August 2007

Cross-Nativity Marriages, Gender, and Human Capital Levels of Children

Delia Furtado
University of Connecticut and IZA

University of Connecticut

Department of Economics Working Paper Series

Cross-Nativity Marriages, Gender, and Human Capital Levels of Children

Delia Furtado
University of Connecticut and IZA

Abstract

Because the demographic composition of todays immigrants to the US differs so much from those of natives, immigrants may be less likely to socially integrate into U.S. society, and specially less likely to marry natives. This paper explores the relationship between immigrants' marriage patterns and the academic outcomes of their children. Using 2000 Census data, it is found that while marital decisions of foreign born females do not affect their children's academic success, foreign born males that marry foreign born females are less likely to have children that are high school dropouts. These relationships remain after using various methods to control for the endogeneity of the intermarriage decision. Although we cannot disentangle whether the benefits of same-nativity marriages for foreign born males arise from a more efficient technology in human capital production within the household or from increased participation in ethnic networks, it does appear that immigrant males have better educated children when they marry immigrant females.

1. Introduction

Assimilation, the process by which immigrants and their descendents become indistinguishable from the native population, occurs through many different dimensions. Rapid convergence to certain native trends may in fact impede the speed at which immigrants become similar to natives in other aspects. In this paper, I examine the relationship between two different aspects of assimilation: marital assimilation, or marriage of an immigrant to a native, and human capital accumulation of children. More specifically, I examine whether marriages of immigrant parents to natives result in more or less favorable academic outcomes for their children even after accounting for the endogeneity of spouse choice.

This is an especially important question today because in many immigrant receiving countries, the racial and educational composition of immigrants differs more and more from the native population. According to the 2000 Current Population Survey, a little over half of the foreign born in the U.S. are from Latin America and a quarter are Asian. Meanwhile, only about 13 percent of the U.S. population is Hispanic and 3.6 percent Asian, according to the 2000 Census. Although becoming more frequent, racial intermarriages are still relatively rare. Moreover, newer cohorts of immigrants also have very different levels of education than natives. Although they are just as likely to have a bachelors degree or above, immigrants are much less likely to have a high school diploma and are significantly

more likely not to have graduated the 9th grade (Current Population Survey 2003). If it is true that the foreign born are less likely today to marry natives than they were in earlier decades, then it is important to know what effect these marriage patterns have on educational attainment of the future generations of immigrants. Certainly, the answer to this question will inform immigration policy discussions on the optimal quantity and types of immigrants allowed into the country.

This paper fits into the literature on the effect of family composition on the assimilation of immigrants. Baker and Benjamin (1997) conclude that family composition is an important correlate of assimilation for immigrants in Canada. They present evidence for the family investment model which predicts that foreign born women take on dead-end jobs in order to provide liquidity for their immigrant husbands' investment in human capital. Immigrant women married to natives make no such investment. Blau et al. (2003) find no such evidence for the U.S.. Duncan and Trejo (2006) find that Mexican intermarriage affects the ethnic identities of the children of Mexicans. I find evidence that family composition does in fact play an important role in a different aspect of assimilation, education of the children of immigrants.

There are basically two types of causal mechanisms through which an immigrant's marriage to another immigrant could affect child outcomes. First, even if marriage partners are randomly assigned, parents born in the same country could have a different technology for producing child human capital and this could lead

to either positive or negative outcomes. For example, the native born children of immigrants with a native born parent are more likely to have English as a first language and even only language (Stevens and Swicegood 1985) when compared to children with two foreign born parents. Since English proficiency is positively correlated with test scores even after controlling for a number of household characteristics (Glick and White 2003, Portes and Rumbaut 2001), having a native-born parent could lead to positive outcomes for children. Using instrumental variables constructed from parent's age at arrival, Bleakley and Chin (*forthcoming*, 2008) find that parents' English language skills have a positive causal effect on their native-born children's academic outcomes. On the other hand, children with two foreign born parents are more likely to be bilingual which also has a positive effect on achievement (Rumbaut 1998).

A second mechanism through which marriage could affect child outcomes is related to ethnic connections outside of the household. Immigrant-immigrant marriages are likely to result in more ethnic connections than immigrant-native marriages. Theoretically, strong attachment to an ethnic community has an ambiguous effect on socioeconomic outcomes of children. Immigrants involved in their ethnic communities are more likely to share information regarding the best schools and how education decisions translate to job opportunities in the U.S. On the other hand, if participation in an ethnic network comes at the expense of association with natives, then immigrants may forego on spillovers from natives'

better educational outcomes.

Studies have shown that the grown children of cross-nativity marriages have higher levels of human capital. After controlling for age, sex, and race, Ramakrishnan (2004) finds that compared to having two foreign born parents, having a native born parent and a foreign born parent decreases the probability of dropping out of high school. Similarly, Chiswick and DebBurman (2003) find that children of cross-nativity parents have more years of schooling than children with two foreign born parents. However, it is difficult to interpret these findings because it is unclear whether the positive effects of having a native born parent are coming from individual characteristics of the immigrant parent that chooses to marry a native, characteristics of the native born parent that chooses to marry an immigrant, or attributes of the marriages themselves including the communities surrounding these marriages.

Immigrant couples differ from mixed couples in many characteristics which may directly affect their children's educational outcomes. Perhaps most importantly, they have different levels of education. Furtado (2006) examines the mechanisms through which education affects interethnic marriage decisions, and finds that the effect of education differs by ethnic group. There is also evidence that the effect of education differs by gender: Among married couples formed by a U.S. citizen sponsoring an immigrant spouse, U.S. citizen husbands and their wives have substantially more schooling than citizen wives and their husbands (Jasso et

al. 2000). If there are more citizen husbands sponsoring immigrant wives than the other way around, then this fact could explain both why children with intermarried couples have higher average educational attainments and why it matters which parent is foreign born.

Parental ability levels are not the only inputs into the child education production function. A series of studies have found that intermarried immigrants have higher earnings than intramarried immigrants (Meng and Gregory 2005, Kantarevic 2004, Meng and Meurs 2006).[1] If these higher earnings are used to buy better schools, tutoring services, and other educational resources regardless of parental countries of birth, then this could explain the findings in the literature. Also, the classic quantity/quality trade-off in children (Becker 1975) suggests that families with more children cannot afford to invest as much in their human capital. If immigrants that choose to marry other immigrants have a higher relative preference for quantity of children as opposed to quality or alternatively, face a higher relative price for quality of children, they will choose to have more children but invest less in their human capital (Chiswick 1988). There is also evidence that the labor supply of female immigrants differs depending on whether they are married to immigrants or natives (Benjamin and Baker 1997, Blau et al. 2003). Although the literature has not produced a conclusive answer as to how mother's labor sup-

---

[1] Meng and Gregory (2005) and Meng and Meurs (2006) suggest that intermarriage has a *causal* effect on immigrant's earnings in Australia and France respectively. Kantarevic (2004) fails to find a causal effect in the U.S.

ply affects child outcomes, it is certainly plausible that there is an effect. This study will control for all of these avenues which could be generating the positive correlation between intermarriage and children outcomes found in the literature.

There is tremendous variation in intermarriage rates by ethnic group. Certain ethnic groups, for many reasons, may invest less in their children's education and have low intermarriage rates. For example, foreign born males in ethnic groups with strict gender roles may find it more difficult to find native women accepting of traditional gender roles and may also place less value on children's education. As another example, immigrants in groups with a long history of migration to the US may find it easier to find natives with similar values. If these groups have high levels of education, then the effect of marriage to a native has a positive bias. To deal with these concerns, ethnicity fixed effects are also accounted for in the analysis.

Unobservable differences in characteristics of parents within ethnic groups pose an even bigger problem for interpreting the effects of parental nativity on child outcomes. In their study of the effect of intermarriage on earnings in Australia, Meng and Gregory (2005) deal with this problem by instrumenting for the intermarriage decision using ethnic group size and sex-ratios within ethnicity-age-religion cells. Although Meng and Gregory conclude that marriage to a native has a positive causal effect on earnings of immigrants, using a similar technique, and U.S. data, Kantaravic (2005) finds no significant causal effect. Building on this technique,

but adding gender effects and looking at a different dependent variable, I find that a male immigrant's marriage to a native as opposed to an immigrant increases children's dropout rates. I find no significant effects of female immigrants' marriage decisions on their children's probability of remaining in school.

The remainder of this paper is organized as follows. In Section 2, I describe the data and present preliminary descriptive analysis regarding the impact of cross-nativity marriages on dropout rates of children. Section 3 discusses an empirical strategy for identifying the causal impact of intermarriage on children's educations. Section 4 presents the instrumental variables and provides the results of the IV regressions. Section 5 concludes with a discussion of the significance of the findings.

2. Data Description

In order to examine whether children of same-nativity parents perform better or worse in school than children with cross-nativity parents, I utilize the 5% Public Use Sample of the 2000 U.S. Census. This sample contains detailed information on household and person level characteristics, yet is large enough to allow for the use of ethnic group fixed effects and cross-state variation in the number of immigrants in estimating the equations of interest. A major disadvantage of this data set is that parental information, including country of birth, is only available for children living with both parents. In order to quell sample selection concerns,

only children under the age of 18 are used in the analysis, but to get a reasonable degree of variation in dropout rates, only the outcomes of children over the age 16 are studied.[2] Because immigrants from English-speaking countries share many cultural attributes with Americans and do not face language barriers upon arrival, yet are not quite American, observations are dropped if either parent is born in an English-speaking country other than the U.S..

A cross-nativity marriage is defined to be a marriage of someone born outside of the U.S. to someone born in the U.S. This need not be an interethnic marriage since, for example, a Mexican-born immigrant married to a German immigrant is classified as a same-nativity marriage in this study. Meanwhile, a Mexican immigrant marrying a second-generation Mexican immigrant is classified as marriage to a native. The first issue is not much of a concern, since 92 percent of all the marriages between two immigrants involve immigrants from the same country of birth. Moreover, most of the eight percent from different countries are from countries with the same cultural background such as a Mexican marrying someone from Central America. The second issue is a bit more difficult to deal with since parents' countries of birth was not asked in the 2000 Census and so it is difficult to measure the extent to which immigrants marrying natives are marrying the native-born children of immigrants from the same country of birth. The Census does contain information on ancestry, but it has been found that given multiple an-

---

[2]Chevalier finds that 94 percent of children ages 16-18 live at home (Chevalier 2004).

cestries, respondents are likely to name ancestries corresponding to their spouse's ancestry. According to the 1970 Census, the last Census to ask for parents' countries of birth, of the immigrants that marry natives, only about ten percent marry children of immigrants from their country of birth.

Table 1 presents descriptive statistics based on a weighted sample. Most marriages in the U.S. are same-nativity marriages: about 86 percent of all marriages involve two natives and 9 percent involve two immigrants. Cross-nativity marriages are more likely to be composed of a native born male and foreign born female than a foreign born female and native born male. The second row in Table 1 compares child dropout rates in the four marriage categories.[3] Children with two native born parents have slightly lower dropout rates than children with two foreign born parents. Although one may expect children with cross-nativity parents to have dropout rates in between these two extremes, in fact, children with a U.S. born mother and foreign born father have the highest dropout rates (2.8 percent) and children with a U.S. born father and a foreign born mother have the lowest dropout rates (1.8 percent). Since most cross-nativity marriages involve foreign born mothers as opposed to fathers, aggregating both types of cross-nativity marriages results in a dropout rate of 2.3 which, consistent with the literature discussed in the introduction, is lower than the dropout rate in families

---

[3]These dropout rates are significantly lower than in the general population because of the restriction that chilren must be living with both biological parents.

	Both Native	Foreign Father	Foreign Mother	Both Foreign
Frequency	3,192,717	94,033	102,397	335,607
Percent Dropout	2.43	1.78	2.82	2.44
Father's Characteristics				
Years of Schooling	13.9	14.2	12.8	11.0
Wage Income	50,627	51,404	49,528	36,202
Years in the U.S.			31.3	24.6
Mother's Characterisitcs				
Years of Schooling	13.6	13.2	13.3	10.5
Percent in Labor Force	76.6	72.1	71.0	60.4
Years in the U.S.		30.0		23.2
Household Characteristics				
Number of Children	2.3	2.3	2.5	2.8
Percent in Metropolitan Area	76.6	89.1	89.9	96.0

Table 1: These are descriptive statistics for a sample of intact married couples whose eldest biological chld living in the household is 16 or 17 years old. The foreign-born from English-speaking countries are excluded from the sample. Averages computed from a weigted sample.

with two foreign born parents.

As discussed in the previous section, there are many other parental characteristics which may affect both intermarriage rates and dropout rates of children. Table 1 presents descriptive statistics of some of these characteristics separately by marriage type. The foreign born have fewer years of schooling than the native born.[4] Consistent with the marriage literature on assortative mating, immigrants that marry other immigrants have fewer years of schooling than those that marry natives and native born females that marry immigrants have fewer years of school-

---

[4]The 2000 Census contains information on educational attainment. To construct a continuous years of schooling variable from last grade completed and degree achieved, I used the mapping in (Kalmijn 1996).

ing than those that marry natives. Interestingly, however, the native born males married to foreign born females have the highest levels of education. Income patterns mirror education patterns, with households composed of two immigrant patterns having significantly less income than any of the other categories. Families with two foreign born parents have fewer children than families with two native born parents, while cross-nativity family sizes lie in between. Similarly, both native-born and foreign-born mothers are more likely be in the labor force if they are married to a native. Not surprisingly, the foreign born married to the foreign born have lived in the U.S. for fewer years than those married to natives.

3. Analytical Strategy and Results

3.1. Baseline Specification

The purpose of this study is to disentangle the effects of intermarriage itself on children's academic outcomes from the characteristics of the parents that choose to intermarry. Consider the following equation for estimating the probability that immigrant i born in country j's teenager is a high school dropout:

$$y_{ij} = \alpha_o + \alpha_1 FB_{ij} + \alpha_2 X_{ij} + \alpha_3 X_{ij}^S + \alpha_4 X_{ij}^C + \gamma_j + \varepsilon_{ij} \tag{1}$$

where y takes the value one if the immigrant's teenager is not enrolled in school and does not have a high school degree, FB is a dichotomous variable equal to one

if the immigrant's spouse is foreign born and equal to zero if he/she was born in the U.S., X is a vector of the immigrant's characteristics such as education, wage, and years in the U.S., and X^S is a vector of the immigrant's spouse's characteristics, and X^C is a vector of child or neighborhood characteristics. Since there are many unobserved factors associated with an immigrant's country of origin that influence both his propensity to marry a native and educational outcomes of his children, γ, a vector of country of origin fixed effects, is included in the specification. Any unobserved heterogeneity will be captured in ε.

Table 2 presents the estimated coefficients of equation 1 estimated using a linear probability model for foreign born females and males separately. Recall that without conditioning on any family characteristics, children with foreign born mothers and native born fathers have lower dropout rates than when both of their parents are foreign born while children with foreign born fathers and native born mothers have higher dropout rates than when both of their parents are immigrants. If this cannot be explained by parental observable characteristics, then the coefficient on foreign born spouse should be positive for foreign born females and negative for foreign born males. In fact, Table 2 shows that after adding even the most basic controls for the foreign born female's characteristics, the nativity of their husbands is not a statistically significant predictor of children's dropout rates. Adding other characteristics of these husbands to the specification, in Column 2, does not change the results. The ethnicity fixed effects added in Column 3 also do not effect the

Child Dropout	1	2	3	4	5	6
	Foreign Born Female Sample			Foreign Born Male Sample		
Both Immigrant Parents	-0.0015	-0.0043	-0.0027	-0.0117	-0.0144	-0.0126
	(0.0027)	(0.003)	(0.0036)	(0.0036)**	(0.0037)**	(0.0040)**
Father's Years of Schooling		-0.0007	-0.0005	-0.002	-0.0009	-0.0007
		(0.0003)*	(0.0004)	(0.0003)**	(0.0004)*	(0.0004)+
Log Wage of Father		-0.0034	-0.0036	-0.0039	-0.0032	-0.0037
		(0.0020)+	(0.0020)+	(0.0018)*	(0.0018)+	(0.0018)*
Years in U.S.	-0.0003	-0.0003	-0.0004	-0.0006	-0.0006	-0.0007
	(0.0002)*	(0.0002)	(0.0002)*	(0.0002)**	(0.0002)**	(0.0002)**
Child's Age	0.0068	0.0062	0.0064	0.008	0.0079	0.008
	(0.0023)**	(0.0025)*	(0.0025)*	(0.0026)**	(0.0026)**	(0.0026)**
Metropolitan Area	-0.0027	0.0025	0.0033	0	0.0005	0.0009
	(0.0055)	(0.0057)	(0.0058)	(0.0061)	(0.0061)	(0.0062)
Mother's Years of Schooling	-0.0023	-0.0015	-0.0015		-0.0017	-0.0017
	(0.0003)**	(0.0004)**	(0.0004)**		(0.0004)**	(0.0004)**
Mother in Labor Force	0.0008	0.0011	0.0018		0.0019	0.0025
	(0.0027)	(0.0031)	(0.0031)		(0.003)	(0.003)
Number Siblings		0.0029	0.003		0.0017	0.0018
		(0.0011)*	(0.0012)**		(0.0011)	(0.0012)
Constant	-0.0527	-0.0211	-0.0502	-0.0182	-0.0225	-0.0487
	(0.0382)	(0.046)	(0.0461)	(0.0434)	(0.0432)	(0.0445)
Observations	19497	16119	16119	16881	16881	16881
R-squared	0.01	0.01	0.01	0.01	0.01	0.02

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 2: These are regression coefficients for a sample of intact married couples with whose eldest biological chld living in the household is 16 or 17 years old. The foreign-born from English-speaking countries are excluded from the sample.

coefficient on foreign born spouse. Thus, we may conclude that a foreign born female's choice of partner has no significant effect on her child's probability of dropping out of high school. Children with a foreign born mother and native born father may have a lower probability of dropping out of high school, but this can be explained by observable parental characteristics.

The story is more complicated for foreign born males. As seen in Column 4, when controlling for father's years of schooling, wage income, and the teenager's age, the coefficient on whether the mother is foreign born is negative and sta-

tistically significant. Adding mother's years of schooling and her labor force participation to the specification in Column 5 does not change the coefficient on whether or not she is foreign born. The ethnicity fixed effects added in Column 6 do decrease the magnitude of the foreign born spouse coefficient, but it remains statistically significant. These results suggest that, all else equal, by marrying a foreign born female, a foreign born male can decrease the probability that his future child drops out of school by about one percentage point.

3.2. *Instrumental Variables Approach*

The difficulty in this type of analysis lies in the unobserved characteristics of the immigrants that choose to marry natives and the natives that choose to marry immigrants. In equation 1, the unobserved characteristics in ε could potentially be correlated with FB and thus lead to biased estimates of α_1. From a theoretical perspective, the bias cannot be signed. Higher ability immigrants may be both more likely to marry natives and have higher ability children, regardless of whom they marry. This would lead to a positive bias on α_1. Alternatively, one can imagine that if immigrants prefer to marry natives, for example because natives can give them citizenship status, then at equilibrium, the unobserved characteristics of the natives that immigrants marry be worse than the unobserved characteristics of the immigrants that immigrants marry. This would lead to a negative bias on α_1.

To address these potential endogeneity problems, an instrumental variable approach is taken. Since one's spouse choice and decisions regarding child raising are very much intertwined, it is very difficult to find a variable correlated with whether or not one's spouse is foreign born but excluded from a child outcome equation. This paper takes the approach common in the marriage literature which is to exploit information on the availability of foreign born potential spouses in one's marriage market. In this paper, the excluded instrument is the percent of the immigrant's state population within his age group that are foreign-born at the time and in the state in which immigrants were most probably searching for a spouse. The larger the share of foreign born potential spouses, the more likely it is that an immigrant marries another immigrant even just by random matching.[5]

There are several reasons to be concerned about the validity of this instrumental variable. First, it is constructed from cross-state variation in the sizes of the foreign born population. There could, however, be other factors correlated with the size of the foreign born population which vary by state. For example, perhaps there are more immigrants in states with good education policies. For this reason, average education levels by state are included in the empirical specification. This variable should pick up any state-level variation in education policies which affects all of its citizens.

---

[5]I also tried to use the sex ratio within each ethnic group as an instrument for whether the spouse of an immigrant is foreign born. The instrument proved to be too weak for this analysis.

A second concern is that the size of the immigrant population itself may affect child outcomes without going through the channel of the nativity of one's spouse. There is a large literature on the benefits of ethnic networks for finding jobs (Edin et al. 2003, Munshi 2003), and these same networks could have benefits for children's educational attainment. The segmented assimilation literature maintains that strong ethnic attachment can protect the children of immigrants from assimilating into an urban underclass with low levels of education (Portes and Rumbaut 2001). Moreover, studies have shown that attachment to an ethnic network is more useful when the network is larger (Gang and Zimmerman 2000). To mitigate this concern, this paper exploits the fact that parents make spouse decisions and children make educational decisions at different times and sometimes, different places. Thus, we can allow the size of the foreign born population in the year 2000 to affect whether or not a child remains in school in the year 2000. The identifying restriction then becomes that conditional on the size of the foreign born population in a state today, the size of the foreign born population twenty years prior to today only affects an immigrant's child's outcomes through the nativity of the immigrant's spouse, that is the child's mother or father.

To be more concrete, the following equations are estimated in an instrumental

variables framework:

$$y_{ij} = \beta_o + \beta_1 FB_{ij} + \beta_2 X_{ij} + \beta_3 W_{st} + \gamma_j + \varepsilon_{ij}$$

$$FB_{ij} = \gamma_o + \gamma_1 P_{s-20,t-20} + \gamma_2 X_{ij} + \gamma_3 W_{st} + \gamma_j + u_{ij}$$

where $P_{s-20,t-20}$ denotes the proportion foreign-born of the state in which the couple lived approximately twenty years prior to the survey. I use the state of birth of the 16 or 17 year old child to measure where the immigrant was living twenty years prior to the survey. I use the proportion foreign born in that state in the year 2000 to get $P_{s-20,t-20}$. The vector W_{st} includes average education measures for the state and the size of the foreign born population in state s at the time of the survey. Because FB is a dichotomous variable, equation (2) will be estimated using a linear probability model. Note that although I allow the size of the foreign born population at time t to affect the probability that a spouse chosen in $t-20$ is foreign born, if my identification strategy is valid, the coefficient on that variable will not be significantly different from zero. Also, in this two equation system, I do not include the spouse or child's observable characteristics. This is because nativity, education, and other spouse characteristics are joint decisions for the foreign born spouse-searcher. Thus, it would be very difficult to interpret the coefficient on spouse's education in the equation predicting whether or not the spouse is foreign born. If the excluded instrument is valid, then the omission of

Both Parents Foreign-Born	1	2	3
State Percent Foreign Born 1980	1.145	1.154	1.059
	(0.090)**	(0.087)**	(0.100)**
Father's Years of Schooling	-0.007	-0.007	-0.007
	(0.001)**	(0.001)**	(0.001)**
Log Wage of Father	-0.015	-0.016	-0.016
	(0.004)**	(0.004)**	(0.004)**
Years in U.S.	-0.009	-0.009	-0.009
	(0.001)**	(0.001)**	(0.001)**
Child's Age	0.01	0.01	0.01
	(0.006)+	(0.006)+	(0.006)+
Metropolitan Area	0.142	0.14	0.136
	(0.019)**	(0.019)**	(0.018)**
Average State Years of Schooling		0.028	0.032
		(0.019)	(0.019)+
State Percent Foreign Born 2000			0.087
			(0.059)
Constant	0.655	0.301	0.24
	(0.126)**	(0.280)	(0.276)
Observations	16881	16881	16881
R-squared	0.26	0.26	0.26

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 3: These are first stage regression coefficients for a sample of intact married couples with whose eldest biological chld living in the household is 16 or 17 years old. The foreign-born from English-speaking countries are excluded from the sample.

observable spouse characteristics will not bias the results.

Table 3 presents first stage coefficients for equation 2 for foreign born males.[6]

Using a linear probability model, a 10 percentage point increase in the proportion

foreign born in a state leads to a 10 percentage point increase in the probability

that a foreign born male marries a foreign born female. This effect is significant

at the one percent level. Especially noteworthy is that conditional on the size of

the immigrant population in 1980, the size of the immigrant population in 2000

---

[6]An instrumental variables analysis was also done for foreign born females. First stage results are almost identical. However, the coefficient on foreign born spouse in the second stage remains insignficiant.

Child Dropout	1	2	3	4
	OLS	IV Regression		
Both Immigrant Parents	-0.01	-0.129	-0.125	-0.085
	(0.004)*	(0.026)**	(0.025)**	(0.027)**
Father's Years of Schooling	-0.001	-0.003	-0.002	-0.002
	(0.000)**	(0.001)**	(0.001)**	(0.001)**
Log Wage of Father	-0.004	-0.006	-0.006	-0.006
	(0.002)*	(0.002)**	(0.002)**	(0.002)**
Years in U.S.	-0.001	-0.002	-0.002	-0.001
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
Child's Age	0.008	0.01	0.009	0.009
	(0.003)**	(0.003)**	(0.003)**	(0.003)**
Metropolitan Area	0.001	0.022	0.021	0.018
	(0.006)	(0.007)**	(0.007)**	(0.007)*
Average State Years of Schooling			0.017	0.013
			(0.006)**	(0.006)*
State Percent Foreign Born 2000				-0.043
				(0.022)*
Country of Birth Fixed Effects	Yes	Yes	Yes	Yes
Constant	-0.048	0.045	-0.17	-0.152
	(0.044)	(0.058)	(0.099)+	(0.097)
Observations	16881	16881	16881	16881

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4: These are regression coefficients for a sample of in-tact married couples with whose eldest biological chld living in the household is 16 or 17 years old. The foreign-born from English-speaking countries are excluded from the sample. Standard errors clustered on age-state of residence 20 years ago cells.

does not have an independent effect on the probability that an immigrant's spouse is foreign born.

Table 4 presents results from both the OLS and instrumented regressions. Column 1 duplicates the OLS results omitting spouse characteristics, while the second column estimates the same equation using 2SLS. When taking the IV approach, the coefficient on foreign born spouse increases in magnitude suggesting that it is the immigrants with worse unobservable characteristics that marry immigrants. After correcting for this selection, it is even more beneficial for children's edu-

cational outcomes for immigrants to marry other immigrants. To deal with the concern that states with high proportions of immigrants may have better education policies or better quality schools, Column 3 adds average education by state to the specification. The coefficient on foreign born spouse is not affected suggesting that state differences in education are not driving the results. Column 4 adds the size of the foreign born population in the state in the year 2000 as a control in the dropout equation. Although the coefficient on the foreign born spouse variable does decrease in magnitude, it remains statistically significant and larger than its OLS counterpart.

There could be a difference between couples that come to the U.S. already married and those that search for a spouse in the U.S. Moreover, states with larger foreign born populations could have more couples which come already married and so the instrument would not solve this type of endogeneity problem. Ideally, the analysis would be conducted only on those immigrants that arrived unmarried, but the data set does not contain information on age at marriage. To mitigate concerns, I ran the regressions of interest on samples of immigrants that were very likely to arrive single. First, I include only those immigrants that arrived before the age 18. Second, I drop all of those immigrant-immigrant couples that report arriving in the U.S. in the same year. In both cases, coefficients do not change qualitatively. That is, same-nativity couples have children who are less likely to be high school dropouts.

One limitation of the study is that its conclusions only apply to families that stay intact up until the child is age 16 or 17. The literature suggests that interethnic marriages are more likely to end in divorce (Kalmijn, de Graaf and Janssen 2005) and that divorce has negative consequences on children's academic outcomes (for example, Pong 1997). This implies that it is even more beneficial for immigrants to marry other immigrants in terms of child outcomes than what is suggested by the results in this paper. By comparing only intact interethnic marriages to intact same-nativity marriages, we are not considering one of the mechanisms through which intermarriage could have a positive effect on dropout rates. However, if marriages involving two immigrants are in general more happy than marriages involving a native and an immigrant, this could be one mechanism through which same-nativity marriages have positive effects on children's human capital.

Although the coefficients are robust to various specifications, one may still be left concerned by the magnitude of the coefficient on foreign born spouse since it implies that marrying a foreign born spouse has the same effect on children's dropout rates as ten additional years of education. This could be explained by the nature of the data and the empirical technique used. The dropout variable is binary and takes a value of one for very few observations in the data (around 2 percent). There is nothing in the linear probability model which prevents predicted dropout rates from dropping below zero, and so estimated coefficients

may be too big to be taken too seriously. For this reason, it is common to assume a normally distributed error term and estimate probit models which impose the restriction that predicted outcomes lie between zero and one. Since the endogenous variable is also binary, a bivariate probit model may be appropriate. Running some of the specifications using a bivariate probit model did result in coefficients which were much smaller in magnitude but still statistically significant. Of course, the bivariate probit model involves more assumptions and there is always the concern that the coefficient is identified off of the structure of the model as opposed to the exclusion restrictions. In either case, the central message is the same: In terms of future children's probability of completing high school, it is beneficial for foreign born males to marry foreign born females.

4. Conclusions

This paper attempts to shed some light on the relationship between immigrants' marital assimilation and their children's academic success by examining the role of intermarriage in determining children's dropout rates. The literature suggests that marriage to a native improves academic outcomes of the children of immigrants, but a more careful look at the data suggests that immigrants' marriage to a native is associated with higher human capital for the children of immigrant mothers, but lower human capital for the children of immigrant fathers. After controlling for family specific characteristics, cross-nativity marriages where the mother is

foreign born are not associated with significantly better educated children than same nativity foreign born marriages. However, even after adding controls, cross-nativity marriages where the father is foreign born are associated with children with lower dropout rates. This positive effect of foreign born mothers given that the father is foreign born remains even after correcting for any endogeneity bias using size of ethnic group as an instrument for whether the mother is foreign born.

The results in this paper run contrary to the common perception that immigrants' association with natives necessarily results in positive outcomes. Countries often explicitly place refugees in different parts of the country specifically to hasten the speed of assimilation. The country of Denmark recently passed legislation which limits the ability of immigrants to import their spouses from their countries of birth . Although these types of policies may in fact lead to more assimilation in some aspects such as language acquisition and earnings mobility[7], this paper suggests that marriage to natives, one aspect of social integration, does not lead to improvements in children's human capital in general and has negative effects on the children of foreign born males. An important question for future research is why there is this gender difference.

---

[7]Skyt et al. (2007) use this policy to instrument for immigrants' marriages to other immigrants. They find that marriage to a native increases the probability that the immigrant is enrolled in school.

References

Angrist, Joshua. "How do Sex Ratios Affect Marriage Markets and Labor Markets? Evidence from America's Second Generation." *Quarterly Journal of Economics*. Vol. 117, Issue 3, (2002), 997-1038.

Bisin, Alberto and Thierry Verdier. "'Beyond The Melting Pot': Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits." *Quarterly Journal of Economics*. Vol. 115, Issue 3, (2000), 955-988.

Bisin, Alberto, Giorgio Topa and Thierry Verdier. "An Empirical Analysis of Religious Homogamy and Socialization in the U.S." *Journal of Political Economy*, Vol. 112, Issue 3, (2004), 615-64.

Card, David, John DiNardo, and Eugena Estes. "'The More Things Change: - and the Children of Immigrants in the 1940s, the 1970s, and the 1990s." *Issues in the Economics of Immigration*, National Bureau of Economic Research Conference Report, (1999).

Chevalier, Arnaud. "Parental Education and Child's Education: A Natural Experiment." IZA Discussion Paper 1153, (2004).

Chiswick, Barry and Noyna DebBurman. "Educational Attainment: Analysis by Immigrant Generation." *Economics of Education Review*, Vol. 23, Issue 4, (2004), 361-379.

Datcher-Loury, Linda. "Effects of Mother's Home Time on Children's Schooling." *The Review of Economics and Statistics.* Vol. 70, Issue 3, (1988), 367-373.

Djajic, Slobodan. "Assimilation of Immigrants: Implications for Human Capital Accumulation of the Second Generation." *Journal of Population Economics.* Vol.16, (2003), 831-845.

Edin, Per-Anders; Fredriksson, Peter; Aslund, Olof. "Ethnic Enclaves and the Economic Success of Immigrants–Evidence from a Natural Experiment." *Quarterly Journal of Economics.* Vol.118, Issue 1 (2003), 329-57.

"The Foreign Born Population in the United States: 2003." Current Population Reports. Population Characteristics. Series P20-551, (2004).

Furtado, Delia. "Human Capital and Interethnic Marriage Decisions." IZA Discussion Paper 1989, (2006).

Gang, Ira and Klaus Zimmerman. "Is Child like Parent? Educational Attainment and Ethnic Origin." *Journal of Human Resources*, 35 (2000), 550-569

Jasso, Guilermina and Mark Rosenzweig. *The New Chosen People : Immigrants in the United States.* New York : Russell Sage Foundation. (1990).

Jasso, Guilermina, Douglas Massey, Mark Rosenzweig, and James Smith. "Assortative Mating Among Married New Legal Immigrants to the United States:

Evidence From the New Immigrant Survey Pilot, " *International Migration Review.* Vol 34, Issue 2, (2000), 443-459.

Kalmijn, Matthijs. "Spouse Selection among Children of European Immigrants: A Comparison of Marriage Cohorts in the 1960 Census." *International Migration Review.* Vol 27, Issue 1, (1993), 51-78.

Kalmijn, Matthijs, Paul M. de Graaf and Jacques P. G. Janssen. "Intermarriage and the Risk of Divorce in the Netherlands: The Effects of Differences in Religion and in Nationality." *Population Studies.* Vol. 59, Issue 1, (2005), 71-85.

Kantarevic, Jasmin. "Interethnic Marriages and Economic Assimilation of Immigrants." IZA Discussion Paper, No. 1142.

Kao, G. and Tienda, Marta. "Optimism and Achievement: The Educational Performance of Immigrant Youth. *Social Science Quarterly.* Vol. 76, (1995), 1-19.

Lichter, Daniel T. and Zhenchao Qian. "Measuring Marital Assimilation: Intermarriage Among Natives and Immigrants." *Social Science Research* Vol. 30, (2001), 289-312.

Lollack, Lisa. "The Foreign Born Population in the United States." *Current Population Reports. P20-534,* (2001).

Meng, Xin and Robert G. Gregory. "Intermarriage and the Economic Assimilation of Immigrants." *Journal of Labor Economics.* Vol. 23, Issue 1, (2005), 135-75.

Nielson, Helena Skyt, Nina Smith, and Aycan Celikaksoy. "The Effect of Marriage on Education of Immigrants: Evidence from a Policy Reform Restricting Spouse Import." IZA Discussion Paper, No. 2899 (2007).

Pong, Suet-Ling. "Family Structure, School Context, and Eighth-Grade Math and Reading Achievement." *Journal of Marriage and the Family.* Vol. 59, Issue 3, (1997), 734-746.

Portes, Alejandro and Min Zhou. "The New Second Generation: Segmented Assimilation and its Variants Among Post-1965 Immigrant Youth." *Anals of the American Academy of Political and Social Sciences*, Vol. 530, (1993), 74-96.

Ramakrishnan, S. Karthick. "Second-Generation Immigrants? The '2.5 Generation' in the United States." *Social Science Quarterly,* Vol 85, Issue 2, (2004), 380-399.

Ruggles, Steven and Matthew Sobek et al. Integrated Public Use Microdata Series: Version 3.0 Minneapolis: Historical Census Projects, University of Minnesota, 2003.

Stevens, Gillian and Gray Swicegood. "The Linguistic Context of Ethnic Endogamy." *American Sociological Review.* Vol 52, Issue 1, (1987), 73-82.