16.020	−8.102	1.543	−0.017
	(16.193)	(15.291)	(15.796)	(13.968)	(14.923)
Activity rate ratio	320.692**	385.207**	254.157*	309.000**	413.756**
	(111.245)	(91.506)	(104.890)	(95.723)	(102.359)
4. Natives married to immigrants (effects of husband's source country on wife's hours)[c]					
Fertility rate	13.905	16.464	19.536	−15.695	−21.789
	(8.729)	(12.590)	(14.041)	(16.118)	(16.236)
Activity rate ratio	198.726*	94.137	196.085*	225.961*	244.614*
	(87.872)	(83.423)	(91.111)	(107.144)	(101.864)

Immigrants are restricted to adult immigrants only. Each set of results comes from a sample of the indicated group augmented by the sample of natives married to natives. All models also include own and spouse variables for age, age squared, three education dummies, and three race/Hispanic origin dummies, as well as eight region, six state, two year dummies, and all other variables shown in table 3. Standard errors are clustered at the country-arrival year level. * and ** denote significance levels of 5% and 1%, respectively; † and †† denote significance levels of the difference between the indicated coefficient and the corresponding effect at 0–5 years since migration, 5% and 1%, respectively.

[a] Includes own and spouse years since migration and arrival cohort dummies.

[b] Includes wife's years since migration and arrival cohort dummies.

[c] Includes husband's years since migration and arrival cohort dummies.

time in the United States, indicating steeper assimilation profiles relative to natives for the more highly educated.[16] It is possible that the labor market is more specialized for those with higher levels of schooling and that it therefore takes a longer period of job search or further training for these workers to locate an acceptable job. Additionally, the more specialized labor markets for those with higher levels of schooling may require additional visas not needed in more menial jobs, again potentially explaining the lower relative work hours at arrival and steeper slopes for the more highly educated.[17]

B. Source Country Characteristics and Assimilation Profiles for Labor Supply: Separately by Family Type

The findings in table 3 and figure 1 suggest a permanent, roughly constant gap in work hours in favor of women coming from countries with high female labor force participation relative to low participation for the overall sample of immigrant women. In tables 5 and 6, we probe the results further by examining them for a number of different family types separately. In each case, the estimated regressions include the indicated subsample of immigrant women and the base group of native women married to native men. The first two panels show findings for immigrant women married to immigrant men and immigrant women married to immigrant men arriving at the same time from the same country. In table 5, panel 1, we continue to sum own and spouse source country effects, while in panel 2, there is only one set of source country characteristics by construction. In either case, the results are almost identical to those in table 3 for both activity rate and fertility. And figure 3 shows very similar assimilation profiles among immigrant women married to immigrant men coming from the same country and at the same time to those in figure 1, which was estimated for all married immigrant women. This close correspondence is perhaps not surprising, given the substantial share of immigrant women married to immigrant men arriving at the same time from the same source country noted above.[18] The results in panel 2 are of interest in that they allow a sharper test of the family migration model in that it might be argued that this model applies most strongly to couples arriving from the same country at the same time.

[16] Differences relative to 0–5 years since migration are significant in all cases for men and for those with a college education (some college and graduates) for women. To calibrate the education effects in tables 3 and 4 relative to natives, we may, as in figures 1 and 2, evaluate the immigrant-native difference in work hours for high school dropouts for immigrant women married to immigrant men who came to the United States from the same country and at the same time, assuming the sample averages for the cohort arrival dummies and the source country characteristics. These differences for women (men) are: 0–5: −146 (−136); 6–10: 57 (137); 11–15: 72 (180); 16–20: 48 (210); 21–30: .3 (297).

[17] It is possible that the need for specialized visas for highly technical work or for study at U.S. universities is correlated with some of the country characteristics we have included in our regressions. However, as noted above, our basic conclusions hold even when we include country fixed effects. Moreover, our results are similar when we stratify by the four education categories.

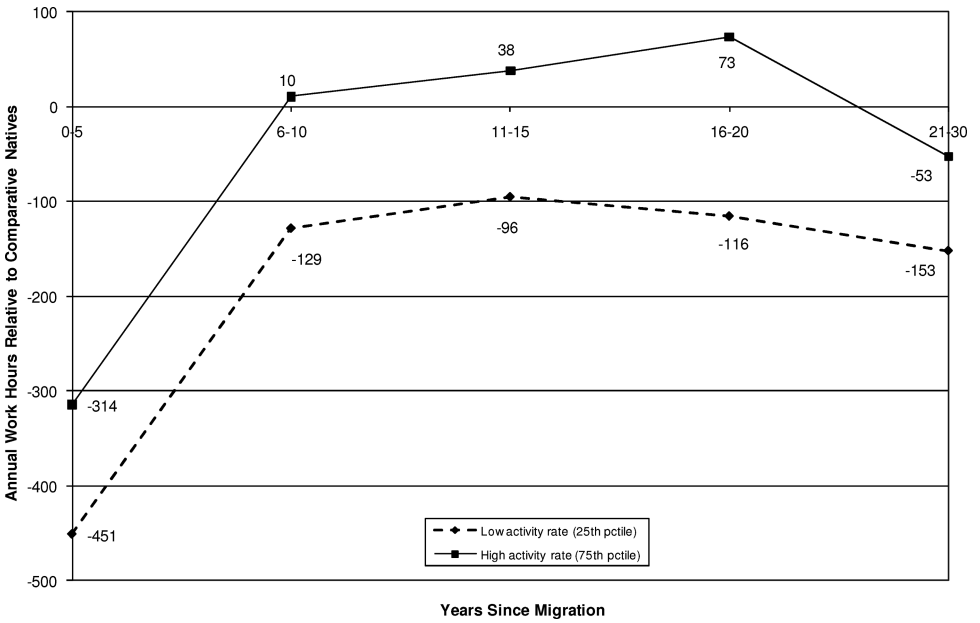
[18] For the full sample (pooling all census years), 77% of married immigrant women are married to immigrant men, 70% are married to immigrant men from the same country, and 53% are married to immigrant men who migrated from the same country at the same time.

TABLE 6.—SELECTED RESULTS FOR ANNUAL WORK HOURS FOR MODELS INCLUDING SOURCE COUNTRY INTERACTIONS, IMMIGRANT WOMEN MARRIED TO IMMIGRANT MEN FROM A DIFFERENT SOURCE COUNTRY

	0–5 Years	6–10 Years	11–15 Years	16–20 Years	21–30 Years
1. Effect of own source country characteristics					
Fertility rate	−12.205	−29.804	−34.341	−18.649	−39.733
	(14.805)	(19.318)	(20.199)	(21.450)	(22.884)
Activity rate ratio	243.009**	370.203**	549.509**	249.191	−53.800
	(98.040)	(117.711)	(128.320)	(129.407)	(156.859)
2. Effect of spouse's source country characteristics					
Fertility rate	−8.931	−37.064*	20.602	−28.569	40.606*†
	(15.487)	(16.861)	(16.066)	(17.759)	(18.389)
Activity rate ratio	188.021	65.948	330.028**	−32.009	213.050
	(104.406)	(124.158)	(114.166)	(120.646)	(132.778)
3. Sum of effects of own and spouse source country characteristics					
Fertility rate	−21.136	−66.869**	−13.739	−47.218	0.873
	(19.920)	(23.675)	(25.470)	(26.889)	(25.711)
Activity rate ratio	431.030**	436.150**	879.538**†	217.182	159.250
	(122.542)	(150.591)	(167.485)	(179.909)	(189.006)

Immigrants are restricted to adult immigrants only. Sample includes natives married to natives and immigrants married to immigrants from a different source country. All models also include own and spouse variables for age, age squared, years-since-migration dummies, arrival cohort dummies, three education dummies, and three race/Hispanic origin dummies, as well as eight region, six state, two year dummies, and all other variables shown in table 3. Standard errors are clustered at the country-arrival year level. * and ** denote significance levels of 5% and 1%, respectively; † and †† denote significance levels of the difference between the indicated coefficient and the corresponding effect at 0–5 years since migration, 5% and 1%, respectively.

FIGURE 3.—ASSIMILATION PROFILES, ANNUAL WORK HOURS, ADULT IMMIGRANT WOMEN MARRIED TO IMMIGRANT MEN WHO ARRIVED FROM THE SAME COUNTRY AND THE SAME TIME, BY SOURCE COUNTRY RELATIVE FEMALE ACTIVITY RATE



Profiles assume the same cohort arrival values, years since migration, and source country characteristics for women and spouses.

However, the results continue to be inconsistent with the family migration model.

Panel 3 of table 5 shows results for immigrant women married to native men. Fertility in one's source country has no effect, while the source country female relative activity rate has a positive effect that is generally smaller in magnitude than in the samples of immigrant women married to immigrant men (panels 1 and 2). Panel 4 shows a positive association between source country female labor supply in the husband's source country and the labor supply of native women married to immigrants; the estimated effect is smaller than for immigrant women who are married to natives (panel 3). Taken together, these results suggest a role for husband's source country female activity rate on wife's behavior. The effect of the husband is suggested by the fact that the effect of activity rate ratio is smaller when only the wife is an immigrant (panel 3) and that an effect is obtained for the native-born wives of immigrant men (panel 4). As discussed above, these correlations could represent an impact of husbands on the behavior of wives or selection of spouses who share similar values, but in either case, a role for culture is suggested. Finally, the absence of an effect of the source country fertility rate on labor supply in panels 3 and 4 is another indication that its effect among immigrant couples

may not be due to the impact of culture but rather other unmeasured source country factors correlated with fertility. This interpretation was also suggested by the finding that the impact of source country fertility on labor supply was negative for immigrant men as well as for immigrant women.

The fact that the impact of source country female relative activity on wife's labor supply was found to be smaller for native women married to immigrant men (panel 4) than for immigrant women married to native men (panel 3) suggests that the impact of a women's own source country characteristics on her behavior is greater than the impact of her husband's. We probe this question further in table 6, where we contrast the effects of a woman's own source country characteristics and those of her spouse in the case where the members of the couple have migrated from different countries. There are about 20,000 such cases in our pooled census data. A caution we note here in disentangling these effects is that even among this sample, there is a high correlation (0.429) between wives' and husbands' female relative activity rate, a correlation that in itself is suggestive of a cultural effect. The results indicate that the effect of women's own country female relative activity ratio is more positive through the first twenty years in the United States than the effect of female labor supply in the spouses' source country; it is also more often significant. The effect of the respondent's own source country fertility is generally more negative than that of fertility in the spouse's source country, although these effects are generally not significant in either case. Overall, women are more responsive to their own source country's culture, but that of their husband also generally affects their labor supply in the expected direction. Again, these results are consistent with the findings in table 5, which show a larger effect of source country female relative activity ratio for immigrant women married to native men than for native women married to immigrant men.

C. Alternative Specifications

We attempted a number of alternative specifications of equation (1). Each of these led to qualitatively similar results to those shown in tables 3 and 4 and figures 1 and 2. First, we included a full set of country dummy variables, in effect transforming the country characteristics effects into within-country effects. The effects on married immigrant women of the female relative activity rate remained highly significant and positive for each category of years since migration. The coefficients rose from 467 hours at 0 to 5 years, to 899 hours at 16 to 20 years, before falling back to 828 hours at 21 to 30 years since migration.[19] The rise in this case was statistically significant, indicating that within countries, an increase in the activity rate raises both the level and the slope of the profile. (Recall from table 3 that the slope was increased through 16 to 20 years but not significantly so.) The effect of the relative female activity rate controlling for country dummies is actually larger in magnitude than the results in table 3. This comparison implies that controlling for the other country characteristics, the female relative activity rate is negatively correlated with unmeasured country-specific factors raising immigrant women's labor supply. The significantly positive impact controlling for country dummies gives us more confidence that our basic results reflect the impact of source country female labor supply rather than unmeasured country-specific factors. In contrast to the results for the female activity rate, the impact of fertility on women's labor supply in the country fixed-effects specification was positive but statistically insignificant. And the impact of female activity rate for men's labor supply was positive, much smaller in magnitude than for women, and statistically insignificant for each years-since-migration category except for 16 to 20 years.[20]

Second, we estimated equation (1) with two alternative dependent variables: (1) a dummy variable indicating that one had positive work hours (a linear probability analysis) and (2) work hours given employment. In these models, the female relative activity rate had significantly positive effects for each years-since-migration category on both employment incidence and hours given employment for married immigrant women. These effects were relatively stable with time in the United States, ranging from .205 to .285 for employment and 162 to 248 for hours given employment. A 75–25 difference in female relative activity rate raises employment incidence by 5.5 to 7.6 percentage points (about 9.6% to 13.3% of the immigrant mean of .573) and hours given employment by 43 to 66 hours (or about 2.6% to 4.0% of the immigrant mean of 1,640 hours given employment). Thus, effects on employment were larger relative to the mean than effects on hours given employment, but source country characteristics have noticeable effects on both margins for women.[21] Effects of fertility were negative for both dependent variables and significant four of five times for hours given employment and three of five times for the incidence of employment. A 75–25 difference in fertility lowered employment by 4.4% to 15.3% and hours given employment by 1.8% to 8.2% of the respective immigrant averages.[22] As before, the effect of fertility was similar for men to what it was for women, and the effect of the female activity rate was small and insignificant.

[19] Like the results in table 3, these represent the sum of the own and spouse country characteristics effects.

[20] The effects of relative female activity rate for men ranged from 33 to 333 hours. These were more positive than the results in table 4, which did not control for country dummies, again suggesting that controlling for the other source country characteristics, female relative activity rate is negatively correlated with unmeasured country-specific factors increasing immigrant men's labor supply (as was the case for women as well).

[21] The similarity of the effects of the female relative activity rate on both employment incidence and hours given employment gives us some confidence in this variable as an indicator of the gender division of labor in the source country, despite our lack of information on the hours actually worked by source country.

[22] The effect of fertility on hours given employment was significantly more negative for 21 to 30 years than at arrival, although, again, the magnitude of these effects relative to the mean was small.

Third, our basic results were very similar when we measured source characteristics at age 17, in the current census year (1980 for the 1980 Census, 1990 for the 1990 Census, and 2000 for the 2000 Census), or at the same year for the full sample (two models: one using 1980 values and one using 1990 values). Thus, our findings are robust to a number of alternative assumptions about the timing of when one's source country might affect one's values and tastes. Fourth, because one might be concerned that selection into marriage may have changed between 1980 and 2000 (as discussed by Blau & Kahn, 2007), we estimated our models using all adults and controlling only for one's own source country characteristics. In effect, these models allow marriage to be endogenous. We obtained very similar results to those reported in tables 3 and 4 and figures 1 and 2. Finally, results were also broadly similar when we performed separate pairwise analyses for 1980–1990 and 1990–2000, rather than pooling all three years as we do in our main specifications.

V. Conclusions

In this paper, we have examined the assimilation of married immigrant women into the U.S. labor market. We found that controlling for personal characteristics, women from high-female-labor-supply countries work more than those from low-female-labor-supply source countries and that this gap is substantial and roughly constant with length of residence in the United States. The work hours of women from both types of source countries do, however, assimilate dramatically over time relative to comparable natives. Women from high-female-labor supply countries (at the 75th percentile of the distribution) work roughly the same number of hours as natives after 6 to 10 years in the United States. While women migrating from low-female-labor-supply countries (at the 25th percentile of the distribution) continue to lag behind natives, they greatly reduce their initial work hours deficit.

Our findings suggest that growing up in a country with less traditional gender roles facilitates the labor market assimilation of women, perhaps by giving them higher (unmeasured) human capital levels or by affecting their views about women's appropriate roles and hence their work orientation. A number of our findings are consistent with the latter possibility or an impact of culture on economic behavior. First, we find that the relationship between source country female participation and immigrant women's labor supply is persistent over time in the United States, consistent with a relatively strong hold of source country culture. This inference is reinforced by our finding that men's labor supply levels and profile slopes are unaffected by source country female labor supply, suggesting that the female findings reflect notions of gender roles rather than the overall work orientation or human capital of all immigrants from a particular type of source country. Second, when we disaggregate by family type, we find that the labor supply of the native-born wives of immigrant husbands is positively related to female participation in the husband's country of origin. This could be due to a direct effect of husbands on the behavior of wives or selection of spouses who share similar values, but either way again suggests an impact of culture. A final result of interest is that unlike previous work on immigrants, we distinguish between the effects on labor supply of an immigrant woman's own source country from that of her husband's, finding that the women's own source country has a larger impact on her behavior, but that husband's source country does matter.

Findings for another indicator of traditional gender roles, source country fertility rates, are broadly similar for women, with substantial and persistent negative effects of source country fertility on the labor supply of female immigrants for the full sample of immigrant wives. However, we also find a similar result for immigrant men, suggesting that, controlling for activity ratio, source country fertility may be an inverse proxy for general preparedness for work in the United States.

The nature of gender roles in the source countries of immigrants to the United States is changing in potentially offsetting ways. On the one hand, fertility rates are falling dramatically in immigrant source countries relative to the United States, potentially raising immigrant women's labor supply here. On the other hand, while female labor force participation relative to men's grew around the world between 1980 and 2000, it grew even faster in the United States than in immigrant source countries. These trends could potentially widen the relative gap in labor supply between native and immigrant women. More recently, however, female participation rates in the United States have leveled off, suggesting that source country rates may begin to catch up to the U.S. rate. Thus, the future assimilation of immigrant women into the U.S. labor market will depend on the strength of these opposing forces.

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DATA APPENDIX

A. *Individual Variables*

Data were obtained from the 1980, 1990, and 2000 5% extracts of the U.S. Census, which are contained in the Integrated Public Use Microdata Series (IPUMS), available at http://www.ipums.umn.edu. Those people born in the United States or a U.S. territory or possession or born abroad to an American parent are classified as natives; others are classified as immigrants. (Results are unchanged when Puerto Ricans are dropped from the sample.) All immigrants in the extracts are included, along with all natives who were married to immigrants. A 4% random sample was taken of the remaining observations, with the 1990 and 2000 Census person weights multiplied by 25; comparable weights were created for the 1980 Census, for which no census weights are provided. (Hence, we have a 1/500 sample of natives.) To ensure that each year was given equal weight, the adjusted weights were then divided by the sum of these weights over all observations in a given year.

For the married sample, husband and wife records were matched, with observations dropped if either spouse was not in the 18–65 age range, had 0 weight, had allocated annual weeks worked, allocated hours worked per week, allocated birthplace or year of immigration, or had missing source country information. For the total sample, observations were dropped if a person was not in the 18–65 age range, had 0 weight, had allocated annual weeks worked, allocated hours worked per week, allocated birthplace or year of immigration, or had missing source country information.

Since we focus on adult immigrants, the preceding samples were further restricted by excluding immigrants who arrived in the United States before age 18. Data on arrival period in the 1980 and 1990 Censuses are in interval form. For each interval, we include only immigrants for whom we can definitely conclude that they were at least 18 years old on arrival in the United States. That is, if the immigrant arrived between A_0 and A_1, we take only individuals for whom $(A_0 - BY) \geq 18$, where BY is birth year as calculated from the individual's reported age. For comparability, similar procedures were followed for the 2000 Census data. This also required us to exclude individuals in the open-ended arrival category for 1980 and 1990 (pre-1950), since we cannot ascertain whether such individuals migrated as children or adults. The resulting maximum years since migration is thus 30 for 1980, and, for comparability, a maximum of 30 years since migration is also set for 1990 and 2000. We define sets of cohort of arrival and years-since-migration variables dummies that are consistent across the three censuses. The cohort of arrival dummies include all but one possible arrival cohort: 1995–2000, 1991–1994, 1985–1990, 1980–1984, 1975–1979, 1970–1974, 1965–1969, and 1960–1964 (1950–1959 is the omitted category). The full set of years-since-migration dummies is included: 0–5, 6–10, 11–15, 16–20, and 21–30 years in the United States.

Values for the highest grade completed by husbands and wives in the 1990 and 2000 samples were assigned using Jaeger's (1997) suggested correspondence. Annual hours worked were defined as the product of the number of weeks worked in the previous year and the number of hours usually worked during those weeks; a respondent was considered to be in the workforce if annual hours were greater than 0.

B. *Source Country Variables*

The source country characteristics were collected at five-year intervals for the period 1950 to 2000. To form a consistent list of source countries, we combine some countries that were not available in some Census years (e.g., subsets of countries in Africa, the Pacific Islands, and the West Indies) and countries that split or combined between 1980 and 2000 (e.g., the former USSR countries, East and West Germany, former Czechoslovakia, and former Yugoslavia). Some countries were combined because data on source country characteristics were available only in a combined form. The data set contains 106 source countries. The characteristics for each composite group are the average values over constituent countries weighted by each country's population age 18 to 65 from the 2000 Census 1% extract. Due to missing values of source country variables in some years, we have, in some cases, interpolated for intervening years, used earliest (most recent) values for preceding (subsequent) years, and imputed source country characteristics from neighboring countries. Source country characteristics were matched to arrival cohorts as follows: 1950–1959: 1955; 1960–1964: 1960; 1965–1969: 1965; 1970–1974: 1970; 1975–1979: 1975; 1980–1984: 1980; 1985–1990: 1985; 1991–1994: 1990; and 1995–2000: 1995.

TABLE A.1.—SOURCE COUNTRY CHARACTERISTICS: DEFINITIONS AND SOURCES

Variable	Description
Fertility	Total fertility rate: Number of children who would be born per woman, assuming no female mortality at child-bearing ages and the age-specific fertility rates of a specified country and reference period. The data are available between 1955 and 2000 at five-year intervals. Source: United Nations Statistics Division (2006a).
GDP per capita	GDP per capita (1995 US$): GDP is an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production. The total population of a country may comprise either all usual residents of the country (de jure population) or all persons present in the country (de facto population) at the time of the census. The data are available annually between 1960 and 2000. Source: United Nations Statistics Division (2006b, 2006c), with supplemental data from U.S. Arms and Control Disarmament Agency (various years) and U.S. Department of State (various issues).
Female/male activity rate	Female LFP / male LFP: Economically active population ("usually active" or "currently active" (currently active is also known as "the labor force")) comprises all persons who furnish the supply of labor for the production of economic goods and services (employed and unemployed, including those seeking work for the first time), as defined by the System of National Accounts (SNA). The rates are calculated for individuals age 15 and up. The data are available between 1950 and 2000 at 10-year intervals and in 1995. Source: United Nations Statistics Division (2006d, 2006e).
Refugee proportion	Refugees as a proportion of total immigrants. The data are available between 1950 and 2000 at five-year intervals. Sources: U.S. Immigration and Naturalization Service (various years) and U.S. Department of Justice (various years).
Primary school enrollment rate	Female or male primary school enrollment rate: Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to that level of education in question. The World Bank data are available in 1970, 1975, 1980, 1985, and 1990–1998; Barro-Lee data are available between 1960 and 1985 at five-year intervals. Source: World Bank (2002a), with supplemental data from Barro and Lee (1994).
Secondary school enrollment rate	Female or male secondary school enrollment rate: Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to that level of education in question. The World Bank data are available in 1970, 1975, 1980, 1985, and 1990-1998; Barro-Lee data are available between 1960 and 1985 at five year intervals. Source: World Bank (2002b), with supplemental data from Barro and Lee (1994).
English-speaking country	English-speaking country. Source: Bleakley and Chin (2004); their data were from the *World Almanac and Book of Facts* (1999).
English official language	English is an official language of the country (for non-English-speaking countries). Source: Bleakley and Chin (2004); their data were from the *World Almanac and Book of Facts* (1999).
Distance to United States	Distance to the United States (miles): computed as the distance between the capital of the foreign country and the closest of three U.S. gateways: New York, Los Angeles, or Miami. See http://www.indo.com/distance/ and http://www.cia.gov/cia/publications/factbook.