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Roland G. Fryer Jr.

W hile black–white parity has not yet been achieved in the United States, many gauges relating to economic and political empowerment have shown extraordinary convergence. Over the past 40 years, for instance, the black–white ratio of median earnings for male full-time workers increased from .50 to .73 (Welch, 2003) and the racial disparity in life expectancy decreased from 6.8 to 5.3 years (author's calculations using data from the National Center of Health Statistics). For the first time, recent cohorts of black and white children with similar backgrounds enter school on equal footing (Fryer and Levitt, 2004).

But in the most intimate spheres of life—religion, residential location, marriage, and cohabitation—far less convergence has occurred. Martin Luther King Jr. famously noted in a number of his speeches that "the 11 o'clock hour on Sunday is the most segregated hour in American life" (for example, see King, 1956). Today, an estimated 90 percent of Americans worship primarily with members of their own race or ethnicity (Stodgill and Bower, 2002). Residential segregation, though lower today than in 1970, remains remarkably high. In a typical American city, 64 percent of blacks would have to change neighborhoods to ensure an even distribution of blacks across the city (Cutler, Glaeser, and Vigdor, 1999). Even friendship networks within seemingly integrated public schools are remarkably segregated; the typical student has .7 friends of a different race (Echenique and Fryer, forthcoming).

Historically, there was a distinction between economic and political equality on one side and social equality on the other (Woodward, 1955). Courts often stated that blacks would be made equal under the law but remain subordinate in informal, intimate spheres of life. In *Plessy v. Ferguson* (163 U.S. 537 [1896]), the U.S.

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Supreme Court argued that integration in schools, parks, railroads, and courts could not be mandated because they were private, social concerns. The last civil rights to be granted pertained to the laws governing to social interactions, like whom to marry and where to live.

In this paper, I focus on one aspect of social intimacy—marriages across black, white, and Asian racial lines. The paper begins with a brief history of the regulation of race and romance in America. Then, using census data from 1880–2000, an analysis of interracial marriage uncovers a rich set of cross-section and time-series patterns.

Marrying across racial lines is a rare event, even today. Interracial marriages account for approximately 1 percent of white marriages, 5 percent of black marriages, and 14 percent of Asian marriages. Among married whites, 0.4 percent choose to marry blacks and 0.6 percent choose to marry Asians. Among married blacks, 4.6 percent intermarry with whites and 0.5 percent with Asians. Asians intermarry almost exclusively with whites—white spouses comprise 13.2 percent of all Asian marriages and blacks roughly 1 percent.[1]

The data are most consistent with a Becker-style marriage market model in which objective criteria of a potential spouse, their race, and the social price of intermarriage are central. The evidence in favor of the classic Becker model is far from overwhelming and hinges on several plausible (but untestable) assumptions. Yet it is the only hypothesis I test that does not contradict the data in important ways, after testing a range of theories, including a social exchange theory of marriage that dominates the sociology literature and a marriage theory based on random search and social interactions.

Ultimately, social intimacy is a way of measuring whether or not a majority group views a minority group on equal footing. In most information-based theories of discrimination, stereotyping, stigma, and inequality, social intimacy leads to less discrimination and improved outcomes for racial minority groups (for example, Fryer and Jackson, 2003; Rosch, 1978; see also Loury, 2002, for a conceptual discussion of racial stigma). Relatedly, Patterson (2002) argues that "social death," the treating of individuals as less than full persons, is the real historical tragedy of racial relations in the United States.

The primary movation for this paper was to explore the division between political and social inequality in the unlovely history of *black–white* relations in America and how interracial intimacy may be a more appropriate barometer for the closing of the divide than labor market statistics, but some of the more interesting patterns in the data concern *Asian* intermarriage. As a group, Asians did not face

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[1] Throughout history, interracial intimacy has been taboo, and there may be considerable underreporting of interracial marriage. This bias likely changes over time and may influence the time-series variation as well as the cross-sectional estimates. The estimates are likely lower bounds on the amount of interracial marriage that actually occurs. Yet, because interracial marriage is concrete and verifiable, this concern is less in the marriage data than questions regarding cohabitation, dating, or sexual preferences.

the intensity or longevity of social ostracism endured by blacks, but for many years the U.S. placed strict quotas on immigrants from Asia. This legacy may explain why the time-series patterns look so similar to those for blacks. The civil rights movement was liberating for all racial groups.

There are literatures on interracial intimacy in law and sociology (for example, Moran, 2003; Kennedy, 2003; Romano, 2003; Wallenstein, 2002, and the references therein). This paper takes first steps toward an understanding of the importance of interracial intimacy as a benchmark for race relations.

A Brief History of Romance, Regulation, and Race

When slavery replaced indentured servitude as the primary source of labor in the upper regions of the South during the last decades of the seventeenth century, whites began to work in close contact with blacks. In some cases, coworkers became intimate and blurred the color line (Moran, 2003). Antimiscegenation laws (laws that forbade marrying across racial lines) became a way to draw a distinction between black and white, slave and free. The Chesapeake colonies, now Maryland and Virginia, were the first to enact statutes that punished whites for racial mixing. In Virginia, the law instructed that a white spouse be banished from the colony within three months of an interracial wedding. This penalty was increased to six months in jail in 1705. In Maryland, if a white woman married a black man she became a slave to her husband's master. Interracial marriage laws also ensured that blacks could not have access to inheritance. Over time, bans on interracial marriage and corresponding social taboos were also directed at Asian groups like Chinese, Japanese, and Filipinos—especially in Western states. However, miscegenation has always been legal for Native Americans and Hispanics.

Table 1 provides dates for the permanent repeal of antimiscegenation laws, by state. The first column shows the twelve states that never had laws against black–white marital unions. The second column shows states that repealed such laws before 1900. The third column shows states that repealed such laws after 1900, but before the 1967 U.S. Supreme Court decision in *Loving v. Virginia* (388 U.S. 1), which held such laws to be unconstitutional. The final column shows the states that repealed their laws only after the Supreme Court ruling.

Looking back, one obvious question is why more states didn't drop their bans on interracial marriage after the passage of the 14th Amendment to the U.S. Constitution in 1868, which attempted to make sure that slaves would receive the rights of citizens by requiring "equal protection of the laws." Indeed, six states in the North, Midwest, and West repealed antimiscegenation laws at about this time, and a few Southern states temporarily dropped bans on interracial marriage. But the Southern states soon reversed course.

For instance, in an Alabama 1872 state Supreme Court decision, *Burns v. State* (48 Alabama 195), the court dropped bans on interracial marriage by appealing to

Table 1

Permanent Repeals of Antimiscegenation Laws, by State

Never had such laws	Repealed before 1900	Repealed after 1900, before Loving	Repealed after Loving
Alaska	Illinois (1874)	Arizona (1962)	Alabama
Connecticut	Iowa (1851)	California (1948)	Arkansas
Hawaii	Maine (1883)	Colorado (1957)	Delaware
Kansas[a]	Massachusetts (1843)	Idaho (1959)	Florida
Minnesota	Michigan (1883)	Indiana (1965)	Georgia
New Hampshire	Ohio (1887)	Maryland (1967)	Kentucky
New Mexico[a]	Pennsylvania (1780)	Montana (1953)	Louisiana
New Jersey	Rhode Island (1881)	Nebraska (1963)	Mississippi
New York[b]		Nevada (1959)	Missouri
Vermont		North Dakota (1955)	North Carolina
Washington[a]		Oregon (1951)	Oklahoma
Wisconsin		South Dakota (1957)	South Carolina
		Utah (1963)	Texas
		Wyoming (1965)	Tennessee
			Virginia
			West Virginia

[a] Had laws, but repealed them before statehood.
[b] Had a law against interracial sex when it was a Dutch colony (New Amsterdam).

the Civil Rights Act of 1866 and the 14th Amendment to argue that marriage was a contract and blacks now had the right to enter contracts with whites. But immediately following the removal of the Northern troops from the South, officials began to delineate sharply between political equality and social equality. Political equality was the formal access to governmental processes, whereas social equality involved informal relations between neighbors, friends, and family. In 1877, the Alabama Supreme Court reversed its decision in *Green v. State* (58 Alabama 190), concluding that the Civil Rights Act of 1866 was not meant to overturn antimiscegenation laws. The court rejected the idea that marriage was simply a contract between individuals. Instead, the court insisted that "homes are nurseries of the states" and that public officials were entitled to regulate marriage to promote the general good. The court argued that equal-protection laws were not violated so long as both parties were equally punished, and the court also declared that it was "under no obligation to promote social equality."

Even the famous 1954 school desegregation decision in *Brown v. Board of Education of Topeka Kansas* (347 U.S. 483), which was a fundamental breakthrough on the road to civil rights, did not bring an end to bans on interracial marriage. Six months after the *Brown* decision, the Supreme Court, without dissent, refused to hear an appeal by Linnie Jackson who was convicted under an Alabama statute barring interracial marriage. Alabama argued that *Brown* did not apply to antimiscegenation because the ruling only involved public services and facilities. One justice described the court's view on desegregation and antimiscegenation at this time by saying (as quoted in Moran, 2003), "One bombshell at a time, please!"

It was at the intersection of sexual freedom and civil rights that antimiscegenation laws would finally be eliminated. In the 1965 case of *Griswold v. Connecticut* (381 U.S. 479), the Supreme Court struck down a Connecticut statute that limited the use of contraception by married couples. The decision declared that marriage was an institution "intimate to the degree of being sacred." Two years later, the case of *Loving v. Virginia* held that all bans on interracial marriages were unconstitutional—forcing 16 states to allow interracial marriage.

Trends in Interracial Marriage over the Twentieth Century

To study the patterns of interracial marriage over time, I use data from the Integrated Public Use Microdata Series based on U.S. Census Data for 1880–2000. Interracial pairings are made using the "spouse location" variable which allows one to search through a census household to identify a given person's spouse, and then to identify demographic data about the spouse.[2] An interracial marriage is defined as a marriage between two individuals who report a different race when the census is taken. Three racial groups are analyzed: Asians, blacks, and whites. All other racial groups and individuals without valid responses to race are dropped from the sample. Other racial categories were omitted because their definitions have not remained constant over time and very often the sample of intermarriages involving these groups is too small. Unless otherwise specified, the denominator used to calculate the rates of intermarriage for a racial group is the number of married persons within that group.

Racial Intermarriage Relative to All Marriage

Figure 1 shows trends in interracial marriage for whites, blacks, and Asians over time. Panel A documents the trends in interracial marriage among whites. In 1880, interracial marriages among whites and blacks or Asians were extremely rare (less than 0.1 percent of all white marriages). Whites were more likely to intermarry with blacks than Asians, though this trend eventually reversed. For the first 100 years of the time series, the share of white male–black female marriages remained under 0.1 percent, trended up from 1980 through 2000, and peaked in the latter years at 0.2 percent. White female–black male unions increased from .10 percent in 1970 to .45 percent in 2000.

White intermarriages with Asians follow a very different pattern. White male–Asian female matches were quite rare from 1880–1960. In 1960, this level was rising dramatically. These marriages continued to increase nearly ten-fold over the next 40 years, and today are the most common interracial marriage. White female marriages with Asian men followed a similar, though less pronounced, trajectory.

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[2] I use the 1 percent samples throughout. This dataset is described and available at ⟨http:www.ipums.umn.edu/usa/index.html⟩.

Figure 1

Percent of Whites, Blacks, and Asians Marrying Out of Race, by Gender

(as a percent of all marriages)

(A) Whites

(B) Blacks

(C) Asians
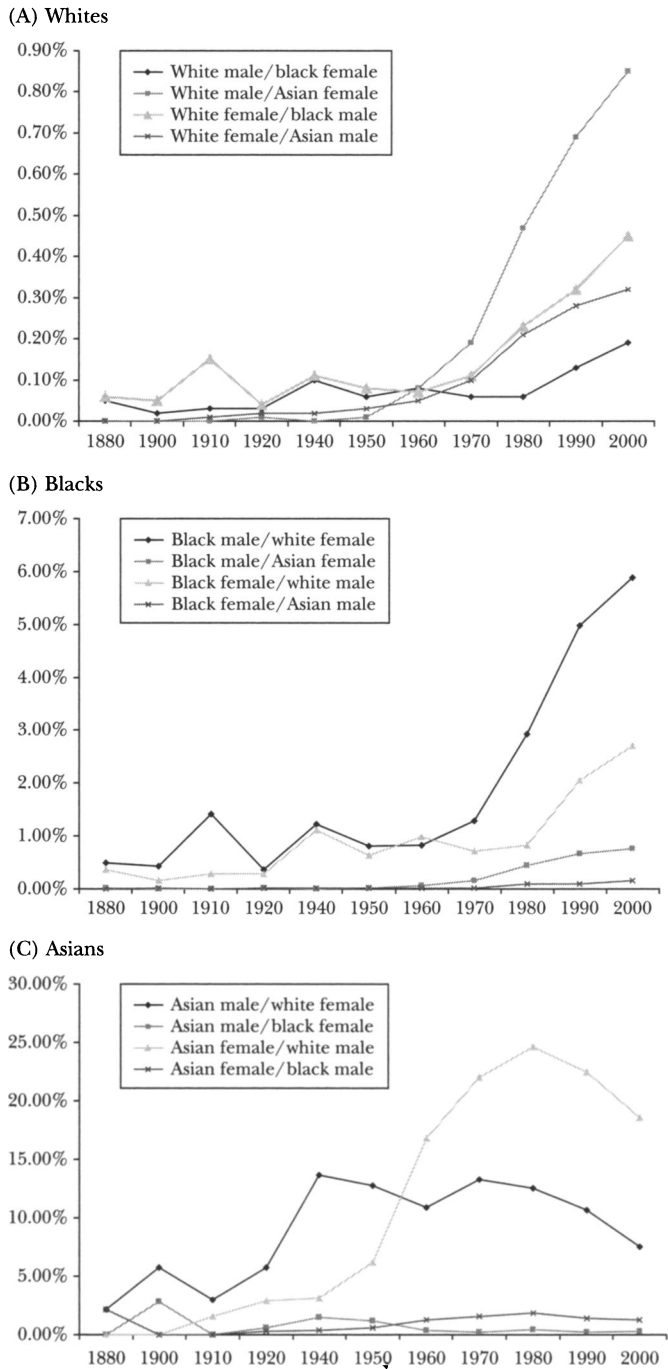
Black males and females have similar trends of miscegenation across the twentieth century, though the level of interracial mixing is quite different, as shown in panel B of Figure 1. Rates of interracial marriage between blacks and other racial groups remained flat from 1880 to 1970. Between 1970 and 2000, black men exhibit an almost six-fold increase in intermarriage with whites. Currently, almost 6 percent of black male marriages are with whites. Black females exhibit similar trends, although the timing of the increase is later and the raw prevalence of interracial marriages is less for black females. Roughly 2.9 percent of black female marriages are to white men. Black men and women are equally unlikely to marry Asians.

In 1880, approximately 1 percent of Asian men intermarried with whites. Rather than increase monotonically over time, Panel C of Figure 1 shows that the share of Asian men intermarrying with whites rises until 1940 and then decreases. Asian females exhibit the opposite pattern, showing dramatic increases in intermarriage with whites until 1980 and then a slow decrease. Until 1960, Asian men were more likely than Asian women to intermarry with whites. By the 2000 census, however, this trend had reversed. Asian women are almost twice as likely to marry a white person as Asian men.

In our sample, Asians comprise 1.4 percent, blacks 11.3 percent, and whites the remainder.[3] It is quite remarkable, in a purely statistical sense, that white males and Asian females are the most prevalent interracial marriage. However, the fact that black–Asian intermarriage occurs so rarely could theoretically be due to their relatively small shares of the population, and need not imply negative preferences for one another—later we explore this possibility—but unadjusted means of interracial marriages need to be interpreted with care.

Figures 1 calculates intermarriage rates relative to all married people. However, the propensity of racial groups to marry has fluctuated substantially over time (as Stevenson and Wolfers discuss in this issue). If rates of intermarriage are divided by all people, not just by individuals who are married, some different patterns emerge.

Overall marriage rates have declined in recent decades. For instance, between 1962 and 2004 the marriage rate for black women has declined steadily from 62 to 36 percent (based on author's calculations using the Current Population Survey). Marriage rates among whites have decreased from 84 to 64 percent.

If rates of intermarriage are divided by all people, then white men and white women show essentially similar trends as in Panel A of Figure 1; a low level of intermarriage until 1960—typically less than .05 percent—followed by a sharp increase in all categories of miscegenation.[4] By 2000, 0.4 percent of white men had married an Asian female and 0.1 percent had married a black female, while .2

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[3] When one restricts the sample to only native-born persons, these numbers become 0.57 and 12.11 percent for Asians and blacks, respectively.

[4] Figures showing these patterns are available in the on-line appendix that accompanies this paper at ⟨http://www.e-jep.org⟩.

percent of white women had married a black male and 0.15 percent had married an Asian male. Asians and blacks also exhibit remarkably similar time-series patterns to that displayed in Figures 1B and 1C, though the magnitudes are substantially smaller because the denominator contains all persons rather than only married persons.

Adjusting for Relative Supply

The relative supply of each racial group will affect its intermarriage rate. For example, Asians will be likely to have higher rates of intermarriage because they make up only 1.4 percent of the sample—and thus Asians live in a population where 98.6 percent of the marriage prospects are non-Asian. Whites, at the other extreme, make up 87.3 percent of the sample, which means that they live in a population where only 12.7 percent of their marriage prospects are nonwhite.

There are several ways to adjust the trends of interracial marriage for the relative population of each racial group. One straightforward way is to weight each rate by the relative populations of the two groups. Thus, if there are twice as many blacks as Asians and the raw intermarriage rate of whites to the two groups is the same, then the adjusted Asian rate would be twice the adjusted black rate. As such, the numbers can be interpreted as the intermarriage rates that would obtain if the population shares were equal and each person still had the same chance of intermarrying as they did in the original population.

Adjusting in this way provides a different portrait of interracial marriage. Among whites, the proclivity to marry Asians increases even more due to the small numbers of Asians in the population. Black men become most likely to marry Asian women, not white women! This is in stark contrast to Figure 1 and many popular perceptions of interracial pairings. Black male–white female and black female–Asian male matches occur with roughly the same frequency. Unions between black women and white men become the least likely combination, given the population weights of the two groups. Asian women marry outside their race significantly more than Asian men—with rates roughly equal between white and black men. When Asian men marry outside the race, it is typically with white women.

Another way to look at the importance of supply in interracial marriage is to consider the importance of immigration policies as an important supply-side component. The decline in Asian intermarriage over the last 20 years shown in Panel C of Figure 1 vanishes if one looks solely at native-born pairings. If one looks only at Asian intermarriage for individuals born in the United States, marriage patterns look strikingly similar to that of blacks and whites—constant until 1960 and a significant increase thereafter.[5]

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[5] In my data, the Asian time series for domestically born intermarriage appears to have a major spike in 1930. The cause of this spike is the very small sample size of the available Census data in 1930. There are very few domestic Asian pairings before 1960, and the 1930 sample is smaller than usual. Thus it is very easy for sampling noise to become visible in the overall rate calculated.

Intermarriage by Education Level

There seems to be some conventional wisdom that interracial marriages are concentrated among those with lower levels of education. But while this claim used to be true several decades ago, the pattern has reversed itself. Interracial marriages are now more concentrated among those with higher levels of education.

For this analysis, I divide education level into four categories: high school dropout (less than 12 years of education), high school degree, some college (enrolled in college but not graduated), and college degree or more. Individuals without valid educational attainment responses were dropped from the sample. The analysis is also limited to the period between 1940 and 2000, because detailed data on educational attainment are only available in the Census after 1940. (Before 1940, the census only asks whether or not a person is literate, not their educational attainment.)[6]

From 1940–1960, whites with less than a high school level of education were the most likely to intermarry, at a rate of about 0.1 percent of all marriages, while intermarriage among higher-educated groups was essentially zero. In the 1960s and 1970s, whites with higher education levels begin to show a marked increase in miscegenation rates while intermarriage rates among the least-educated tailed off just a bit. In 2000, white men with some college education or more than a college education had an intermarriage rates above .4 percent, and white women in these education categories had intermarriage rates above .25 percent.

The pattern for Asians is similar to that of whites. From 1940 to 1960, about 8–12 percent of the marriages of Asian men with less than a high school education were outside the race. For Asian men with higher levels of education, the rate of intermarriage was typically 1–2 percent in these years. But the rate of intermarriage for low-educated Asian men has since plummeted to 1 percent in 1990 and almost zero by 2000, while the rate of intermarriage for Asian men with college education or more had risen above 4 percent by 1980. Asian women show a similar pattern, although the timing is a little different. Asian women of all education levels are very unlikely to intermarry in 1940, with all education levels having intermarriage rates under 2 percent. But from 1950 to 1980, Asian women with a high school education or less were more likely to intermarry than those with more education, at rates of 8–10 percent. But by 2000, intermarriage rates for Asian women with less than a high school education had dropped again, to 2 percent, while intermarriage rates for Asian women with a college education or more had risen to 8 percent.

Blacks follow this same general pattern, with a twist. Between 1940 and 1960, the least educated blacks were the most likely to intermarry, with intermarriage rates typically between 0.6 and 1.0 percent of all marriages. But during the 1960s and 1970s, the prevalence of intermarriage rates among this education group changed little, while those with more education increased intermarriage rates. By 2000, blacks with some college education were the most likely to intermarry, with

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[6] Figures that illustrate the points made in this discussion are available in the on-line appendix with this paper at ⟨http://www.e-jep.org⟩.

an intermarriage rate of 2.5 percent for black men and 1.1 percent for black women (who are generally less likely to intermarry than black men). However, blacks are also much less likely than whites or Asians to possess a college or higher-level degree. Adjusting for the relative numbers of individuals in each educational category, more educated blacks experience a sharper increase in their intermarriage rates than their less-educated counterparts. With this adjustment, the patterns of racial intermarriage by level of education are strikingly similar across all racial groups.

Military Service and Intermarriage

Soldiers are forced to interact and trust individuals of various ethnic and racial groups; the price for not doing so can be large. Romano (2003) provides a detailed historical description of interracial mixing in America since World War I, emphasizing the role of the military and of war in shaping preferences towards interracial marriage. To date, there has been no statistical analysis of members of the military versus civilians in the proclivity to intermarry. The data collected for this paper show that while military service seems to have had little effect on rates of intermarriage from 1940 to 1960, black and white veterans have had higher rates of intermarriage than nonveterans since then.

From 1940 to 1960, white veterans and nonveterans had very similar rates of racial intermarriage at 0.1–0.2 percent. As rates of intermarriage rise, the rate of intermarriage for white veterans rose faster than for nonveterans. By 2000, the intermarriage rate of white veterans was 1.3 percent versus a rate of 0.9 percent for nonveterans. Similarly, black veterans and nonveterans have very similar rates of intermarriage from 1940 to 1960, at about 1 percent. But as rates of racial intermarriage rise for both groups, the increase is faster for black veterans. By 2000, black veterans had an intermarriage rate of 6.9 percent, compared to 4.3 percent for black nonveterans.

In this area, Asians do not follow a similar pattern to blacks or whites. From 1940 to 1970, the intermarriage rate for Asian veterans was similar to that of nonveterans in the range of 10–15 percent. However, when rates of intermarriage increased for both groups in the 1970s, the rate for Asian nonveterans increased more quickly. By 2000, the racial intermarriage rate was 35 percent for nonveteran Asians versus only 24 percent of veteran Asians.[7]

With the current data, it is impossible to distinguish between selection (indi-

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[7] It is possible to break these time series out further by gender. Since substantial numbers of veteran females appear starting only in 1980, it is harder to analyze their trends over time. Female trends between 1980 and 2000 do not differ significantly from the trends described above. However, the vast majority of all veterans in the sample are male. I also calculate the time series of intermarriage rates for different categories of veterans by looking at veterans of major wars versus veterans who did not serve in a major war (World War I, World War II, Korean War, or Vietnam War). In general, non–war veterans appear to have slightly higher intermarriage rates. However, this pattern is almost certainly because the bulk of the non–war veterans appear in the last 20 years of the sample, when intermarriage rates in general were much higher.

viduals who enter the military are those who would be more inclined to intermarry) and treatment (the military experience cultivates a demand for interracial intimacy). The latter possibility is bolstered by the fact that the time-series variation fits with historical data on the integration of military units (MacGregor, 1985). The Armed Forces were fully segregated through World War II. President Harry Truman ordered an end to racial segregation in the late 1940s, and racially integrated units started during the Korean War. The trend has continued since. The military is currently believed to be as racially integrated as any U.S. institution, although blacks may still lag in officer representation, especially at the highest ranks (MacGregor, 1985).

Across Regions and States

Intermarriage rates can vary across geographical regions and historical legal climates—which to some extent overlap.

For a regional breakdown, I split the data into five geographical regions: South, North, Midwest, Mountain West, and Pacific West. I also focused here on intermarriage rates for native-born whites and blacks to limit the impact of recent immigrants; Asians were omitted because there were very few interracial pairings for domestic-born Asians in the early part of the sample. Between 1880 and 1960, white intermarriage rates are quite low across all regions—under .05 percent—and no region consistently has a higher or lower rate than the others. This finding is quite surprising, given the perception that racial attitudes towards blacks differed substantially by region (Litwack, 1961).

Starting in 1960, intermarriage rates for all regions begin to increase dramatically, and in this later part of the sample, major regional differences become discernable. The Pacific West has the highest intermarriage rate for whites throughout this period, and as time goes on, the gap between it and the other regions widens. By 2000, the rate for the Pacific West exceeded 1 percent, while the next highest region, the Mountain West, at 0.47 percent had a rate less than half that. In turn, the Mountain West has higher intermarriage rates than the remaining regions through the period 1960–2000, although it diverges less than does the Pacific region. Finally, the rates of the South, Northeast, and Midwest generally follow each other closely, though the South has a consistently higher rate than the Northeast, which in turn consistently exceeds the Midwest. Segregation patterns, another measure of social intimacy, follow similar patterns across regions (Echenique and Fryer, forthcoming). Accounting for the share of each racial group within each region does not explain the differences.

One can further partition the data by the historical legal climate concerning miscegenation. To do this, I partition states into three groups: "never" states, those that never contained antimiscegenation laws (the first column of Table 1); "voluntary" states, those that eliminated such laws of their own accord (the second and third columns of Table 1); and "forced" states, those that were forced to eliminate antimiscegenation due to the Supreme Court decision in *Loving v. Virginia* (the last column of Table 1). Adjusting for relative numbers of blacks in the population in

each of these three categories of states, over the course of the entire sample, intermarriage rates were higher for blacks in states that either did not have antimiscegenation laws or that voluntarily repealed such laws. Both men and women show a decrease in their intermarriage rates between 1880 and 1930 in "voluntary" and "never" states, while the rates for "forced" states are relatively constant throughout this period. Both time trends also show a brief spike for "voluntary" states and "never" states in 1940 followed by a gradual decline until 1960. All three categories sharply increase from 1960–2000. Throughout the sample, voluntary-repeal states have higher intermarriage rates than forced-to-repeal states, though the two follow each other rather closely.

Can Shifting Social and Economic Status Explain Patterns of Interracial Marriage?

The types of individuals who choose to intermarry have changed over the twentieth century; for example, intermarriage has shifted from being primarily a phenomenon of the less-educated to being primarily a phenomenon of the more-educated. Moreover, the social and economic status of racial groups has shifted over time. These kinds of changes can potentially explain some of the patterns in the data. Thus, it is useful to explore the extent to which differences in patterns of interracial marriage can be explained by factors like age, education, income, veteran status, and location.

The previous analyses demonstrate that the types of individuals who choose to intermarry have changed over the twentieth century. This, coupled with the shifting social and economic status of racial groups, can potentially explain some of the patterns in the data. For instance, if residential location at birth becomes an important predictor of intermarriage and Asians are more likely than blacks to be born in close proximity to whites, this factor could partially explain why whites intermarry with Asians more than blacks.

To understand this more formally, I decompose the share of the difference in the trends of interracial marriage between blacks and Asians (to explain why white men marry Asian women more than black women, for example) that are attributable to (plausibly) exogenous characteristics such as age, birthplace, residential location, education, and veteran status.

Put differently, I am interested in testing whether white males marry Asian females at higher rates than black females because they are objectively "better" mates (more highly educated, for example) or whether the white males are using asymmetric standards to choose a mate.

Oaxaca (1973) provides a straightforward way of calculating such decompositions. The key idea involves estimating race-specific regression equations to glean weights placed on various characteristics of mates for each potential racial match. Since there are significant differences in the propensity of different genders within a racial group to intermarry, I also look at each gender combination. Thus, the differences I decompose compare men of one racial group against men of another

racial group, and likewise for women. In symbols, I estimate the following equation for each race/gender combination within each census year:

$$Intermarriage_{ijt} = \alpha_t + X\beta_t + \varepsilon_{ijt},$$

where X is a vector of relevant covariates such as age, education, income, veteran status, and location.

A skeletal outline of the implementation of the decompositions is as follows: For each pairing of interest, like black men versus white men, I compute the difference in their mean intermarriage rates. Since ordinary least squares estimated equations hold exactly for the sample means, I find the share of this difference unexplained by the differences in the mean characteristics in X by calculating the differences in the estimated coefficients multiplied by the mean of X for one of the groups and then dividing by the mean difference in intermarriage rates. The share of the difference remaining is then the share explained by the difference in mean values of X between the two groups.

The interpretation of a share between one and zero is straightforward; it represents the share of the difference in mean intermarriage rates explained by the different mean characteristics of the two groups. A value exceeding one means that based solely on their mean characteristics, one would expect a larger gap than in fact exists. Negative coefficients can be interpreted similarly, except that a negative value implies that the mean characteristics of the two groups predict a gap in the opposite direction. For example, a share explained of –3 means that based solely on group characteristics, one would expect a gap three times as large and in the opposite direction from what is found in the data.

Table 2 presents a series of results from the decompositions for each census year between 1940 and 2000.[8] The six rows of the table compare patterns of interracial marriage for white and black men, white and Asian men, Asian and black men, white and black women, white and Asian women, and Asian and black women. One overall conclusion from this analysis is that the measured characteristics used here are often not very helpful in explaining differences in interracial marriage across these groups. In only two of the comparisons—white and Asian men, and white and black women—are the scores mostly positive. For example, in 2000, I estimate that 55 percent of the gap in Asian/white male intermarriage is due to the differences in their mean characteristics. Asian men are predicted to intermarry more than white men because they are more educated, professional, and wealthy and are concentrated in the Pacific West and Northeast, all variables positively associated with intermarriage. Similarly, I estimate that 51.9 percent of the gap in interracial marriage between white and black women is explainable by measured factors in 2000. However, even some of the positive scores are highly variable, which suggests either that the determinants of interracial marriage fluc-

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[8] For readers interested in the details of such decompositions, see Oaxaca (1973).

Table 2

Decomposition of Differences in Intermarriage Rates for Different Race/Gender Groups

(share of difference explained by different group characteristics)

Men	1940	1950	1960	1970	1980	1990	2000
White/black	0.047	−0.880	−3.180	−1.436	−0.758	−0.583	−0.555
White/Asian	−0.378	−0.658	0.345	0.427	0.403	0.483	0.553
Asian/black	−5.903	−4.767	0.365	−0.030	−0.802	−1.498	−1.396
Women							
White/black	0.289	0.289	0.006	0.421	0.757	0.393	0.519
White/Asian	0.495	0.341	0.050	−0.127	−0.179	−0.314	−0.417
Asian/black	−0.960	−2.052	−2.285	−1.080	−2.081	−2.676	−4.346

Source: Data are from Census Public-Use Micro Sample, 1940–2000.
Notes: The table compares patterns of interracial marriage for white and black men; white and Asian men; Asian and black men; white and black women; white and Asian women; and Asian and black women. Results reported are the share explained from Oaxaca decompositions. For readers interested in the details of such decompositions, see Oaxaca (1973). All regressions included covariates for age, education, income, veteran status, and location. Dummies for missing values were included. Log files for the regression analysis that underlies the Oaxaca decompositions are available on the author's website at ⟨http://www.economics.harvard.edu/faculty/fryer/fryer.html⟩.

tuate a great deal, or that the estimates are being influenced by other unmeasured factors such as the supply of different marriageable partners within each race/gender group.

For most of the comparisons, the scores are negative, suggesting that the differences in mean characteristics predict a gap in interracial marriage in the opposite direction from the one which actually exists. For example, black men intermarry more than white men, but according to measured characteristics, it should be the other way around (and with a spike around 1960). White men have greater professional status, education, and income, all of which predict that white men will intermarry more than black men. Similarly, geographic variables such as Pacific West also predict more white intermarriage than black. For the gap between white and Asian women, measured characteristics explain some of the difference in interracial marriage in 1940 and 1950, but then the share explained steadily decreases and turns negative. The Asian/black time series for women is rather variable, and always negative. In this case, for Asian women, higher income and living in the Northeast are positively associated with intermarriage, while these factors are negatively related to intermarriage among black women.

Overall, the effectiveness of the set of (plausibly) exogenous covariates in explaining racial differences in interracial marriage varies significantly from year to year and racial group to racial group. Changing group characteristics do little to explain the observed time trends in interracial marriages among any of the groups under study except perhaps for Asian and white men in the years 1960–2000 or for white and black women. In short, one clearly needs to look at more than group

characteristics to account for the differences in interracial marriage across race and gender groups that are found in the data.

Fitting Theories of the Family to Facts about Interracial Marriage

A number of facts emerged from the analyses in the preceding sections. White male–Asian female marriages are the most common interracial marriage, comprising 20 percent of all Asian female marriages and 35 percent for domestic-born Asian women. White female–black male is the second most common pairing, constituting 6 percent of black male marriages. Asian–black marriages are virtually nonexistent. Adjusting for the relative supply of each racial group in the population provides a different portrait of interracial marriage—particularly for intermarriage with Asians whose small numbers can make the raw calculations deceiving. Intermarriage rates differ substantially by education, geographic considerations, and veteran status. The most striking patterns are those concerning the reversal in the role of education in intermarriage. In the middle of the twentieth century, the least educated were more likely to be in an interracial marriage, but by the end of the century, the most educated were the most likely to intermarry.

In this section, we investigate the extent to which three theories of interracial marriage can account for this rich set of facts. The first theory is the most well known in sociology: social exchange theory (Merton, 1941). The remaining two are economic models: a search model and a Becker-style marriage-market model (Becker, 1973).

Social Exchange Theories

The leading theory in sociology for explaining intermarriage between racial groups is social exchange theory. This approach was originally laid out in Merton (1941); Blau (1964) and Kalmijn (1993) offer some interesting extensions of the basic model. The ideas are similar to some models of hedonic pricing in economics (Rosen, 1974).

Let individuals be represented by a vector of characteristics: attractiveness, sense of humor, height, weight, race, gender, family wealth, criminal record, and so on. Suppose the value of a person in a marriage market depends on that person's objective value, given a person's vector of characteristics, and the societal cost of marrying an individual with such characteristics. Further, assume that all else equal, marrying across racial lines is a cost.

The predictions of the social exchange theory are clear. For whites, given they are believed to be on top of the social hierarchy, interracial marriage will always come at a social cost, though interracial marriage with whites is a benefit to other groups. In equilibrium, then, whites must be compensated for their higher social status by intermarrying with racial minorities who possess more redeeming qualities. In minority–white marriages, the minorities will have superior objective characteristics—like being more attractive or intelligent—than their white mates. Thus,

the social exchange model refers to a trade between objective characteristics and social status.

Social exchange theory is successful at capturing some elements of the data. For example, if one assumes that the societal cost of intermarriage fell sharply during the 1960s, then one can explain the increase in miscegenation after that time. If one further assumes that the societal cost of marrying Asians differs (in specific ways) from intermarrying with blacks, the relative magnitudes of Asian and black intermarriage with whites can be obtained. Further, a more general model of social exchange in which societal costs of interracial marriage decrease as objective value increases picks up further subtleties in the data.

However, this theory fails to explain the characteristics of who marries whom in interracial unions, which is really the key prediction. If anything, the average education of blacks who chose to intermarry is less than the average education of those who intramarry (despite the fact that higher-educated blacks are the most likely to intermarry—they are outnumbered by blacks with less education). This is a direct contradiction of the theory.

Search/Interaction Models

A search/interaction marriage model, like the one developed in Adachi (2003), contains no own-race preference for mates embedded in the model. Instead, interracial marriages arise in this model due only to interaction with members of other groups. In this kind of model, in each period a single man (or woman) randomly meets a single woman (or man), whose type is a random draw from the distribution of types. The paired agents discover the partner's type upon meeting, and each agent decides whether to mate with the partner or not. They will mate if both agree, which means that for each agent, the prospect of marriage with the current potential partner exceeds some reservation level of utility. If at least one does not agree to mate, they separate, forget about the other agent's identity, and look for other partners in the next period. Adachi also imposes conditions like no side payments and no bargaining over the terms of marriage. Also, all single men and women are assumed to be risk neutral, have a common discount factor, and maximize their expected utilities. A profile of reservation utilities for men and women constitutes a market equilibrium if men and women maximize their expected utility.

A model of this sort makes a number of predictions about interracial marriage. Holding all else constant, increasing the mean value of members of a certain minority group yields increased interracial marriage. Fixing the mean and increasing the variability (more extremes) also increases miscegenation, as agents will ignore those that are below their reservation value and mate with those above. The model also predicts that lower frequency of interaction with minority groups and higher societal costs of intermixing both decrease intermarriage between whites and minorities.

I attempted several simulations of a simplified random matching model along these lines. Of course, random matching is a stretch of the imagination, but it is

much more tractable, and absent a model of how one chooses a mate, I assume random matching among the set of mates who exceed a person's reservation value.

To begin, I looked at the characteristics of people who choose to marry according to gender, age, and education, without consideration of race. I then looked at the proportion of people in each race categorized by gender and education, and made a forecast of how much interracial marriage would occur if potential marriage partners met at random and accepted the first person—regardless of race—who met their reservation standard of age, education, and geographic location.[9] This simulated level of interracial marriage can then be compared to the actual levels.

The main simulation used data from 17 cities, selected primarily because they have consistent data from 1940 onwards (although data is lacking for the 1960–1970 period), and because they represent the smallest geographic division with which one can perform detailed analysis. These cities are not necessarily representative of the United States and were chosen solely because of the availability of data. Fortunately, these 17 cities include many of the largest U.S. cities: New York, Los Angeles, Chicago, Boston, Philadelphia, and Washington D.C. are all present. For robustness, I estimated similar simulations on state-level and on census-tract-level data, and similar results were obtained from all the simulations. This step is important because data are incomplete, and this robustness check alters the level of geographic aggregation.

Without delving into the specifics, the results of such simulations don't come anywhere close to matching the actual data on interracial marriage. In terms of magnitudes, the simulated rates of racial intermarriage are large relative to the actual rates; often the predicted rate is orders of magnitude higher. That is, if people were equally likely to marry two people of different races but with the same age, education, and geographic location, then we would see far more racial intermarriage than we actually do. In terms of time trends, such simulations fail to capture, for example, the rise in actual white intermarriage with blacks from 1980 to 1990. According to the simulations, if people were equally likely to marry two

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[9] The simulation had seven steps: First, I estimated for each year an empirical distribution over types of people who choose to marry by calculating for each gender/age/educational category the number of such people who have spouses in each age/educational category. Second, for each age/educational combination, I find the weight placed on that combination as a potential spouse by each gender/age/educational group by dividing the number of such pairings by the total number of marriages for the gender/age/education category. Third, I find the number of people in each race who are in each age/education category and multiply this by the weight found in the previous step, which gives the expected number of pairings between people in each race/age/education group and people in each of the other gender/age/educational groups. Fourth, for each gender/age/educational category, I find the share who are in each race, which allows one to calculate the expected number of pairings for each race, age, and educational combination of spouses. Fifth, summing these expected pairings over age, education, and gender, I find the total number of expected pairings between any two racial groups. Sixth, to determine intermarriage rates between two races, I sum these expected numbers across different cities (for a given year), weighting by city population. Seventh, dividing these totals by the total number of marriages for the relevant race allows me to calculate the simulated intermarriage rates for each race.

people of different races but with the same age and education, then we should have observed a fall in black intermarriage with whites in the 1980s. The simulations also fail to capture the flat to increasing intermarriage rates of whites and Asians in recent decades; instead, the simulated intermarriage rates of Asians and blacks to whites fall monotonically from 1940 to 2000.

Thus, a search/interaction model of interracial marriage based on random matching within marriageable partners appears to overpredict greatly the level of interracial marriage compared to what actually occurs, and also fails to capture trends over time in interracial marriage.

Equilibrium Sorting and the Market for Marriage

In his seminal work on the economic approach to understanding marriage, Becker (1973) posited a theory of marriage that depended on household production. With this basic intuition, he went on to analyze marriage markets and derived conditions for optimal sortings, which provided conditions for when likes and non-likes mate. Becker's foundational theory has been extended in many directions, but here, I take a basic version of the theory and explicate what assumptions are needed to explain the facts thus far.

Consider the marriage decision between women and men each deciding whom to marry among numerous potential mates. For simplicity, assume that all individuals prefer to be married relative to remaining single. All household commodities that are to be produced in a marriage are assumed to be combined into a single aggregate output, and these commodities include quality and quantity of children, prestige and social standing, companionship, love, and the like. In this setting, each household has a production function for its overall aggregate output which is made up of three different categories of inputs: inputs bought in the market, for which income must be earned; inputs produced directly with the time of household members; and "environmental" variables such as societal attitudes of interracial marriages or its views on the children of such marriages. Individuals also face exogenous constraints like their market wage, their time, and their property income.

In this framework, a marriage will occur when the total output for two people from being married exceeds the sum of their utility from remaining single. Each individual is assumed to be able to calculate the output that results from any combination of man and woman in the marriage market. The sorting that maximizes the total output over all marriages is the equilibrium allocation of the marriage market. The equilibrium of this market (identical to the concept of "core" in cooperative game theory) has the property that no two unmarried persons can marry and make one better off without making the other worse off.

To relate the model back to the data, consider the optimal sorting of individuals in a marriage market when men and women differ in observable traits like race, education, and other characteristics. From Becker's foundational theory we know that a key issue is whether traits are substitutes or complements in household production. If traits are substitutes, then people will tend to marry those with traits

unlike themselves, called "negative assortative mating." If traits are complements, then people will tend to marry those with traits like themselves, called "positive assortative mating."

For simplicity, consider a derivative of the model in which individuals can only differ on two traits: black or white race and high or low human capital. In this setting, it is straightforward to show (under mild assumptions about the relative numbers of each type and assuming a cost of interracial marriage) that if race is more of a cost to household output than low education, the marriage market will segregate on race. Essentially, those with high human capital will have their pick of a spouse within their racial group. If the cost of race is less important than education, then one gets interracial mixing and positive assortative matching on education. Marriages within race will be more prevalent, because there is still a mild cost of intermarriage, but individuals of all racial groups who choose to intermarry will be more highly educated. These predictions fit the facts observed in the cross-sectional data.

To capture the time series patterns, one needs to assume that between 1880 and 1960, race was the most important attribute in a marriage market for all racial groups. This assumption is plausible enough: after all, interracial marriage during this time was illegal in many states and possessed enormous social costs in others. Even in states without bans on interracial marriage, marriages across racial lines were extremely rare. During the social transformation of America in the 1960s, blind racism began to decrease and other attributes of a mate became more important, causing the increase in interracial marriage. Finally, if one assumes that marriage to Asians is less costly socially than marriage to blacks, one produces the differences in magnitudes of interracial marriages across racial groups along with the trends.

In summary, although the evidence in favor of the marriage market model is far from overwhelming, it is the only theory examined which does not yield predictions that are directly at odds with the observed patterns in the data. However, the basic facts and models discussed here only scratch the surface of understanding of the importance of interracial intimacy. The next steps involve understanding its causes and consequences: that is, what affects interracial intimacy and what interracial intimacy affects. This path may take us a long way toward a better understanding of the subtle racial dynamics at play in our society.

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