MEXICAN MARITAL ENDOGAMY AND EDUCATIONAL HOMOGAMY IN THE USA, 1980-2000: A CASE OF SOCIAL CLOSURE?

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Abstract.- *Mexican Marital Endogamy and Educational Homogamy in the USA, 1980-2000: A Case of Social Closure?*

The high rates of Mexican immigration into the United States in recent decades raises questions about marital assimilation and social closure. We use data for approximately two million couples aged 30-39 from the 1980, 1990 and 2000 IPUMS census samples for the USA to analyze the demographic and social dynamics of ethnic endogamy and educational homogamy (N = 2,019,754). Log-linear models leave no doubt that endogamy remains the rule among the Mexican-born, Mexican-origin and Non-Hispanic Whites—both at the national and "local" levels (~2,000 PUMAS). The increase in endogamy among the Mexican-born, while significant, does not portend the emergence of social closure, perhaps not even a trend. Post-secondary education substantially weakens the endogamy rule for all three groups. The gender squeeze (more Mexican born males than females) forces the rule to be broken in a large fraction of cases. 2010 census microdata will provide an important test of these findings

Keywords.- Mexican immigration, USA, Mexican Marital Endogamy, Educational Homogamy, IPUMS.

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MEXICAN MARITAL ENDOGAMY AND EDUCATIONAL HOMOGAMY

IN THE USA, 1980-2000: A CASE OF SOCIAL CLOSURE?

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1.- Introduction

Are the high immigration rates of Mexican-born population into the United States encouraging social closure of Mexicans through endogamous marriage patterns? Or do the Mexican-born residing in the USA show more open patterns of union formation? To what degree is adaptation or assimilation occurring, if any? Does ethnic endogamy vary by level of educational attainment? To address these questions we examine patterns of ethnic endogamy and educational homogamy of the Mexican population in the United States for the period 1980-2000. The patterns of non-Hispanic Whites are used for comparison.

We focus on two dimensions that generate important social categories-ethnicity or origin and education-and explore how these influence union formation patterns. In our search for hypotheses, we discuss the existing literature on intermarriage and educational assortative mating and then study union formation patterns of Mexicans in the United States, distinguishing those born in Mexico from those who assert Mexican origins, although born in the United States.

We focus simultaneously on ethnic endogamy and educational homogamy and explore the degree of interrelation between them. By ethnic endogamy we refer to unions in which both spouses have the same self-described ethnicities or identities as reported in the census. By educational homogamy we refer to unions between individuals that are similar to each other in educational attainment, also self-reported in the census. The use of the term 'endogamy' for ethnicity and 'homogamy' for education is not arbitrary and finds broad

acceptance in the social science literature cited below. To a certain extent, such distinctions anticipate differences in the degree of group affiliation and bonding based on ethnicity or educational attainment.

In a context where the Mexican population is not the majority and where differences in ethnicity are apparent in multiple dimensions, it should be expected that education will play a somewhat different role than in those contexts where an ethnic group is a majority, yet educational attainment is a salient social distinction. We are pursuing then, a rather singular objective, one that is absent from much research on this subject. Studies in which Latino populations, among them Mexicans, may be subjects of analysis, and in which education is incorporated as an explanatory variable, typically focus on levels of ethnic intermarriage. Such studies have given rise to various theories as to how ethnic endogamy changes between levels of educational attainment. Few take the next step to see how educational homogamy itself influences the formation of unions. We take a third step by considering geography, examining patterns of endogamy and homogamy within localities rather than solely considering patterns for the nation as a whole.

The paper is divided into four parts. In the first, we develop the theoretical and empirical elements that provide the basis for our research questions. We consider, on the one hand, the principal theories regarding educational homogamy and theories of ethnic/racial intermarriage including interactions between education and ethnicity. And on the other, we present empirical evidence, paying special attention to studies of educational assortative mating in Mexico as a point of departure for comparing our own findings with respect to the United States. Second, we describe our data and methods. The third section discusses the results drawn from the more suggestive models of marriage patterns and the degree to which there is change over time and variation in space, including specific interaction parameters. Finally, we offer some conclusions and points for further discussion.

2.- Background and Hypotheses

There is a consensus that individuals of similar characteristics tend to mate, which, as a matter of the logic of probability, is equivalent to saying that more endogamous and/or homogamous unions will occur than what would be expected as a matter of chance. This homogeneity, which validates the principle of homophily in social networks (McPherson,

Smith-Lovin, and Cook 2001), has been examined in a wide variety of contexts and characteristics, ascribed and acquired, including religion (Johnson 1980), ethnicity (Pagnini and Morgan 1990; McCaa 1993), socioeconomic status (Kalmijn 1991), education (Mare 1991; Blackwell 1998; Smits 2003) and occupation (Hout 1982). Researchers agree that the expansion of educational opportunities together with economic development confers upon schooling a preponderant role in the configuration of conjugal preferences. Given the evident correlation between educational attainment and socioeconomic status, especially in developing societies, interaction between educational groupings may be read as code for the degree and rigidity of social stratification.

2.1.- Educational assortative mating

In terms of education, there exist two major lines of interpretation regarding its role in influencing conjugal choice. Differences arise in the consideration of asymmetrical conjugal preferences by males and females, which in turn, lead to two distinct theories of marriage. According to Becker (1974), the attributes which couples should possess to be candidates for marriage should be different, as, also, should the age at which these attributes are attained. In traditional male-female marriages in the USA, such asymmetry in conjugal preferences would support the class pattern of female hypergamy, in which the woman has a level of educational attainment below that of her spouse, and the traditional age difference between spouses favors the male as the older. This conventional formulation of marriage encounters serious challenges once women become incorporated into the labor market, educational achievement is universalized, and gender differences in educational attainment are reduced or even reversed (Diprete and Buchmann 2006). Oppenheimer (1988) argues that the increase in economic independence of women will have an effect on conjugal choice, since this will increase the level of expectations, delaying, if necessary, marriage until an appropriate candidate is found. Such changes will erode the traditional asymmetry between men and women in relation to their preferences in mate selection.

From another perspective, not based on the social or economic logic of marriage, prolonged schooling, associated with the expansion of educational opportunities, will also result in greater homogamy with respect to educational attainment. The longer the time frame between leaving the educational system and entering into a union, the lower the probability of forming a homogamous union (Mare 1991). If the delay in age at marriage is

the result of a longer stay in the educational system, homogamy will increase for those who spend the longest time in the system and, therefore, attain the highest levels.

In conclusion, if, on the one hand, gender symmetry is observed in the constellation of preferences and, on the other, the time between the completion of school and the formation of unions is reduced, an increase in homogamy should be expected among the most educated as well as among the least. Meanwhile, among the intermediate groups, where the dispersion of educational attainment is greatest, grades and diplomas are not so important, leading to reduced homogamy.

Theoretical arguments regarding educational assortative mating have been examined, and in the majority of the cases validated, in countries such as the United States (Mare 1991), Spain (Esteve and Cortina 2006), France (Forsé and Chauvel 1995), United Kingdom (Halpin and Chan 2003), Norway (Birkelund and Heldald 2003), Czech Republic, Slovakia and Hungary (Kartnák 2005), and including some developing countries such as Mexico and Brazil (Solís 2003; Esteve and McCaa 2005). In the majority of countries where data are available, we find a tendency of diminishing homogamy on a global scale in recent decades, due in part to the expansion of educational opportunities. Nonetheless in countries with the highest levels of development, like the United States, educational homogamy continues to be high and with a tendency to reinforce itself, specifically at both ends of the educational hierarchy (Schwartz and Mare 2005). Of the potential causes driving educational assortative mating patterns throughout the entire period or for certain parts of it, Schwartz and Mare highlight the following i) an increase in the number of men and women with university studies, ii) a decrease in the lapse between the completion of studies and the formation of nuptial unions, and iii) a greater symmetry between men and women in terms of their conjugal preferences. At the lower end of the educational hierarchy, we also find some similarities between countries. The evidence shows that the frontiers least permeable to unions between educational groups are situated at the extremes of educational attainment.

Among heterogamous unions, the ubiquity of female hypergamy -those unions in which the wife has a lower level of study than her husband- has diminished to an important degree in recent decades. This diminution is observed in practically all the research in which authors specifically consider this phenomenon. In the United States, differences by gender in educational homogamy between non-Hispanic Whites has disappeared (Qian

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1998). Once again, the reduction and even the inversion of the traditional educational difference between men and women in marriage is due to the reduction of gendered differences in educational attainment, in labor force participation, and also in the emerging gender symmetry in conjugal preferences.

For Mexico, the authors of this paper have reported in previous work the topic of educational assortative mating for the period 1970-2000 using data and methods analogous to those employed here (Esteve 2005). These decades are characterized by a strong expansion of schooling in Mexico, an increase in the advances in education and a progressive reduction in differences by gender in educational attainment. The most significant achievements are observed in primary education, but secondary and university education is also expanding rapidly. Nevertheless at the higher levels gendered differences persist and in spite of substantial progress social inequalities continue to be reproduced due to unequal access to education (Mier, Rocha, and Rabell 2003). The returns from education are increasing markedly over time. The striking increase in female labor force participation rates confirms this assessment. Increased schooling has contributed to the growth in female economic activity (Garcia and Oliveira 1994), above all among the most educated and this in turn improves the return on resources dedicated to the education of daughters, and favors the further reduction of differences by gender (Parker and Perderzini 1999).

As a result of the expansion of education in Mexico, the proportion of homogamous unions has diminished, falling below 50% in the 2000 census. The proportion of hypergamic couples (wife has less formal education than the husband) is greater than hypogamic pairings (the husband has less education than the wife). Despite the decrease in homogamous unions, a result of the diversification of educational opportunities, the analysis of specific levels of homogamy, free from the disturbing effects of unequal distribution of educational attainment by gender, shows that, first, homogamy remains the basic rule at all levels and is accentuated among the most educated. Second, over the same period, the rule of female hypergamy is nearing its end. The results for Mexico confirm to a great extent our expectations regarding educational homogamy -it increases among the most educated and remains strong among the least educated while the traditional propensity toward female hypergamy is eroded. Mexicans in Mexico display similar patterns to non-Hispanic-Whites in the United States (Esteve 2005), although, in this comparison, Mexicans and non-Hispanic Whites are the majority groups in their respective countries.

2.2.- Ethnic endogamy

The validity of the theoretical and empirical arguments sketched to this point is conditioned by the ethno-demographic context of the marriage pool. In heterogeneous contexts, due to ethnicity or religion, education conforms with other individual characteristics in the configuration of conjugal preferences, which in turn are highly influenced both by individual decisions as well as by the affinity between groups and the direct influence of families (Kalmijn 1998). Thus, in the context of the present study, with its focus on, first, Mexicans born in Mexico, and, second, people of Mexican identity born in the United States ("Mexican origin"), we must not forget the fact that people of Mexican identity constitute an ethnic minority, the largest in the United States, but a minority all the same.

With respect to the propensity of minorities in the United States to marry within or outside their ethnic group, there exists an abundant literature in the social sciences (Alba and Golden 1986, Pagnini and Morgan 1990; McCaa 1993; Qian 1998; Rosenfeld 2002; Jacobs and Labov 2002). In our search for hypotheses, we consider three main theories: assimilation, segmented assimilation and social exchange.

According to Gordon's typology (1964), assimilation of a structural type produces primary group affiliations between members of the minority groups and the majority (e.g., marrying outside of one's ethnic group). The celebration of mixed marriages is understood, then, as key to the structural assimilation between groups. Experience indicates that the propensity to form mixed marriages by members of the minority group is conditioned by various factors, among them residence, birthplace, generation of migration, educational attainment, socioeconomic status, and facility in speaking the majority language. But these factors do not exercise the same influence among all minorities, nor do all minorities, when out-marriage occurs, take a partner from the majority group. Some authors have interpreted this evidence to formulate a theory of "segmented assimilation" (Portes 1993).

In any case, the union formation patterns of Mexicans in the United States do not seem to confirm the segmented assimilation theory, but rather assimilation in its classic form (Rosenfeld 2002). For example, spatial assimilation (the geographical proximity of the minority group with the majority), the influence of the differences between the first and subsequent generations, and the different levels of educational attainment are consistent

with the classic model of assimilation in the case of the Mexican population (South et al. 2005; Whal et al. 2007). With respect to intermarriage, rates of mixed marriage by the second generation and among those with the highest levels of schooling are in agreement with the classic model of assimilation (Lee 2005; McCaa et al. 2006). Second and subsequent generations display reduced propensities toward unions within their own group. Compared to non-Hispanic Blacks, Mexican Americans show more evidence of assimilation with non-Hispanic Whites (Rosenfeld 2002). The degree of assimilation is even stronger among the more highly educated, especially among university graduates. Higher educational attainment erodes racial and ethnic barriers to intermarriage (Qian 1997). An example of this is the proportion of the most highly educated from ethnic minority groups, for whom greater schooling brings greater exposure to other groups and reduced ties to the group of origin (Qian and Lichter 2001; Okun 2001). Is the greater exogamy (greater propensity to mixed marriages) observed among the most highly educated the result of greater opportunities to find a mate outside one's group of origin, the characteristics of the universities as marriage markets, or the workings of the social exchange hypothesis? These are questions that invite attention.

If differences in intermarriage between generations or socioeconomic statuses, as predicted by the classic model of assimilation, do not alter the preferences of individuals for a spouse with one or another educational profile, the patterns of educational homogamy also will not be altered. If Mexican-born and Mexican origin residents in the USA who have attended university have a higher propensity towards intermarriage but continue to prefer that their spouses also have the same level of education, as would be expected in a homogeneous ethnic and religious context, the observed patterns of educational assortative mating will be independent of the ethnicity of the members of the union. This assertion is supported by Qian (1997) who showed that interracial marriages were more likely to be educationally homogamous than heterogamous, meaning that racial minorities in the United States 'seek to exchange their economic potential less for higher racial status than for the same economic potential of whites' (Qian 1997: 274).

Nevertheless, if the Merton thesis (1941) regarding "social exchange" is true, then individuals who belong to a minority ethnicity expect to use socioeconomic status as an element of exchange or counterweight to the social disadvantages derived from ethnic or racial condition. With respect to differences of gender, Merton's theory predicts that men will be more inclined to intermarry in all minorities in which they have more resources

than their ethnic sisters. Merton's exchange thesis does not hold, however, for some types of intermarriage (Rosenfeld 2005; Jacobs and Labov 2002). Jacobs and Labov demonstrated that this pattern did not apply either for Asian white marriages or for some Hispanic groups. Spouses tend to marry within the same educational levels regardless of whether they marry within or outside their ethnic or racial group. In summary, to the extent that structural assimilation through marriage is attained, following the logic of social exchange, this will alter the patterns of homogamy observed by the minority group -here the Mexican population resident in the United States- compared with the patterns observed for the majority population in Mexico or in the United States (non-Hispanic Whites).

Geography has not been part of our discussion although there is some evidence that levels of homogamy and endogamy vary greatly across local marriage markets (Harris and Ono 2004; Lewis and Oppenheimer 2000). The basic notion is that neither education nor race and ethnicity are equally distributed in space. Local markets differ significantly in their marriage pool compositions and, thus, aggregated or "national" views of the marriage market may be misleading. This observation is reinforced by the fact that individuals tend to mate within their geographical space (McPherson et al. 2001). For instance, in ethnic segregated neighborhoods the likelihood of mating a partner from a different ethnic group is lower than in ethnically mixed contexts. By modeling the marriage market as a single, unified pool of marriage candidates, one is assuming that the likelihood of a union between, for instance, a Mexican-born and a non-Hispanic White is the same regardless of their place of residence. Nonetheless, in those contexts, where ethnic minorities are small in number, we should expect, according to structural theory, a higher likelihood of mixed marriages. On the contrary, when they are large in number, the likelihood of mixed marriage should be lower. This relationship, however, is highly conditioned by the way the marriage market is technically conceptualized. Most of the microdata available to explore patterns of union formation for the entire US do not offer sufficient geographic detail to introduce a reliable measure of individuals' daily spaces. We will use the proportion of Mexicans (born and ancestry) by Public Use Microdata Areas (PUMAs) as a proxy for ethnic segregation.

From a reading of the theory and analysis of the literature on both educational homogamy and intermarriage, several hypotheses emerge regarding the interaction between education and ethnicity on union formation patterns. If classic assimilation occurs, second and older generations of Mexicans should experience lower levels of endogamy than first

generations and show similar patterns of educational assortative mating to those of non-Hispanic Whites. Here assimilation is defined as Mexicans (first and later generations) marrying non-Hispanic Whites. An inverse relation between the degree of endogamy levels and the individual level of formal education should also be observed. As formal education increases, endogamy should decrease. Here an important difference is whether such relations hold only for Mexicans or for non-Hispanic Whites as well. If the former occurs, support for social exchange would be demonstrated. If the later, educational homogamy would be the rule. With regard to educational homogamy, we expect it to be higher at both ends of the educational hierarchy irrespective of ethnic origin, as shown in most of the literature. We expect discrepancies in the level of homogamy between first generation Mexicans, second or later generations Mexicans and non-Hispanic Whites. Educational boundaries for non-Hispanic Whites should be stronger than for Mexicans for several reasons. First, in demographic terms, non-Hispanic Whites are the ethnic majority, so irrespective of their propensity to marry out of their ethnic group, their social differentiation in terms of formal education is necessarily to be taken into account in the selection of spouses. Second, there is no evidence indicating that ethnic intermarriage for non-Hispanic Whites is accompanied by educationally hypogamous pairings, that is, non-Hispanic Whites males and females marrying Mexican females and males respectively with less formal education. The formulation of hypotheses with regard to the extent geography will challenge or weaken the previous points is highly conditioned by the way geography is conceptualized or taken into account. Thus, further explanations are required before posing additional hypotheses.

3.- Data and Method

3.1.- The sample

Our data come from the 5 % *Integrated Public Use of Microdata Samples (IPUMS)* of the United States for 1980, 1990 and 2000 population censuses, available at www.ipums-usa.org (Ruggles et al 2004). The structure of the dataset is simply a cross-classification of nuptial unions (N = 1,877,303), regardless of marital status, for each census by ethnicity or ethnic origin of husband and wife (*Mexican-Born, Mexican-Origin,* other Hispanic, *non-*

Hispanic White, and Other), by years of schooling completed (<9, 9-11, 12, 13-15, 16+), and by PUMA (n=1,154, 1,726 and 2,071 for 1980, 1990 and 2000, respectively). The results of the analysis are sensitive to the number of levels upon which years of schooling are grouped. The accumulated experience indicates that the number of categories should be subjected to meaningful groupings with social and economic consequences. In the United States, non-Hispanic Whites and Mexicans differ enormously in their levels of educational attainment. For non-Hispanic Whites common categories are found at fewer than 12, 12, 13-15 and 16 or more years of school (Qian 1998; Qian and Lichter 2001; Blackwell 1998; Mare 1991; Lewis and Oppenheimer 2000). However, the majority of Mexicans in the United States, and specially those born in Mexico, fall into the 'fewer than 12' category (see Table 1). We divided this group into two categories to distinguish between those with very little formal educations by US standards (fewer than 9 years of schooling) and those who have completed primary and have some secondary education (9-11). From a Mexican perspective, similar studies on educational homogamy in Mexico have used even lower thresholds (i.e. 'Fewer than 6', '6-8').

Only couples that are enumerated as living in the same household are considered because the census microdata do not provide a means for linking husbands and wives living apart. Regarding ethnicity, the population has been classified as follows: Mexican by birth, Mexican by origin or ancestry (born in the United States), non-Hispanic White, Other Hispanic, and Other. These five categories are constructed from a combination of three census variables: birth place, Hispanic origin, and race. "Mexican-born" are those born in Mexico and whose Hispanic origin is also "Mexican". "Mexican-origin" are those whose Hispanic origin is "Mexican", but are born in the United States. "Non-Hispanic Whites", as the label indicates, are those who declared race as white and whose origin is anything other than "Hispanic". "Other Hispanics" are those who declared a Hispanic origin other than Mexican. Finally, "Others" are those who do not belong to any of the previous categories. Although our analysis focuses exclusively on endogamous unions in which both spouses are Mexican by birth, Mexican by origin or ancestry (born in the United States) or non-Hispanic White, the remaining unions are implicitly included in the descriptive results and in the log-linear models. Because modern US censuses (1980, 1990, and 2000) do not provide parental birthplace information, second generations cannot be distinguished from older ones. This is an obvious limitation of the study that cannot be addressed with the current data. Compared to earlier censuses (1970 and before), for which parental birthplace

was enumerated, current estimates of ethnic endogamy are biased upwards because unions between partners of Mexican origin can be identified beyond the second generation.

Table 1.- Characteristics of the population in marital unions in which at least one of the spouses resided in the United States before the age of 20 and was aged 30-39 years at the time of the census. Data are reported in percentages by sex, census year, and ethnicity/origin by years of schooling completed*.

	Husbands			Wives		
	1980	1990	2000	1980	1990	2000
Mexican Born						
< 9	53,4	48,3	42,9	49,4	44,5	38,9
9-11	12,6	13,6	17,5	14,6	13,4	17,2
12	17,3	19,4	24,1	23,6	22,7	25,5
13-15	10,6	13,6	11,5	9,0	14,7	13,0
>= 16	6,0	5,1	4,0	3,4	4,8	5,4
Total	100	100	100	100	100	100
N	3235	8797	24370	3365	7722	23079
Mexican Origin						
< 9	24,3	7,6	4,7	22,4	7,1	4,4
9-11	18,2	12,9	10,9	20,7	13,5	10,7
12	28,7	34,7	35,5	39,3	39,2	34,5
13-15	18,2	32,3	33,5	12,5	30,3	35,1
>= 16	10,7	12,5	15,3	5,1	9,9	15,4
Total	100	100	100	100	100	100
N	12833	17127	16962	13008	18155	18827
Non Hispanic White						
< 9	6,0	1,9	1,2	3,4	1,1	0,8
9-11	9,8	5,6	4,8	10,7	5,2	3,8
12	35,4	29,7	30,4	46,6	34,5	28,5
13-15	19,5	31,3	30,8	20,2	33,4	34,5
>= 16	29,3	31,5	32,8	19,1	25,8	32,5
Total	100	100	100	100	100	100
N	490249	566322	497014	488364	560504	488124

Source: IPUMS-USA

* The number of husbands and wives do not sum the same number. This is because Others and Other non-Hispanics are not shown in the table although they have been included in the log-linear models. A small fraction of the difference between the number of males and females is also due to differences in the weight factors, which are not necessarily the same for both members of the couple.

The census is a source that relates to a moment in time and not to the life course. Thus, years of schooling refers to educational attainment at the moment of the census, and therefore could have varied since the date of marriage. Nevertheless, we must assume that this fact, determined by the availability of the data, does not bias significantly our results since is commonly taken for granted that educational attainment typically does not vary a great deal after marriage. There is, however, little evidence to support this claim. Schwartz and Mare (2003) examined the effects of marriage, marital dissolution, and educational upgrading on educational assortative mating, concluding that their impact on educational assortative mating patterns was small compared to the effect that the odds of homogamy among newlyweds entering their first marriages. Nevertheless, to restrict these possible biases, we have adopted a practice common to this sort of study, limiting our analysis to couples where the female is aged 30-39 years at the time of the census. Limiting our research to a ten year age group has the added advantage of avoiding the overlapping of cohorts in successive censuses. It is certain, nevertheless, that with this strategy we underestimate the number of ethnically mixed couples because they tend to break up faster (Jones 1996; Kalmijn 2005) although that there is evidence that compared to Blacks, Mexican Americans and Whites have lower odds of marital disruption (Bulanda and Brown 2007). The fact that marital status is not known at the time of migration is also a limitation of the source. Only in the 1980 census, can we distinguish unions that occurred before immigration from those occurring afterward because more recent censuses do not request age at marriage. To minimize this bias, we exclude those unions in which the age of immigration to the United States for both of the spouses is 20 years or older. In other words, of those born in Mexico we only consider couples where at least one partner resided in the United States before age 20. For 1980, we have determined the proportion of men and women who resided in the United States before age 20 and whose first marriage occurred before the age of arrival. For men, this proportion was 2.4 % and for women 11.3 %. Considering the increase in the age at marriage for both men and women observed in Mexico during the past decades (CONAPO 1999), we assume that these proportions decreased over the period of study. Another possible bias stems from the fact that couples from mixed backgrounds are more likely to separate or divorce at younger ages than others, and thus the incidence of homogamous unions is slightly exaggerated. Marital dissolution and educational advancement after marriage play an important role in the intensification of the degree of educational homogamy within cohorts over time (Schwartz

and Mare 2005). This is another argument for limiting the analysis to couples that are relatively young. Research shows that homogamous couples are more stable than heterogamous ones (Kalmijn 1991). Thus, there may be no direct correspondence between prevailing cohorts of marriages and the same marriages at the time they occurred. However, for inter-ethnic marriages, and especially marriages involving Mexican-born and origin populations, the selective attrition problem has not been studied. With appropriate data, this is worth investigating in future research.

Because the concentration of Mexican-born, as well as those of Mexican-origin differs dramatically within the United States, we have introduced in our analysis a measure of such differences without losing a national perspective. For the 1990 and 2000 censuses, dwellings are located within Public Use Microdata Areas (PUMAs). They consist of areas between 100,000 and 200,000 residents. Although PUMA is available only for 1990 and 2000, it is similar to the IPUMS CNTYGP80 variable for the 1980 census. CNTYGP80 is an un-recoded variable that identifies the household's 1980 county group of enumeration (IPUMS-USA). For each of these areas (CNTYGP80 in 1980 and PUMAs in 1990 and 2000), we have calculated the proportion of Mexican-born and Origin populations over the total population (always restricted in both cases to population with spouse present). Then we classified all areas into five groups depending on the proportion of the population of Mexican identity: less than 20%, 20 to 40, 40 to 60, 60 to 80 and 80% or more. In 2000, 87% of PUMAs were in the first category, that is with Mexicans (by birth and origin) constituting less than 20% of the population. Only seven of 2,071 PUMAs were 80% Mexican or greater. We have checked alternative classifications with similar results, for instance using absolute, instead of relative numbers. Because PUMAs and CNTYGP80 areas have similar numbers of residents but larger differences in their urban and geographic structures, some consideration has to be made about the way this may interfere with estimates of ethnic endogamy. For areas with small numbers or proportions of Mexicans we do not have additional information about the degree of segregation within that area. Thus, it is uncertain whether a small number of Mexicans will foster intermarriage following the reasoning of the classical works on this topic (Blau, Blum and Schwartz 1982).

3.2.- Descriptive Indicators of Educational Assortative Mating

Table 1 reports the basic characteristics of husbands and wives of the cases selected for this study. Each couple has the common denominator that at least one of the spouses was aged 30-39 years old, that at least one resided in the United States before the age of 20, and that both spouses belonged to one of three groups: Mexican-born, Mexican-origin, or non-Hispanic White. The table shows the distribution and evolution between 1980 and 2000 for each ethnicity distinguished by sex and the relative distribution by level of educational attainment for each of the groups. The number of Mexican-born increases notably between 1980 and 2000, so much so that for men their numbers exceed, for the first time, the number of Mexican-origin. The table indicates that the number of unions in which one or another of the spouses was born in Mexico jumped by six and seven times, for men and women, respectively. Unions in which at least one spouse was of Mexican-origin also increased between 1980 and 2000, but the growth was not constant nor as rapid as for the Mexican-born. Indeed, between 1990 and 2000, the number of unions in which the husband was of Mexican-origin actually decreased while that of wives remained stable. From the point of view of the numerical variations by gender, the figures show that the effective difference between Mexican-born men and Mexican-born women narrows in relative terms between 1980 and 2000. The difference is always in favor of males, with a shortage of females amounting to 10-20 percentage points. In contrast, among the Mexican-origin, the effective difference is favorable for women in all the years. As expected, among the non-Hispanic White, these differences are not important.

With respect to educational attainment, variation by ethnicity is striking. Mexican-born show the lowest levels of schooling and non-Hispanic Whites the highest. As recent as 2000, the secondary school completion rate (12 or more years) for Mexican-born was scarcely 40% compared with almost 85% for Mexican-origin and 95% for non-Hispanic Whites. In spite of these differences, improvements occurred for all groups over the three censuses. Among Mexican-born those completing fewer than 9 years of schooling declined from 54 to 40% and 51 to 40% for males and females, respectively. For those of Mexican-origin the drop was even more dramatic, from 22% to less than 5% for both men and women, a level similar to non-Hispanic Whites in 1980. In 2000, 99% of non-Hispanic Whites completed 9 or more years of schooling, indeed, 95% graduated from high school.

The most important point to recall is that there are great differences between the three groups and that these must condition patterns of educational homogamy. On the other hand, it is also important to note that if the two Mexican groups are considered as one, sex ratios at the various levels of educational attainment are more or less in balance. In other words, the marriage market of Mexicans in the United States as a whole would seem to be in equilibrium by sex and the educational profiles are such that the demand for spouses could be satisfied entirely by Mexican candidates.

While there is no "gender squeeze" for Mexicans as a whole, this is due to counter-balanced squeezes between those of Mexican birth and origin. For the Mexican-born the surplus of males is readily understood. Males are more likely to immigrate to the US than females. For the Mexican-origin, the overall sex-ratio imbalance may provoke some consternation among the demographically curious. Why are there more Mexican-origin females than males in our study? The answer is in the differences in proportions married. In each census the fraction of never-married Mexican-origin males aged 30-39 is substantially greater than females: 12% for males and 9% for females in 1980, 21% and14% in 1990, and 27% and 19% in 2000. While the 2000 census sample reports 63% of Non-Hispanic white males aged 30-39 as living in a marital union with wife present, barely 50% of Mexican-origin males do so, rising to 61% for the Mexican- born. For females, the corresponding figures are 69%, 59% and 73%, respectively.

Table 2 reports the relative distribution of unions, for each census and ethnic combination by type: homogamous (within the same level of educational attainment), hypergamous (wife has less education than the husband) and hypogamous (husband has less than the wife). Two points stand out. First, homogamy is the rule, accounting for 40-60% of all pairings regardless of ethnicity–with a couple of borderline exceptions. Over the decades the rule weakens for endogamous unions of the Mexican-born (from 57 to 50%), but it grows somewhat stronger for those of Mexican-origin (43 to 47%) and non-Hispanic Whites (49 to 54%).

Second, among the Mexican-born we note an increase in the proportion of heterogamous unions, with hypergamous and hypogamous unions equally divided. For Mexican-origin and non-Hispanic Whites, the share of hypergamous unions is greater than hypogamous unions in 1980 and 1990, but constitute a smaller fraction in 2000.

Table 2. Marital unions in percentages by year. ethnicity/origin of the spouses and type of endogamy (homogamy. hypergamy. hypogamy)

	Females								
	1980			1990			2000		
Males	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White	Mexican Born	Mexican Origin	Non Hispanic White
Educational Homogamy									
Mexican Born	56,9	46,4	37,8	53,9	35,0	36,4	49,6	36,1	39,7
Mexican Origin	42,6	42,6	44,1	40,4	47,1	47,6	38,4	47,4	50,5
Non Hispanic White	36,7	40,1	49,2	38,2	46,7	51,4	43,0	51,0	53,7
Female Hypogamy									
Mexican Born	18,2	36,3	38,1	22,3	48,3	43,4	26,9	45,5	45,7
Mexican Origin	16,7	24,2	22,6	16,4	24,7	25,3	21,9	27,7	28,4
Non Hispanic White	13,1	15,9	19,5	13,3	19,4	21,2	18,3	20,3	25,2
Female Hypergamy									
Mexican Born	24,9	17,3	24,2	23,8	16,7	20,2	23,4	18,4	14,7
Mexican Origin	40,8	33,2	33,3	43,2	28,2	27,1	39,7	24,9	21,0
Non Hispanic White	50,2	43,9	31,4	48,5	33,9	27,4	38,7	28,7	21,1

Source: IPUMS-USA

Third, ethnically mixed, or exogamous, pairings tend to be more heterogamous, although this is not true for all combinations in all years. In general terms, hypergamy is greater than hypogamy for all the exogamous combinations below the diagonal, that is where the husband is Mexican-origin or non-Hispanic White and the wife is Mexican by birth or origin. In contrast, hypogamy is the rule above the diagonal. The largest proportions of hypergamy (where the wife has fewer years of schooling than the husband) are observed in pairings of non-Hispanic White men with Mexican-born women (50% in 1980, declining to 39% in 2000). These results are consistent with those reported in Table 1, which show differences by educational attainment for the three ethnic groupings. It is logical, given that the non-Hispanic White population has educational attainment levels much greater than the Mexican-born, that unions between these groups would be mainly hypergamous for Mexican-born females and hypogamous for males.

Next, we turn to log-linear models to analyze patterns of educational homogamy to take into account relative group size by educational attainment and ethnicity.

3.3.- Models of Educational Assortative Mating

Log-linear models offer the possibility of examining relations between two or more variables controlling for their marginal distributions. If couples formed without consideration of educational attainment and ethnic origin, the total number of unions would be conditioned solely by the frequencies of men and women by their years of schooling completed and ethnic origin. If the data confirm this scenario, we conclude that neither educational attainment nor ethnicity is a relevant consideration in the marriage market. Of course, both common sense and the empirical evidence tell us the contrary. Years-of-schooling is a significant factor in the process of mate selection as is ethnicity. For this reason, it is necessary to specify models, that, using statistical independence as a point of departure, generate estimates that approximate observed counts, but without so many specifications that we have as many parameters as combinations in the table. A fully saturated model is totally lacking in explanatory power. Between the independence and saturated models, there exist a number of formulations that can be used to test various hypotheses regarding gender and educational homogamy, controlling for the ethnicity of spouses as well as census year and area of residence (PUMA). To assess goodness of fit we use the *Likelihood Ratio* (G^2) statistic and the *Bayesian Indicator Criteria* (*BIC,* Raftery 1986).

4.- Findings

Table 3 shows the goodness of fit statistics, model description and basic results of a series of log-linear fittings. For explanatory purposes, we have selected only four models to illustrate the basic sequence of hypotheses leading to a final and best fitting model, as ascertained by means of G^2 and BIC. In both cases, the smaller the statistics, the better the fit, and therefore the better the explanatory power of the model.

Model 1, independence, assumes that the frequency of each combination of union is determined solely by the total number of men and women with given characteristics, that is, by the year of the census, the proportion of Mexicans in their PUMA area of residence, ethnicity, and the level of schooling attained. This model controls for the frequencies of each of the variables considered, and therefore assumes that the distribution of unions is

wholly a matter of chance. As the table shows, of all the models examined, independence is the worst fit (BIC_1 = 1,845,540.85). Because model 1 does not assume any interaction between either the ethnic background of the spouses or their years of school, there are no specific terms for such interactions.

Table 3.- Likelihood-Ratio Chi-Square Statistics for selected models of ethnicity/origin endogamy and educational homogamy

	Model			
	1	2	3	4
Goodnes of fit df	8640	8608	8416	8128
Goodnes of fit chi-square (L2)	5251949,28	49698,52	32396,70	15824,61
BIC	1845540,85	-81976,76	-94494,00	-105701,13
Description	heth x hedu x year x geo weth x wedu x year x geo	Model 1 + heth x weth hedu x wedu	Model 1 + heth x weth x year heth x weth x geo hedu x wedu x year hedu x wedu x geo	Model 3 + heth x weth x hedu heth x weth x wedu hedu x wedu x heth hedu x wedu x weth
Ethnic Endogamy				
Mexican Born		2,26	2,08	1,99
Mexican Origin		1,59	1,54	1,59
Non Hispanic White		2,24	1,99	2,16
Educational Homogamy				
< 9		1,79	1,47	1,54
9 - 11		1,11	0,98	0,89
12		0,44	0,44	0,45
13 - 15		0,73	0,67	0,68
16		2,45	2,16	2,00

Model 2 adds the presence of association between the ethnicity of the spouses (heth x weth), on the one hand, and, on the other, between the level of schooling (hedu x wedu), with no variation over time (year) and area (geo). The dramatic improvement in fit as measured by both G^2 and BIC, confirms the strong association of both these factors in influencing conjugal choices (BIC_2 = -81,976.76). Model 3 builds on this to take into account both ethnic endogamy and educational homogamy as they vary in time and within areas. The inclusion of these terms improves the fit considerably, confirming the strong effects of time and area on endogamy and homogamy (BIC_3= -94,494.00). Along the same line, model 4 builds on 3 to examine the variation in endogamy by husband's and wife's

years of school and the variation in homogamy by husband's and wife's ethnic/origin. These specifications allow the model to examine gender differences in levels of ethnic endogamy and educational homogamy. In model 4, a significantly better fit is obtained (BIC_4 = -105,701.13). We have made unsuccessful attempts (not shown in the table) to go beyond model 4, to take into account jointly variations of time and area in both ethnic endogamy and educational homogamy. These attempts do not yield better fits, which indicates that temporal and area variations in endogamy and homogamy need not be incorporated into the model as separate elements. In other words, time effects are common to all areas (% of Mexicans in PUMAs) as area effects are common to all times (census years).

For models 2, 3 and 4, Table 3 reports the baseline parameters for ethnically endogamous and educationally homogamous couples. We refer to these as "baseline" because they are the underlying reference parameters for all years, areas, ethnicities and levels of educational attainment. These parameters are shown in the form of log odds, with zero as the reference value. Positive values indicate a greater propensity for unions of the specified type and negative ones the opposite. (For an idea of magnitude, consider that a log odds of 1 -the anti-log- indicates some 2.7 more unions, 2 = 7.4, 3 = 20.1, etc.). Log odds may also be interpreted as deviations from a random scenario of assortative mating, which will only be conditioned by the ethnic and educational composition of the marriage pool by time and area.

With regard to ethnic endogamy, model 4 shows that the odds of marriage between non-Hispanic Whites (2.16) are higher than the odds of marriage between Mexican-born (1.99) and between Mexican-origin (1.59). Marriages between persons of Mexican-origin have the lowest odds. Second, homogamy by educational level follows the classic and expected form of a "U": highest educational homogamy at the extremes of the educational hierarchy ('<9' = 1.54; '16' = 2.00) and lowest at the intermediate levels ('9-11' = 0.89; '12' = 0.45; '13-15' = 0.68), where educational barriers are traditionally more permeable. Given the unequal distribution of educational attainment between Mexican-born, Mexican-origin and non-Hispanic White, it is hardly surprising to find levels of educational homogamy among the lowest educated (1.54) similar to levels of ethnic endogamy among the Mexican-born (1.99). Likewise, the same correspondence between homogamy among the more highly educated (2.00) and endogamy of non-Hispanic Whites (2.16) is clearly established.

Now, we examine in detail baseline deviations by year, % of Mexicans in PUMAs, ethnicity and years of schooling. Results come from model 4 and are displayed in Tables 4 and 5, which show deviations for endogamy and homogamy respectively. Both tables share the same structure. First, the baseline parameters shown in Table 3 for model 4 are reproduced. Second, the remaining values of the table have to be read in combination with the baseline parameter. A series of parameters have to be added or subtracted in order to obtain an endogamy parameter specific to a given year, area, sex and level of schooling. For instance, from Table 4, the log odds of being in a union in 1980 between persons born in Mexico for areas with less than 20% of Mexicans in their PUMA, add the following values: 1.99 (baseline parameter for marriages between Mexican-born), -0.09 (baseline deviation for marriages between Mexican-born in 1980), and 0.45 (baseline deviation for unions between Mexican-born in PUMAs with less than 20% of Mexicans). The sum is 2.35 (~10 times as many unions of this type). We will comment, however, on each of the effects separately since they are introduced this way in the model.

Table 4. Log-odd ratios for ethnically endogamous unions and baseline deviations by year. % of Mexicans in PUMA areas. husband's and wife's schooling Model 4

	Mexican Born	Mexican Origin	non-Hispanic White
Baseline trend	1,99	1,59	2,16
Baseline' deviations by:			
Census year			
1980	-0,09	0,12	0,14
1990	0,00	-0,04	-0,03
2000	0,09	-0,09	-0,10
% of Mexicans in PUMA			
< 20 %	0,45	0,15	0,29
20 - 40	0,14	-0,11	-0,08
40 - 60	-0,03	-0,02	-0,03
60 - 80	-0,36	0,12	-0,04
> 80 %	-0,19	-0,15	-0,13
Husband's schooling			
< 9	-0,13	0,24	0,50
9 - 11	0,23	0,08	0,21
12	0,09	0,03	0,02
13 - 15	-0,03	-0,17	-0,31
16	-0,17	-0,18	-0,42
Wife's schooling			
< 9	0,03	0,18	0,28
9 - 11	0,19	0,03	0,00
12	0,09	0,04	0,02
13 - 15	-0,11	-0,13	-0,09
16	-0,20	-0,12	-0,21

Regarding ethnic endogamy, Table 4 displays an increase over time in the odds of marriage between persons born in Mexico (from -0.9 to 0.9), and a decrease for Mexican-origin (from 0.12 to -0.09) and non-Hispanic Whites (from 0.14 to -0.10). The high immigration rates of Mexican-born population is accompanied by a rising propensity for inmarriage among the Mexican-born. The odds of endogamous marriages for Mexican-born and non-Hispanic Whites decrease as the proportion of Mexicans in PUMAs increases (from 0.45 to -0.19), while for Mexican-origin there is no a steady trend but there are consistent differences between the two extremes (0.15 vs -0.15). Contrary to expectations, in PUMAs with low concentrations of Mexicans, the odds of in-marriage are significantly higher for the Mexican-born (0.45). Non-Hispanic Whites, on the other hand, show the expected pattern -low concentrations of Mexican-born lead to higher than expected in-marriage for non-Hispanic Whites (0.29). In places where non-Hispanic Whites are the majority, Mexicans tend to marry endogamously. In contexts where Mexicans are the majority, non-Hispanic Whites show lower levels of endogamy (-0.42)- they out-marry more. When educational attainment is considered, a similar pattern emerges for all types of endogamous unions and both sexes. Endogamy decreases as educational attainments increase for both males and females. Non-Hispanic Whites show the greatest range of endogamic variation by level of schooling (e.g. husbands from 0.50 to -0.42), followed by Mexican-born (from 0.24 to -0.18) and, lastly, Mexican-origin (from -0.13 to -0.17) . Among the non-Hispanic Whites, however, males show greater differences between levels of schooling than females. Among the more highly educated, endogamy levels are lower for men than for women.

Table 5 displays the effects of year, area, and husband and wife ethnicity on the baseline trend for educational homogamy. Compared to the previous table, neither place (proportions of Mexicans in PUMAs) nor time (census year) retains the same degree of power as ethnic endogamy. Differences among censuses and areas are smaller. Nevertheless, the results suggest that there is a strengthening of educational homogamy over time for all educational pairings. The largest change, however, is for marriages between persons with fewer than 9 years of school (from -0.14 to 0.13), which corresponds to a small fraction of the total population and the vast majority of them are born in Mexico. Area variations in educational homogamy are not of great magnitude except for the few PUMAs with more than 80% Mexican born. Educational homogamy is lower in these areas

with the exception of the more highly educated (0.05). In minority dominated contexts, social distance between educational groups is lower except for the most educated.

Table 5. Log odds ratios for educationally homogamous unions and baseline deviations by year. % of Mexicans in PUMA areas. husband's and wife's ethnic origin. Model 4

	< 9	9 - 11	12	13 - 15	16
Baseline Trend	1,54	0,89	0,45	0,68	2,00
Baseline' deviations by:					
Census year	-0,14	-0,08	-0,03	0,00	-0,06
1980	0,01	0,03	-0,01	-0,02	0,03
1990	0,13	0,05	0,04	0,02	0,03
2000					
% of Mexicans in PUMA					
< 20 %	0,07	0,09	0,02	0,02	0,02
20 - 40	-0,02	0,03	0,05	0,00	-0,04
40 - 60	0,03	0,03	0,00	0,01	-0,02
60 - 80	0,04	-0,06	-0,02	0,01	-0,02
> 80 %	-0,12	-0,08	-0,06	-0,03	0,05
Husband's ethnicity					
Mexican Born	-0,30	-0,07	0,01	-0,01	-0,16
Mexican Origin	-0,07	0,03	0,01	0,00	-0,01
Non Hispanic White	0,15	0,10	-0,04	0,00	0,17
Wife's ethnicity					
Mexican Born	-0,22	-0,01	-0,01	-0,05	-0,40
Mexican Origin	0,07	-0,03	0,01	0,00	0,08
Non Hispanic White	0,36	0,06	-0,01	0,09	0,36

The effects of husband's and wife's ethnicity on educational homogamy are quite symmetrical but they differ in the intensity of the parameters. This is clearly seen at both extremes of the educational hierarchy. Female Mexican-born with 16 or more years of education show lower levels of educational homogamy (-0.40) than their male counterparts (-0.16) and we find the opposite trend for non-Hispanic White females of the same level of education (females 0.36 and males 0.17). Differences between ethnicities arise in the two extreme (lowest and highest) educational categories. Systematically, for Mexican-born the odds of marriage between persons with the same educational attainment are lower than for non-Hispanic Whites. Educational homogamy is higher for non-Hispanic Whites than for the Mexican-born.

5.– Summary and Conclusion

This research demonstrates, yet again, that ethnic identities and educational attainment are key considerations in mating choices. Belonging to one group versus another is central to the formation of couples and generates social distance with respect to other groups. Consistent with the assimilation thesis Mexican-origin individuals of second and higher generations show systematically lower rates of endogamy than first generation Mexican immigrants. Moreover endogamy levels for the second and higher generations tend to diminish over time, notwithstanding the high immigration rates in recent years. Nevertheless, endogamy among those of Mexican birth slightly increased from 1980 to 2000, a weak sign of segmented assimilation, perhaps, but certainly no sign of social closure. Moreover, it could be argued that this is simply a group size effect due to the doubling, in a mere decade, of the Mexican born population resident in the United States. As the rate of Mexican immigration diminishes it will be interesting to see whether this faint signal of segmented assimilation disappears.

Regarding educational homogamy, the second and higher generations of Mexicans show levels midway between the Mexican-born and non-Hispanic Whites, who are characterized by the highest levels of all. Some of these results are entirely expected from the simple observation of the shockingly low levels of educational attainment of those born in Mexico. Even though years of schooling for the Mexican-born have increased markedly in recent decades, in relative terms the gap has actually widened not only in comparison with non-Hispanic Whites but even more dramatically with those of Mexican identity born in the United States. Indeed, our models may be confounded by the sheer fact that the lowest schooled group (fewer than 9 years of schooling completed by age 30) is overwhelming made up of the Mexican-born.

For this reason, we are compelled to examine endogamy by educational levels (Table 5). Doing so, reveals that endogamy trends are indeed consistent with assimilation theory— not only for those of Mexican origin born in the United States but also for those born in Mexico. For Mexicans of all generations, the propensity toward ethnic endogamy shrinks with increasing educational attainment (underscoring the importance of the "Dream Act" legislation). This result is entirely consistent with the social exchange thesis, but also with that of educational homogamy. Additional support is provided by our findings that even among non-Hispanic Whites, endogamy declines with increased schooling. Thus, increased

schooling reduces social distance among the more educated regardless of ethnic background.

On the other hand, the evidence of marital assimilation among the Mexicans, as a whole, should be read with caution. The lack of information on parental place of birth does not permit a generational analysis. Second and subsequent generations are clumped in the rubric "Mexican identity". Nevertheless our analysis shows that those of Mexican identity born in the United States have lower levels of endogamy than non-Hispanic Whites and similar levels of educational homogamy.

Gender differences are surprisingly muted with regard to nuptial choices in terms of ethnicity and educations, as we have modeled them. The fact that we have emphasized endogamy and homogamy over exogamy and heterogamy, justifies in part the fact that gendered differences do not come into focus. In terms of schooling, for example, differences by gender appear clearly when mixed pairs are analyzed—but that is a different study.

Finally the variation in levels of ethnic endogamy and educational homogamy by geography (PUMA) also provokes additional questions. On the one hand, our results may appear counter-intuitive, from prior findings. Endogamy among first generation Mexicans declines as their relative weight increases in the PUMA of residence. That is to say, in those areas where Mexicans have the greatest exposure to other ethnic groups and where their demographic weight is least, the level of endogamy is greatest. This finding is possibly due to the fact that PUMA does not adequately capture the level of residential segregation in terms of daily contacts. In public use census samples the PUMA constitutes the finest level of spatial desegregation possible. More refined geography available in Census Bureau secure data enclaves may offer the opportunity to test this speculation. In addition, we may estimate in the future the effect of changing boundaries over time.

Meanwhile, our research shows that, as long as educational opportunities are widespread, there is little danger of social closure by Mexicans in the United States. The general pattern of assimilation familiar to students of American immigration history is being repeated yet again—now in the case of Mexicans. While the obstacles are much greater for immigrants with minimal levels of education, their children gain much more education than their parents, and in doing so, gain access to a wider pool of non-Hispanic White marriage partners.

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