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Does identity affect intermarriage decision? Evidence from NLSY*

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Abstract

The marriage gap between black and white Americans has widened since 1950s. Black women are less than half as likely to marry than white women, across all education and income levels. In 2012, nearly 50% of black women in the age group 25-50 have never been married whereas only 20% of white women in that same age group have never married. It has been hypothesized in the literature that sex-ratio imbalance of African American is the major culprit of the phenomenon due to high incarceration rate of black males, however, this explanation is only partial. We pay particular attention to the fact that black female is also the least likely group to form interracial marriage, which has not been paid much attention in the literature. In 2010, only 9% of black females married someone outside of own race, whereas the number is 36% and 26% for Asian and Hispanic women, respectively. Building on the framework of [Akerlof and Kranton \(2000\)](#)'s identity model, we empirically test the role of identity, a sense of self, in black females' decision to intermarry. Two identification strategies are used to test the hypothesis of identity effects: i) fathers' region of origin, which was categorized according to the timeline of each states decision to repeal anti-miscegenation laws, was used as a proxy for identity. ii) third-generation migrants were used as a proxy for identity under the assumption that a lag exists between assimilation to the host culture and one's identity. The results of the empirical analysis using NLSY data indicate significant effect of identity on black female's inter-marriage decision, which take a partial role in the current diverging marriage gap in U.S.

JEL Classification: J11, J12

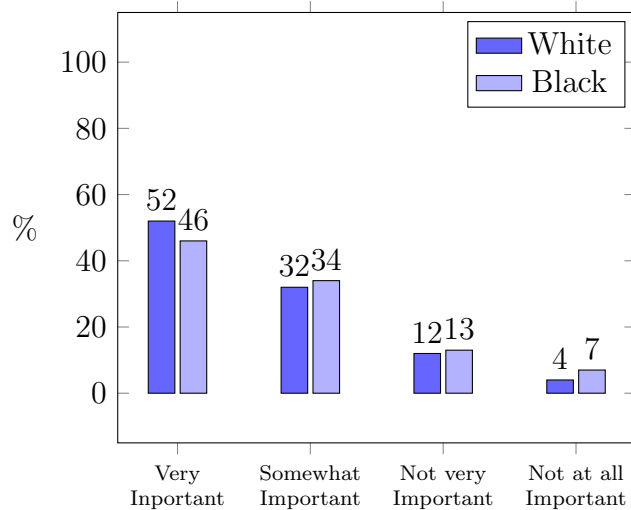
Key Words: Black and White Marriage Gap, Identity Model

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1 Introduction

In the U.S., the marriage rate has declined over the last 60 years for all demographic groups and is at a historic low. Notably, this trend has impacted a particular segment of the population the most: black women. Despite young African-Americans valuing marriage as much as other racial groups, as shown in Figure 1, the marriage gap between black and white females has widened at a larger rate than for other groups. The trends in the diverging marriage gap can be a source of various social

Figure 1: “How important is it to you to be married someday?” (% by Race)



Source: National Longitudinal Study of Adolescent Health, Wave 3, 2001-2002

problems, especially regarding child well-being. According to the 2012 National Vital Statistics Birth Datafiles (Martin et al., 2013), seven-in-ten African-American first-born babies are born to unmarried parents, while the number is three-in-ten for white babies. Children born out of wedlock are at a relative disadvantage, on average, due to limited resources in single parent households compared to dual-headed households. The statistical evidence shows that children born outside of marriage have higher risks of having a low birth-weight, being born prematurely, and dying as an infant. They are also more likely to be in unstable family situations, perform poorly in school, and experience emotional problems as a child (Hymowitz et al., 2013; Liu and Heiland, 2012). Also, female-headed household, especially black female, are economically worse off than the male-headed household (Darity and Myers, 1984). Various accounts of the cause of low marriage rate among African-Americans have been proposed such as a lack of “marriageable” black men (Darity and

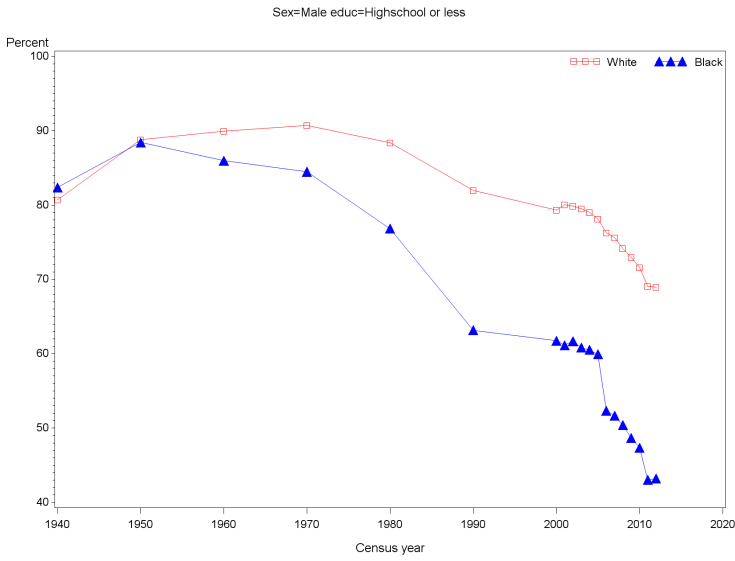
Myers, 1984; Wilson and Neckerman, 1986; Brien, 1997), stemming from relatively low education and economic status of black men compared to black women. Additionally, black men experience high incarceration rates during their prime marrying ages (Charles and Luoh, 2010). Standard economic theory of marriage (Becker, 1991), would predict that the shortage of marriageable black men reduces the gains from marriage accruing to black women as it shifts bargaining power to the black males who remain in the marriage market. This vicious cycle may contribute to the trends extracted from Census data shown in Figure 2, which shows a consistent divergence of black and white women marriage rates over the entire educational spectrum.¹ However, these explanations are empirically found to be insufficient in accounting for the widening racial gap in marriage (Seitz, 2009; Wood, 1995). What has given less attention is the literature is the particularly low incidence of black females' crossing racial lines in marriage. Only 9% of black females among those who get married in 2010 marry outside of their race, whereas the number is 36% and 26% for Asian and Hispanic females, respectively (Paul et al., 2012). A research by Fryer (2007) showed from Oaxaca decomposition that, when accounting for the observed group characteristics such as age, education, income and location, it would be expected that the difference in intermarriage rate between black and Asian female should be 4.3 times greater for black females than the observed gap in the data. He notes that the observed characteristics does not well explain the differential gaps in intermarriage rate across the races. This paper asks the following question: does identity, as defined by Akerlof and Kranton (2000), help explain the black females low rate of intermarriage? The concept of identity, which can be generally defined as the internalized social norms that affects the individuals decisions, was first introduced to Economics by Akerlof and Kranton (2000) to explain various social phenomena such as gender discrimination in labour market, household division of labor, poverty, educational outcomes. As noted by Akerlof and Kranton (2005), the fundamental difference between standard economic theory and identity model is that identity-based model assumes preference is a relative concept whereas the standard economic theory views it as absolute. In other words, utility maximizing behaviours of individuals in standard economic theory is dependent (i.e. choice of decision can vary), in identity model, on the contingent values

¹Although the recent popularity of co-habitation as a new institution of union has been documented (Stevenson and Wolfers, 2007), racial differences in cohabitation rates are not large (Goodwin, Mosher and Chandra, 2010). Thus, for the purpose of this paper I only focus on legal marriage.

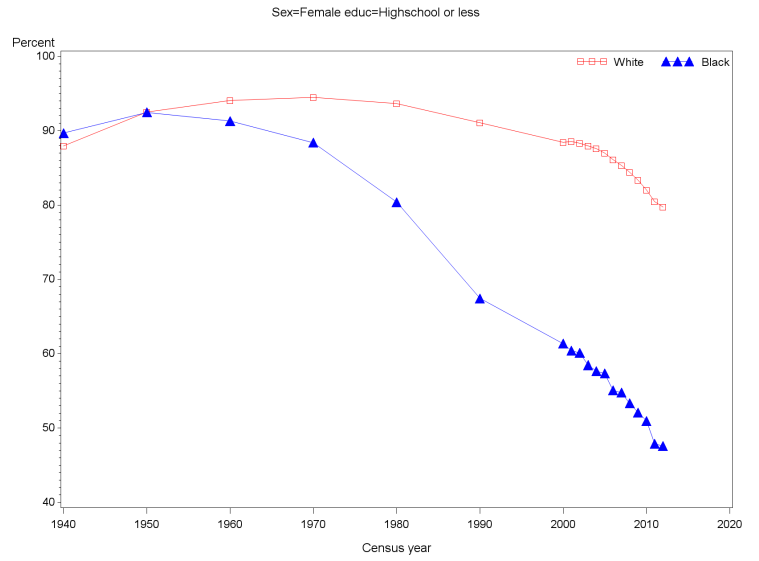
of social situations where the individuals are positioned in.² This study adds value to the current literature as it is a first attempt to explain the intermarriage rate in the lens of identity model, which may be also highly relevant to the diverging marriage gap in U.S., a portion unexplained by conventional neo-classical model. In this paper, I hypothesize that the unexplained intermarriage gap after controlling for socio-economic factors as well as the sex-ratio are due to prescriptions of the society affecting black women's identity. Two identification strategies are used in this paper in order to test the hypothesis of identity effects: i) fathers' region of origin, which was categorized according to the timeline of each states decision to repeal anti-miscegenation laws, was used as a proxy for identity. ii) third-generation migrants were used as a proxy for identity under the assumption that a lag exists between assimilation to the host culture and one's identity.

²For example, using gender category, "man" or "woman", [Akerlof and Kranton \(2000\)](#) show how agents follow behavioral prescriptions that one's community offers to maintain their self-concepts, or identity, violation of the prescriptions evokes anxiety in oneself as well as in others which ultimately affect one's utility function.

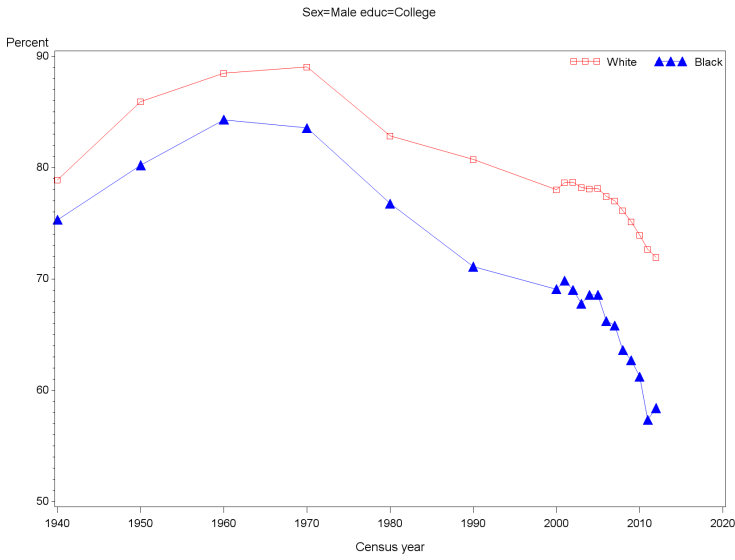
Figure 2: Marriage Rates: by Race, Education and Sex



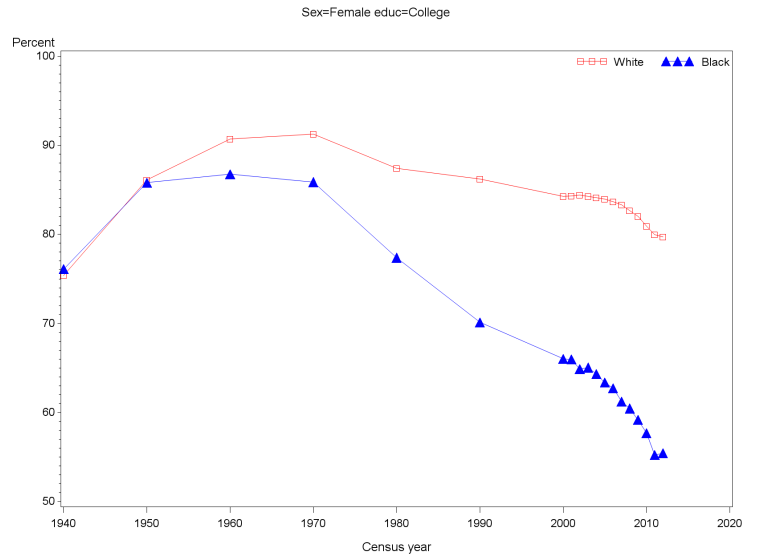
(a) Male with at most high-school education



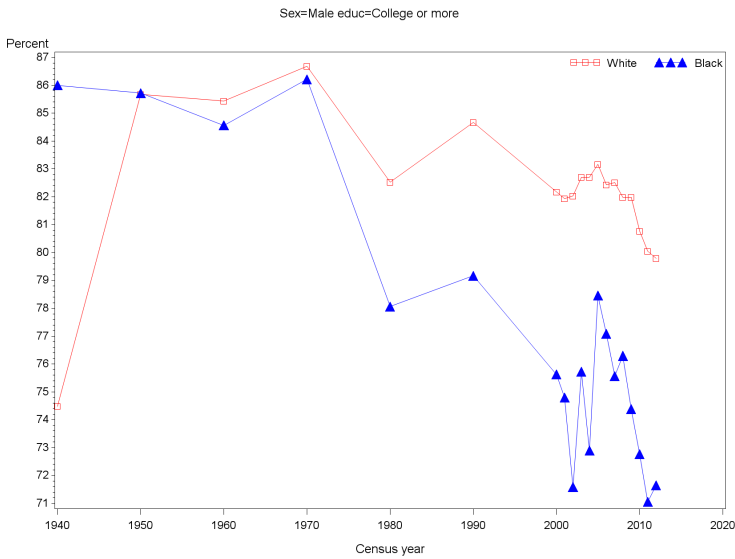
(b) Female with at most high-school education



(c) Male with some college education



(d) Female with some college education



(e) Male with at least college degree



(f) Female with at least college degree

2 Literature Review

The declining marriage rate has been a universal phenomenon in recent decades for all demographic groups. Numerous factors have been studied that have contributed to this phenomenon, some of most important ones include: improvements in labor-saving technology within households (Stevenson and Wolfers, 2007); the invention of birth control pills and legalization of abortion (Akerlof, Yellen and Katz, 1996); increases in female labor force participation and narrowed gender wage differentials; the negative effect of marriage on the lifetime labor-market earnings (Loughran and Zissimopoulos, 2009) and government programs³(Alm and Whittington, 1995). The standard economic theory of marriage (Becker, 1991) predicts the declining trend of marriage incidence over the second-half of the 20th century as the marginal benefits of marriage are reduced as a result of the above mentioned phenomena. However, what standard economic theory of marriage is silent about is the striking racial difference in the marriage rate that has been observed over last decades. It has been documented that the sex-ratio imbalance is a very important factor in explaining this phenomenon (Wilson and Neckerman, 1986; Brien, 1997). However, in her study of black-white marriage gap using an inter-temporal dynamic model, Seitz (2009)’s simulation shows only 19% of the black-white marriage gap for women can be explained by the supply difference in marriageable men. Wood (1995), using 1970 and 1980 SMSA level census data, also finds only 3-4% of the decline in marriage can be explained by the lack of marriageable men. According to Paul et al. (2012), black female is the minority group that are least likely to marry outside of their own race. Using 2010 Census data, the report shows that only 9% of black females married someone outside of their race, whereas the number is 36% for Asian women and 26% for Hispanic women. Given that disproportionately more black females have higher education levels than black males and their high employment rate, it is perplexing to observe that black females are the least likely group to form interracial marriage, especially when there exists a problem of lack of “marriageable black men” in the particular racial marriage market. How can this sharp disparity in intermarriage rate among racial groups be explained? Fryer (2007) argues that “social costs” of inter-marriage for

³see Alm, Dickert-Conlin and Whittington (1999) for a discussion of how government programs such as Earned Income Tax Credit(EITC) and Temporary Aid to Needy Families(TANF), can negatively or positively affect incentive to marry. They note that increasing married couples experience an economic disadvantage in the government programs as a result of income equality between spouses.

Asian females is less than the social cost that black females confront. Another question arises; what determines the social cost that affects the intermarriage behaviour of different racial groups? It is this “social costs” termed by [Fryer \(2007\)](#) that I attempt to test and explore the root of the cause in this paper. It is interesting to note that within Becker’s framework, this observed racial difference in inter-marriage pattern would be interpreted as, relatively speaking, that factors associated with race are more likely to be substitutes in an inter-racial household production function for Asian women whereas they would have to be complements in household production for black women. This explanation is only partial as it fails to provide satisfactory account for the fundamental reasons of observed phenomenon, that is, why would social cost of inter-marriage differ among different racial groups? Strong racial identity has been documented as a factor that influences economic and social outcomes, especially for black Americans. In a study of Ohio high school students, [Ferguson \(2001\)](#) finds that peer pressure is an important factor that affect student educational outcomes. Importantly black students are three times more likely to hold back due to peer pressure than their white counterparts. Moreover, [Ferguson \(2001\)](#) states that it is black identity that is the root cause: “what blacks who make the accusations (towards their peers who take honors or AP courses) find offensive, however, is not academically successful students’ accomplishments or ambitions, but their apparent rejection of black friends (and sometimes black identity) in favor of white ones.” This kind of behaviors that are often observed among minorities are formalized in the work of [Austen-Smith and Fryer \(2005\)](#). Black women’s self-identification has been the focus of extensive study in psychology literature due to the unique experience of black women in the U.S. [Settles \(2006\)](#) states that black women’s identity formation is unique because of their experiences, such as being potential targets of racial and gender discrimination and harassment. In the marriage literature of African-American women, [Banks \(2007\)](#) hypothesizes that it is the greater cultural and political pressure coming from society, which forged the black women as a cultural signifier. This in turn bolsters the post-Jim-Crow impoverished black family during the 60s and 70s, which deters black women from marrying non-blacks. Following [Banks \(2007\)](#)’s and other literature that emphasize importance of identity in determining economic outcomes, we hypothesize that the social pressure that framed black women’s identity is an important factor

that explains the black women’s low intermarriage behaviour which also may contributed the wide racial marriage gap in U.S.

3 Model

It is assumed that the utility function of an agent deliberating whether one is to marry or not depends on the identity of the agent that is exogenously determined by the social category that is assigned to the agent. In other words, an action of agent i who is a utility maximizer can be represented:

$$\mathbf{a}_i = \mathbf{a}_i(\mathbf{c}_i, \omega_i; \mathbf{P}) \quad (1)$$

The agent i ’s choice action depends on social categories, \mathbf{c}_i , one’s innate preference, ω_i and social prescription denoted as \mathbf{P} . Prescriptions \mathbf{P} indicate the set of behaviours deemed to be appropriate to each social category assigned by a society. Examples of social categories are religious affiliation, political orientation, ethnicity and race etc. In our context, the prescriptions to the social categories identify the ideal marriage pattern for each social category and in what ways the union should take place. An agent’s utility function can be represented as (similar to [Akerlof and Kranton \(2002\)](#) and [Benjamin, Choi and Strickland \(2010\)](#)):

$$U_i = -\phi(P)[\mathbf{a}_i - \mathbf{a}_P]^2 - (1 - \phi(P))[\mathbf{a}_i - \mathbf{a}_{\omega_i}]^2 \quad (2)$$

where $1 \geq \phi(P) \geq 0$ denotes the importance of social category in agent i ’s utility calculation represented as a weight. It is assumed that the ϕ is a monotonically increasing function of P , which represents the intensity of the social prescription expected of agent i as a member of social category that agent i belongs to. \mathbf{a}_P is the action prescribed by agent i ’s social category, which can be denoted $\mathbf{a}_P = \mathbf{a}_P(\mathbf{c}_i; \mathbf{P})$ and \mathbf{a}_{ω_i} denotes the agent i ’s marital decision without identity constraints which is an action that agent i would take as in the standard economic model.

When $\phi(P) = 0$, there is no identity constraints and agent i choose to make a decision solely based on one’s own self-contained preference as in standard economic theory. Whereas in the case

when $\phi(P) = 1$, an agent i must obey what is expected of him/her by the society and choose to act exactly the same way as described by the society.

The first-order condition of (1) yields:

$$\frac{\partial U_i}{\partial \mathbf{a}_i} = \mathbf{a}_{\omega_i} - \mathbf{a}_i - \phi(P)\mathbf{a}_{\omega_i} + \phi(P)\mathbf{a}_P \quad (3)$$

This implies agent i 's optimal action is:

$$\mathbf{a}_i = (1 - \phi(P))\mathbf{a}_{\omega_i} + \phi(P)\mathbf{a}_P \quad (4)$$

We can see from equation (4) that the optimal marital action agent i takes is a weighted average of one's desired action free of identity prescriptions and action required by the social category. The optimal action is skewed towards the social prescription as the intensity of prescription increases. For example, when a group idealizes endogamous marriage. Any actions against the prescriptions such as inter-marriage will result in the loss of utility. The magnitude of the loss in utility increases as the social pressure on endogamous marriage in the group, $\phi(P)$ intensifies.

4 Empirical Strategy

4.1 Intergenerational transmission of Identity

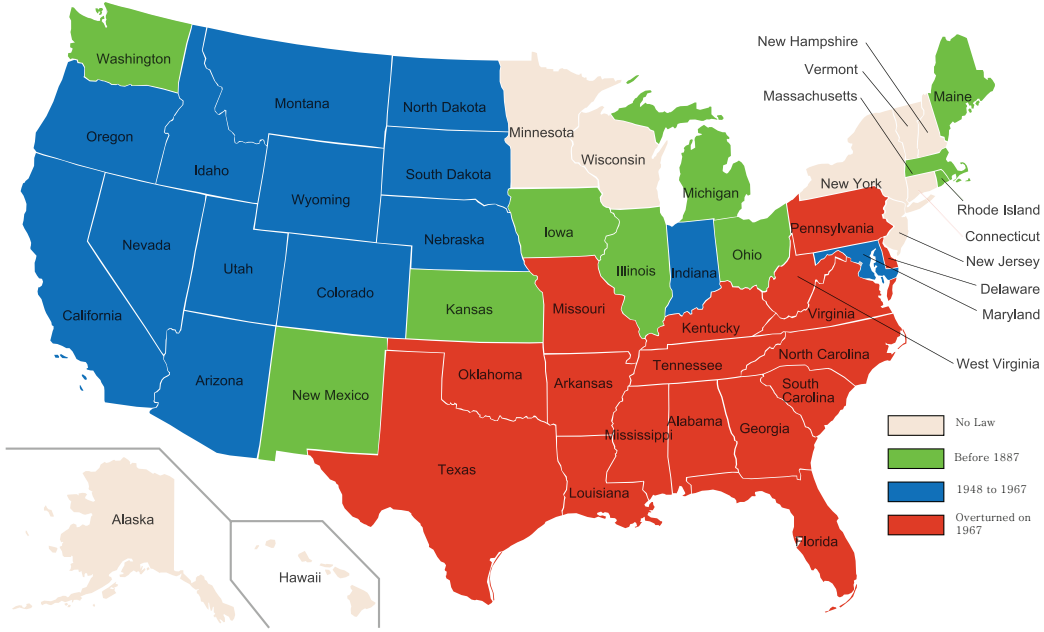
As identity is an unobserved variable and clear identification of identity is close to impossible, a number of assumptions are imposed. I use historical anti-miscegenation law, first introduced in late seventeenth century to enforce racial segregation in marriage, as a possible identification strategy.⁴

The fact that the dates of repeal of anti-miscegenation law vary across the states provides a possible source of variation in social prescription among different group states and opportunity to test the hypothesis of identity theory. It is assumed that the states with longer history of Anti-

⁴A recent study by [Gevrek \(2014\)](#) use anti-miscegenation as exogenous factor in her study of black/white interracial marriage and black Americans geographical distribution.

miscegenation law have stronger social prescription (greater $\phi(P)$) against inter-marriage. Figure 3 shows states that are categorized into four groups according to the period of repeal.

Figure 3: Repeal of Anti-miscegenation Law



The requirement of credible proxy needs to satisfy two conditions (Wooldridge, 2002):

1. The proxy for identity, denoted as \mathbf{p} , needs to satisfy the redundancy condition stated as follows:

$$E(y|\mathbf{X}, Identity, \mathbf{p}) = E(y|\mathbf{X}, Identity) \quad (5)$$

This condition implies that marriage decision, y , is not a function of \mathbf{p} , when identity is controlled for. The major difficulty of satisfying the redundancy condition comes from the inability to clearly distinguish the effect of identity on the marriage decision, as group states as defined above might have state or region specific characteristics that are unobserved, but affects marriage decisions. In order to overcome this challenge, father's birth states categorized into historical anti-miscegenation law is included as a proxy for identity, instead of respondents' birth state category. Also, NLSY97 respondents who still live in the same anti-miscegenation region of father's birth at the time of latest survey in 2011 were excluded from

the analysis in order to avoid possible confounding effects.⁵ In other words, by including only those who were raised in different states than their fathers’ anti-miscegenation region, we eliminate the concern for the biased estimates caused due to unobserved region or state specific characteristics that might affect both marriage behaviour of the respondents and identity. It is assumed that the parents are successful in transferring their obtained “identity” formed during their up-bringing in their home states defined by the anti-miscegenation region to their children who is NLSY97 respondents.⁶ The within family inter-generational transmission of identity and culture in general has been well documented in various social science literature.⁷

2. Second condition of credible proxy is that \mathbf{X} , the vector of observed explanatory factors, is uncorrelated with *Identity*, once \mathbf{p} is controlled for.

$$Identity = \alpha_0 + \alpha_1\mathbf{p} + \sigma \tag{6}$$

$$\text{then } Cov(\mathbf{X}, \sigma) = 0 \tag{7}$$

It is assumed that the error term, σ , is not correlated with \mathbf{X} which is a socio-demographic characteristics in the marriage function. If these two conditions are met, the proxy variable yields consistent estimator of identity.

This empirical strategy is especially suitable for the NLSY97 sample as the respondents’ parents were born in 1960s, in the midst of the period which five million southern-born blacks migrated to the other state in West, Midwest and Northeast.⁸ The migration of blacks reflected in the NLSY datasets can be found in Figure 5. In contrast, the population of white exhibits more steady or gradual changes across the region. The fact that the movement of black population was economically motivated and that the movement was quite drastic and rapid makes randomness

⁵To check robustness, I also try specification with all respondents included in the model. The results are presented in the later section.

⁶see Olivetti, Patacchini and Zenou (2013), as an example that shows parents’ attitude or identity is a crucial factor that form’s child identity.

⁷see Bisin and Verdier (2010)

⁸The mass migration of 5 million African-Americans out of Southern states took place in 1940 - 1970 in search of better economic conditions. This movement is often termed as “Second Great Migration”. see Thomas C. Holt

assumption of the movement quite credible and also eliminate some of the concerns for the self-selection into out-migration (that is, only those who strongly disagree with the social prescription (**P**), move out of their birth region to escape the social prescription assigned to their social category. In this case, identity they carry out of the region may not representative of the average identity of the birth region). This fact provides a legitimate quasi-natural experiment setting in this study.

Figure 4: NLSY79 vs. NLSY97 Comparison of father’s birth state, Black: by repeal date of anti-miscegenation law

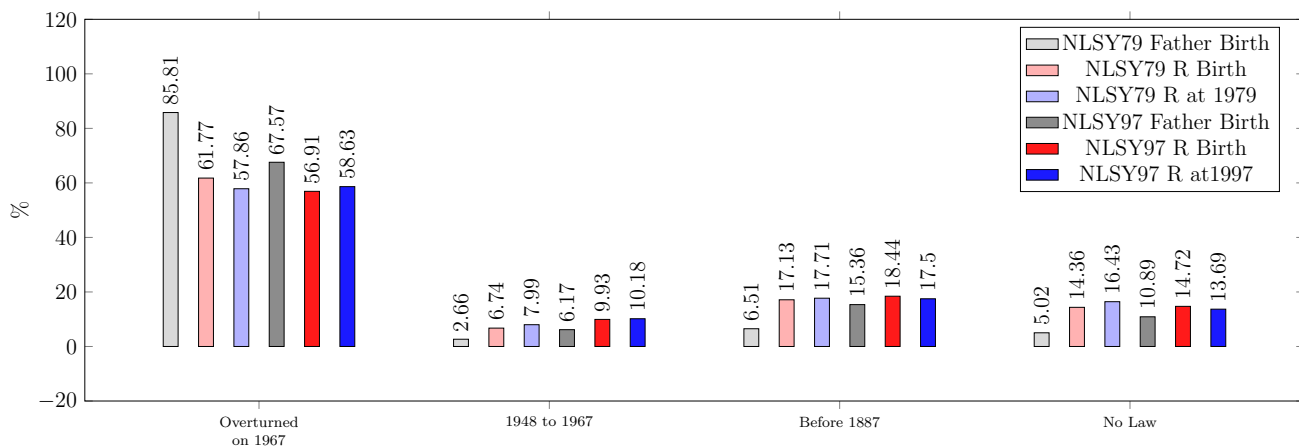
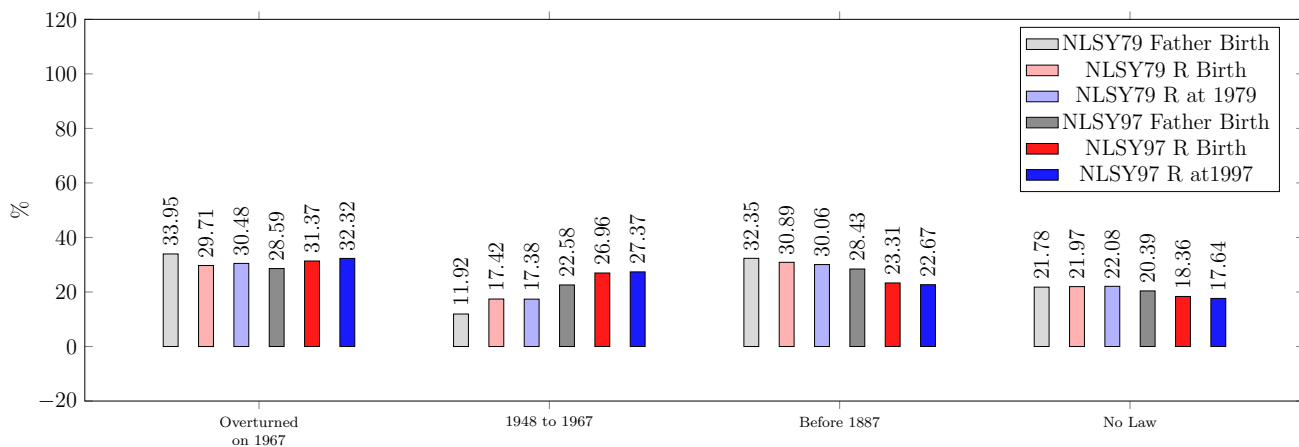


Figure 5: NLSY79 vs. NLSY97 Comparison of father’s birth state, White: by repeal date of anti-miscegenation law



One major problem in using NLSY97 data in this study is that approximately 50% of the respondents are below the median age⁹ of first marriage in 2011, the latest dataset available. This limits the sample size significantly as we need enough variations in inter-marriage pattern

⁹Median age at first marriage in 2011 is 27.6 according to 2011 CPS

conditional on father’s birth state anti-miscegenation category. As an alternative, race of dating partner was used for the analysis which expands the sample size considerably.

The logistic regression model used for the analysis can be written as:

$$P(y_{ijk} = 1 | \mathbf{X}_{ijk}) = \Lambda(\alpha_0 + \beta_1 Identity_{ijk} + \beta_2 Location_{ijk}^{1997} + \mathbf{x}_{ijk}\beta + \epsilon_{ijk}) \quad (8)$$

where y is the two binary variables: 1. taking 1 if ever-married or 0 otherwise at the time of latest interview in 2011. 2. equals 1 if race of one’s dating partner or married partner is different from one’s own, and 0 otherwise. Subscripts j and k represents sex and racial group of respondent i , respectively. *Identity* is the variable of interest that is proxied by the historical anti-miscegenation region of father’s birth region. It is expected that the respondents whose father was born in group states that the law was overturned by the Supreme Court decision in 1967 have the most significant and negative effect on the decision to inter-marry. *Location* variable indicates the respondent i ’s geographical region of residence in 1997 when the respondents are about to enter the potential marriage market. The location variable which is categorized into four regions¹⁰ are designed to control for region specific factors that might affect the marriage behaviour of the individual respondents at the time of their entry to marriage market. \mathbf{x} is a vector of socio-economic demographic variables that have been identified as factors correlated with marriage in the literature such as education, level of income, religious activities and state level male-to-female sex ratio.¹¹

4.2 Third-generation Immigrants Identification

We also use NLSY79 data in this study. What is unique about the NLSY79 is that it documents birthplace of grand-father. The availability of the variable enables one to identify third-generation immigrants to the U.S. It is assumed that, as in classical assimilation theory in sociology, immigrants assimilate to the host culture as a linear function of time.¹² Although the speed of complete

¹⁰North East, North Central, South, West

¹¹As the regression were run separate by sex and racial group, these key variables are omitted in the control variable. Age variable is also omitted because NLSY97 is the longitudinal survey of similar age cohorts.; Sex-ratio was calculated using 5% 2000 Census data.

¹²See [Zhou \(1997\)](#) for the summary of the literature on assimilation theory.

assimilation is hard to measure, [Waters \(1994\)](#) notes in a study of cultural assimilation using a survey conducted of second-generation black West-Indian and Haitian immigrants to New York city: “It could be that by the time they have their children they will have decided that the quest not to be seen as a black American will be a futile one,” which suggests that the length of the assimilation don’t last long for black immigrants. I assume that third-generation black immigrants share relatively homogeneous culture with hosting black culture but degree of assimilation is not complete. The third-generation dummy variable is used as a proxy for the identity effects. As the third-generation black immigrants may have shared and retains the different social prescription which the intensity of the prescription is presumably lighter than that of non-immigrant black in U.S., it is possible to capture the effect of identity on the marriage decision. It is hypothesized that the identity variable proxied by the third-generation immigrants would have positive effect on both marriage rate and interracial marriage rate. The logistic regression model used for the identification strategy is almost identical to the equation 6, except that the *Identity* is proxied by the third generation immigrant status which is expected to have positive effect on the marriage decision.

5 Data Description

Individual level panel data from two sets of National Longitudinal Surveys (1979 and 1997), conducted by Bureau of Labor Statistics are used as the primary source of data in this study. Additionally, decennial Census data at the county level are used to describe marriage market attributes for each individual. The proprietary geo-coded version of the NLSYs is used to tie market data to each individual’s county of residence when they are of prime marrying age. Each dataset is explained below.

5.1 NLSY79

The National Longitudinal Survey of Youth 1979 (NLSY79) is a longitudinal survey of a nationally representative sample of 12,686 individuals between the ages of 14 and 21 at the time of initial

interview in 1979. From 1979 through 1994, NLSY79 respondents were interviewed annually and biennially since 1994. The dataset contains variables pertaining to labor force participation, education, health, knowledge and skill aptitudes, assessments of attitudes and other socio-demographic characteristics including marital status. The descriptive statistics of the variables of interest are presented in Table 1.

Table 1: NLSY79 Descriptive Statistics

| | Black | | | | | | White | | | | | |
|---|--------|----------|--------|----------|-------|----------|---------|----------|---------|----------|-------|----------|
| | Male | | Female | | Total | | Male | | Female | | Total | |
| | N | Pct | N | Pct | N | Pct | N | Pct | N | Pct | N | Pct |
| Average.Income(Age 25 - 35)(%) | 1,503 | 26,921.5 | 1,466 | 24,522.9 | 2,969 | 25,737.2 | 3,347 | 38,646.3 | 3,354 | 38,440.6 | 6,701 | 38,543.3 |
| Third-generation | 21 | 1.3 | 16 | 1.02 | 37 | 1.17 | 393 | 10.65 | 350 | 9.67 | 743 | 10.17 |
| -Marriage Variables | | | | | | | | | | | | |
| 1.Marry by age 35 | 877 | 54.92 | 983 | 63.42 | 1,860 | 59.10 | 2,719 | 74.66 | 3,059 | 85.35 | 5,778 | 79.96 |
| 2.Married | 1,036 | 64.23 | 1,115 | 71.43 | 2,151 | 67.77 | 2,894 | 78.43 | 3,178 | 87.84 | 6,072 | 83.09 |
| -Educational Attainment | | | | | | | | | | | | |
| 1.Highschool or less | 1,136 | 70.43 | 920 | 58.94 | 2,056 | 64.78 | 2,394 | 64.88 | 2,176 | 60.14 | 4,570 | 62.53 |
| 2.College | 422 | 26.16 | 560 | 35.87 | 982 | 30.94 | 961 | 26.04 | 1,116 | 30.85 | 2,077 | 28.42 |
| 3.Post-College | 55 | 3.41 | 81 | 5.19 | 136 | 4.28 | 335 | 9.08 | 326 | 9.01 | 661 | 9.04 |
| -Frequency Religious Attendance | | | | | | | | | | | | |
| 1.Not at all | 421 | 27.52 | 204 | 13.53 | 625 | 20.57 | 1,155 | 32.99 | 899 | 26.01 | 2,054 | 29.52 |
| 2.Several Times/Year | 376 | 24.58 | 398 | 26.39 | 774 | 25.48 | 1,089 | 31.11 | 1,074 | 31.08 | 2,163 | 31.09 |
| 3.Once/Month | 197 | 12.88 | 155 | 10.28 | 352 | 11.59 | 328 | 9.37 | 298 | 8.62 | 626 | 9.00 |
| 4.Two-Three times/Month | 234 | 15.29 | 307 | 20.36 | 541 | 17.81 | 309 | 8.83 | 347 | 10.04 | 656 | 9.43 |
| 5.Once/Week | 212 | 13.86 | 292 | 19.36 | 504 | 16.59 | 416 | 11.88 | 599 | 17.33 | 1,015 | 14.59 |
| 6.More than Once/Week | 90 | 5.88 | 152 | 10.08 | 242 | 7.97 | 204 | 5.83 | 239 | 6.92 | 443 | 6.37 |
| -Sex Ratio[Male-to-Female Ratio] | | | | | | | | | | | | |
| 1.North East | 26,085 | 47.09 | 29,305 | 52.91 | - | 0.89 | 205,355 | 53.71 | 176,963 | 46.29 | - | 1.16 |
| 2.North Central | 23,845 | 47.12 | 26,765 | 52.88 | - | 0.89 | 201,044 | 55.95 | 158,299 | 44.05 | - | 1.27 |
| 3.South | 80,582 | 47.77 | 88,101 | 52.23 | - | 0.91 | 238,462 | 57.47 | 176,449 | 42.53 | - | 1.35 |
| 4.West | 14,736 | 53.42 | 12,847 | 46.58 | - | 1.15 | 175,630 | 58.65 | 123,809 | 41.35 | - | 1.42 |

Note: Number in total column of sex ratio represents ratio.
 Number in Pct column of average income is in dollars.
 Sex Ratio is calculated using 1980 Census.

Table 1 shows descriptive statistics of the NLSY79 participants divided into race and gender. White group has higher marriage rate than black group, both male and female. Among NLSY79 female participants, there are 16.41 percentage points difference in the life time marriage rate, whereas for male participants, there are 14.2 percentage points difference in the life time marriage rate. On average, women have higher education than men, although the gap is greater for black group than white group. While 10.17% of the white participants are third-generation migrants, only 1.17% of the black participants are third-generation migrants, this small sample size of the black third-generation migrants are cause of concern for the validity of the third-migrant identification strategy, while there is no theoretical reason to rule out the strategy in the analysis. Data from two decennial census are also used to characterize marriage market features in each NLSY respondent's community. In order for more accurate measure of marriage market situation for each races, 1990 Census data are used in calculation of sex ratio(male-to-female) at county-level. The age of NLSY79 respondents range from 25 to 33 in 1990, the use of 1990 Census data provides relevant sex ratio for the group in their prime marriage age. Although sex-ratio at county-level are used in the analysis, sex-ratio at regional-level are presented in the table 1 for the purpose of brevity.

5.2 NLSY97

The National Longitudinal Survey of Youth 1997(NLSY97) is a longitudinal survey of nationally representative sample of 8,984 individuals between the ages of 12 and 16 at the time of initial interview in 1997. The survey has been conducted annually since its inception in 1997. Similar to NLSY79, the dataset contains variables pertaining to life events including education, employment and marital status. The descriptive statistics of the variables of interests are presented in Table 2.

Table 2: NLSY97 Descriptive Statistics

| | Black | | | | | | White | | | | | |
|--|-------|----------|--------|----------|-------|----------|-------|----------|--------|----------|-------|----------|
| | Male | | Female | | Total | | Male | | Female | | Total | |
| | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct |
| Average.Income(Age 20 - 30)($\$$) | 1052 | 18776.28 | 1059 | 16866.35 | 2111 | 17818.15 | 2464 | 27431.16 | 2251 | 20174.57 | 4715 | 23966.77 |
| Ever Married | 300 | 25.04 | 298 | 25.04 | 598 | 25.04 | 1102 | 40.78 | 1357 | 53.64 | 2459 | 47 |
| Never Cohibited | 680 | 56.76 | 669 | 56.22 | 1349 | 56.49 | 1524 | 56.40 | 1702 | 67.27 | 3226 | 61.66 |
| Ever intermarry/date | 202 | 17.38 | 89 | 7.72 | 291 | 12.57 | 243 | 9.55 | 257 | 10.81 | 500 | 10.16 |
| Ever Incarcerated | 221 | 18.45 | 38 | 3.19 | 259 | 10.85 | 247 | 9.14 | 66 | 2.61 | 313 | 5.98 |
| -Educational Attainment | | | | | | | | | | | | |
| 1.Highschool or less | 1,014 | 85.21 | 852 | 72.08 | 1,866 | 78.67 | 1,865 | 69.18 | 1,481 | 58.86 | 3,346 | 64.20 |
| 2.College | 160 | 13.45 | 267 | 22.59 | 427 | 18.00 | 705 | 26.15 | 858 | 34.10 | 1,563 | 29.99 |
| 3.Post-College | 16 | 1.34 | 63 | 5.33 | 79 | 3.33 | 126 | 4.67 | 177 | 7.03 | 303 | 5.81 |
| -Importance of Religion at 2011 | | | | | | | | | | | | |
| 1.Extremely important | 287 | 29.83 | 455 | 43.92 | 742 | 37.14 | 246 | 11.86 | 381 | 19.15 | 627 | 15.42 |
| 2.Very important | 362 | 37.63 | 373 | 36.00 | 735 | 36.79 | 378 | 18.22 | 463 | 23.27 | 841 | 20.69 |
| 3.Somewhat important | 212 | 22.04 | 161 | 15.54 | 373 | 18.67 | 621 | 29.93 | 575 | 28.89 | 1,196 | 29.42 |
| 4.Not very important | 54 | 5.61 | 28 | 2.70 | 82 | 4.10 | 396 | 19.08 | 298 | 14.97 | 694 | 17.07 |
| 5.Not important at all | 47 | 4.89 | 19 | 1.83 | 66 | 3.30 | 434 | 20.92 | 273 | 13.72 | 707 | 17.39 |
| -Father's birth state by historical anti-miscegenation region | | | | | | | | | | | | |
| 1.No law | - | - | - | - | 209 | 10.59 | - | - | - | - | 860 | 20.25 |
| 2.Repealed before 1887 | - | - | - | - | 304 | 15.40 | - | - | - | - | 1,215 | 28.62 |
| 3.Repealed between 1948 to 1967 | - | - | - | - | 123 | 6.23 | - | - | - | - | 954 | 22.47 |
| 4.Overtured on 1967 | - | - | - | - | 1,338 | 67.78 | - | - | - | - | 1,217 | 28.66 |
| -Region of residence in 1997 | | | | | | | | | | | | |
| 1.North East | - | - | - | - | 372 | 15.58 | - | - | - | - | 993 | 18.98 |
| 2.North Central | - | - | - | - | 429 | 17.96 | - | - | - | - | 1,463 | 27.96 |
| 3.South | - | - | - | - | 1,443 | 60.43 | - | - | - | - | 1,603 | 30.64 |
| 4.West | - | - | - | - | 144 | 6.03 | - | - | - | - | 1,173 | 22.42 |
| Sex Ratio[Male-to-Female](aggregate) | - | - | - | - | - | 0.98 | - | - | - | - | - | 1.20 |

Note: Number in total column of sex ratio represents ratio.

The marriage statistics of NLSY97 participants in Table 2 shows that marriage gap between the two races has widened considerably compared to NLSY79 statistics. The gap between black and white female participants has increased from 16.41 percentage points to 28.06 percentage points, while the gap for black and white male participants increased from 14.2 percentage points to 15.74 percentage points. This phenomenon is consistent with widening marriage gap between black and white female observed in Census data described in Figure 2. Similar to NLSY79, female participants have higher education attainment than male participants for both races. The majority, 67.78%, of the black participants' father come from anti-miscegenation region that had the law overturned in 1967, whereas the father of white participants are relatively evenly populated over the four regions defined by the date of the repeal. The high concentration of father of black participants in the region that had the law overturned in 1967 stems from the fact that the region that had anti-miscegenation law overturned in 1967 are consisted with mostly southern states where majority of African-Americans resided.

Similar to the calculation of sex-ratio corresponding to NLSY79, the 2010 Census data are used in calculation of sex ratio(male-to-female) at county-level. The age of NLSY97 respondents range from 26 to 30 in 2011, the use of 2010 Census data provides relevant sex ratio for the group in their prime marriage age.

6 Results

6.1 Intergenerational Transmission of Identity

The results from the first identification strategy are shown in Table 3 and Table 4. Table 3 shows the average marginal effects estimates from the logistic regression ran for each race by sex with two dependent variables.¹³ First four columns contains estimates with binary dependent variable that takes 1 if the respondents are ever-married up to the point of interview in 2011 when respondents' age ranges from 26 to 30, and 0 otherwise. The columns from 5 to 8 shows the estimates with

¹³The separate regression results using different sub-samples are reported rather than using pooled sample with interaction variables due to its simplicity of the presentation. With reasonable *a priori* belief that the independent variables included in the analysis affects the marriage behaviour differently by race and gender, increasing interaction terms may complicate the interpretation of the results.

binary dependent variable that equals 1 if the respondents have ever dated a partner outside of their own race, 0 if not. As mentioned earlier, the race of both dating partner and spouse is chosen instead of race of spouse only due to the data limitation that hampers the econometric analysis.

One major findings of the analysis presented in the first four columns in Table 3 is that, in general, black respondents whose father were born in region that had longer history of anti-miscegenation law (i.e., those regions that had the law repealed only after 1948) are less likely to get married compared to those with father born in the “no law” region. Although not statistically significant at the meaningful level, the effect of father’s origin anti-miscegenation region appears to have relatively stronger effect for females than males, where the direction of effect is negative for black females (statistically significant at 20 %) and positive for white females (statistically significant at 15-20 %). Although the evidence is not clear enough to make an assertion that it is the effect of identity that explains the unexplained marriage gap witnessed over past sixty years, the signs of the coefficient for black and white women is consistent with observed trend and the hypothesis that identity proxied by the father’s anti-miscegenation region negatively affect the black females’ marriage behaviour.

Considering the fact that only less than 8% of black females those who marry intermarries, the effect of the identity on the overall marriage decision must be minimal, which is consistent with the estimates found in this study. The low statistical significance level may also be due to small sample size that includes only respondents whose father migrated out of their birth anti-miscegenation region for the reasons that are already discussed in the earlier section on empirical strategy. The analysis with larger sample size that includes both migrants and non-migrants will be discussed in the later section for robustness check.

Income level appears to be an important factor that have positive effect on the probability of getting married for males but not females. This finding will be contrasted with the results derived from using NLSY79 in the later section of the paper. Another finding to note is that, consistent with previous literature, male-to-female sex ratio ¹⁴ appears to have significant and sizable effect on black females probability of getting married. One standard deviation increase in the sex ratio is

¹⁴The sex ratio is calculated using 2000 Census. The state-level ratio is calculated using sample in the age between 20 - 30 excluding people who are institutionalized.

correlated with 23% increase in the probability of being married for black female. Although signs of the effects comply to expectation for other groups, the effects are not statistically significant.

More important and interesting results are presented in last four columns in Table 3, one can observe indeed the negative and statistically significant effect of identity on black females' probability of dating/marrying a partner outside of their own race. The average marginal effects estimates indicate that black females whose father come from the regions with the longer history of anti-miscegenation law are 15% less likely to marry or date out of their own race compared to those with father's birth region had no miscegenation law. It should be emphasized that only those who were born and raised out of father's birth miscegenation region are included in the analysis as an attempt to avoid possible confounding effects.¹⁵ Assuming parents are successful in transferring their attitude and "identity" that were formed during their lives in the home states to their children, the fact that the children are independent of other region specific characteristics that affects the marital or dating decision enables clearer identification of the "identity" effects.

Although less pronounced, the statistically significant effect of the identity on white female may be interpreted by the identity effects as it is reasonable to assume that miscegenation law have effected the all groups in the affected region. However, as shown in Figure 5, the mass migration that enables randomness assumption that is crucial to this analysis didn't happen to white group. This fact complicates the interpretation of significant coefficients for white females. In other words, although the statistically significant effect of identity that appears on the white female may as well indicative of the identity effects as in the case of black female, the argument is relatively weak in the case of white female as there may be self-selection bias of the migrants.

The higher level of education appears to have positive effect on the probability of intermarry or dating for white white males, whereas the opposite is observed black males. Instead, higher income is correlated with black males' probability of meeting/marrying outside of their race. The increasing male-to-female sex ratio of own race have no meaningful effect on the probability of intermarry or date after controlling for other covariates included in the model.

¹⁵The identity effects from logit regression using samples that includes only the respondents whose miscegenation region is same as their father is not statistically significant and sign of the effect is not consistent over difference miscegenation region, suggesting that confounding effects is indeed potential problems when all the samples are included. The regression results are not included in the paper, but available upon request.

Table 3: Logit Regression Results: Average Marginal Effects

| | Dep.V: Ever Married | | | | Dep.V: Marry/Date out of own race | | | |
|---|----------------------|----------------------|----------------------|----------------------|-----------------------------------|----------------------|----------------------|-----------------------|
| | (1) Black Female | (2) Black Male | (3) White Female | (4) White Male | (5) Black Female | (6) Black Male | (7) White Female | (8) White Male |
| Log.Avg.Inc(Age20-30) | -0.00364 (0.0289) | 0.128*** (0.0363) | 0.0243 (0.0269) | 0.198*** (0.0335) | 0.0240 (0.0225) | 0.0542* (0.0281) | -0.0132 (0.0184) | -0.00900 (0.0160) |
| -Father's Micegenation Region | | | | | | | | |
| (1.Base.No Law) | - | - | - | - | - | - | - | - |
| 2.Repealed before 1887 | 0.0631 (0.105) | -0.0152 (0.109) | 0.0656 (0.0521) | -0.0249 (0.0512) | -0.0831 (0.0854) | -0.0765 (0.101) | -0.0653* (0.0369) | -0.00657 (0.0373) |
| 3.Repealed bet 1948 to 1967 | -0.224** (0.0906) | -0.0169 (0.131) | 0.159*** (0.0589) | 0.0830 (0.0584) | -0.156** (0.0760) | 0.00597 (0.136) | -0.0548 (0.0431) | -0.0364 (0.0398) |
| 4.Overtured in 1967 | -0.110 (0.0900) | -0.105 (0.0899) | 0.0908 (0.0640) | -0.0149 (0.0633) | -0.150** (0.0726) | -0.0998 (0.0888) | -0.0787* (0.0432) | -0.000862 (0.0425) |
| -Census Region at 1997 | | | | | | | | |
| (1.base.North East) | - | - | - | - | - | - | - | - |
| 2.North Central | -0.0649 (0.0903) | 0.151 (0.0946) | 0.0767 (0.0674) | 0.137** (0.0651) | 0.0143 (0.0775) | 0.111 (0.0866) | -0.0480 (0.0495) | -0.00764 (0.0400) |
| 3.South | 0.0394 (0.103) | 0.102 (0.0881) | 0.0878 (0.0649) | 0.0605 (0.0651) | -0.0117 (0.0642) | 0.0138 (0.0762) | -0.0526 (0.0462) | 0.0198 (0.0410) |
| 4.West | -0.0315 (0.117) | 0.0518 (0.126) | -0.0448 (0.0850) | 0.0867 (0.0800) | 0.0302 (0.0965) | 0.154 (0.133) | -0.00654 (0.0635) | 0.0823 (0.0590) |
| -Education Attainment | | | | | | | | |
| (1.Base.Highschool or less) | - | - | - | - | - | - | - | - |
| 2.College | 0.0705 (0.0751) | -0.0161 (0.0728) | 0.0371 (0.0439) | -0.0131 (0.0428) | -0.0143 (0.0438) | -0.140** (0.0619) | -0.0304 (0.0288) | -0.00415 (0.0291) |
| 3.Post-College | 0.00604 (0.119) | - (-) | 0.0680 (0.0687) | 0.180** (0.0756) | -0.0366 (0.0646) | - (-) | 0.0242 (0.0500) | 0.125* (0.0641) |
| -Sex Ratio in 2000 (State level) | | | | | | | | |
| Black | 0.229** (0.0926) | -0.0705 (0.110) | | | 0.0860 (0.0537) | 0.0561 (0.0794) | | |
| White | | | 0.0110 (0.0230) | -0.0138 (0.0226) | | | 0.00126 (0.0145) | -0.0112 (0.0174) |
| <i>N</i> | 200 | 213 | 633 | 601 | 200 | 213 | 633 | 601 |
| pseudo <i>R</i> ² | 0.0725 | 0.0856 | 0.0199 | 0.0709 | 0.1096 | 0.0697 | 0.0265 | 0.0238 |

Robust standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

$$AME_i = \frac{1}{n} \sum_{k=1}^n f(\beta x^k)$$

Various specifications of black females' decision to inter-marry/date are examined to test for the consistency of the effect of identity. Table 4 presents estimates with various specifications. The estimates shows the consistent and sizable identity effect on the decision to intermarry/date throughout the varying specifications. The identity effects are consistently negative and sizable in magnitude with statistical significance between 5% to 10%. The respondents with their father from region that had the anti-miscegenation law overturned in 1967 have approximately 12-16 percent less probability of choosing the dating partner or spouse outside of their own race than those with their father from "no law" region. Even after intensity of religious belief is accounted for, the identity effect remains to have statistically significant effect on the intermarriage behaviour. Moreover, as predicted by theory, the magnitude of the negative effect increases with the strictness of the social prescription for black female. The gradual increase in the magnitude of the effects buttress the reliability of the proxy variable for identity and the assumption that identity is transmitted through the father. What is baffling is that the increase in male-to-female sex ratio have positive effect on the probability of intermarriage/dating. This finding requires further investigations.

Table 4: Logit Regression Results: Average Marginal Effects

| | Dep.V: Marry/Date out of own race | | | | | |
|--|-----------------------------------|----------------------|-----------------------|-----------------------|----------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Black Female | Black Female | Black Female | Black Female | Black Female | Black Female |
| Log.Avg.Inc(Age20-30) | | | | | 0.0240 (0.0225) | 0.0146 (0.0196) |
| Father's Micegenation Region (1.Base.No Law) | . | . | . | . | . | . |
| 2.Repealed before 1887 | -0.0535 (0.0723) | -0.0834 (0.0853) | -0.0961 (0.0855) | -0.0941 (0.0840) | -0.0831 (0.0854) | -0.0728 (0.0921) |
| 3.Repealed bet 1948 to 1967 | -0.0897 (0.0939) | -0.134 (0.0890) | -0.161** (0.0787) | -0.157** (0.0770) | -0.156** (0.0760) | -0.128 (0.0838) |
| 4.Overtuned in 1967 | -0.123** (0.0608) | -0.161** (0.0734) | -0.163** (0.0735) | -0.160** (0.0728) | -0.150** (0.0726) | -0.137* (0.0727) |
| Census Region at 1997 (1.base.North East) | . | . | . | . | . | . |
| 2.North Central | | 0.0304 (0.0591) | 0.00471 (0.0693) | 0.00497 (0.0699) | 0.0143 (0.0775) | 0.0186 (0.0783) |
| 3.South | | -0.00932 (0.0493) | -0.0205 (0.0596) | -0.0205 (0.0613) | -0.0117 (0.0642) | -0.0336 (0.0653) |
| 4.West | | 0.127 (0.0862) | 0.0243 (0.0811) | 0.0205 (0.0813) | 0.0302 (0.0965) | 0.00473 (0.100) |
| Importance Religion at 2011 (1.Base.Extremely Important) | - | - | - | - | - | - |
| 2.Very Important | | | | | | -0.0319 (0.0416) |
| 3.Somewhat Important | | | | | | 0.0527 (0.0700) |
| 4.Not very Important | | | | | | 0.0122 (0.0951) |
| 5.Not Important at all | | | | | | 0.239 (0.232) |
| Education Attainment (1.Base.Highschool or less) | | | | - | - | - |
| 2.College | | | | 0.0140 (0.0426) | -0.0143 (0.0438) | 0.00239 (0.0482) |
| 3.Post-College | | | | -0.00835 (0.0684) | -0.0366 (0.0646) | -0.0228 (0.0753) |
| Sex Ratio 2000(State level) | | | 0.0895*** (0.0314) | 0.0900*** (0.0312) | 0.0860 (0.0537) | 0.101** (0.0504) |
| <i>N</i> | 222 | 222 | 222 | 220 | 200 | 184 |
| pseudo R^2 | 0.0490 | 0.0822 | 0.1262 | 0.1267 | 0.1096 | 0.1370 |

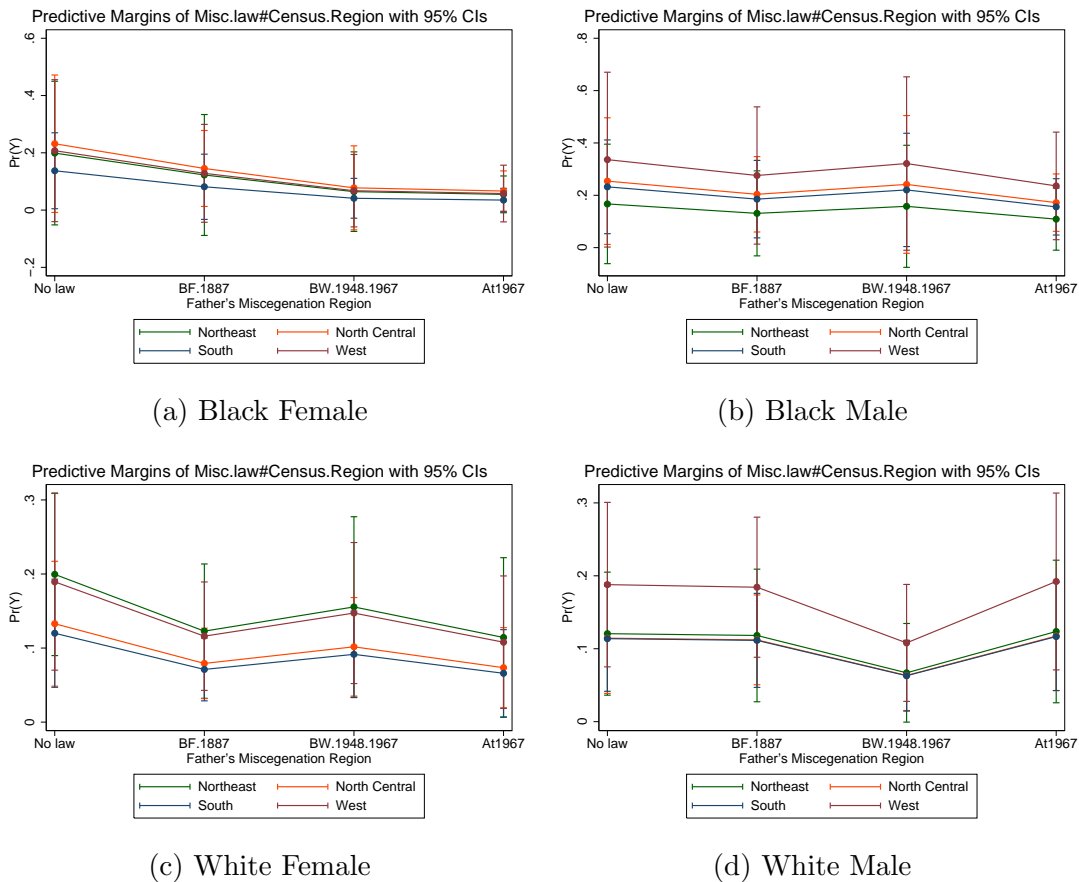
Robust standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

$$AME_i = \frac{1}{n} \sum_{k=1}^n f(\beta x^k)$$

Figure 6 shows predictive margins of the identity evaluated at the mean of other covariates. Clear and consistent negative effect of identity on black female’s intermarriage/dating incidence is observed in (a) of Figure 6. Irrespective of census region where NLSY97 black female respondents reside at their age between 12-16, the probability of intermarriage/date decrease monotonically as stringency of the social prescription against intermarriage of father’s origin increase. As expected, systematic relationship is not found for other groups included in the analysis. One can infer from this finding that it is indeed the black female that are mostly impacted by the strong social prescription against intermarriage/date as hypothesized by Banks (2007) and also consistent with the previous study by Fryer (2007) that noted the social costs of inter-marriage is expensive for black females.

Figure 6: Predictive Margins of Identity(Miscegenation Law Region): By Census Region, Sex and Race



6.2 Third-generation immigrants

The results from the second identification strategy are presented in Table 5. Most importantly, the variable of interest, identity proxied by third-generation black has the expected positive effect on black females chance of being married by age 35¹⁶ and is statistically significant at the 10% level. The magnitude of the effect is economically important, as it is equivalent in size to one standard deviation increase in income level. Third-generation immigrants have a 17.4 percent higher probability of getting marriage by age 35 than those who are not. This results seem to contradict the estimates from the previous section that use anti-miscegenation as the identification strategy as no effects of the identity on marriage incidence were found. However, given that the proxy for identity is only an imperfect measure and the fact that the two proxies for the identity used in this study estimate average identity effects at only local level that may differ sharply depending on the which segment of population is involved, these two results that confirms identity effect should be considered jointly rather than deemed to be showing contradictory results.

Somewhat different from analysis conducted using NLSY97 data, the income level at the prime age of marriage for NLSY79 respondents have very strong positive effect on the probability of getting married by 35 for all groups. It is interesting to note that the analysis shows the role of income in the dynamics of marriage has been changed over the 20 years gap between NLSY79 and NLSY97. The similar analysis using NLSY97 data as shown in Table 3 suggested the income has positive effect for only males whereas the estimates in Table 5 shows positive and statistically significant effect for both male and female regardless of race. The observed change in the role of income in females' marital decision over the 20 years suggests the time-dependency of the marriage dynamics. Region of living and education are both important predictor of marriage decision for all groups, unlike positive or weak effect of education that are observed in NLSY97 data, higher education is strongly correlated with lower probability of getting married for most NLSY79 cohorts,

¹⁶Ideally, I would include the marriage status in life-time as a dependent variable. This is hampered by size of observations of the third-generation black that limits the sample variation. There are 37 black third-generation immigrants in the dataset and almost all the women are married by the time they turn to 45 to 53, which disables meaningful statistical analysis. I use marriage status by age 35 instead.

During the survey period between 1979 to 2010 (i.e., until respondents turn to age from 45 to 53) the share of respondents who married at least once in the survey period is 79%, whereas 21% of them never married: 68% for Black and 83% for White.

except for black males. One can infer from the changes in the effect of education on marriage decision that NLSY79 cohorts, especially females, exhibited stronger desire to get education at the cost of delayed marriage. Whereas, for NLSY97 cohorts, education is not a significant factor that influence marriage decision twenty years later. The fact that the marriage rate have decreased over last decades may indicate that there are other important factors that affects the marriage decision of more recent cohorts. Although positive sign is observed, the male-to-female sex ratio is not statistically significant factor that influence marriage of black female, somewhat contrary to the estimates derived from NLSY97. This may be due to the fact that black male incarceration rate was significantly low in early 1980s compared to 2000s ([Charles and Luoh, 2010](#)).

Table 5: Logit Regression Results: Average Marginal Effects

| | Dep.V: Marry until 35 | | | |
|---|-----------------------|----------------------|------------------------|----------------------|
| | (1) Black Female | (2) Black Male | (3) White Female | (4) White Male |
| Log.Ave.Inc(Age25-35) | 0.170*** (0.0155) | 0.124*** (0.0137) | 0.0796*** (0.00812) | 0.722*** (0.0643) |
| Third-generation Black | 0.174* (0.0956) | -0.0457 (0.113) | | |
| Third-generation White | | | 0.00510 (0.0196) | -0.173 (0.138) |
| Census Region at 1979 (1.base.North East) | . | . | . | . |
| 2.North Central | -0.0422 (0.0436) | 0.0979** (0.0428) | 0.0203 (0.0192) | 0.274** (0.127) |
| 3.South | 0.104*** (0.0372) | 0.131*** (0.0375) | 0.0397** (0.0199) | 0.594*** (0.138) |
| 4.West | 0.119* (0.0628) | 0.100* (0.0584) | -0.0223 (0.0290) | 0.136 (0.170) |
| Education Attainment (1.Base.Highschool or less) | | | | |
| 2.College | -0.0487* (0.0267) | 0.0238 (0.0292) | -0.0517*** (0.0139) | -0.300*** (0.105) |
| 3.Post-College | -0.152*** (0.0585) | 0.129* (0.0728) | -0.169*** (0.0285) | -0.215 (0.158) |
| Sex Ratio 1980(State level) | | | | |
| Black | 0.156 (0.160) | 0.211 (0.189) | | |
| White | | | 0.416 (0.316) | 2.738 (2.007) |
| <i>N</i> | 1429 | 1453 | 3218 | 3230 |
| Pseudo. <i>R</i> ² | 0.0802 | 0.0705 | 0.0705 | 0.0579 |

Robust standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

“Region” is the smallest unit that NLSY79-without-geocode provides for geographic information of residence.

The variable is categorised into Northeast, Northcentral, South and West.

The Male-to-Female ratio is calculated using 1980 Census data for the corresponding region definition of NLSY.

One might argue that the probability of being married is higher due to unobserved factors that are particular to the ethnic group other than identity, such as market conditions that are particular to the ethnic group. Shares of inter-marriage for each group is examined in Table 6. Although few observations are available for third-generation black immigrants, one can see that larger share of people in the third-generation tend to cross racial line in marriage.

Table 6: Inter-marriage Rate Comparison by generations

| | Third-Generation Black | | | | | | Third-Generation + Black | | | | | |
|----------------|------------------------|-------|--------|-------|-------|-----|--------------------------|-------|--------|------|-------|------|
| | Male | | Female | | Total | | Male | | Female | | Total | |
| | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct | Freq | Pct |
| Inter-marriage | 5 | 41.67 | 2 | 12.50 | 7 | 25 | 129 | 12.60 | 56 | 5.10 | 185 | 8.71 |

7 Robustness Check

7.1 Intergenerational transmission of Identity

Although historical massive migration of African Americans during 1940 - 1970 makes the randomness assumption of the migrants somewhat credible, there remains a room for self-selection bias of the black migrants that may results in biased estimates of the identify effect. For the robustness check, I compare logit regression results presented in the previous section to the state fixed-effect logit model using sample of both migrants and non-migrants.¹⁷ The results are shown in Table 7. Directions of the identity effect remains the same for black and white female especially in their decision to intermarry. Odds of meeting spouse or dating partner outside of racial line for black females whose father come from strongest miscegenation law region are 0.313 times lower than those whose father come from no miscegenation law region and statistically significant at 1% level after controlling for state-fixed effects. The magnitude of the identity effect are reduced to some extent, however, father's Anti-miscegenation region remains to be a significant predictor of the decision to intermarry/date, complying to our previous results with migrants sample. The reduced effect of identity in the fixed effect model can be explained by the fact that the model controls

¹⁷Comparison is in odds-ratio as fixed-effects models do not allow marginal effect calculation.

for unobserved marriage market characteristics at state level which may also include subset of the identity we try to measure. Also, the fact that statistically significant identity effect for black and white male indicate that the social prescription against intermarriage still persists in those regions that had historically stringent law against the intermarriage.

This support the evidence that randomness assumption of migrants placed in section 7.1 is reasonably credible. As state fixed effects controls for state specific unobserved factors that might affect the dependent variable, the results from the bigger sample that includes both migrants and non-migrants proves the robustness of the claim that identity proxied by the father's miscegenation law region have significant and sizable effect on black females' decision to have interracial relationship.

Table 7: Comparison of Logit Regression Results Vs. Fixed-Effect Logit Regression Results: ODDS RATIO

| | Logit regression | | | | | | | | Fixed-effect logit regression | | | | | | | |
|--|---------------------|---------------------|---------------------|---------------------|-----------------------------------|-------------------|-------------------|--------------------|-------------------------------|---------------------|---------------------|---------------------|-----------------------------------|---------------------|--------------------|---------------------|
| | Dep.V: Ever Married | | | | Dep.V: Marry/Date out of own race | | | | Dep.V: Ever Married | | | | Dep.V: Marry/Date out of own race | | | |
| | (1) BF | (2) BM | (3) WF | (4) WM | (5) BF | (6) BM | (7) WF | (8) WM | (1) BF | (2) BM | (3) WF | (4) WM | (5) BF | (6) BM | (7) WF | (8) WM |
| Log.Avg.Inc(Age20-30) | 0.980 (0.161) | 1.906*** (0.386) | 1.109 (0.127) | 2.399*** (0.399) | 1.374 (0.417) | 1.406* (0.254) | 0.879 (0.158) | 0.919 (0.137) | 1.177* (0.0996) | 2.045*** (0.231) | 1.140** (0.0728) | 2.824*** (0.237) | 1.279 (0.209) | 1.268** (0.121) | 0.971 (0.112) | 0.901 (0.0826) |
| Father's Micegenation Region (1.Base.No Law) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.Repealed before 1887 | 1.345 (0.670) | 0.931 (0.474) | 1.310 (0.280) | 0.896 (0.202) | 0.499 (0.358) | 0.642 (0.370) | 0.560* (0.177) | 0.943 (0.312) | 0.717 (0.385) | 0.375** (0.151) | 1.128 (0.211) | 1.068 (0.181) | 0.531 (0.296) | 0.477* (0.197) | 0.500* (0.179) | 0.851 (0.276) |
| 3.Repealed bet 1948 to 1967 | 0.204** (0.154) | 0.924 (0.566) | 1.973*** (0.507) | 1.440 (0.370) | 0.159* (0.163) | 1.032 (0.736) | 0.626 (0.234) | 0.697 (0.278) | 0.316 (0.628) | 0.898 (0.442) | 1.389* (0.267) | 1.482** (0.248) | 0.0816 (0.536) | 0.384 (0.481) | 0.556** (0.161) | 0.612* (0.159) |
| 4.Overtuned in 1967 | 0.542 (0.260) | 0.595 (0.259) | 1.456 (0.390) | 0.937 (0.261) | 0.185** (0.126) | 0.550 (0.274) | 0.478* (0.208) | 0.992 (0.369) | 0.530 (0.225) | 0.526* (0.196) | 1.418* (0.269) | 1.364 (0.268) | 0.313*** (0.111) | 0.450*** (0.122) | 0.532* (0.176) | 0.641 (0.236) |
| Census Region at 1997 (1.base.North East) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.North Central | 0.678 (0.363) | 2.187 (1.158) | 1.382 (0.389) | 1.835** (0.539) | 1.202 (1.228) | 2.025 (1.206) | 0.638 (0.281) | 0.916 (0.414) | - | - | - | - | - | - | - | - |
| 3.South | 1.232 (0.674) | 1.735 (0.859) | 1.450 (0.393) | 1.310 (0.384) | 0.842 (0.763) | 1.109 (0.646) | 0.605 (0.247) | 1.224 (0.526) | - | - | - | - | - | - | - | - |
| 4.West | 0.835 (0.566) | 1.339 (0.950) | 0.833 (0.291) | 1.470 (0.528) | 1.441 (1.678) | 2.522 (1.982) | 0.948 (0.490) | 2.011 (1.041) | - | - | - | - | - | - | - | - |
| Education Attainment (1.Base.Highschool or less) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2.College | 1.468 (0.585) | 0.922 (0.342) | 1.170 (0.217) | 0.944 (0.177) | 0.828 (0.487) | 0.352* (0.206) | 0.735 (0.217) | 0.960 (0.279) | 1.092 (0.211) | 1.342 (0.313) | 1.086 (0.0987) | 1.095 (0.106) | 1.105 (0.322) | 1.142 (0.247) | 0.745 (0.159) | 1.265 (0.240) |
| 3.Post-College | 1.036 (0.718) | - | 1.338 (0.402) | 2.245** (0.813) | 0.578 (0.651) | - | 1.227 (0.498) | 2.448** (0.937) | 0.621 (0.294) | 2.767 (3.388) | 1.169 (0.302) | 1.994*** (0.421) | 1.013 (1.607) | 1.269 (5.809) | 0.851 (0.232) | 2.346*** (0.499) |
| Sex Ratio 2000(State level) | | | | | | | | | | | | | | | | |
| Black | 3.665** (1.989) | 0.701 (0.391) | - | - | 3.128 (2.186) | 1.423 (0.711) | - | - | - | - | - | - | - | - | - | - |
| White | - | - | 1.048 (0.102) | 0.941 (0.0941) | - | - | 1.012 (0.144) | 0.900 (0.146) | - | - | - | - | - | - | - | - |
| State-fixed Effects | NO | NO | NO | NO | NO | NO | NO | NO | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 200 | 213 | 633 | 601 | 200 | 213 | 633 | 601 | 860 | 847 | 1804 | 2012 | 780 | 856 | 1751 | 1910 |
| pseudo R ² | 0.072 | 0.086 | 0.020 | 0.071 | 0.110 | 0.070 | 0.027 | 0.024 | 0.015 | 0.093 | 0.005 | 0.080 | 0.042 | 0.020 | 0.009 | 0.012 |

Estimates in odds ratio.

Robust standard errors in parentheses for logit regression results.

Bootstrap standard errors in parentheses for fixed-effect logit regression results.

* p<0.1, ** p<0.05, *** p<0.01

8 Conclusion

The persistent diverging marriage gap between black and white women in the U.S. have been a cause of concern for many social scientists and policy makers. This paper address the inter-marriage behaviour through the framework of identity theory, as proposed by [Akerlof and Kranton \(2000\)](#). The theory suggests that marriage decisions can be influenced by the prescription of a society in which one belongs. In particular, I examined the role of social prescriptions that may have shaped black womens identities in their decisions to inter-marry using two identification strategies: i) region of their fathers origin, which was categorized according to the timeline of each states decision to repeal miscegenation laws as a proxy for identity. ii) third-generation migrants as a proxy for identity under the assumption that a lag exists between assimilation to the host culture and ones identity. As predicted by the theory, the results of this paper indicate that a large portion of the intermarriage decision can be explained by the identity instilled by the surroundings in which one is positioned. Consistently sizable and statistically significant effects of identity were found. For black female, identity had a larger effect on their decision to meet someone outside of their race than any other covariates included in the model. This finding is striking, as the previous literature largely overlooks the contextual factors that economic agents are contained within. This study also finds the heterogeneous and time-dependent effects of key parameters included in the analysis over different segments of the population. For example, using NLSY97 data, income level appears to matter more for males than females regarding their probability of getting married, whereas data from NLSY79 indicate that income level is an important factor for all groups. Heterogeneous effects are also found for the education variable. While higher education is correlated with a lower probability of marriage for all groups except black males in the NLSY79 samples, higher education shows positive or no effect on marriage incidence when the NLSY97 data is used. The findings of this paper have meaningful implication on current research on marriage as it calls for another important parameter(i.e., identity) to be included in modelling the marriage behavior. As [Sen \(1997\)](#) invites to pay substantial attention in formulating maximizing behavior of an agent as a “maximizer”(that is, an volitional entity) as opposed to non-volitional maximizing behavior of substances that are subject of natural sciences, this study support [Sen \(1997\)](#)’s cliam that choice

behavior, that is, marriage decision in our context, is “menu-dependent” that are quite difficult to generalize to all context, unlike with non-volitional objects in natural sciences.

There is an inherent limitation in identifying the causal inference of the “identity effect” empirically and this study is not an exception. The fathers’ anti-miscegenation as a proxy for identity captures only partial effects as it relies only on the vertical transmission of identity between father and the child. The identity formation through the horizontal socialization as described by [Bisin and Verdier \(2010\)](#) is largely ignored while the identity theory described by [Akerlof and Kranton \(2000\)](#) is actually more relevant to the identity formation via horizontal socialization, that is, identity formation via interaction with others in a society. Despite this major limitation, the results are still credible in supporting the hypothesis that the identity that is exogenously determined by forces external to the decision maker influence the (inter)marriage decision and contribute, in part, to the diverging racial marriage gap in U.S.

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