UNIVERSITY OF CALIFORNIA

Los Angeles

The Role of Preferences in Union Formation

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Sociology

by

Erika Arenas Velázquez

2014

ABSTRACT OF THE DISSERTATION

The Role of Preferences in Union Formation

by

Erika Arenas Velázquez

Doctor of Philosophy in Sociology

University of California, Los Angeles, 2014

Professor Robert D. Mare, Chair

Research on assortative mating over the past three decades shows a tendency of individuals to marry others with similar characteristics. Positive marital sorting increases income inequality and is positively correlated with wage inequality. Even though marriage choice has important implications for inequality and its persistence, little is known about how marital sorting patterns arise. The positive correlation between spouses' characteristics reflects two forces in the marriage market: demand and supply. Investigating mating preferences in the process of union formation is central to understand marriage market dynamics leading to social inequality. This dissertation project focuses on the process of partner choice.

In my first chapter, I investigate educational homogamy by union type (i.e. cohabitation and marriage) in one Latin American country: Mexico. I test two hypotheses that explain

differences in educational homogamy between marriage and cohabitation. The "winnowing" hypothesis assumes that people become more selective as they move from dating to cohabiting to marriage, hence it predicts higher homogamy in marriages than in cohabitations. The "looser bond" hypothesis assumes that cohabitation is a living arrangement chosen by individuals with more egalitarian values seeking a relationship lacking long-term commitment. The "looser bond" hypothesis conceives education as an indicator of potential labor market success and individual autonomy and predicts higher educational homogamy in cohabitation than in marriage.

I use data from three waves of the Mexican Family Life Survey (MxFLS) and follow the stock-and-flow framework proposed by Schwartz (2010). This model investigate educational homogamy by comparing patterns of association by union type (i.e. cohabitation vs. marriage), but it goes further and takes advantage of longitudinal data to investigate some of the implications of these hypotheses on selective union dissolution. To examine differences in educational homogamy, I rely on log-linear models to investigate spousal resemblance across union type and across transition status. I find no support for the "looser bond" hypothesis and strong support for the "winnowing" hypothesis. Results are also consistent with the cultural matching hypothesis and with recent economic theories that suggest the main difference between cohabitation and marriage is the strength of the commitment. Given that cohabitation is an institution of shorter duration than marriage, education becomes more salient for couples opting for marriage and this explains higher homogamy rates in marriages than in cohabitation. Finally, the evidence shown in this chapter also supports the idea that cohabitation markets, in Mexico, are less structured by education compared to marriage markets.

My second chapter investigates the influence of skin color in the process of partner choice. I examine assortative mating patterns by skin color using data from the Mexican Marital Preference Porject pilot (MxMPP), a novel dataset that includes information about skin color of respondents and their spouses. The MxMPP instrument asked interviewers to rate respondents' skin color, and asked respondents to rate the skin color of their spouse based on the NIS 10-scale color palette.

I investigate skin color homogamy using log-linear models to describe the association between partners' skin color, net of marginal distributions. I consider skin color as a trait hierarchically ordered, where lighter skin is preferred to darker skin. I find evidence of skin color homogamy in Mexico. Skin color homogamy is present among couples in which both spouses attained more than elementary school, however, it is not present among couples in which at least one of the partners had elementary school or less. This finding indicates that the least educated couples are more likely to mix. Moreover, I find that most of the exogamous unions involve persons of proximate skin colors, which indicates that there is still a wide social distance at the extremes of the skin color spectrum. I also find that the probability of forming a union decreases as the distance in terms of skin color increases, specifically for couples with more than elementary school. I do not find evidence supporting the hypothesis from "status exchange theory" which posits that light-skinned women interchange higher racial status for higher socio-economic status when they form a union.

The third and final chapter of my dissertation examines the underlying preferences that lead to positive assortative mating in terms of education, skin color, and age. I use data from the MxMPP and use information about the choice set of available partners before the first union (i.e.

marriage or cohabitation). I start by estimating log-linear models as a point of departure to investigate the patterns of association between partner's characteristics. Parameter estimations from these models confound the effects of preferences, strategic behavior, and meeting opportunities on partner's choice because these models use data from final matches.

I take advantage of the MxMPP, which includes information about final matches as well as data from a partial choice set of alternative partners to estimate parameters associated with vertical (i.e. hierarchical) preferences and horizontal (i.e. homogamy, hypergamy, and hypogamy) preferences for education, skin color, and age, using one-sided logit models (i.e. conditional fixed effects logistic regressions). The analytical sample comprises first unions of respondents who declared having at least one previous relationship before their first union. I estimate parameters associated with preferences for men and women separately.

I find that positive assortative mating on education is mainly driven by vertical (hierarchical) preferences for education. Both men and women prefer higher rather than lower educated partners, however competition in the marriage market leads to positive assortative mating. Positive marital sorting is reinforced by a preference for educational homogamy rather than educational hypergamy. The evidence suggests skin color is a very vertical trait, given that everyone seems to prefer lighter over darker skin color partners in terms of vertical and horizontal preferences. Yet, competition in the marriage market leads to skin color homogamy. Finally, in terms of age the data suggest age homogamy, and to some degree women's age hypergamy are mainly driven by women's preferences for age homogamy rather than age hypogamy, and women's vertical preferences for older (rather than younger) males.

By knowing the partial sets of available partners, estimating mating preferences using one-sided logit models goes beyond measuring associations of traits between spouse's characteristics from log-linear models for two main reasons. First, parameter estimates associated with preferences for men and women are possible to estimate separately. Second, the model allows examining possible dynamics of vertical and horizontal preferences that could lead to positive marital sorting of final matches. However, parameters from these models should be interpreted with caution given that they may still confound the effect of strategic behavior and meeting opportunities.

The dissertation of Erika Arenas Velázquez is approved.

Patrick Clement Heuveline

Adriana Lleras-Muney

Megan Mc Donell Sweeney

Robert Denis Mare, Committee Chair

University of California, Los Angeles

2014

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

Chapter 2

Chapter 3

Appendix A

LIST OF FIGURES

Chapter 1

Chapter 2

SUPPLEMENTARY MATERIALS

Interviewer's Manual

Instrument 1 (in Spanish)

Instrument 1 (in English)

Instrument 1B (in Spanish)

ACKNOWLEDGEMENTS

This dissertation would not be completed without the help, support, patience, and kindness of all my family, friends, and colleagues. I am especially grateful to my advisor Robert D. Mare who broadened my view of how social inequality should be investigated. He taught me the relevance of investigating the impact, at the population level, of social behavior at the micro level. He showed me the importance of examining social inequality from an intergenerational perspective, and the significance of the role of families in the social reproduction of inequality. He taught me the highest methodological tools to make social science. I am grateful for his patience, guidance, and support, and for believing in this dissertation project. He is and will continue to be an inspiration for me in the rest of my professional career.

I am also indebted to Graciela Teruel and Luis Rubalcava who encouraged me to study Sociology. I am especially grateful to Graciela Teruel for her support, kindness, and generosity over the years. She has been an example of perseverance that will continue to inspire me. I thank Graciela for teaching me how to conduct high quality research based on original data collection. Without her support, it would not have been possible to gather the data for this dissertation.

I also wish to thank my other committee members: Megan Sweeney whose detailed and useful comments helped me improved every chapter of my dissertation. As a teacher, her well organized and clear statistical classes set up a benchmark to which I strive to reach in my future teaching career. I am grateful to Patrick Heuveline whose suggestions broadened my theoretical background and greatly enriched my dissertation. I wish to thank him for his support in several conference presentations.

I am also indebted to Anne Pebley who always provided me with warmth advice and support while I was writing my dissertation. I would also like to thank the UCLA Demography,

Family and Stratification Research Group that showed me the importance of discussing and sharing ideas with colleagues during the research process.

I am indebted to Pedro Aspe and Aaron Tornell who always believed in me and supported me in crucial moments throughout this journey of getting my degree.

I also wish to thank all my classmates and colleagues. Dwight Davis whose great sense of humor and naturalness provided great moments of cheerfulness over the years. I thank Yana Kucheva and Tara Mckay for always sharing with me useful information that helped me succeed in each one of the milestones achieved during graduate school. I also wish to thanks Jenjira Yahirun for sharing with me the joys as well as the tough moments of graduate school. I am thankful to all of them for they were always willing to read my work, correcting my English, and give me substantive comments about my research. I would also like to thank Charles Lau who provided great dancing moments, Bongoh Kye for teaching me difficult statistical models, William Rosales for his openness and nice attitude towards me, Xi Song and Sung Park who by the end of graduate school were always willing to help me in different ways.

I am particularly grateful to my mother Irma Velázquez Marqués and my grandmother Catalina Marqués Cano for teaching me a strong work ethic. I owe much gratitude to my father Jesús Arenas Schwarz and may mother for investing in my education since I was a kid. I wish to thank my grandmother Noemí Schwarz for encouraging me to always follow my dreams. I thank my sisters Marcela and Cocoy, and my brother Jesús for their love and encouragement over these years. I am especially grateful to my parents in law, Agustín Herrera and Pilar Ortíz, for their unconditional care and support throughout these years. I owe much gratitude to Marcelino Ortíz Fernández, Erika Jiménez, José Marcelino Ortíz, and Lucía Caldera for their love and support during all these years.

I wish to thank Rodrigo Elizarrarás, Madinina Mauvois, Juan Carlos Carrillo, and Javier España whose friendship continues to show no bounds.

Lastly, I am grateful to my dear husband Christian Herrera whose love, affection and daily support was crucial throughout this process, and to my son Matias Herrera whose presence, light, and smiles were and continue to be an infinitely source of motivation and encouragement.

Funding for my research was generously provided by the University of California Institute for Mexico and the United States (UC MEXUS). I also gratefully acknowledge support from the California Center for Population Research and the UCLA Department of Sociology. Opinions reflect those of the authors and not necessarily those of the granting institutions.

VITA

2002	B.A., Economics (Honors) Instituto Tecnológico Autónomo de México
2004 - 2009	Consejo Nacional de Ciencia y Tecnología - University of California Mexican Institute for Mexico and the United States (UC MEXUS) Fellowship
2005 - 2008	Fieldwork Coordinator of the second wave of the Mexican Family Life Survey, Prof. Graciela Teruel (Universidad Iberoamericana Ciudad de México)
2006	M.A., Economics University of California Los Angeles
2006-2011	Fogarty International Center Fellowship
2007-2010	UCLA Graduate Division Fellowship
2008	M.A., Sociology University of California Los Angeles
2009 - 2011	Fieldwork Coordinator of the third wave of the Mexican Family Life Survey, Prof. Graciela Teruel (Universidad Iberoamericana Ciudad de México)
2009 - 2011	Research Assistant for the project "The impact of education in later life well-being: A comparative study of Korea and Mexico", Prof. Graciela Teruel (Universidad Iberoamericana Ciudad de México)
2010 - 2012	Research Assistant for the Mexican Marital Preference Project, Prof. Robert D. Mare (University of California Los Angeles) and for Prof. Graciela Teruel (Universidad Iberoamericana Ciudad de México)
2010	Wilshire Foundation Summer Award
2012	Reader for the Intermediate Statistical Methods Course (210C) in the Sociology Department
2012 - 2014	Research Assistant for the Mexican Family Life Survey, Prof. Graciela Teruel (Universidad Iberoamericana Ciudad de México)
2012	Teacher in a seminar on how to use the Mexican Family Life Survey at the Universidad Nacional Autónoma de México (UNAM)

2013	Bixby Foundation Fellowship
2013	Summer Travel Grant
2013	Del Amo Summer Fellowship
2014	UC MEXUS Dissertation Fellowship

PUBLICATIONS AND PRESENTATIONS

Arenas, Erika. 2004. "Efectos de la apertura comercial en la brecha salarial entre trabajadores calificados y no calificados en México durante el periodo 1987-2000." *Gaceta Económica* 9 (18): 5-39

Arenas, Erika, Hector Conroy, Jenna Nobles. 2008. "Recent Trends in Internal and International Mexican Migration: Evidence from the Mexican Family Life Survey", California Center of Population Research PWP-CCPR-2008-034

Arenas, Erika. 2008."Health Selection of Internal Migrants in Mexico: Evidence from the Mexican Family Life Survey", California Center of Population Research, Working Paper PWP-CCPR-2008-031

Arenas, Erika. 2008. "Health Selection of Internal Migrants in Mexico: Evidence from the Mexican Family Life Survey", Population Association of America in April 2008, New Orleans

Arenas, Erika. 2009. "Tracking across Borders: Experience of the Mexican Family Life Survey", Population Association of America in April 2009, Detroit

Arenas Erika. 2010. "Left Behind: The Effects of Children's Migration on Parents' Mental Health in Mexico", Population Association of America in April 2010, Dallas (with Jenjira Yahirun)

Arenas, Erika and Jenjira Yahirun. 2010. "Left Behind: The Effects of Offspring's Migration on Parental Mental Health in Mexico", California Center of Population Research, Working Paper PWP-CCPR-2010-060

Teruel, Graciela, Luis Rubalcava and Erika Arenas. 2012. "Migration in the Mexican Family Life Survey", Chapter 2 in *Migration and Remittances from Mexico: Trends, Impacts and New Challenges*, edited by Cuecuechea, Alfredo and Carla Pederzini, published by Lexington Books and Imprint of the Rowman & Littlefield Publising Group, January 2012.

Arenas Erika. 2012. "Assortative Mating Patterns in Mexico by Education, Skin Color, and Age Using the Mexican Family Life Survey", Poster Presentation in Population Association of America in May 2012, San Francisco (with Bongoh Kye, Graciela Teruel and Luis Rubalcava)

Arenas Erika. 2012. "Education and Elderly Health in South Korea: A Demographic Approach", May 2012, Poster Presentation in Population Association of America San Francisco (with Bongoh Kye, Graciela Teruel and Luis Rubalcava)

Arenas, Erika, Susan Parker, Luis Rubalcava, Omar Stabridis and Graciela Teruel. 2013. "Evaluación del Programa Oportunidades: Impacto en el sector laboral y escolar" en *Uso*

de una encuesta panel para evaluaciones de impacto: ensayo metodológico con la ENNVIH 2002-2005 edited by Consejo Nacional de Evaluación de la Política de Desarrollo Social en México (CONEVAL)

Arenas, Erika, Susan Parker, Luis Rubalcava, Omar Stabridis and Graciela Teruel. 2013. "Evaluación del Seguro Popular" en *Uso de una encuesta panel para evaluaciones de impacto: ensayo metodológico con la ENNVIH 2002-2005* edited by Consejo Nacional de Evaluación de la Política de Desarrollo Social en México (CONEVAL)

Arenas, Erika, Kye, Bongoh, Graciela Teruel and Luis Rubalcava. 2013. "The impact of education and health heterogeneity on Generational Support Ratios in Mexico", California Center of Population Research, Working Paper PWP-CCPR-2013-005

Arenas, Erika. 2013. "The impact of education and health heterogeneity on Generational Support Ratios in Mexico", Presentation at the American Sociological Association in August 2013, New York

Kye, Bongoh, Erika Arenas, Graciela Teruel and Luis Rubalcava. 2014. "Education and Elderly Health in South Korea: A demographic Approach", *Demographic Research*, Vol. 30 (26), pp. 753-794

Arenas, Erika, Susan Parker, Luis Rubalcava, and Graciela Teruel. 2014. "Impact of the Seguro Popular in the utilization of medical services, health expenditure and labor market in Mexico" (accepted in *El Trimestre Económico*)

Arenas, Erika. 2014. Differences in Educational Homogamy: Testing the "Looser Bond" and "Winnowing" Hypothesis Using Longitudinal Data from the Mexican Family Life Survey, Presentation at the Population Association of America in May 2014, Boston

INTRODUCTION

Background

Research on assortative mating over the past three decades shows a tendency of individuals to marry others with similar characteristics such as education (e.g. Mare 2008; Esteve and McCaa 2007; Blossfeld and Tim 2003; Mare 1991), religion (e.g. Bisin, Topa and Verdier 2004; Johnson 1980), occupation (e.g. Erickson and Goldthorpe 1992; Kalmijn 1991; Hout 1982), race/ethnicity (e.g. Kalmijn 1998) and age (e.g. Qian and Preston 1993). The evidence indicates positive marital sorting increases income inequality (Fernández and Rogerson 2000) and is positively correlated with wage inequality (Fernández, Guner and Knowles 2005).

In contemporary societies, educational assortative mating plays a key role in maintaining social inequality from one generation to the next (Mare and Maralani 2006). The strong pattern of educational assortative mating provides a social mechanism through which inequality can be reproduced across generations. Educational attainment is an indicator of labor market success (Treiman 1970), of cultural background, values, tastes, and lifestyles (DiMaggio and Mohr 1985). Hence, it is a fundamental socio-economic trait in the process of partner choice with implications in subsequent fertility behavior, and children's outcomes. The process of educational attainment provides opportunities for upward social mobility. By achieving higher education, individuals not only acquire the skills necessary for upward mobility but also become more attractive partners in the marriage market, which reinforces their chances for mobility. Consequently, in modern societies social hierarchies are strongly determined by educational attainment.

However, these hierarchies are still embedded in social stratification systems inherited from the past. North American and Latin American societies continue to organize themselves on racially ranked stratification systems inherited from the colonial era (Telles 2004; Wade 1997:51).

Evidence from the U.S. and Latin America shows that practices of discrimination based on skin color hinders the process of educational attainment (Murguia and Telles 1996; Telles and Steele 2012). In the U.S., not only light-skinned (rather than darker-skinned) individuals complete more years of schooling (Murguia and Telles 1996), but they also have higher incomes and better occupations (Espino and Franz 2002; Hunter 1998), and marry higher status individuals (Udry, Bauman and Chase 1971; Hunter 1998). These findings suggest that skin color may also play an important role in marriage behavior and in the process of upward mobility.

This dissertation project focuses on the process of partner choice. I examine assortative mating in terms of education and skin color given that these socio-economic characteristics are strongly associated with the persistence of inequality. I also investigate differences in educational assortative mating by union type (cohabitation vs. marriage) given that the choice of type of union has consequences on marital instability and children's well-being, which ultimately hampers upward mobility.

Even though marriage choice has important implications for inequality and its persistence, little is known about how marital sorting patterns arise. The positive correlation between spouses' characteristics reflects two forces in the marriage market: demand and supply. Mating preferences determine the demand, while meeting opportunities the supply (Kalmijn and Flap 2001). Investigating mating preferences in the process of union formation is central to understand marriage market dynamics leading to social inequality. However, estimating preferences is not an easy task. Traditionally, social stratification researchers infer preferences for partner's characteristics from parameters estimated using log-linear models (e.g. Mare 1991; Johnson 1980; Esteve and McCaa 2007). This is problematic because their estimation is based on marital

matches, so they confound the effect of preferences with the effects of meeting opportunities and strategic behavior. Nonetheless, given that most of the information available to analyze marital preferences comes from marital matches, parameters from log-linear models have been acceptable points of departure to investigate marital preferences. Log-linear models have shed some light on differences in the process of partner choice across distinct groups (e.g. those categorized by education or skin color) or across different types of union (marriage vs. cohabitation).

Most empirical studies on assortative mating use marital matches to infer preferences for spousal characteristics. This is problematic for several reasons. First, observed marital matches may stem from different underlying preferences (Fisman, Iyengar, Kamenica and Simonson 2008). Second, institutional arrangements in the marriage market may lead to positive assortative patterns even if individuals all have the same preferences (Kalmijn and Flap 2001). Third, the lack of information about the available alternatives makes it difficult to know if mate choice is due to preferences or opportunity constraints (Logan, Hoff and Newton 2008). Fourth, preference parameters from observed matches may be confounded with strategic behavior (Belot and Francesconi 2013). Fifth, singles are excluded from the analysis.

Recent studies of preferences for mate attributes use revealed preference data to study marriage market behavior (e.g. Belot and Francesconi 2013; Hitsch, Hortaçsu and Ariely 2010; Banerjee, Duflo, Ghatak, and Lafortune 2009; Lee 2009; Fisman, Iyengar, Kamenica, and Simonson 2006; Kurzban and Weeden 2005). These studies use rich sets of data from on-line dating services, speed-dating events, or newspaper ads samples that allow observation of the choice set of available partners as well as the final partner choice. Although these studies overcome some limitations of previous research, they still show some shortcomings. First, these

studies use non-random samples of the population. Second, their data only covers the early stages of union formation. Although dating and marriage markets certainly overlap they are conceptually different and individuals' preferences may differ in these two markets. From the standpoint of estimation, an advantage of these study designs is that by knowing the choice sets of alternative partners, researchers are able to estimate one-sided models and assess preferences separately for men and women. These models are similar to those used to study consumer choice where the choice set is well known. Using this type of data, preferences are not estimated from equilibrium outcomes so they can be estimated directly without relying on assumptions about the process through which final marital matches were attained.

One distinctive contribution of my dissertation is that I conducted a pilot study, the Mexican Marital Preference Pilot Project (MxMPP), to collect data specifically designed to investigate mating preferences (see Appendix A). I designed a survey instrument that collects retrospective relationship histories from adults between 20 and 60 years old. The MxMPP is a subsample of the Mexican Family Life Survey[1] (MxFLS) and has two novel features. First, it collects retrospective histories of marriages, consensual unions, and dating relationships. Second, it collects information about skin color of respondents and their partners.

My dissertation examines the role preferences in union formation, specifically the role of preferences for education, skin color and age. By knowing partially the choice sets of alternative partners, I compare two different methodologies used in the literature to estimate marital preferences: log-linear models and one-sided models. This project helps researchers determine whether collecting detailed information about the sets of available partners throughout the life

[1] The MxFLS is an ongoing longitudinal survey that is nationally-representative of individuals, households, and communities (N=35,000 individuals) in Mexico.

course improves estimates of preferences that are calculated from data only on marital matches. Finally, this project documents for the first time the role of skin color in the marriage market in Mexico.

Dissertation Summary

In my first chapter, I investigate educational homogamy by union type (i.e. cohabitation and marriage) in one Latin American country: Mexico. I test two hypotheses that explain differences in educational homogamy between marriage and cohabitation. The "winnowing" hypothesis assumes that people become more selective as they move from dating to cohabiting to marriage, hence it predicts higher homogamy in marriages than in cohabitations. The "looser bond" hypothesis assumes that cohabitation is a living arrangement chosen by individuals with more egalitarian values seeking a relationship lacking long-term commitment. The "looser bond" hypothesis conceives education as an indicator of potential labor market success and individual autonomy and predicts higher educational homogamy in cohabitation than in marriage.

These hypotheses were formulated to explain differences in educational homogamy based on the rise of cohabitation as a new institutional arrangement to form a family in the U.S. and other European countries. However, cohabitation in Mexico differs from cohabitation in developed countries, because it has been a socially acceptable institution for childbearing and childrearing since colonial times. Today two types of cohabitation coexist in Mexico: modern and traditional. Similar to cohabitation in the U.S., modern cohabitation in Mexico may be an alternative to marriage chosen by individuals with new value orientations toward individualism and gender equality (Rodriguez -Vignoli 2005; Fussell and Palloni 2004). However, traditional cohabitation is a colonial institution conceived as an alternative to marriage with the same goals and norms. In the

Mexican context the assumption that cohabitation implies a lack of long-term commitment could be questionable since about 70% of cohabiting couples last more than 20 years (Ojeda et al. 2008), and there are no differences in fertility behavior between cohabiting and married couples (Rodriguez -Vignoli 2005). Moreover, about 40% of unions who start cohabiting legalize their unions (Ojeda et al. 2008), and most of those who do not legalize their union, gain, after 2 years of cohabiting with their partners, similar rights and obligations than married couples. However, I test the "looser bond" hypothesis because cohabitation is an institution of lower duration (thus of shorter-term commitment) than marriage, in this sense cohabitation implies a "looser bond" compared to marriage.

I use data from three waves of the MxFLS and follow the stock-and-flow framework proposed by Schwartz (2010). This model investigates educational homogamy by comparing patterns of association by union type (i.e. cohabitation vs. marriage), but it goes further and takes advantage of longitudinal data to investigate some of the implications of these hypotheses on selective union dissolution. For example, the model allows testing one implication of the winnowing hypothesis in terms of union dissolution: whether couples that select out from cohabitation and marry show more educational homogamy compared to those who remain cohabiting.

To examine differences in educational homogamy, I rely on log-linear models to investigate spousal resemblance across union type (i.e. cohabitation, and marriage) and across transition status (i.e. cohabitation entry and remaining together, cohabitation exit and separation, cohabitation exit and entry into marriage with the same partner, marriage entry without cohabiting, and marriage exit).

I find no support for the "looser bond" hypothesis and strong support for the "winnowing" hypothesis. Results are also consistent with the cultural matching hypothesis and with recent economic theories that suggest the main difference between cohabitation and marriage is the strength of the commitment. Given that cohabitation is an institution of shorter duration than marriage, education becomes more salient for couples opting for marriage and this explains higher homogamy rates in marriages than in cohabitation. Finally, the evidence shown in this chapter also supports the idea that cohabitation markets, in Mexico, are less structured by education compared to marriage markets.

My second chapter investigates the influence of skin color in the process of partner choice. I examine assortative mating patterns by skin color using data from the MxMPP about skin color of respondents and their spouses. The MxMPP instrument asked interviewers to rate respondents' skin color, and asked respondents to rate the skin color of their spouse based on the NIS 10-scale color palette.

I investigate skin color homogamy using log-linear models to describe the association between partners' skin color, net of marginal distributions. I consider skin color as a trait hierarchically ordered, where lighter skin is preferred to darker skin. This assumption is based on historical and ethnographic evidence from Mexico showing that whiteness is associated with beauty, modernity, wealth, and material acquisition, while dark skin is associated with rurality, manual labor, poverty, and backwardness (Lewis 2012; Moreno 2010; Wade 1997).

I find evidence of skin color homogamy in Mexico. Skin color homogamy is present among couples in which both spouses attained more than elementary school, however, it is not present among couples in which at least one of the partners had elementary school or less. This finding

indicates that the least educated couples are more likely to mix. Moreover, I find that most of the exogamous unions involve persons of proximate skin colors, which indicates there is still a wide social distance at the extremes of the skin color spectrum. I also find the probability of forming a union decreases as the distance in terms of skin color increases, specifically for couples with more than elementary school. I do not find evidence supporting the hypothesis from "status exchange theory" which posits that light-skinned women interchange higher racial status for higher socio-economic status when they form a union.

The third and final chapter of my dissertation examines the underlying preferences that lead to positive assortative mating in terms of education, skin color, and age. I use data from the Mexican Marital Preference Pilot Project (MxMPP) and use information collected about the choice set of available partners before the first union (i.e. marriage or consensual union). I start by estimating log-linear models as a point of departure to investigate the patterns of association between partner's characteristics. Parameter estimations from these models confound the effects of preferences, strategic behavior, and meeting opportunities on partner's choice because these models only use data from final matches.

I take advantage of the MxMPP, which includes information about final matches as well as data from a partial choice set of alternative partners to estimate parameters associated with vertical (i.e. hierarchical) preferences and horizontal (i.e. homogamy, hypergamy, and hypogamy) preferences for education, skin color, and age, using one-sided logit models (i.e. conditional fixed effects logistic regression models). The analytical sample comprises first unions of respondents who declared having at least one previous relationship before their first union. I estimate preferences for men and women separately.

I find that positive assortative mating on education is mainly driven by vertical (hierarchical) preferences for education. Both men and women prefer higher rather than lower educated partners, however competition in the marriage market leads to positive assortative mating. Positive marital sorting seems to be reinforced by the preferences for educational homogamy rather than educational hypergamy. The evidence suggests skin color is a very vertical trait, which means everyone prefers lighter over darker skin color partners. Yet, competition in the marriage market leads to skin color homogamy. Finally, patterns of age homogamy and hypergamy seem to be driven mainly by women's preferences for men within their same age category rather than younger men, and by women´s preferences for older men.

Discussion and Implications

The three chapters of this dissertation have important implications for how marital preferences can be studied and point to directions for future research.

The first chapter finds evidence that strongly supports the "winnowing hypothesis"; however, the evidence is also consistent with economic theories that emphasize that choosing whether to marry or cohabit depends on individuals' potential returns to inter-temporal commitments specifically associated with investments in children. Given that expected returns from parental investments are higher for highly-educated parents, highly educated parents would be more likely to marry than to cohabit. One implication of this finding is the rise of cohabitation in Mexico is likely to induce greater social inequality in the short run and across generations.

The second chapter finds evidence of skin color homogamy in Mexico. I argue skin color preferences are shaped by stereotypes associated with certain ethnic groups. These stereotypes have been reinforced historically by political discourses and religious ideas, and, recently by the

mass media. Even though racism is not overt in Mexican society, stereotypical views of whites, blacks, and Indians have persisted since colonial times. Skin color, hair texture, and facial features, are used as proxies for descent and origin. I find that skin color is more relevant in the process of union formation for higher (rather than lower) educated couples. One implication of this finding is, as educational attainment improves in Mexico, skin color may play a more important role in the decision of whom to marry. Overall, this study shows evidence of the effect of skin color in the process of marriage choice in Mexico. Even though Mexican political elites assumed that by adopting the ideology of *Mestizaje* racial discrimination would eventually disappear and a stratification system based only on class differences would emerge, the evidence of this paper shows that skin color continues to have an impact in demographic processes leading to the social reproduction of inequality.

The third chapter shows how, by knowing partially the choice sets of available partners, estimating mating preferences using one-sided logit models goes beyond measuring associations of traits between spousal characteristics from log-linear models for two reasons: (1) preferences for men and women can be estimated separately, and (2) the model allows for an examination of some of the dynamics of vertical and horizontal preferences that lead to positive marital sorting of final marital matches. However, a common concern of using one-sided models is preference parameters may confound the effect of strategic behaviors and meeting opportunities. To investigate the presence of strategic behavior, future data collection efforts should gather information about marriage proposals and rejections. Moreover, to examine whether the preference parameters from one-sided models are reasonable estimates, it would be useful to provide a behavioral model of the marriage market that considers its "two-sided" nature. Then the analyst could use these preference parameters and the observed distributions of traits of all participants in the market to compute a set

of stable equilibrium matches. If the computed matches resemble the actual matches, then the model may be useful to investigate how changes in the distribution of some traits may alter the equilibrium in the marriage market as well as other implications of strategic behaviors in marriage choice. This project highlights the advantage of collecting data on the sets of available partners during the life course to improve our estimates of preferences compared to estimations that only use data on final matches.

References

Banerjee, Abhijit, Esther Duflo, Maitreesh Ghatak, and Jeanne Lafortune. 2009. "Marry For What: Caste And Mate Selection In Modern India", NBER Working Paper 14958, http://www.nber.org/papers/w14958

Belot, Michele and Marco Francesconi. 2013. "Dating Preferences and Meeting Opportunities in Mate Choice Decisions ", The Journal of Human Resources, Vol. 48, No. 2, 474-508

Bisin, Alberto, Giorgio Topa and Thierry Verdier. 2004."Religious Intermarriage and Socialization in the United States", *Journal of Political Economy*, Vol. 112, no. 3, pp. 615-663

Blackwell, D. L., & Lichter, D. T. 2000. "Mate selection among married and cohabiting couples", Journal of Family Issues, Vol. 21, pp. 275–302.

Blackwell, D. L., & Lichter, D. T. 2004. "Homogamy among dating, cohabiting, and married couples", Sociological Quarterly, Vol. 45, pp. 719–737.

Blossfeld, Hans-Peter and Andreas Tim. 2003. *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies*, edited by Blossfeld, Hans-Peter and Andreas Tim, European Association for Population Studies, Kluwer Academic Publishers

Bumpass, L. L., Sweet. J. A., & Cherlin, A. J. 1991. "The role of cohabitation in declining rates of marriage". *Journal of Marriage and the Family*, 53, 913– 927.

DiMaggio, Paul, and John Mohr. 1985. "Cultural Capital, Educational Attainment and Marital Selection" *American Journal of Sociology,* Vol. 90, pp. 1231-61.

Erikson, Robert, and John H. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility*

Espino Rodolfo and Michael M. Franz. 2002. "Latino Phenotypic Discrimination Revisited: The Impact of Skin Color on Occupational Status", *Social Science Quarterly,* Vol. 83, No. 2, June 2002, pp. 612-622

Esteve, Albert, and Robert McCaa. 2007. "Homogamia Educacional en México y Brasil, 1970-2000 Pautas y Tendencias", *Latin American Research Review*, Vol. 42, No.2, June 2007

Esteve, Albert, Joan Garcia-Roman, Ron Lesthaeghe, Antonio Lopez-Gay. 2012. "The "Second Demographic Transition" Features in Latin America", Centre d'Estudis Demografics, Universitat Autonoma de Barcelona.

Fernández , Raquel and Richard Rogerson.2000. "Sorting and Long-Run Inequality", NBER Working Paper 7508, http://www.nber.org/papers/w7508

Fernández, Raquel, Nezih Guner and John Knowles. 2005. "Love and Money: A theoretical and Empirical Analysis of Household Sorting and Inequality", *The Quarterly Journal of Economics*, pp. 273-343

Fisman, Raymond, Sheena S. Iyengar, Emir Kamenica, and Itamar Simonson. 2006. "Gender Differences in Mate Selection: Evidence from a Speed Dating", The Quarterly Journal of Economics, May 2006, pp. 673-697

Fisman, Raymond, Sheena S. Iyengar, Emir Kamenica, and Itamar Simonson. 2008. "Racial Preferences in Dating", Review of Economic Studies, 75: 117–132.

Fussell, Elizabeth and Alberto Palloni. 2004. “Persistent Marriage Regimes in Changing Times”, *Journal of Marriage and Family*, Vol. 66, Issue 5

Hitsch, Gunter J., Ali Hortaçsu, Dan Ariely. 2010. “Matching and Sorting in Online Dating”, American Economic Review, Vol. 100, No. 1, March 2010

Hout , Michael. 1982. “The Association between Husbands' and Wives' Occupations in Two-Earner Families, *American Journal of Sociology*, Vol. 88, No. 2 (Sep., 1982), pp. 397-409

Hunter, Margaret L. 1998. “Colorstruck: Skin Color Stratification in the Lives of African American Women”, *Sociological Inquiry,* Vol. 68, No. 4, Fall 1998, pp. 517-535

Johnson, Robert A. 1980. Religious Assortative Marriage in the United States. New York: Academic Press. (Ch. 1, 2)

Kalmijn, Matthijs.1991. “Status Homogamy in the United States”, *American Journal of Sociology*, Vol. 97, No. 2, pp. 496-523

Kalmijn, Matthijs.1998. “Intermarriage and Homogamy: Causes, Patterns, and Trends”, *Annual Rev. Sociology*, 24:395-421

Kalmijn, Matthijs and Hendrik Derk Flap. 2001. “Assortative Meeting and Mating: Unintended Consequences of Organized Settings for Partner Choices”, Social Forces, Vol. 79, No. 4, pp. 1289-1312

Kurzban, R. and Weeden, J. (2005) “HurryDate: Mate preferences in action”. Evolution and Human Behaviour 26, pp. 227-244.

Lesthaeghe, Ron. 2010.The Unfolding Story of the Second Demographic Transition, Population and Development Review 36(2): 211–251

Lewis, Laura. 2012. Chocolate and corn and flour: History, Race, and Place in the Making of Black Mexico, edited by Duke University Press

Logan, John Allen, Peter D. Hoff, and Michael A. Newton. 2008. "Two-Sided Estimation of Mate Preferences for Similarities in Age, Education, and Religion", Journal of the American Statistical Association", Vol. 103, No. 482

Lundberg, Shelly, and Robert A. Pollak. 2013. "Cohabitation an the Uneven Retreat from Marriage in the U.S., 1950-2010", http://paa2014.princeton.edu/papers/140239

Mare, Robert D. 1991. "Five Decades of Assortative Mating", American Sociological Review 56(1): 15-32

Mare, Robert D. 2008. "Educational Assortative Mating in Two Generations", Working Paper, http://www.econ.ucla.edu/workshops/papers/History/mare_eam_08.pdf

Mare, Robert D., and V. Maralani. 2006. "The Intergenerational Effects of Changes in Women's Educational Attainments." *American Sociological Review* 71: 542-64

Moreno Figueroa, Mónica G. 2010. "Whiteness, mestizaje and the logics of Mexican racism", *Ethnicities*, 10(3), pp. 387-400

Murguia, Edward and Edward Telles. 1996. "Phenotype and Schooling among Mexican Americans", *Sociology of Education,* Vol. 69, No. 4, pp. 276-289

Ojeda N. & González E. 2008. "Divorcio y separación conyugal en México en los albores del siglo XXI", *Revista Mexicana de Sociología* , 70(1), pp. 111-145

Qian, Zhenchao, and Samuel H. Preston.1993. "Changes in American Marriage, 1972 to 1987: Availability and Forces of Attraction by Age and Education", American Sociological Review, 1993, Vol. 58, August: 482-495

Rodríguez Vignoli, Jorge. 2005. "Unión y cohabitación en América Latina: ¿modernidad, exclusión, diversidad?, Proyecto Regional de Población Centro Latinoamericano y Caribeño de Demografía (CELADE) – División de Población de la CEPAL / Fondo de Población de las Naciones Unidas (UNFPA), Serie Población y Desarrollo No. 57

Schoen and Weinick. 1993. "Partner Choice in Marriages and Cohabitations", Journal of Marriage and Family, Vol. 55, No. 2, pp. 408-414

Schwartz, Christine R. 2010. "Pathways to educational homogamy in marital and cohabiting unions", Demography, Vol. 47, No.3, pp. 735-753

Seltzer, Judith. 2000. "Families Formed Outside of Marriage", Journal of Marriage and the Family 62: 1247–1268

Telles, Edward. 2004. Race in Another America: The Significance of Skin Color in Brazil, Princeton University Press

Telles, Edward and Liza Steele. 2012. "Pigmentocracy in the Americas: How is Educational Attainment Related to Skin Color", *AmericasBarometer Insights: 2012,* No. 73, pp. 1-8

Udry, J. Richard, Karl E. Bauman, and Charles Chase. 1971. “Skin Color, Status, and Mate Selection”, *The American Journal of Sociology,* Vol. 76, No. 4, Jan 1971, pp. 722-733

Treiman, Donald J. 1970. "Industrialization and Social Stratification." Pp. 207-234 in *SocialStratification: Research and Theory for the 1970s*, edited by Edward O. Laumann. Indianapolis:Bobbs-Merrill

Van de Kaa, Dirk J. 1987. “Europe's second demographic transition”, Population Bulletin, Vol. 42

Wade, Peter. 1997. Race and Ethnicity in Latin America edited by Pluto Press in London

Chapter 1
Educational homogamy in Cohabitation and Marriage: The Mexican Case

Introduction

Several regions of the world have experienced the emergence of new value orientations toward greater gender equality, individualism, secularism, distrust of traditional institutions, and more open attitudes toward sexuality that have changed conceptions about dating, marriage and family (Van de Kaa 1987; Lesthaeghe 2010). At the population level, this cultural shift have been accompanied by a rise in cohabitation, the postponement of marriage and fertility, and the increase in the proportion of childless women and non-marital childbearing (Lesthaeghe 2010; Seltzer 2000). The trend started in several industrialized countries, since the 1960s, and has continued to spread, to different degrees, to other regions of the world, including Latin America (Bumpass et al. 1991; Lesthaeghe 2010; Esteve 2012a; Seltzer 2000).

Changes in nuptiality patterns and the adoption of new institutional arrangements at union formation have inspired researchers to examine differences and similarities between traditional and non-traditional family institutions (Lesthaeghe 2010; Smock 2000; Esteve et al 2012c). The rise of cohabitation have motivated researchers to understand its role in family formation, by comparing cohabiting and married couples in several outcomes that are relevant in terms of family well-being, such as duration, fertility, and children's outcomes (Manning and Lichter 1996; Morrison and Ritualo 2000; Seltzer 2000). Other research focuses on partner choice and describes the characteristics of the individuals forming the different types of relationships (e.g. Schwartz 2010; Hamplova 2008; Blackwell and Lichter 2000 2004; Schoen and Weinick 1993). Yet, another line of research, attempts to understand whether cohabitation can actually be treated as a different social institution (e.g. trial marriage, alternative to single) or as an institution that shares similar characteristics and functions as marriage (e.g. alternative to marriage) (Heuveline and Timberlake 2004; Casper and Bianchi 2002; Rindfuss and Vandenheuvel 1990). Some studies go further and

investigate to what extent cohabitation differs across distinct national contexts (Heuveline & Timberlake 2004; Esteve 2012c).

In the present study, my primarily focus is on the process of partner choice. Since partners' socio-economic characteristics are associated with subsequent fertility behavior, marital stability, and children's outcomes, examining the socio-economic differences between couples that opt for cohabitation and couples who choose to marry is a first step to understand some of the implications that the spread of cohabitation may have in the social reproduction of inequality. I compare cohabitation and marriage by investigating spousal resemblance in terms of education, since educational assortative mating plays a key role in maintaining social inequality from one generation to the next (Mare 1995; Mare and Maralani 2006).

Based on the idea that education is the most important indicator of economic success, two different hypotheses are often found in the literature to explain differences in assortative mating by union type: (1) the "looser-bond" hypothesis, and the (2) double-selection or "winnowing" hypothesis. The "looser-bond" hypothesis assumes cohabitation is a new institutional arrangement, conceived as an alternative to marriage, which arose in response to a cultural shift in values involving greater individual autonomy and more gender equality; hence it is a type of relationship in which both partners equally place a high value on socio-economic characteristics of potential partners. This hypothesis predicts more educational homogamy in cohabitation than in marriage (Schoen and Weinick 1993). By contrast, the "winnowing" hypothesis conceives cohabitation as a trial marriage where people become more selective as they move from cohabitation to marriage. This hypothesis predicts more educational homogamy in marriage than in cohabitation (Blackwell and Lichter 2000 2004).

Empirical evidence is not conclusive. Studies using cross-sectional data provide support for the "winnowing" hypothesis (Blackwell and Lichter 2000 2004), other studies find support for the "looser bond" hypothesis (Schoen and Weinick 1993) and others find no difference in educational homogamy across union type (Jepsen and Jepsen 2002). Given the inconsistency of the findings, Schwartz (2010) shows how results from cross-sectional data may be driven by selective exits by union type, and finds no difference in educational homogamy in partner choice.

Most of this evidence comes from the United States (U.S.). However, the meaning of cohabitation may vary depending on the social and historical context (Seltzer 2000; Heuveline and Timberlake 2004). For example, in Latin America cohabitation and marriage have co-existed historically, since colonial times (De Vos 1998). Even though research on Latin America may shed some light in the consequences of having a dual-nuptiality system in the structure of inequality, little is known about assortative mating patterns in this region due to scarcity of data.

In the present study, I investigate the "winnowing" and "looser bond" hypotheses in one Latin American country: Mexico. I use longitudinal data from three waves of the Mexican Family Life Survey (MxFLS), a nationally representative sample well-suited for this study since it captures complete marital and cohabitation histories, thus allowing addressing the implications of selective dissolution by union type. I test the "winnowing" and "looser bond" hypotheses following the stock-and-flow framework proposed by Schwartz (2010). This framework incorporates, on the one hand, the traditional approach that compares educational homogamy between the stock of ever-married and ever-cohabiting couples. On the other hand, this framework allows a decomposition of these stocks in couples that persist and couples that select out from the union, thus allowing testing additional implications of these hypotheses. Finally, this framework allows a better understanding of which flows are responsible of the differences in educational

homogamy between the stocks of the different union types. The analysis proceeds in four steps. First, I investigate union type differences in educational assortative mating through the comparison of stocks of ever-married and ever-cohabiting couples. Second, I examine differences in educational homogamy among couples that select-out from cohabitation, and couples who progress from cohabitation to marriage. Third, I examine differences in educational homogamy between cohabiting couples that persist and couples that select-out from cohabitation (and do not marry). Finally, I test whether married couples that have cohabited before marrying are more likely to be homogamous than married couples who have not cohabited.

Theoretical Background

Theoretical models that attempt to explain educational homogamy differentials between cohabitation and marriages can be divided in two types depending on the meaning they attribute to education. While economic and exchange theories conceived education as an indicator of labor market success (Blossfeld 2009; Mare 1991; Treiman 1970), cultural matching theories conceive education as an indicator of cultural background, values, tastes, and lifestyles (DiMaggio and Mohr 1985; Mare 1991).

Economic and exchange theories

Economic and exchange theories explain the matching process by assuming that marriage is voluntary, individuals are rational and seek to maximize their well-being, and men and women face competition for the best possible mate (e.g. Edwards 1969; Becker 1973). Both of these theories assume the existence of gender asymmetries in preferences for partner´s socio-economic characteristics (i.e. women emphasize preferences for socio-economic characteristics more than men) in order to explain positive gains from marriage. As a result, the classic economic model

predicts that gains from marriage are maximized when women specialize in home production and men in labor market activities (Becker 1973 1974). Similarly, exchange theory predicts that gains from marriage only occur when potential partners differ in at least one trait (e.g. education) (Rosenfeld 2005).

However, given the spread of cohabitation some researchers have questioned the existence of gender asymmetries in socio-economic preferences for potential partners. Instead, they suggest that under a shifting cultural context that favors attitudes involving more individualism, both, males and females, might equally place a high value on characteristics associated with greater individual autonomy, such as educational attainment, because it serves as an indicator of potential economic success and economic independence. They portray cohabitation as a different institutional arrangement, a "looser bond", that may be chosen as an alternative to marriage but with distinct goals, norms and behaviors involving more individual autonomy and a lack of long-term commitment (Schoen and Weinick 1993). While gains from marriage arise from departures of homogamy due to the existence of gender asymmetries in preferences for socio-economic characteristics, gains from cohabitation involve preferences in which both partners place equally high importance on these characteristics. As a consequence, greater educational homogamy is expected in cohabitation than in marriages, and lower educational homogamy is expected in couples that select out from cohabitation than in couples that remain cohabiting. The "looser bond" hypothesis assumes that gains from marriage are explained by gender asymmetries for partner's socio-economic characteristics, however, this assumption may be questionable given that women, in general, have increased their participation in the labor market substantially (Lundberg and Pollack 2013; INMUJERES 2009).

Recent economic theories argue that the main difference between cohabitation and marriage comes from the strength of the commitment. Marriage represents a stronger commitment than cohabitation because costs of entry and exit are higher. These theories emphasize that choosing whether to marry or to cohabit depend on individual's potential returns of inter-temporal commitments, specifically associated with investment in children. Given that marriage provides with the mechanism for commitment that fosters long-term cooperation, individuals who expect making low investments (in time and money) for their children will prefer cohabitation, while those who expect making high investments in their children will prefer marriage (Lundberg and Pollack 2013). Based on these theories if marriage is an institution that implies a longer-term commitment and higher parental investments, partner's education may be more salient in the process of partner choice and higher homogamy would be expected in marriage than in cohabitation.

Alternative explanations that attempt to explain homogamy differences by union type conceive cohabitation as a trial marriage, in which cohabiting is part of a dynamic search process in which as individuals progress in their relationships from dating to cohabiting to marriage they become more selective in their choices (Blackwell and Lichter 2000 2004). Since education is an indicator of potential economic success that is hierarchically ordered, individuals would prefer to form a union with others with comparatively more desirable characteristics than their own (South 1991; Mare 2008; Becker 1973), more specifically, with higher education. As they become more selective in their choices they may weight more heavily their preference for these comparatively more desirable characteristics. However, the constraints imposed by competition would allow them to achieve someone with at least the same resources they can offer in exchange in the marriage market. The "winnowing" or double-selection hypothesis predicts that as individuals

progress from dating to cohabiting to marriage, homogamy will increase. It also implies that couples that select out from cohabiting will be less homogamous than couples that progress from cohabitation to marriage.

Cultural matching

The cultural matching hypothesis suggests that individuals tend to match based on similar traits regarding cultural background, shared values and lifestyles (DiMaggio and Mohr 1985). If education is conceived as an indicator of these traits, it may be treated more like an ascribe characteristic such as race, ethnicity, and religion rather than as an achieve characteristic. Treating education as an ascribed characteristic, does not change the predictions of the "winnowing" hypothesis, because it argues individuals tend to sort themselves into similar achieved and ascribed characteristics (Blackwell and Lichter 2000; Schwartz 2010). By contrast, treating education as an ascribed characteristic changes the original prediction of the "looser bond" hypothesis. In particular, since marriage is conceived as a long-term institution while cohabitation is not, sharing similar values may be more relevant for married than for cohabiting couples, consequently, higher homogamy would be expected in marriages than in cohabitation.

Previous Research

Empirical evidence is not conclusive. Studies using cross-sectional data provide support for the "winnowing" hypothesis by showing that educational homogamy among cohabiting couples is lower than among married couples (Blackwell and Lichter 2000). Other evidence shows that among the highest educated individuals, those who have ever-cohabited are most homogamous compared to those who never cohabited (Blackwell and Lichter 2004). Yet, other studies find support for the "looser bond" hypothesis (Schoen and Weinick 1993) and others found no

difference in educational homogamy across union type (Jepsen and Jepsen 2002). Another line of research that examines transitions finds no difference between cohabitors that separate and those who marry (Goldstein and Harkett 2006).

Given the inconsistency of the findings, Schwartz (2010) shows how results from cross-sectional data are likely to be affected by selective exits by union type. Using a stock-and-flow approach and longitudinal data, she finds that educational homogamy differences in prevailing unions, across union type, are not due to differences in partner choice. Instead, she finds that these differences are mainly driven by selective union dissolution. In particular, she finds that dissimilar marriages are more likely to dissolve, while dissimilar cohabitors are more likely to persist. Furthermore, in the case of newly formed unions she finds no significant differences in educational homogamy across union type; moreover, she finds high rates of educational homogamy in both types of union, suggesting that the observed union patterns are associated with the fact that marriage markets are partially structured by education.

The majority of the evidence comes from the U.S.; however, the meaning of cohabitation may vary depending on the social and historical context. Cross-national research shows cohabitation in the U.S. is characterized by a very short duration compared to other industrialized nations and it is more similar to singlehood than to marriage (Rindfuss and Vandenheuvel 1990; Seltzer 2000; Heuveline and Timberlake 2004). Moreover, the decreasing proportion of cohabitating couples that end in marriage, from the 1970s to the 1990s, indicates that cohabitation is not, in general, a stage in the marriage process in the U.S. (Seltzer 2000). Finally, cohabitation is not a widely socially accepted institution to raise a family in the U.S.; even though, it has spread widely[2], family laws still give cohabitors few of the rights of married couples, which reflects the

[2] More than two-thirds of American adults cohabit before they marry (Kennedy and Bumpass 2008).

historical legacy of a social system where marriage was the only acceptable institution to form a family (Seltzer 2000; DeVos 1999; De Vos 1998).

However, for other societies where, historically, extra-marital unions have been socially recognized institutions for childbearing and childrearing, the role of cohabitation in family formation and its characteristics may differ widely from those prevalent in the U.S. For example, in Latin America two types of cohabitation coexist: modern and traditional cohabitation. While modern cohabitation may be conceived as an alternative to marriage with different goals and norms toward individualism and gender equality (Rodriguez -Vignoli 2005; Fussell and Palloni 2004), traditional cohabitation is a historical and cultural institution usually conceived as an alternative to marriage with the same goals and norms. Traditional cohabitation is often chosen by the economically disadvantage (Lopez-Ruiz et al. 2009; De Vos 1999), while modern cohabitation is increasingly chosen by the more educated (Esteve et al. 2012c). The accelerated spread of modern cohabitation, in the last four decades in Latin America, may reflect that historically cohabitation has been a socially recognized institution to form and raise a family. The Latin American case is an example of a system where cohabitation and marriage have co-existed historically. Research on Latin American may provide some insight in the possible consequences that a dual-nuptiality system may have in the structure of inequality in other societies in which this type of system is emerging.

However, little is known about assortative mating patterns in Latin America due to scarcity of data. At the national level, most cross-national studies use census data to examine educational homogamy differences between marriage and cohabitation (De Vos 1998; López-Ruiz et al. 2009; López-Ruiz et al. 2008; Esteve and McCaa 2007) and find higher odds for educational homogamy among married couples than among cohabitors. This “homogamy gap” between married and

cohabiting couples has narrowed as cohabiting rates have increased in the region (Esteve et al. 2013). Based on these results, some researchers provide slight evidence supporting the "winnowing" hypothesis. However, using cross-sectional data poses important limitations to test this hypothesis, since results are likely to be driven by selective dissolution by union type (Schwartz 2010).

In the present study, I investigate the "winnowing" and "looser bond" hypotheses in one Latin American country: Mexico. I use longitudinal data from a nationally representative sample of the Mexican population, which allows addressing some of the implications of selective dissolution by union type to test these hypotheses.

The Study Site

Since the last half of the twentieth century, Mexico has experienced a profound demographic, economic, and social transformation. Life expectancy has increased by 22 years over the last 5 decades (i.e. a girl born in 2000 can expect to live to age 77 and a boy to age 73 (Villagómez 2009; López 2001)). Total fertility rate has fallen from above 6 children per woman in 1975 to 2 children per woman in 2009 (Romo et al. 2009). In terms of education, in the last 15 years, the average completed years of schooling increased from 6.6 in 1990 to 8.1 in 2005. For women this increase was from 6.3 to 7.9 years of schooling and for men was from 6.9 to 8.4 (INMUJERES 2009). Between 1970 and 2010 the percentage of women that completed secondary education increased from 2.6% to 41.2% (Esteve et al. 2012b). Improvements in women's education have been coupled with increases in their labor force participation (from 17% in 1970 to 42% in 2009) (INMUJERES 2009).

These demographic changes and the improvements in women's economic position in Mexican society have led to new configurations of the marriage market and in union formation patterns. In the last four decades, among women age 25 to 29, cohabitation rates increased from 16% to 37%, the proportion of single mothers increased from 11% to 16%, women with lower educational levels shifted from marriage to cohabitation, while women with tertiary education shifted from marriage to single (Esteve et al. 2012b). Moreover, the divorce rate increased from 4% to 16% between 1980 and 2010 (INEGI). Finally, from 1970 to 2000, Mexico experienced increases in educational homogamy and decreases in educational hypergamy (Esteve and McCaa 2007).

Cohabitation in Mexico

Marriage and cohabitation are two institutional arrangements that have coexisted since colonial times in Latin America. One historical explanation about the origin of cohabitation in Latin America suggests that during the colony, given that males outnumbered females from European descent, societal norms allowed sexual relations with indigenous women; however, due to restrictions imposed by religion these unions were never formalized (Lopez et al. 2009; Castro 1997). For the population in the lower income distribution, cohabitation became an alternative to marriage because they could not afford the costs associated with the formalization of the union (Lopez et al. 2009; Castro 1997).

Currently, prevalence of cohabitation in Latin America varies greatly by region. In 2002, Dominican Republic showed one of the highest percentages of cohabitation (64%) while Mexico showed one of the lowest (20%) (Castro et al. 2008; Lopez-Ruiz et al. 2009). Although Mexicans are more likely to form marriages, from 1970 to 2000 cohabitation increased from 13% to 20% (Lopez-Ruiz et al. 2009). In Mexico, cohabitation is an institution where childbearing and

childrearing activities are socially acceptable (Castro et al. 2008). Recent amendments in family laws give cohabitors the same rights and obligations as married couples after two years of cohabitation. Moreover, fertility differences between union types are non-existent (Rodriguez -Vignoli 2005). Whereas, about 32% of non-marital cohabitation unions eventually turn into marriages after 25 years (Goldman and Pebley 1986), a large proportion of them are never legalized. Even though cohabitation is socially recognized, marriage is considered a more prestigious and stable institution.

Until today, the less educated groups are the most likely to cohabit. In 2000, 81% of individuals cohabiting attended less than secondary school compared to 68% of married individuals (Lopez-Ruiz et al. 2009). The existence of a negative educational gradient of cohabitation suggest that the spread of cohabitation may indicate economic constraints, more than preferences, are guiding couples' decisions to cohabit instead of marrying (Castro et al. 2008). However, the existence of this gradient may also be historically-rooted. Given that the rise of cohabitation had occurred at the same time as improvements in women's education, some researchers suggest this rise may be explained by a shift in preferences for union type (Esteve et al. 2012c). Furthermore, since the spread of cohabitation among the most educated has been the main driving force behind the expansion of cohabitation in the country (Rodriguez -Vignoli 2005), changes in preferences rather than economic constraints may explain better the spread of cohabitation (Rodriguez -Vignoli 2005; Fussell and Palloni 2004).

Analytical Framework

Based on the stock-and-flow framework proposed by Schwartz (2010), Figure 1-1 describes the model I used in this study to examine educational homogamy differences between cohabiting and married couples.

INSERT FIGURE 1-1

Given that previous research shows that socio-economic status and education are less relevant in partner´s choice on second marriages (Dean 1978; Shafer and James 2013), my primarily interest is the analysis of first unions. My analysis is divided in two parts, I start with an analysis of stocks and then I proceed with an analysis of flows.

First, I compare the stock of ever-cohabiting and ever-married couples (boxes A and B)[3]. The stock of ever-cohabiting couples is constituted by cohabitation entries and cohabitation exits (transitions 1, 2, and 3). The stock of ever-married couples is constituted by marriage entries through cohabitation, marriage entries without cohabiting with spouse and marriage exits (transitions 3, 4, and 5). Moreover, I stratify homogamy rates by education to examine differences in homogamy patterns between couples with low and high education.

Second, I compare educational homogamy between couples that select-out from cohabitation and couples who progress from cohabitation to marriage (transitions 2 vs. 3). Moreover, I compare cohabiting couples that persist to couples that select-out from cohabitation (and do not marry) (Transition (1-2-3) vs. 2). Finally, I test differences in homogamy among married couples that have cohabited with their spouse before marrying to married couples who did not cohabited with their spouse (transitions 3 vs. 4).

[3] Schwartz (2010) compared the stock of cohabiting and married couples, at a given time, for all parities.

Data and Methods

Data

I use data from three waves of the MxFLS, which is an ongoing national representative longitudinal survey of individuals, households, and communities. The baseline survey was fielded in 2002, its original sample size was of 35,000 individuals, and rural population was oversampled. The second and third waves were conducted in 2005 and 2009-2010, respectively, and recontact rates at the household level were about 90% in the both waves. The MxFLS is designed to collect information of new households established by panel members who moved out from their household at baseline and of new household members. By 2010, the sample consists of about 48,000 individuals.

The MxFLS is well suited to study educational assortative mating because it gathers a rich set of information on respondent's cohabiting and marriage retrospective histories and partner's educational characteristics. Moreover, the prospective nature of the survey allows following any change in respondent's marital status, from 2002 to 2009-2010. Furthermore, this information allows researchers to clearly identify first unions from subsequent ones. In addition, if the partners mentioned by respondents in the retrospective histories are MxFLS respondents as well, their education and marital status information is obtained from their own responses, instead of relying in the response of their partner. Finally, since new household members are added to the sample, information about new partners is collected.

Sample Selection

First, I selected a sample of respondents who were 20 to 60 years old by the third wave of the MxFLS and have reported being in a union (i.e. marriage or cohabitation) at least once.

Appendix Table 1-1 shows a general description of the MxFLS sample. The MxFLS has 23,445 respondents between the ages 20 to 60 years old, of these respondents 78% have been in a union, and 18% have never been in a union. Hence, 18,321 respondents comprise my eligible sample.

Second, I use retrospective histories to identify union parity. Of the 18,321 respondents, 19% never responded to this section so parity is missing for these cases. However, instead of dropping all these observations, I keep respondents 25 years old (by 2009) or younger and assume that the union observed in the data is their first. After, eliminating observations of respondents from whom I cannot determine the union type, the sample is reduced to 16,308 respondents (see Appendix Table 1-1).

Third, from the 16,308 respondents I generate a sample of 12,233 couples, and then I drop 1,339 couples (4% marriages and 6% cohabitations) due to missing data in the variables of interests, resulting in a sample of 10,894 couples. This sample of couples consists of unions formed by at least one partner with no previous unions, where 71% are ever-married and 29% have ever-cohabited (see Appendix Table 1-2). Moreover, 51% are couples in which both partners are in their first union; 6% are couples formed by one partner with at least one previous union and the other with none; and, 43% are unions formed by at least one partner with no previous unions and missing parity information for the other partner[4].

My primarily interest is on first order unions; however, since 43% of the sample includes couples with partial information on parity, I conduct a supplementary analysis (see Appendix Table 1-3) to examine differences in educational homogamy patterns by couple's type in order to determine if keeping all the observations are likely to bias my results. The supplementary analysis

[4] The information of one of the partners is not available because: (1) the partner is not an MxFLS respondent, or (2) if he/she is a respondent, then he/she did not answer the retrospective marital and non-marital cohabitation history.

shows no strong evidence to support the existence of differences across couple's type; hence, 10,894 couples comprise the final analytical sample.

The unit of analysis is couples. In the first part of the analysis (where I analyze stocks of ever-cohabited and ever-married couples) couples that cohabited with their spouse before getting married are two times in the sample. In the second part of the analysis, since I classify couples by transition type, I eliminate duplicates and classify couples to mutually exclusive categories; hence 10,441 couples comprise the transition sample.

Variables

Educational attainment is collapsed in four ordered categories: (1) elementary school or less, (2) secondary school, (3) some high school, and (4) high school graduate or more. Measurement of education is based on education level by the time the third wave of MxFLS was conducted (see Appendix 4 for the criteria to generate this variable). Homogamy is a dummy variable that indicates whether partners' educational attainment is the same or not. Hypergamy is a dummy variable that indicates whether the male shows a higher educational level than the female within a couple.

Crossing variables are dummies coded based in the following designed matrices:

Crossing 1

Male's	Female's Education			
Education	0-6	7-9	10-11	12+
0-6	0	1	1	1
7-9	1	0	0	0
10-11	1	0	0	0
12+	1	0	0	0

Crossing 2

Male's	Female's Education			
Education	0-6	7-9	10-11	12+
0-6	0	0	1	1
7-9	0	0	1	1
10-11	1	1	0	0
12+	1	1	0	0

Crossing 3

Male's	Female's Education			
Education	0-6	7-9	10-11	12+
0-6	0	0	0	1
7-9	0	0	0	1
10-11	0	0	0	1
12+	1	1	1	0

Crossing parameters represent the varying degrees of difficulty of crossing different educational barriers (Powers and Xie 2008). Crossing 1 parameters represent the difficulty for

someone with less than 7 years of education of forming a union someone with 7 or more years of education. Crossing 2 and crossing 3 parameters represent the difficulty of crossing the educational barriers 10+/>10 and 12+/<12, respectively.

Methods

To examine differences in educational homogamy between the stocks of ever-cohabitors and ever-married couples, I rely on log-linear models to examine whether the association between husband's and wife's educational attainment varies by union type. I estimate a series of log-linear models to analyze a three-way table that is produced by cross-classifying wife's education (0-6, 7-9, 10-11, 12+), husband's education (0-6, 7-9, 10-11, 12+), and union type (ever-married, ever-cohabited) which results in a 4 X 4 X 2 = 32 cell table. Log-linear models permit estimating associations between partners' characteristics controlling for marginal distributions. Since my goal is to analyze the association between partners' education across union type, I begin with a "conditional independence" model (MU FU), which assumes no variation in the association between partners' education across union type. The formal model can be written as follows.

$$\log(f_{ijk}) = \mu + \mu_i^M + \mu_j^F + \mu_k^U + \mu_{ik}^{MU} + \mu_{jk}^{FU}$$

where M denotes husband's education (i=1,…,4), F is wife's education (j=1,…,4), U is type of union (k=1,2), and f_{ijk} is the expected number of unions between husbands in education category i and wives in education category j , and union type k. I add to the baseline model the interaction term μ_{ij}^{MF} that allows for unrestricted association between partners' education and constrains this partial association to be constant by union type. Then, I add homogamy, crossing, hypergamy, and diagonal terms to the baseline model to investigate differences in educational assortative mating by union type.

To examine the impact of selective exits on the stocks of ever-cohabitors and ever-married individuals, I estimate a similar set of log-linear models but instead of cross classifying by union type I cross-classify the unions by transition status into 5 categories: cohabitation entry and remaining together, cohabitation exit and separation, cohabitation exit and entry into marriage with the same partner, marriage entry without cohabiting, and marriage exit which results in a 4 X 4 X 5 = 80 cell table. Model comparisons rely on the Bayesian Information Criterion (BIC) and G^2 statistics.

Results

Descriptive Statistics

INSERT TABLE 1-1 HERE

Table 1-1 shows the distribution of educational attainment for male's and female's education by union type. The table reveals that cohabiting couples tend to be less educated compared to married couples.

INSERT TABLE 1-2 HERE

Table 1-2 shows the frequencies and distribution of female's education conditional on male's education by union type. In general, the table reveals a tendency for educational homogamy; however, the table also shows a pattern of educational hypergamy among females with secondary school. These patterns are similar for both union types.

INSERT TABLE 1-3 HERE

Table 1-3 shows observed rates of intermarriage by union type. This table shows that educational homogamy is more common among ever-married than among ever-cohabited couples;

while, hypergamy[5] is more common among cohabitors. Moreover, cohabiting couples are (i) more likely to cross the 7+/<7 educational barrier than married couples, (ii) as likely as married couples to cross the 10+/<10 educational barrier, and (iii) less likely to cross the 12+/<12 educational barrier than married couples.

INSERT TABLE 1-4 HERE

Table 1-4 shows the distribution of unions by transition status. As expected, the table reveals that 14% of the sample consists of cohabitating couples that remain together as cohabitors, 11% are cohabiting couples that separated, 5% are cohabiting couples that decide to marry, 56% are married couples with no previous cohabitation and remain together, and 14% consist of couples that exit from marriage. This table also shows that among the stock of ever-cohabited couples, 51% remained together as cohabitors, 41% separated, and 9% married. Moreover, only 4% of the marriages are preceded by cohabitation and 19% of marriages separate or divorce.

To examine the association between male's and female's educational attainment controlling for the marginal distribution of education I present the results of the log-linear analysis in the next section.

Log-Linear Models

INSERT TABLE 1-5 HERE

I estimate a series of log-linear models to explore educational homogamy patterns by union type. Model specifications and fit statistics of selected models are provided in Table 1-5[6]. I present G^2 (likelihood ratios) and BIC statistics to measure the goodness of fit of the models. A

[6] In Appendix 5, I estimate an alternative set of models that control for couple's type and find similar results.

significant G^2 indicates that the saturated model fits better the data than the reduced model. A smaller value of BIC indicates that the reduced model is more likely than the saturated model.

Model 1 (the conditional independence model) assumes no association between partners' education across union type. Model 2 allows for unrestricted association between partners' education, but this is assumed to be constant across union type. This model accounts for most of the association in the table as it is shown by the substantial decrease in G^2 from Model 1. Models 3 to 6 add homogamy, crossing, hypergamy, and diagonal parameters to Model 2 and relax the assumption that assortative mating is invariant across union type. Based on the BIC statistics all these models improve the fit of Model 2, however, Model 3 is most likely to be the true model.

INSERT TABLE 1-6 HERE

Table 1-6 show log-linear models using transition status instead of union type. Results using transition status are similar to those in the previous analysis.

Assortative mating patterns by union type

To investigate homogamy differences by union type, I estimate homogamy parameters from the preferred model (MU_FU_MF_HU) in Table 1-7. Figure 1-2 shows these parameters graphically.

INSERT TABLE 1-7 HERE

INSERT FIGURE 1-2 HERE

I find that the odds of homogamy are about 30% (exp{1.87-2.13}) higher for ever-married compared to ever-cohabiting couples. Consistent with previous research using the Mexican census data (Lopes-Ruiz, Esteve and Cabres 2009; Esteve et al. 2013), this result supports the "winnowing" hypothesis that predicts more homogamy among marriages than among cohabiting unions. If education is conceived as an indicator of cultural background, values and lifestyle, this

result would support the cultural matching hypothesis. Next, I examine educational specific homogamy parameters from Model 6 (MU_FU_MF_DU) in the right side of Figure 1-3.

INSERT FIGURE 1-3 HERE

The graph shows greater homogamy among the less educated couples for both union types; moreover, among couples with less than 7 years of education I find that the odds of homogamy are about 50% greater for married than for cohabiting couples, while among couples with 7 or more years of education these odds are about 20% greater for married than for cohabiting couples. Some researchers suggest that cohabitation in the lower strata is explained mostly by economic constraints more than for preferences for union type; however, if this were the case differences across union type should not be expected, since cohabitation, in this case, would be conceived as an alternative to marriage with the same goals and norms. Yet, I find significant differences across union type, and the difference is higher for couples in the lower educational distribution. Conceiving education as an indicator of shared values, the cultural matching hypothesis would explained that this difference might be related to a change in preferences (in terms of the commitment) for union type.

Assortative mating patterns by transition type

To examine educational homogamy by transition status, I estimate parameters of the preferred model (MT_FT_MF_HT). Table 1-8 shows parameter estimates and Figure 1-4 present them graphically. I begin by comparing educational homogamy between couples that select-out from cohabitation and couples who progress from cohabitation to marriage. Figure 1-4 shows that the odds of homogamy of couples that exit from cohabitation to marriage (transition 3) are 54% higher than the odds of homogamy of couples that exit from cohabitation and separate (transition 2). Similar to other studies, I find that homogamous cohabitors are more likely to marry and dissimilar

cohabitors are more likely to split up (Schwartz 2010; Goldstein and Harkett 2006); however, contrary to other studies from the U.S., my results are statistically significant, which indicates that a "winnowing" process may be taking place. Alternatively, this would also support the cultural matching theory indicating that couples that shared similar values are more likely to persist. The difference between these two groups contributes to the higher resemblance in the stock of ever-married couples compared to the stock of ever-cohabited couples.

Additionally, I test differences in homogamy among married couples that have cohabited with their spouse before marrying (transition 3) to married couples who did not cohabited with their spouse (transition 4). If a "winnowing" process were taking place, higher homogamy would be expected from the former group than from the latter; however, consistent with previous research (Schwartz 2010), I find small and not significant differences between the two groups.

Finally, consistent with the cultural matching theory, I find that dissimilar couples (either cohabiting or married) are more likely to dissolve. The graphs shows that the odds of homogamy among persisting cohabiting couples are 26% higher than the odds of couples that select-out from cohabitation (and do not marry); and the odds of homogamy among persisting married couples are 21% higher than the odds of homogamy among couples that select-out from marriage, and these differences are statistically significant. While selective dissolution from marriage contributes positively to the homogamy difference between the stock of ever-married and ever-cohabited couples, selective dissolution from cohabitation contributes in the opposite direction.

Discussion

This paper investigates educational homogamy by union type (i.e. cohabitation and marriage), using data from the MxFLS, a national representative sample of Mexico. I test two hypotheses

that explain differences in educational homogamy between marriage and cohabitation. On the one hand, the "winnowing" hypothesis assumes that people become more selective as they move from dating to cohabiting to marriage, hence it predicts greater homogamy in marriages than in cohabitations. On the other hand, the "looser bond" hypothesis assumes that cohabitation is a living arrangement chosen by individuals with more egalitarian values seeking a relationship lacking of long-term commitment. The "looser bond" hypothesis conceives education as an indicator of potential labor market success and individual autonomy and predicts greater educational homogamy in cohabitation than in marriage.

The "looser bond" hypothesis assumes that a cultural shift favoring norms and values toward more egalitarianism and individualism changed preferences for partner´s choice in two dimensions. First, it changed preferences for socio-economic characteristics of potential partners. In particular, this hypothesis suggests that males and females that opt for cohabitation (instead of marriage) would equally place a high value on characteristics associated with economic independence. Second, it changed preferences for the type of relationship seek in terms of commitment. More specifically, this hypothesis assumes that cohabitation implies a "looser bond" because it underlies on the assumption that it is an institution lacking of long-term commitment (Schoen and Weinick 1993). This assumption is based on empirical evidence from the U.S. showing that in several attitudes, such as fertility expectations, cohabitors resemble more closely single than married (Rindfuss and VandenHeuvel 1990), and the duration of cohabitation is shorter than in marriages (Seltzer 2000) (i.e. in the U.S. within the first 10 years of the union, about 60% of first cohabitors and only 30% of first married couples break up (Bumpass & Sweet 1989 Table 4)).

In the Mexican context the assumption that cohabitation implies a lack of long-term commitment could be questionable since about 70% of cohabiting couples last more than 20 years (Ojeda et al. 2008), and there are no differences in fertility behavior between cohabiting and married couples (Rodriguez -Vignoli 2005). Moreover, about 40% of unions who start cohabiting legalize their unions (Ojeda et al. 2008), and most of those who do not legalize their union, gain, after 2 years of cohabiting with their partners, similar rights and obligations than married couples. However, I test this hypothesis because in Mexico cohabitation is also (as in the U.S.) an institution of lower duration than marriage; in this sense cohabitation implies a "looser bond" compared to marriage. Nonetheless, in Mexico this type of union does not lack of a long-term commitment, instead it implies a shorter-term commitment compared to marriage. In Mexico, within the first 10 years of the union, about 20% of first cohabitors and only 3% of married couples split up (Ojeda and González 2008 Table 8).

In this paper, I find no support for the "looser bond" hypothesis. Contrary to what this hypothesis predicts, I find higher educational homogamy among ever-married than among ever-cohabited couples. Moreover, I find that couples that select out from cohabitation and marry show higher educational homogamy than those who persist cohabiting. By contrast, my results are consistent with the "winnowing" hypothesis in several respects. As predicted by this hypothesis, I find higher homogamy among ever-married than among ever-cohabited couples, and higher homogamy among couples that select out from cohabitation and do not marry compared to those that select out from cohabitation and marry. However, contrary to its predictions, I do not find significant differences between married couples that previously cohabited with their spouse and married couples that did not. Using a stock and flow approach, previous research from the U.S. finds a slight support for the "winnowing" hypothesis (Schwartz 2010), however, in the Mexican

context, I find strong support for this hypothesis. Differences across these regions may reflect that in Mexico cohabitation functions as a "trial marriage", since about 40% of the unions that start cohabiting eventually marry (Ojeda et al. 2008), while the U.S. few of the unions that start cohabiting end in marriage (Seltzer 2000).

Even though, in general, results are consistent with the "winnowing" hypothesis, they can also be explained by a cultural matching hypothesis that conceives education as an indicator of shared values and lifestyles. Consistent with the cultural matching hypothesis I find that dissimilar couples (either cohabiting or married) are more likely to dissolve. Moreover, since cohabitation is an institution of shorter duration than marriage, education becomes more salient for couples opting for marriage; hence I find higher homogamy in marriages than in cohabitation. An alternative explanation, which is also consistent with these findings is provided by recent economic theories that emphasize that choosing whether to marry or to cohabit depend on individual's potential returns of intertemporal commitments, specifically associated with investment in children (Lundberg and Pollack 2013). These theories highlight that marriage is a social institution that provides the commitment mechanism for parents to adopt a high investment strategy for their children, so that individuals that expect making low investments (in time and money) for their children will be more likely to cohabit and those who expect making high investments for their children will be more likely to marry. Expected returns from parental investments are higher for highly-educated parents, in this regard, highly educated parents would be more likely to marry than to cohabit. One implication of this finding is that the rise on cohabitation, in Mexico, is likely to be inducing greater social inequality in the short run, and across generations.

Similar to evidence from the U.S. (Schwartz 2010), results from Mexico suggest that changes in the cultural paradigm involving greater gender equality and greater individual autonomy are not reflected in higher educational homogamy in cohabitation than in marriage.

So far, I have only explained these differences by hypothesizing a change in preferences. However, educational homogamy reflects two forces in the marriage market: demand and supply. On the demand side, individuals' preferences for attributes of their spouses play a key role in determining who marries whom; from the supply side perspective, the choice of whom to marry is constrained by the opportunities to meet people with the desirable attributes individuals are searching for (Kalmijn and Flap 2001). The evidence showed here is consistent with the fact that marriage markets are partially structured by education (Schwartz 2010). In Latin America, the coexistence of traditional and modern cohabitation adds another layer of complexity to the analysis of the structure of marriage and cohabiting markets. Esteve (2013) argues that traditional cohabiting markets in Latin America are less structure by education because "cohabiting couples were historically more likely to be found in the lower social classes, among less educated people and in indigenous populations", while modern cohabitation "spreads into higher social strata" hence it is more structured by education. He argues that, since "marriages are distributed across the educational spectrum" it should be more structured by education. In this regard, the evidence shown in this paper would support the idea that cohabiting markets are less structured by education compared to marriage markets, since lower educational homogamy is found in cohabitation than in marriages.

Finally, this paper also contributes to the literature in the understanding on the effects of selective dissolution in homogamy differences across union type. I find that selective dissolution from marriage contributes positively to the homogamy difference between the stock of ever-

married and ever-cohabited couples, which is consistent with research from the U.S. (Schwartz 2010); however, I find that in the Mexican context, selective dissolution from cohabitation contributes negatively to this difference. In other words, selective dissolution from cohabitation offsets the increase in the homogamy difference due to selective dissolution of marriages.

Appendix 1-3

Supplementary Analysis

The analysis consists in estimating a series of log-linear models to explore differences in educational homogamy and hypergamy patterns by couple's type. In particular, I examine a contingency table that is produced by cross-classifying wife's education (*0-6, 7-9, 10-11, 12+*), husband's education (*0-6, 7-9, 10-11, 12+*), and couple's type (*1-1, 1-2, 1-DK*), which results in a 4 X 4 X 3 = 48 cell table.

Model specifications and fit statistics of selected models are provided in Table 1-3.1 of this appendix and parameter estimates of the preferred model are provided in Table 1-3.2. G^2 (likelihood ratios) and BIC statistics are provided to measure the goodness of fit of the models. I begin with the conditional independence model (MR_FR) that assumes that the association between husband's and wife's education is not associated. Then I add to the baseline model an interaction term that allows for unrestricted association between partners' education and constrains these partial association to be constant by couple's type. Finally, I add interactions terms between couple's type and homogamy, crossing, and hypergamy terms to the baseline model to investigate differences in educational assortative mating by couple's type. Based on the BIC statistics, the analysis indicates that Models 2 to 5 are better than the saturated model; however, Model 2 (MR_FR_MF), which has the most negative BIC statistic, is the best. Based on the G^2 statistics, Models 3 (MR_FR_MF_HR) and 4 (MR_FR_MF_CR) fit better the data compared to the saturated model. In sum, based on BIC we may conclude that there are not significant differences across couple's type. However, results from the G^2 suggest that there may be some differences. Next, I examine these differences for Model 3 since our main interest is the analysis of homogamy.

I present estimates of the interaction parameters of Models 3 in Table 1-3.2 of this appendix. Interaction parameters indicate that the log odds of homogamy (vs. heterogamy) for couple's types *1-2* and *1-DK* are significantly lower compared to type *1-1* ($p<.01$).

Based on these mixed results, my analytical sample will comprise the three types of couples (10,894 couples). Moreover, the main analysis in the paper will not include controls for couple's type in order to maintain a parsimonious formulation; however, whenever possible, I will conduct supplementary analyses to check if the results of the models change by including controls for couple's type.

Appendix 1-5

Supplementary Analysis

This analysis is conducted to evaluate if controlling for couple's type change the results obtained from log-linear models in the first part of the analysis in section 5 of the paper. I examine whether the association between wife's and husband's educational attainment varies by union type by estimating a series log-linear models to analyze a four-way table that is produced by cross-classifying wife's education (0-6, 7-9, 10-11, 12+), husband's education (0-6, 7-9, 10-11, 12+), union type (marriage, cohabitation), and couple's type (*1-1* vs. others) which results in a 4 X 4 X 2 X 2 = 64 cell table.

I begin with a baseline model (MUT FUT MFT) (see Appendix 5 Table 1-5), which assumes no variation in the association between partners' education across union type. The formal model can be written as follows.

$$\log(f_{ijkl}) = \mu + \mu_i^M + \mu_j^F + \mu_k^U + \mu_l^T + \mu_{ik}^{MU} + \mu_{jk}^{FU} + \mu_{il}^{MT} + \mu_{jl}^{FT} + \mu_{kl}^{UT} + \mu_{ikl}^{MUT} + \mu_{jkl}^{FUT} + \mu_{ijl}^{MFT}$$

where M denotes husband's education (i=1,…,4), F is wife's education (j=1,…,4), U is type of union (k=1,2), couple's type (l=1,2) and f_{ijkl} is the expected number of unions between husbands in education category i and wives in education category j , union type k, and couple's type l. I add to the baseline model homogamy, hypergamy, crossing, and diagonal terms to investigate differences in educational assortative mating by union type. In general our find are similar from the models based on a three way table, where we do not control for couple's type.

References

Becker, Gary. 1973. "A Theory of Marriage: Part I", *The Journal of Political Economy* Vol. 81, No.4, pp. 813-846

Becker, Gary. 1974. "A Theory of Marriage: Part II", Marriage, Family, Human Capital and Fertility, editor Schultz, Theodore W., pp. 11-26

Blackwell, D. L., & Lichter, D. T. 2000. "Mate selection among married and cohabiting couples", *Journal of Family Issues*, Vol. 21, pp. 275–302.

Blackwell, D. L., & Lichter, D. T. 2004. "Homogamy among dating, cohabiting, and married couples", *Sociological Quarterly*, Vol. 45, pp. 719–737.

Blossfeld, Hans-Peter. 2009. "Educational Assortative Marriage in Comparative Perspective", *Annual Review of Sociology*, 35: 513-530

Bumpass, L. L., Sweet. J. A., & Cherlin, A. J. 1991. "The role of cohabitation in declining rates of marriage". *Journal of Marriage and the Family*, 53, 913– 927.

Casper, L. M., & Bianchi, S. M. 2002. Cohabitation. *In Trends in the American family*. Thousand Oaks, CA: Sage.

Castro Martín, T. 1997. "Marriages without papers in Latin America" IUSSP International Population Conference Proceedings, Beijing 11-17 October 1997, Vol. 2, pp. 941-960. Liège, Belgium: International Union for the Scientific Study of Population.

Castro Martín, Teresa, Teresa Martín García and Dolores Puga González. 2008. "Matrimonio vs. unión consensual en Latinoamérica: Contrastes desde una perspectiva de género",

presentation in the III Congreso de la Asociación Latinoamericana de Población, ALAP, Córdoba, Argentina, 4-26 September 2008

De Vos, S. 1998. "Nuptiality in Latin America: The View of a Sociologist and Family Demographer", (CDE Working Paper no. 98-21) Center for Demography and Ecology, University of Wisconsin, Madison

De Vos, S. 1999. "Comment Of Coding Marital Status In Latin America", *Journal of Comparative Family Studies*, 30, 1, 79-93

Dean, Gillian, & Gurak D.T. 1978. "Marital homogamy the second time around", *Journal of Marriage and the Family* 43: 559-570.

DiMaggio, Paul, and John Mohr. 1985. "Cultural Capital, Educational Attainment and Marital Selection", *American Journal of Sociology*, Vol. 90, pp. 1231-61.

Edwards, J. N. 1969. "Familial behavior as social exchange", *Journal of Marriage and the Family*, 31, 518-526.

Esteve, Albert, and Robert McCaa. 2007. "Homogamia Educacional en México y Brasil, 1970-2000 Pautas y Tendencias", *Latin American Research Review*, Vol. 42, No.2, June 2007

Esteve, Albert, Joan Garcia-Roman, Ron Lesthaeghe, Antonio Lopez-Gay. 2012a. "The Second Demographic Transition Features in Latin America", Centre d'Estudis Demografics, Universitat Autonoma de Barcelona.

Esteve, Albert, Joan Garcia-Roman, Ron Lesthaeghe. 2012b. "The Family Context of Cohabitation and Single Motherhood in Latin America", *Population and Development Review* 38(4):707-727

Esteve, Albert, Robert McCaa, Luis Angel Lopez. 2013. "The Educational Homogamy Gap Between Married and Cohabiting Couples in Latin America", *Population Research Policy Review* 32:81-102

Esteve, Albert, Ron Lesthaeghe, Antonio Lopez-Gay. 2012c. "The Latin American Cohabitation Boom, 1970-2007", *Population and Development Review* 38(1):55-81

Fussell, Elizabeth and Alberto Palloni. 2004. "Persistent Marriage Regimes in Changing Times", *Journal of Marriage and Family*, Vol. 66, Issue 5

Goldman, Noreen and Anne R. Pebley.1986. "Legalization of Non-marital cohabitation in Latin America", *Social Biology*, Vol. 33, pp. 49-61

Goldstein, Joshua, and Kristen Harknett. 2006. "Parenting across Racial and Class Lines: Assortative Mating Patterns of New Parents Who Are Married, Cohabiting, Dating, and No Longer Romantically Involved." *Social Forces*, Vol. 85(1), pp. 121-143.

Hamplová, D. and C. Le Bourdais. 2008. "Educational Homogamy of Married and Unmarried Couples in English and French Canada" Canadian Journal of Sociology, 33(4)845-872

Heuveline, P. & Timberlake J.M. 2004. "The Role of Cohabitation in Family Formation: The United States in Comparative Perspective", *Journal of Marriage and Family* 66: 1214-1230

INMUJERES.2009.Instituto Nacional del las Mujeres, México, http://estadistica.inmujeres.gob.mx/formas/temas.php

Jepsen, L.K. and Jepsen C.A. 2002. "An empirical Analysis of the Matching Patterns of Same-Sex and Opposite-Sex Couples", *Demography*, 39(3), 435-453

Kalmijn, Matthijs and Hendrik Derk Flap. 2001. "Assortative Meeting and Mating: Unintended Consequences of Organized Settings for Partner Choices", *Social Forces*, Vol. 79, No. 4, pp. 1289-1312

Kennedy, S., & Bumpass, L. L. 2008. "Cohabitation and children's living arrangements: New estimates from the United States", *Demographic Research*, 19(47), 1663–1692. doi:10.4054/DemRes.2008.19.47

Lesthaeghe, Ron. 2010. "The Unfolding Story of the Second Demographic Transition", *Population and Development Review* 36(2): 211–251

López Ramírez, A. 2001. "El perfil socio-demográfico de los hogares: 1976-1997", México, DF, CONAPO Abril 2001

López-Ruiz, Esteve and Cabré. 2008, "Distancia social y uniones conyugales en América Latina", *Revista Latinoamericana de Población*, 1, (2).

López-Ruiz, Esteve and Cabré. 2009. "Uniones consensuales y matrimonios en América Latina: ¿Dos patrones de homogamia educativa?", *Papeles de Poblacion,* 15 (60), Abril-Junio 2009, pp. 9-41.

Lundberg, Shelly, and Robert A. Pollak. 2013. "Cohabitation an the Uneven Retreat from Marriage in the U.S., 1950-2010", http://paa2014.princeton.edu/papers/140239

Manning, W. D., & Lichter, D. T. (1996). "Parental co- habitation and children's economic well-being", *Journal of Marriage and the Family*, 58, 998–1010

Mare, Robert D. 1991. "Five Decades of Assortative Mating", *American Sociological Review* 56(1): 15-32

Mare, Robert D., 1995, Changes in Educational Attainment and School Enrollment, State of the Union: America in the 1990s, ed. R. Farley, vol 1 pp. 155-213. New York, Russell Sage Found.

Mare, Robert D. 2008. "Educational Assortative Mating in Two Generations", Working Paper, http://www.econ.ucla.edu/workshops/papers/History/mare_eam_08.pdf

Mare, Robert. D., and V. Maralani. 2006. "The Intergenerational Effects of Changes in Women's Educational Attainments." *American Sociological Review* 71: 542-64

Morrison, D.R. & Ritualo A. 2000."Routes to Children's Economic Recovery after Divorce: Are Cohabitation and Remarriage Equivalent?", *American Sociological Review* , 65(4),560-580

Ojeda N. & González E. 2008. "Divorcio y separación conyugal en México en los albores del siglo XXI", *Revista Mexicana de Sociología* , 70(1), pp. 111-145

Powers, Daniel A. and Yu Xie. 2008. Statistical Methods for Categorical Data Analysis edited by Emerald Group Publishing Limited, 2nd edition

Rindfuss, R. R., & VandenHeuvel, A. (1990). "Cohabitation: A precursor to marriage or an alternative to being single?", *Population and Development Review*, 16, 703–726.

Rodríguez Vignoli, Jorge. 2005. "Unión y cohabitación en América Latina: ¿modernidad, exclusión, diversidad?, Proyecto Regional de Población Centro Latinoamericano y Caribeño de Demografía (CELADE) – División de Población de la CEPAL / Fondo de Población de las Naciones Unidas (UNFPA), Serie Población y Desarrollo No. 57

Romo, R. 2009. "El descenso de la fecundidad en México, 1974-2009: a 35 años de la puesta en marcha de la nueva política de población", in CONAPO (2009) *La situación demográfica*

de México 2009. Consejo Nacional de Población Press, http://www.conapo.gob.mx/publicaciones/sdm/sdm2009/02.pdf.

Rosenfeld, Michael J. 2005. "A critique of Exchange Theory in Mate Selection", American *Journal of Sociology*, Vol. 110, No. 5, pp. 1284-1325

Schoen and Weinick. 1993. "Partner Choice in Marriages and Cohabitations", *Journal of Marriage and Family*, Vol. 55, No. 2, pp. 408-414

Schwartz, Christine R. 2010. "Parthways to educational homogamy in marital and cohabiting unions", *Demography*, Vol. 47, No.3, pp. 735-753

Seltzer, Judith. 2000. "Families Formed Outside of Marriage", *Journal of Marriage and the Family* 62: 1247–1268

Shafer, Kevin , Spencer L. James. 2013. "Gender and Socioeconomic Status Differences in First and Second Marriage Formation", *Journal of Marriage and Family*, (75) 3: 544–56

Smock, P.J. 2000. "Cohabitation in the United States: An Appraisal of Research Themes, Findings, and Implications", *Annual Review of Sociology* 26: 1-20

South, S.J. 1991. "Sociodemographic Differentials in Mate Selection Preferences", *Journal of Marriage and Family*, Vol. 53, No. 4, pp.

Treiman, Donald J. 1970. "Industrialization and Social Stratification." Pp. 207-234 in Social Stratification: Research and Theory for the 1970s, edited by Edward O. Laumann. Indianapolis: Bobbs-Merrill

Van de Kaa, Dirk J. 1987. "Europe's second demographic transition", *Population Bulletin*, Vol. 42 (March).

Villagómez, Paloma. 2009. “Evolución de la situación demográfica nacional a 35 años de la Ley General de Población de 1974”, Chapter 1 in *La situación demográfica de México 2009* edited by the Consejo Nacional de Población, México, September 2009.

TABLES

Table 1-1: Distribution of Educational Attainment for males' and females' education by union type

		Unweighted		Weighted	
		Cohabitation	Marriage	Cohabitation	Marriage
	N	3,106	7,788	3,106	7,788
	(%)	29	71	28	72
Males' Education (%)					
	0-6	41	40	42	36
	7-9	34	30	33	31
	10-11	6	7	6	7
	12+	18	23	19	26
Females' Education (%)					
	0-6	42	42	43	40
	7-9	37	32	36	31
	10-11	6	6	6	7
	12+	15	20	15	23

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 1-2: Frequency and conditional distribution of female's education given male's education by union type

Panel A. Frequencies

Cohabitation

Male's Education	Female's Education				
	0-6	7-9	10-11	12+	Total
0-6	817	362	31	77	1287
7-9	346	486	77	143	1052
10-11	35	96	25	45	201
12+	96	196	59	215	566
Total	1294	1140	192	480	3106

Marriage

	Female's Education				
	0-6	7-9	10-11	12+	Total
Male's Education					
0-6	2246	697	70	118	3131
7-9	722	1088	170	373	2353
10-11	86	233	68	137	524
12+	194	471	179	936	1780
Total	3248	2489	487	1564	7788

Panel B. Conditional Distribution (weighted)

Cohabitation

	Female's Education				
	0-6	7-9	10-11	12+	Total
Male's Education					
0-6	65	26	3	6	100
7-9	35	47	7	11	100
10-11	17	51	12	21	100
12+	17	32	8	43	100
Total	43	36	6	15	100

Marriage

	Female's Education				
	0-6	7-9	10-11	12+	Total
Male's Education					
0-6	72	22	3	3	100
7-9	31	45	8	16	100
10-11	18	42	11	29	100
12+	10	24	10	56	100
Total	40	31	7	23	100

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 1-3. Observed Rates of Intermarriage[1] by union type (N=10,894)

	Cohabitation		Marriage	
	Unweighted	Weighted	Unweighted	Weighted
Homogamous Unions	50%	52%	56%	55%
Hypergamy	27%	27%	24%	25%
Unions Crossing Educational Barriers				
7+/<7 years of schooling	30%	30%	24%	24%
10+/<10 years of schooling	24%	23%	22%	23%
12+/<12 years of schooling	20%	18%	19%	20%

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 1-4: Transition Status

		Weighted %
All unions		
Prevailing Unions		14%
Exit and Separated		11%
Exit and Marriage with the same partner		5%
Marriage with no previous cohabitation		56%
Exit Marriage		14%
	N=	10441
Cohabitations		
Prevailing Unions		51%
Exit and Separated		41%
Exit and Marriage with the same partner		9%
	N=	3106
Marriage entries		
Previous cohabitation with spouse		4%
No previous cohabitation		96%
	N=	6382
Ever-Married		
Prevailing Unions		81%
Exit		19%
	N=	7334

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 1-5: Goodness of Fit of Selected Models of Educational Assortative Mating by Union Type (N=10,894 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 4 X 4 X 2 Contingency table (Males's educ X Female's Education X Type of Union)						
0	MFU	-112.7	0.0	0	1.000	0
1	MU_FU	-1970.8	3716.2	18	0.000	3549
2	MU_FU_MF	-139.2	52.9	9	0.000	-31
3	MU_FU_MF_HU	-122.4	19.4	8	0.013	-55
4	MU_FU_MF_CU	-115.4	5.4	6	0.493	-50
5	MU_FU_MF_HypU	-126.0	26.7	8	0.001	-48
6	MU_FU_MF_DU	-121.1	16.8	7	0.019	-48

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.
Notes: Model terms are as follows: M=Male partner's education, F=Female partner's education, U=Union type, H=Homogamy; Hyp=Hypergamy; C=Crossing; D=Specific Homogamy (Both partners <=6 yrs. Educ or Both partners > 6)

Table 1-6: Goodness of Fit of Selected Models of Educational Assortative Mating by Tranistion Status (N=10,441 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 4 X 4 X 5 Contingency table (Males's educ X Female's Education X Transition Type)						
0	MFT	-231.8	0.0	0	1.000	0
1	MT_FT	-2042.1	3620.5	45	0.000	3204
2	MT_FT_MF	-283.1	102.6	36	0.000	-231
3	MT_FT_MF_HT	-255.5	47.3	32	0.040	-249
4	MT_FT_MF_CT	-248.6	33.6	24	0.091	-188
5	MT_FT_MF_HypT	-262.8	62.0	32	0.001	-234
6	MT_FT_MF_DT	-253.2	42.8	28	0.036	-216

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Notes: Model terms are as follows: M=Male partner's education, F=Female partner's education, T=Transition type, H=Homogamy; Hyp=Hypergamy; C=Crossing; D=Specific Homogamy

Table 1-7: Educational Homogamy Parameters for Selected Models by Union Type (N=10,894)

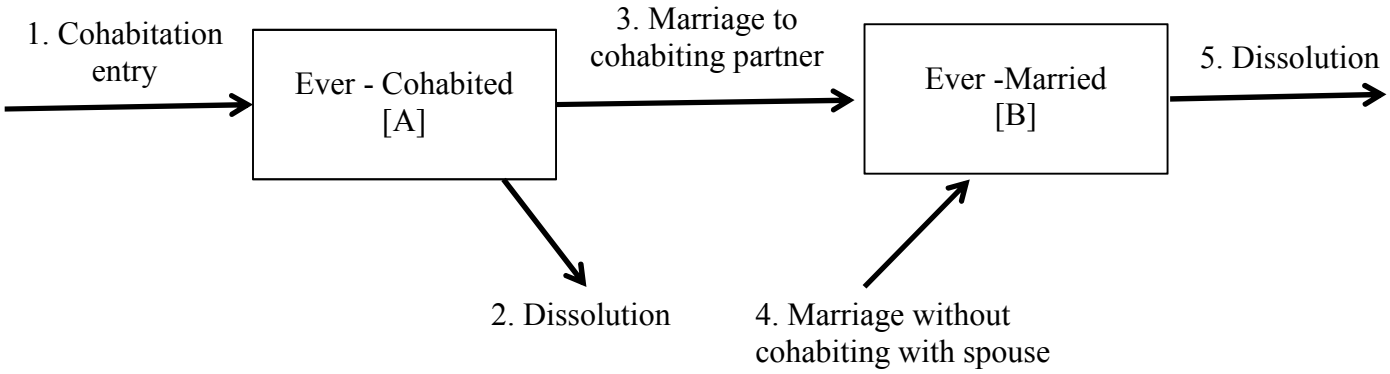
		Log Odds			Odds	
		β_M	β_{CU}	β_{CU}- β_M (1)	exp(β_M)	exp(β_{CU})
Panel A: Homogamy interaction parameters from model MU_FU_MF_HU						
	Homogamy	2.13	1.87	-0.27	8.42	6.46
	p-value	*0.000*	*0.000*	*0.000*		
Panel B: Homogamy Specific interaction parameters from model MU_FU_MF_DU						
	Education 0-6	3.28	2.86	-0.42	26.49	17.48
	p-value	*0.000*	*0.000*	*0.000*		
	Education >6	1.01	0.82	-0.18	2.74	2.28
	p-value	*0.000*	*0.000*	*0.009*		

(1) This is the coefficient of the interaction terms in each model (e.g. p_value of Homogamy X Union Type)

Table 1-8: Educational Homogamy Parameters by Transition Status (N=9,881)

	Log Odds		Odds
	b_M		exp(b_M)
Panel A: Homogamy interaction parameters from model MU_FU_MF_HU			
Homogamy Prev CU	1.93	0.00	6.90
Homogamy Exit CU	1.70	0.000	5.49
HomExitCUMar	1.89	0.000	6.63
HomPrevMar	2.14	0.000	8.48
HomExitMar	2.20	0.000	9.00
Panel D: Diagonal interaction parameters from model MU_FU_MF_DU			
Specific Homogamy		***<=6***	
Prev CU	2.88	0.00	17.74
Exit CU	2.72	0.000	15.19
ExitCUMar	2.84	0.000	17.20
PrevMar	3.32	0.000	27.58
ExitMar	3.04	0.000	20.92
Specific Homogamy		***>6***	
Prev CU	0.93	0.00	2.53
Exit CU	0.67	0.000	1.95
ExitCUMar	1.26	0.000	3.54
PrevMar	1.07	0.000	2.92
ExitMar	0.93	0.000	2.54

Figure 1-1. Stock-and –Flow Diagram of Transitions Into and Out of Cohabitation and Marriage



Source: Schwartz (2010; p. 737)

Figure 1-2: Log Odds of Educational Homogamy by Union Type

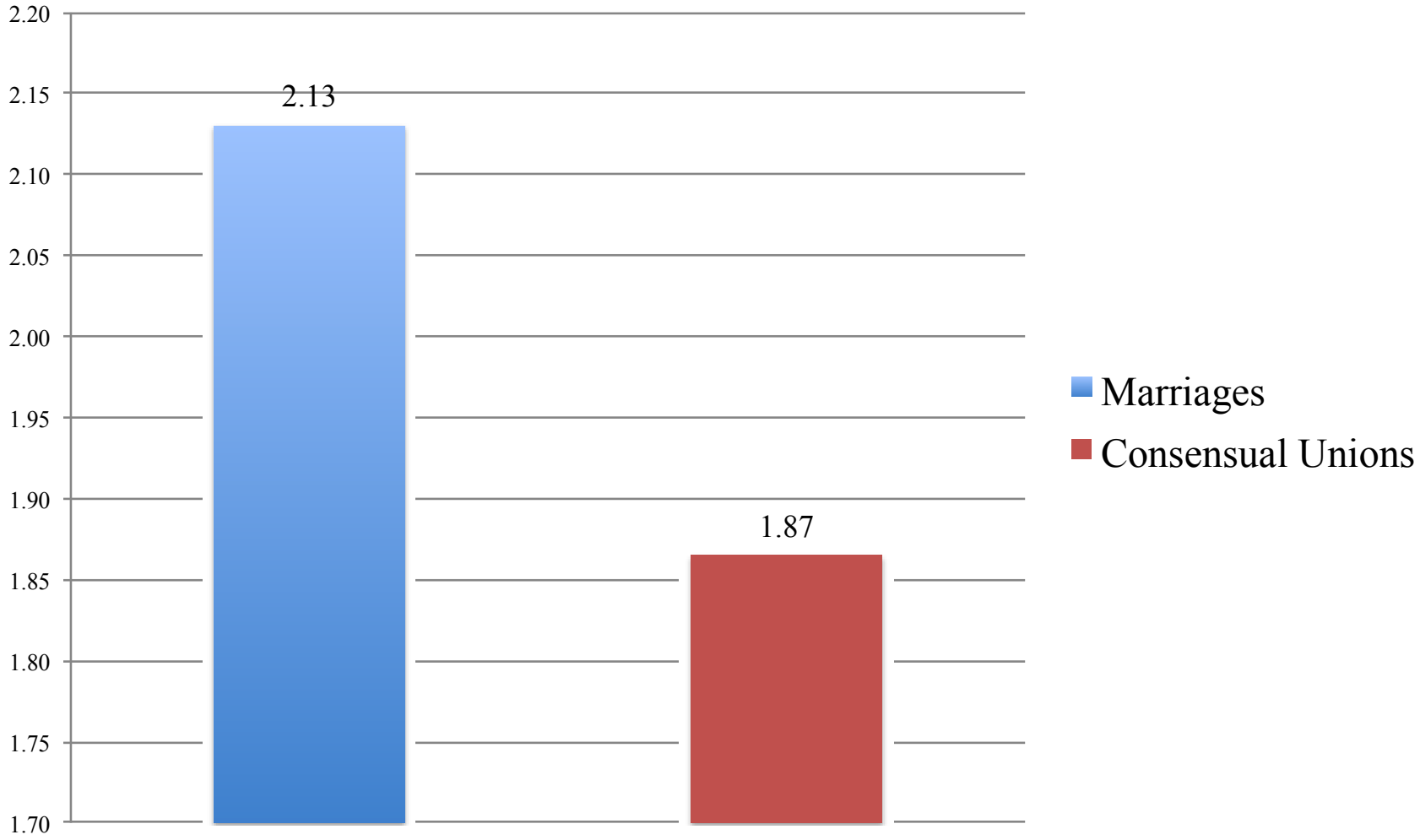


Figure 1-3: Log Odds of Educational Specific Homogamy by Union Type

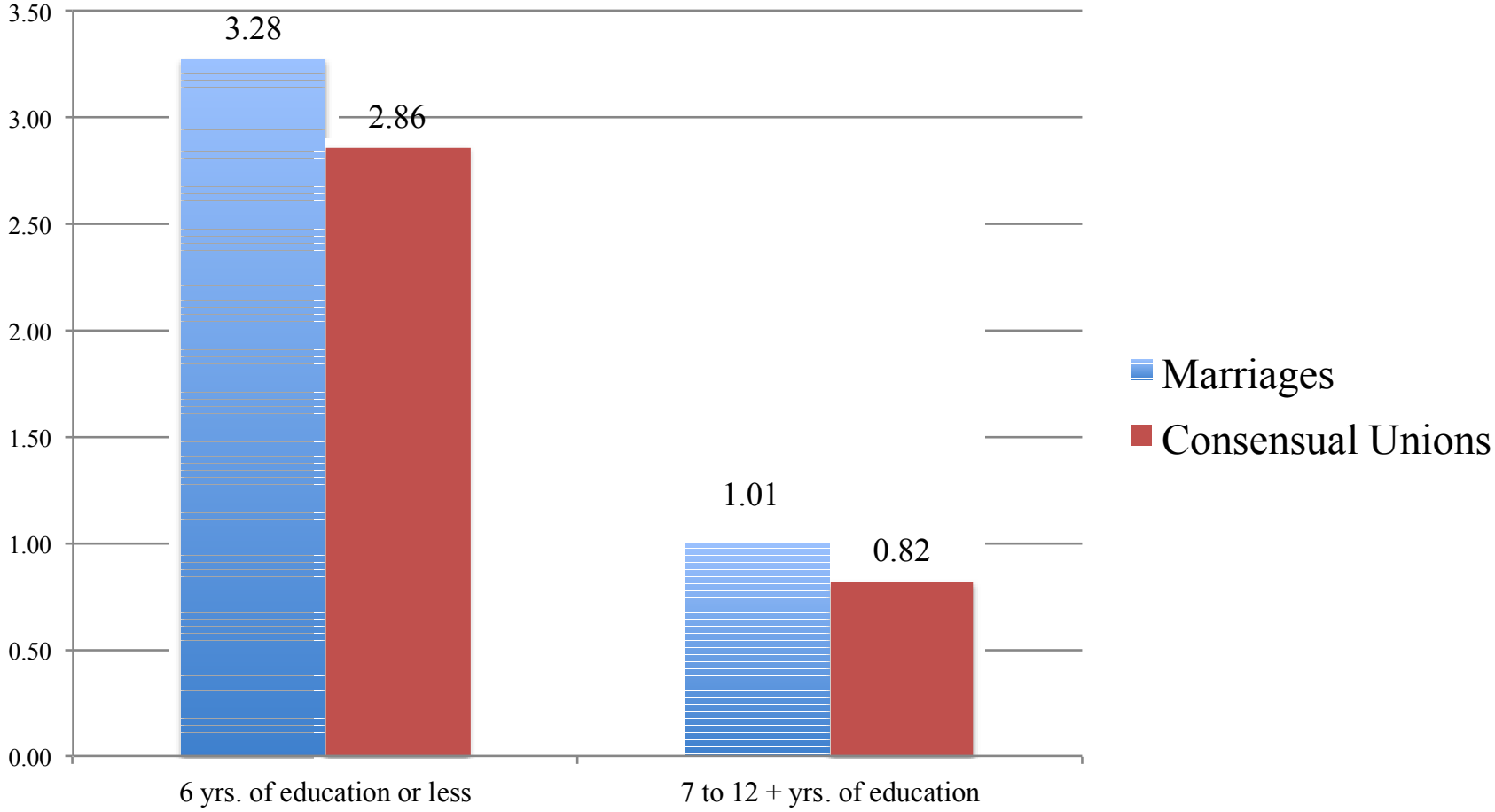
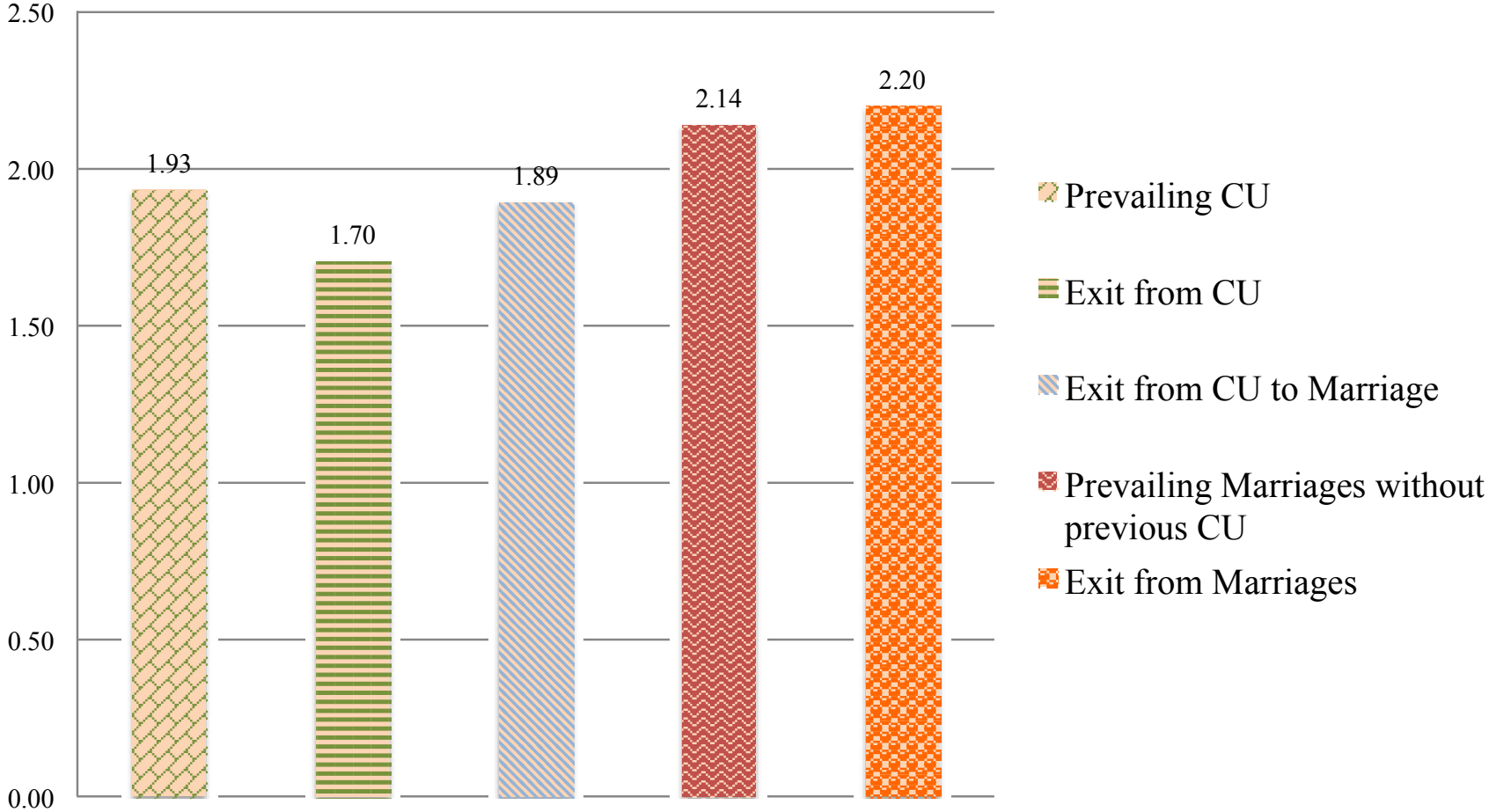


Figure 1-4: Log Odds of Educational Homogamy by Transition Status



APPENDIX TABLES

Table 1-1: Descriptive Statistics of MxFLS respondents

	%	N
Age eligible respondents (20-60)	100%	23,445
Ever in a union	78%	18,321
Never in a union	18%	4143
DK	4%	981
Age eligible respondents who have been at least 1 union	100%	18321
No restrospective history and age>25	15%	1955
No restrospective history and age<=25	4%	765
With restropective history	85%	15601
Drop cases where type of union is missing		58
Sample of respondents used to generate the sample of couples		16,308

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table1-2: Couples Characteristics

Number of couples[(1)]	10,894	100%
Type of Union		
Marriage	7788	71%
Consensual Unions	3106	29%
Type of couple		
1st - 1st	5581	51%
1st - Not 1st	619	6%
1st - DK	4694	43%

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.
[(1)] This number excludes couples in which for both partners the union is a second marriage.

Table 1-3.1: Goodness of Fit of Selected Models of Educational Assortative Mating by Couple's Type (N=10,894 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 4 X 4 X 3 Contingency table (Males's educ X Female's Education X Couple's Type)						
0	MFR	-153.5	0.0	0	1.000	0
1	MR_FR	-2011.7	3716.5	27	0.000	3465
2	MR_FR_MF	-175.5	44.0	18	0.001	-123
3	MR_FR_MF_HR	-169.5	32.1	16	0.010	-117
4	MR_FR_MF_CR	-165.4	23.9	12	0.021	-88
5	MR_FR_MF_HypR	-173.5	40.0	16	0.001	-109

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Notes: Model terms are as follows: M=Male partner's education, F=Female partner's education, R=Couple type (First-First, First-Not First, First-DK), H=Homogamy; Hyp=Hypergamy; C=Crossing

Table 1-3.2: Homogamy and Crossing Interaction Parameters with Couples' Type

	Log Odds	p-value
Panel A: Homogamy interaction parameters from model MR_FR_MF_HR		
Homogamy X (First - First) Couple Type	(ref category)	
Homogamy X (First - Not First) Couple Type	-0.24	0.009
Homogamy X (First - DK) Couple type	-0.12	0.006
Panel B: Crossing interaction parameters from model MR_FR_MF_CR(1)		
Crossing 1 X (First - First) Couple Type	(ref category)	
Crossing 1 X (First - Not First) Couple Type	0.30	0.002
Crossing 1 X (First - DK) Couple type	0.11	0.018
Crossing 2 X (First - First) Couple Type	(ref category)	
Crossing 2 X (First - Not First) Couple Type	0.13	0.368
Crossing 2 X (First - DK) Couple type	0.11	0.120
Crossing 3 X (First - First) Couple Type	(ref category)	
Crossing 3 X (First - Not First) Couple Type	0.14	0.407
Crossing 3 X (First - DK) Couple type	-0.04	0.614

(1) Crossing 1=Secondary School or more / Less than secondary school;
Crossing 2=Some High School or more/Secondary School or less ;
Crossing 3=High School grad or more/Some High School or less

Table 1-4: Definition of a Bestguess on Educational Attainment

2002	2005	2009	Criteria	Education Bestguess
Educ2002	Missing	Educ2009	Educ2002=Educ2009	Educ(2009)
Missing	Educ2005	Educ2009	Educ2005=Educ2009	Educ(2009)
Educ2002	Educ2005	Missing	Age_2002>20(1), Educ2002=Educ2005	Educ(2009)
Educ2002	Missing	Missing	Age_2002>20[(1)]	Educ(2002)
Missing	Educ2005	Missing	Age_2002>20[(1)]	Educ(2005)
Missing	Missing	Educ2009		Educ(2009)
Educ2002(proxy Respondent)	Educ2005(direct Respondent)	Missing	Age_2002>20[(1)(2)]	Educ(2005)
Educ2002(direct Respondent)	Educ2005(direct Respondent)	Educ2009(direct Respondent)	Age_2002>20[(1)(2)]	Average(2002,2005,2009)
Educ2002(proxy Respondent)	Educ2005(direct Respondent)	Educ2009(direct Respondent)	Age_2002>20[(1)(2)]	Average(2005,2009)
Educ2002(direct Respondent)	Educ2005(proxy Respondent)	Educ2009(direct Respondent)	Age_2002>20[(1)(2)]	Average(2002,2009)
Educ2002(direct Respondent)	Educ2005(proxy Respondent)	Educ2009(proxy Respondent)	Age_2002>20[(1)(2)]	Educ(2005)
Educ2002(proxy Respondent)	Educ2005(direct Respondent)	Educ2009(proxy Respondent)	Age_2002>20[(1)(2)]	Educ(2005)
Educ2002(proxy Respondent)	Educ2005(proxy Respondent)	Educ2009(direct Respondent)	Direct Respondents' Answer is prefered	Educ(2009)
Educ2002(proxy Respondent)	Educ2005(proxy Respondent)	Educ2009(proxy Respondent)	Age_2002>20[(1)(2)]	Average(2002,2005,2009)
Educ2002	Educ2005	Educ2009	Age_2002<20; Educ2002>=Educ2005>=Educ2009	Educ(2009)
Educ2002	Missing	Educ2009	Age_2002<20; Educ2002>=Educ2009	Educ(2009)

[(1)] For respondents older than 20 in 2002, we assume that by 2002 they already achieve their maximum level of education

[(2)] Direct respondents are prefered to proxy respondents

Table 1-5: Goodness of Fit of Selected Models of Educational Assortative Mating by Union and Couple's Type (N=10,894 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 4 X 4 X 2 X 2 Contingency table (Males's educ X Female's Education X Type of Union X Couple's Type)						
0	MFUT	-201.7	0.0	0	1.000	0.0
1	MUT_FUT_MFT	-233.4	63.4	18	0.000	-103.9
2	MUT_FUT_MFT_HU	-219.9	36.4	17	0.004	-121.7
3	MUT_FUT_MFT_CU	-213.5	23.7	15	0.070	-115.7
4	MUT_FUT_MFT_HypU	-221.3	39.2	17	0.002	-118.8
5	MUT_FUT_MFT_DU	-213.5	23.6	14	0.051	-106.5

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Notes: Model terms are as follows: M=Male partner's education, F=Female partner's education, U=Union type, T: Couple's Type; H=Homogamy; Hyp=Hypergamy; C=Crossing; D=Diagonal (Specific Homogamy)

Chapter 2
Skin Color Homogamy in Mexico

Introduction

Social stratification based on race and ethnicity in North America and the Americas has been widely recognized. Historically, it surged in the 16th century from ideas of European superiority and African inferiority adopted to justify the conquest of the New World and the subsequent domination of Europeans over Native Americans and blacks (Wade 1997). Today, North American and Latin American societies continue to organize their social hierarchies on a racially ranked stratification system inherited from the colonial era, founded in principles of white supremacy (Telles 2004; Wade 1997:51). Practices of discrimination based on skin color persist; evidence from the United States shows that light-skinned individuals have higher incomes and better occupations (Espino and Franz 2002; Hunter 1998), complete more years or schooling (Murguia and Telles 1996), and marry higher status individuals than darker-skinned individuals (Udry, Bauman and Chase 1971; Hunter 1998). Moreover, evidence from most Latin American countries shows that skin color predicts educational attainment (Telles and Steele 2012), and evidence from Brazil shows that intermarriage between persons at the extremes of the color spectrum is rare (Telles 1993). These findings imply that skin color may play an important role in the intergenerational transmission of inequality, since educational attainment and intermarriage are key elements in maintaining social inequality from one generation to the next (Mare 1995; Mare and Maralani 2006).

Even though skin color may have longstanding effects in the persistence of inequality, little is known about the role that skin color plays in social stratification in Latin America, due to lack of suitable data. The great level of miscegenation (or race mixture) in this region gave rise to the political ideology of *Mestizaje*, which is based on the notion that race mixture is desirable to improve the characteristics of the population. Based on this ideology, throughout the 19th century, most Latin American countries eliminated from national constitutions any distinctions based on race and ethnicity. Moreover, political elites and intellectuals avoided these types of distinctions in all national discourses. By formally eliminating the caste system and by supporting the ideology of *Mestizaje*, Latin American

elites assumed that racial discrimination would eventually disappear and a stratification system based only on class differences would emerge. The adoption of this ideology was so influential that, until recently, most of the research in Latin America only focused on the effect of socioeconomic class on different outcomes, and the effect of skin color was often neglected.

National identities in Latin America were founded on egalitarian principles, yet the ideology of *Mestizaje* used to build these identities was based on ideas of white supremacy. This ideology emphasized the possibility of improving the population through policies of `social hygiene' implemented to progressively whitening the population (Wade 1997:32; Telles 2004:28). *Mestizaje* conceives whiteness as a site of privilege in a context in which overt racism is not acknowledged (Moreno 2010). Ideas of white supremacy continue to exert an influence in these societies, not only in the political arena, but also in everyday life (Telles and Steele 2012; Moreno 2010).

Recently, social inequalities by race and ethnicity are beginning to be recognized. This recognition has been accompanied by new efforts to collect suitable data to study the phenomenon[7]. Recent findings show that skin color has an impact in the social reproduction of inequality. The evidence suggests that skin color plays a key role in the process of educational attainment. In particular, it shows that darker-skinned children are more likely to hold the lowest levels of educational attainment, placing them in a very disadvantaged position once they enter in the labor market (Flores and Telles 2012). Indeed, the effect of skin color in educational attainment is an important mechanism through which social inequality is produced and reproduced. Another key component in the intergenerational transmission of inequality is the process of marriage choice, since marriage guarantees the transmission of cultural and economic capital from one generation to the next (Bourdieu 1975). Marriage creates new ties between spouses and their families. These connections to a broader social network offer new opportunities for mobility (Lin 2001; Blossfeld 2009; Kalmijn 1998; Smits, Ultee and Lammers 1998). Just as skin color has consequences in educational attainment; it may also exert an important influence in the process of

[7] PERLA, Discriminación de México, MIT 2006

marriage choice. For example, evidence from the U.S. shows that lighter-skinned individuals marry higher status spouses (Udry, Bauman and Chase 1971; Hill 2002; Hunter 1998). However, evidence from Latin America is scant, and comes from a single country: Brazil (Telles 1993; 2004). As expected, intermarriage is more common in Brazil than in the U.S., which reflects that historically race mixture has been more widely accepted in Latin America than in North America. However, among the Brazilian exogamous unions, the large majority involves persons of proximate color indicating a wide social distance at the extreme of the color spectrum (Telles 1993; 2004).

Studies on assortative mating by race and ethnicity only exist for Brazil because it is one of the few countries in Latin America that collects race and ethnicity data. Other countries, like Mexico, only collect information on ethnic background, more specifically indigenous origin, but do not collect data on skin color or race. Additionally, recent efforts to collect data on skin color in Latin America do not collect information about skin color of spouses of the respondents. In this paper, I will expand understandings of assortative mating by race by investigating skin color homogamy in Mexico. I will use a novel dataset from the Mexican Marital Preference Pilot project (MxMPP) that will allow me to assess for the first time the role of skin color homogamy in this country. The MxMPP survey instrument includes two measures of skin color. First, respondents were asked to rate the skin color of their spouses according to a skin color palette. After the interview was over, interviewers rated the skin color of the respondent according to the same palette. The colors of the palette come from the New Immigrant Survey (NIS) skin color scale (Massey and Martin 2003) found in Figure 2-1. I will investigate skin color homogamy using log-linear models to describe the association between partners' characteristics, net of marginal distributions.

The paper is organized as follows. In the next section, I present in more detail the historical context under which social stratification based on skin color emerged Mexico. I briefly introduce the caste system that was prevalent during colonial period. I also present an account of how race and ethnic relations evolved during the *Porfiriato* and after the Mexican Revolution, and how ideas of biological

determinism gave rise to the *Mestizaje* ideology, which was central in the process of nation building after the Revolution. In section 3, I present recent ethnographic and statistical evidence of how a hierarchical social order based on skin color persists in Mexico, even though social distinctions based on race are not acknowledged. In section 4, I present my hypotheses. In section 5, I describe the data and methods. In section 6, I present the results, and finally I conclude in section 7.

Historical Background

Colonial Period

Skin color stratification in Mexico begins with the Spanish colonization of the New World, in the 16th century. The multiethnic nature of the population of New Spain, composed by white Europeans, Africans, and Indians gave rise to a social stratification system where whites were located at the top of the social hierarchy and blacks at the bottom. To justify the conquest, Spaniards arrived in the New World with ideas of white superiority that portrayed Europeans as civilized and morally superior compared to non-Europeans. To legitimize slavery Spaniards brought ideas of African inferiority that considered blackness as a physical expression of the sinner nature of Africans (Wade 1997, p. 8; Vinson III 2004, p.25). Based on European stereotypical views, in New Spain blacks were perceived as violent, untrustworthy, lacking morals, superstitious, cruel and evil, lazy, and "people without reason" who needed white guidance to survive (Fischer 2009, p. 54; Vinson III 2004, p. 27). In contrast, Indians were perceived as "people of reason", based on the complex social systems that existed in pre-hispanic civilizations. Since Indians were considered "rational beings" their enslavement was questioned and banned (Wade 1997: 27).

As in other regions in Latin America, New Spain experienced a high degree of race mixture that gave rise to a caste system, mainly based on skin color, which formally existed until the 19th century. Two demographic factors influenced the development of the caste system: (1) the sex-ratio imbalance of whites and blacks, and (2) the collapse of the indigenous population. At the beginning of the 16th century, the large influx of male colonizers and black slaves to New Spain encouraged a large

proportion of unions with Indian females (Carroll and Lamb 1995; Vinson III 2004, p. 30; Navarrete 2004, p. 52). At the same time, a decrease of about 90% among the indigenous population from death and disease prompted the importation of slaves to New Spain, which by 1640 hosted the second largest slave population in the New World (Proctor III 2009, p. 23). Black males were particularly likely to form exogamic unions, mainly with free Indians and *mestizas*, in order to ensure the freedom of their offspring (Caroll and Lamb 1995) [8]. Altogether, the result was an increase in the population heterogeneity in terms of skin color (Caroll and Lamb 1995).

To protect the Indian population from the total collapse, Spaniards implemented an apartheid type system that separated physically and legally Indians from Spaniards (Wade 1997, p. 28; Vinson III 2004, p. 30) through the creation of two Republics (i.e. the Indian Republic and the Hispanic Republic). However, the high degree of race mixture weakened the original purpose of the Republics (Wade 1997, p. 28), and gave rise to a social stratification system that was based on race or physical appearance. Skin color and descent was the principal designator of identity and social status within the Hispanic Republic, while lifestyle (and not race) defined individuals' identity within the Indian Republic (Wade 1997, p. 29; Carroll 2009 p. 83).

Within the caste system, whites were at the top of the social hierarchy, Indians and blacks at the bottom, and the racially mixed population (or *castas)* in the middle. Spaniards were designated as whites (*blancos*), very dark-brown skinned persons were designated as blacks (*negros*), *pardo* denoted a skin tone that derived from black/Indian unions, *mulattoes* were persons with skin tones that derived from black/white unions, and Indian was represented by bronze or coffee colored skin tone (*de color aindiado).* The association between skin color and race was so accepted that from 1630 onwards, Spanish documents commonly used color terms to designate person's race (Caroll 2009, p. 88).

[8] In Spanish colonies children inherited the legal status of their mother, so it was common that male slaves marry free women to free their offspring from slavery (Caroll and Lamb 1995). Most blacks in New Spain were freed during the 1700s, even though slavery persisted until 1829 (Vinson III, 2004).

From the beginning of the 17th century to the end of the colonial era, Spaniards adopted ethnocentric and racists ideologies that limited exogamic intermarriages. In 1776 the Crown issued a Royal Pragmatic that allowed parents to petition for the nullification of undesirable marriages of their children, such as mixed race marriages, and mixed social-class marriages (Castillo 2000). While Spanish rules discouraged Africans from marrying outside their group (Love 1971), intermarriage between whites and Indians was socially accepted (Wade 1997). Historical evidence from specific regions in Mexico shows that the likelihood of marrying depended on race, especially for women. Moreover, race was a key determinant in the process of partner choice (McCaa 1984; McCaa et al. 1983; McCaa et al. 1979). These studies indicate that exogamy patterns in the 18th century reflected a social structure based on the caste system. For example, pairings between individuals in proximate groups in the socio-racial hierarchy were more common than those formed by individuals in more distant groups (McCaa 1984; McCaa et al. 1983).

Even though Spanish rules discouraged black intermarriage, *mulattoes* and black males showed a clear tendency to marry outside their social group, in particular to Indian and mestizo women (Carroll & Lamb 1995; Castillo 2000). This strategy allowed blacks to free their progeny, and to improve the "quality" of the descendants by converting them into *pardos* or *mestizos*, which implied a higher status in the socio-racial hierarchy. In general, mixed races avoided being classified as Indians, blacks, *mulattoes, or pardos* to avoid social disgrace or fiscal obligations. In this way, the process of *mestizaje* offered individuals with African ancestry, a way to hide their lineage, as a strategy for upward mobility (Castillo 2000). The rapid assimilation of *Afro-castas* into Indian communities facilitated the process of *mestizaje*, since mixtures between Indians and Blacks were more frequently classified as *mestizo* rather than *pardo*. By the end of the 17th century, *mulattoes* and blacks disappeared, at the same time that the *mestizo* population increased. The exogamic behavior of blacks and *afro-castas* surged from the necessity of this population to be assimilated to the general population so that their black ancestry did not hinder their upward mobility.

By the end of the colonial era, Spaniards and Indians tended to form endogamic unions; however, some Spaniards continued to form unions with *mestizos* –particularly *mestizo* women. . *Mestizos* surged as a new social group, in the middle of the social hierarchy, with Spaniards at the top and Indians and *afro-castas* at the bottom (Carroll & Lamb 1995).

Independence and Revolution

During the colonial period, power and privilege were closely linked to caste; however, generations of intense miscegenation complicated racial categorizations in such a way, that through the 18th century, race became secondary to class as a form of social differentiation (Knight 1990, p. 72). Likewise, during the first half of the 19th century, the demolition of other structural mechanisms that maintained the racial order of the colonial era further debilitated the caste system. Two examples of these changes were: (1) the creation of a citizenry on the basis of equality before the law established in the Mexican Constitution of 1814, and (2) the abolition of slavery in 1829 (Vinson III 2004, p. 34; Navarrete 2004, p 64).

Even though a society stratified by class emerged in this period, racism was strengthened by racial theories during the 19th century (Knight 1990). Policymakers during the dictatorship of Porfirio Díaz (1876-1911), a period referred to as *Porfiriato*, were convinced of the superiority of white Europeans and the inferiority of mixed-races. Henceforth, they encouraged "social hygiene" policies[9] to whiten the population (Wade 1997, p. 31; Telles 2004 p. 28), such as immigration policies that would attract white European immigrants and restrict the entry of blacks (Wade 1997, p.32). Through mixing, political elites envisioned the progressive whitening of the population, since white 'blood' would dominate other types (Wade 1997, p. 32; Telles 2004 p. 28). At the same time, since the *Porfirian* model of development required the dispossession of the Indian communities, political elites portrayed Indians who resisted assimilation as "lazy", "stubborn", "ignorant", and "uncivilized". By doing this, political elites justified the genocide of Indian communities that refused to give away their land. During this period, indigenous

[9] Policies like limiting black immigration, and fostering European immigration (Telles 2004); however, in Mexico migration policy during the time of Porfirio Díaz failed to attract Europeans to Mexico in a large scale (Lomnitz 2011).

identity was destroyed and Indians were forced to assimilate to the new Western culture as *mestizos* (Navarrete 2004). These stereotypical views of Indians exist until today.

The expropriation of Indian land during the *Porfiriato* was one of the causes of the Mexican Revolution war, during the first half of the 20th century. The primary goal of this Revolution was to reinstate the land to the Indian communities, and to rehabilitate Indian history, customs, music, dance, and rituals (Knight 1990). Yet, Indian communities continued to constitute a challenge to the process of nation building. Integration of these communities was still a priority for the Mexican government, but during this time their integration was thought to be respectful of their culture, rather than forcible, as it was before the Revolution. The Indian became the symbol of national identity in Mexico, while Afro-descendants were completely ignored (Wade 1997).

The Revolution transformed race and ethnic relations. The demolition of scientific racism (due to the surge of genetics) was extremely influential on the ideology adopted by post-revolutionary Mexican philosophers and politicians to build the nation. In particular, the notion that racial subordination and super-ordination was wrong, and that race mixture was desirable, was used by the elites to consolidate the *mestizo* as the prototypical "Mexican". Formulations about the "cosmic race", proposed by Vasconcelos (1925), suggest that the Mexican race that emerged from the process of *mestizaje* was ideally suited for the environment of Mexico (Lomnitz 2011). Furthermore, the de-emphasis of genetic determinism and the acknowledged of the influence of the environment on the existent social differences among groups, changed the way differences among Indians and *mestizos* were conceived. Now Indians were perceived as a group with "cultural" instead of "biological" differences. By late 20th century, ideas of biological determinism were substituted by ideas of psychological determinism. These new ideas assumed that due to centuries of oppression, Indians developed a collective psychology that lack the will to power, was passive, and anti-technological (Knight 1990). Today, psychological determinism implies subtler forms of racism, since perceptions of Indian inferiority remain.

The Mestizaje ideology

The *Mestizaje* ideology surged by the end of the 19th century as a racial and nationalist doctrine adopted by Mexican political elites to build national identity based on tenets of Western societies in order to emulate their progress (Navarrete 2004; Wade 1997). The ideology of *Mestizaje* was founded in two principles: (1) the identification of the *mestizo* with a glorious indigenous pre-hispanic history; and (2) the conviction about the superiority of Western culture (Navarrete 2004). The ideology was inclusive in the sense that Indians and afro-descendants who assimilated to the new culture were able to become *mestizos* and citizens in the new nation. However, groups that refused to assimilate were treated as enemies of the nation and, in many cases, stereotyped as criminals (Navarrete 2004).

The ideology of *mestizaje* was originally nurtured by ideas of scientific racism that assumed that different races were biologically different in terms of intellectual abilities, personality and morals. Whites were considered as superior, stronger, and at the top of human evolution, Indians were conceived as inferior, stubborn and lazy, and blacks were considered immoral, violent, and carriers of disease. Discussing the incorporation of blacks was considered, by political elites, damaging for the image of the nation, so they completely ignored this group in the process of nation building (Vinson III et al. 2004; Wade 1997). The idea of *mestizaje* assumed that, through assimilation, Indians and blacks would be able to improve morally and socially.

Between 1808 and 1921, about 3 million people changed their ethnic category from Indian to *mestizo* (Navarrete 2004). The change in ethnic identity was accompanied by the adoption of Spanish as the native language, and the rejection of languages and costumes from other ethnic groups. Even though the process of *mestizaje* implied more racial tolerance, it was accompanied also by cultural intolerance of marginalized ethnic groups (Navarrete 2004).

After the 1910 revolution war, the cult of the *mestizo* blossomed. A *mestizo* in colonial times, defined as the racial mix of Spaniard and Indian, differed from a *mestizo* defined in this period, in which a *mestizo* was the result of the mix of different racial and ethnic groups; yet, the ideology of *mestizaje*

assumed that *mestizos* constituted a homogenous group with a single ethnic and cultural identity (Knight 1990). At the beginning of the 20th century, the idea of a national race, the "Mexican race", appeared, and the nation became identified with that race (Lomnitz 2011).

Since the end of the revolution only two ethnic categories have been recognized in Mexico: *mestizos* and indigenous people. The difference between the two groups is defined in cultural and psychological terms rather than in terms of skin color or descent. This distinction is reflected in the national census, which identifies indigenous populations by asking individuals about their ability to speak an indigenous language. In 2010, about 5% were identified as indigenous and the rest as *mestizos*, including people from African descent.

During the second half of the 20th century, *Mestizaje* had an impact on academia, since social researchers began to examine social differences based on class or education, and often overlooked differences based on race. In Mexico, "the national discourse has produced a raceless social context where individuals are not recognized as racialized subjects, but experience and reproduce racist practices everyday" (Moreno 2010). In a context in which social distinctions based on race are not acknowledged, evidence from Latin America and Mexico shows that the hierarchical racial order is recreated through practices of whitening (Wade 1997; Moreno 2010).

Whitening and Mexican racism

Whitening is the major mechanism of racism in Latin America (Wade 1997). The process of homogenization envisioned by the ideology of *Mestizaje* implies the progressive whitening of the population. Today, *mestizo* represents the Mexican, with whiteness as the imminent ideal (Lewis 2012). *Mestizaje* enables whiteness as a site of legitimacy and privilege (Moreno 2010). Whiteness is a value in its own right that enters into people's social interactions. The practice of whitening is reinforced by stereotypes advertised in films, television, and other mass communication media.

Recent anthropological research provides some insights into how whiteness operates in Mexico, and how racism organizes everyday life. For example, based on focus groups and life-history interviews

of 40 Mexican women, Moreno (2010) explores ideas and experiences about racism, *mestizaje*, and national identity. She finds that in Mexico people do not recognize racism. In fact, they have difficulty discerning what racism is. Yet, people experience it everyday. For example, she finds that in discussions about who is a desirable partner, marriage is often seen as an opportunity "to improve race", since lighter-skinned women are perceived as better, more refined, and the archetype of beauty. Moreover, she finds that *mestizaje* enables the possibility of engaging in processes of whitening. In this context, "whiteness" is not necessarily attached to a white skin color, but to a site of privilege that individuals may sometimes occupy depending on the circumstances and the specific people involved in the interaction. This site of privilege is available but can easily be taken away. Moreno concludes that in Mexico being "white" is a complex relational process that is fluid and depends on the situation.

Consistent with the previous study, ethnographic evidence presented by Lewis (2012) from *Costa Chica*[10], Mexico, shows that "race is impossible to pin down" since people all consider themselves Mexican. However, hair and skin color are constantly signifiers of race in the region. According to Lewis, aesthetics of skin and hair do not favor whiteness, but the mixture. For example, women are preferred with long wavy hair (not straight as Indians, and not kinky as Blacks) and light skin color. However, whiteness is still associated with beauty, while dark skin is associated with rurality, manual labor, poverty, and backwardness. Marrying a lighter-skinned partner is considered desirable. In particular, marital unions between Indian women and Moreno men are favored. Parents complain when their children marry a dark-skinned partner, as do grandparents if their grand-children are "too dark". Social distance between *Costa Chicans* and whites is so wide that, for them, *mestizaje* only refers to mixing among blacks and Indians. Whites are represented by the government or by the rich, and this group is conceived as one that prevents non-whites from upward mobility. Yet, whiteness also represents modernity, wealth, and material acquisition.

[10] This area spans the border between Oaxaca and Guerrero, the southwest coastal states of Mexico, and has one of the highest concentrations of black-Indians in Mexico.

In 2010, the National Survey of Discrimination (ENADIS 2010) implemented by the Mexican government, showed that discrimination based on skin color is a common practice in Mexico, since 40% of the population thinks that people are treated differently as a function of their skin tone, and 15% of the population thinks that their civil rights are not respected as a result of their skin tone. Moreover, recent evidence from Mexico shows that darker-skinned individuals are more likely to have lower educational levels, are more likely to live in poverty, and are less likely to be affluent compared to their lighter-skinned counterparts (Villareal 2010; Telles and Steele 2012).

In sum, the evidence indicates that in Mexico social hierarchies privilege lighter-skinned over darker-skinned individuals. Stereotypical views of dark and light-skinned individuals continue to have real consequences in their life chances until today. A social stratification system based on skin color has reproduced itself by the adoption of racist discourses that continue to have longstanding effects in Mexican society. Just as skin color has an impact in educational outcomes, it may also play an important role in determining *who* is a desirable partner. In this sense, skin color is likely to have important effects in processes leading to the social reproduction of inequality. In this paper, I explore the effect of skin color in the mate selection process.

Hypotheses

Based on economic and exchange theories, if skin color is considered a trait hierarchically ordered (such as education), I would predict that individuals would prefer to form a union with others with comparatively more desirable characteristics than their own, in this case to form a union with lighter-skinned individuals (South 2001; Mare 2008; Becker 1973). However, competition among potential partners in the marriage market would lead to skin color homogamy. Moreover, I would also expect a decrease in the probability of forming a union the greater the distance in terms of skin color.

Moreover, based on "status exchange theory", which posits that lower status light-skinned females might exchange their higher racial status with higher social status dark-skinned men (Merton 1941), I would expect that women that marry darker-skinned males would tend to be educationally hypergamous.

This theory implies that, for women, light skin may function as social capital that can be transformed into economic capital (Hunter 2002). Evidence from the U.S. shows that skin color of Mexican American women does not affect their choice of marriage partners, however, skin color of African American women does affect their choice; in particular, light-skinned women are more likely to marry high-status and well educated spouses (Hunter 2002).

Data and Methods

Data

I use data from the Mexican Marital Preference Pilot project (MxMPP), a pilot study designed to collect relevant information about the marriage selection process of adults in Mexico. These data represent the first effort, in Mexico, to collect information about skin color of respondents and their spouses. The survey instrument designed for the MxMPP was administered to a subsample of the third wave of Mexican Family Life Survey (MxFLS-3), an ongoing longitudinal survey that is nationally-representative of individuals, households, and communities in Mexico.

MxMPP – Sampling Design

The MxMPP sample was selected from a subsample of the third wave of MxFLS-3. This eligible sample included panel and new members of the MxFLS-3, and was selected in three steps. First, respondents were chosen based on the following characteristics: (i) within ages between 20 and 60 years old, and (ii) who were not death, international migrant, individual not found, or refusal in MxFLS-3. From the 23,792 age eligible respondents, 19.5% were eliminated from the age eligible sample because they were dead, international migrants, refusals, or lost to follow-up (see Appendix 1-Table 1). Second, since the MxMPP shared part of the resources of the MxFLS-3 (such as interviewers, and transportation resources), and the MxFLS-3 was still in the field when the MxMPP sample was selected, the MxMPP eligible sample excluded households who had already been completely interviewed by the MxFLS-3 teams. The order of interview attempts for the MxFLS-3 was not random, hence, 34% of the eligible

sample (that ideally should have been considered in the random sampling for the MxMPP) was excluded from the sampling frame. From a comparison of the demographic characteristics between the final eligible sample (that was used for random sampling) and the excluded age eligible sample (see Appendix 1 – Table 2), I found that compared to older individuals respondents between the ages of 20 to 29 are more likely to be in the final eligible sample. Moreover, individuals from rural origins are less likely to be in the final eligible sample. In terms of education, sex, and ever being in a union there are no significant differences between the two samples.

The MxMPP sample consists of 1,476 observations that were selected randomly from the 12,589 observations in the final eligible sample. From the 1,476 observations, 19% have never been in a union (i.e., marriage or consensual union), 77% have either been married or in a consensual union, and 4% are missing on this item. For this analysis, since I am interested in individuals who have been in a union at least once, I drop 280 cases of individuals who have never been in a union, which implies an eligible sample of 1,196. From these observations, 73% were interviewed, 17% were lost to follow-up, and 10% refused to answer the survey. Moreover, from the 870 respondents that completed the survey only 720 have no missing values on the relevant variables used in this analysis. To analyze possible mis-representativeness, due to missing data, I ran a logistic regression (N=1,196) of the odds of being in the analytical sample as a function of demographic characteristics. I find that individuals from rural origins are 1.8 times more likely to be in the analytical sample (p=0.000), and that females are 1.4 more likely to be in the sample (p=0.002); I do not find significant differences in terms of education and age. Finally, I generate a couple's file that comprises 720 couples. My analysis focuses on first unions (marriages or consensual unions).

MxMPP – Data collection

The MxMPP collected information through two instruments. MxMPP-Instrument 1 collected retrospective histories of marriages, cohabitations, and dating relationships during the life course (see Supplementary Materials). This instrument began by asking information about their current relationship

and then about previous relationships that lasted six months or more. MxMPP-Instrument 1B collected information about the first union (marriage or cohabitation) and the most important relationship before the first union (defined as the relationship that lasted longer) (see Supplementary Materials). Both instruments collected data about each relationship in the order that follows:

1. Time and duration of the relationship.
2. Meeting places and how the partner was first introduce to the respondent.
3. Socio-economic characteristics of the partners, such as age, education, marital status, employment, occupation, migration status to the United States.
4. Socio-economic characteristics of the partner's parents, such as father's educational level and occupation, and relative economic status of the partner's family.
5. Physical attributes of the partners, such as relative height, physical appearance related to weight, and skin color.
6. Decision to form or finish a union.

The fieldwork collection was divided in two phases. The first phase was conducted the last quarter of 2011 and consisted in the data collection of MxMPP-Instrument 1. In general, MxMPP-Instrument 1 was collected at the same time as the Health Instrument of the MxFLS-3. There was no fixed order for the collection of the instruments (i.e. sometimes the MxMPP-Instrument 1 was collected first and the MxFLS-3 Health Instrument second, or *viceversa*). The MxFLS-3 Health Instrument collected biomarkers (i.e. blood spots, glucose, blood pressure) and anthropometric measures (i.e. height, weight), and basic demographic information (e.g. age, sex). After the MxMPP-Instrument 1 was collected, we found that about 26% of respondents answered having more than 1 relationship that lasted for 6 months or more. For data quality purposes, we conducted a series of phone interviews to a random sample of 570 respondents, who had been in a union (marriage or cohabitation), in order to check if the number of relationships declared in MxMPP-Instrument 1 was accurate. During this exercise, we realized that about 13% of respondents who had previously answered having only one relationship, changed their

answer and declared having more than one relationship. In these cases, MxMPP-Instrument 1 was administered by phone again. Furthermore, we also find that 23% of the respondents remained with their previous answer, and the rest was unable to be reach by phone.

Given that our interest was to collect information about the set of marriageable partners. We decided to revisit some respondents and collect MxMPP-Instrument 1B. Data collection of MxMPP-Instrument 1B was done by itself; no other MxFLS-3 instruments were gathered at the same time. Three are the main differences between MxMPP-Instrument 1 and 1B: (1) MxMPP-Instrument 1 collected relationship information of singles and individuals who had been in a union; while the MxMPP-Instrument 1B only collected information of individuals who had been in a union, (2) MxMPP-Instrument 1 collected information about the set of available partners defined as all partners with whom the respondent had formed union (marriage or cohabitation) and other partners with whom the respondent established or tried to established a relationship that lasted for 6 months of more; while MxMPP-Instrument 1B only gathers information about the relationship with the first partner with whom the respondent formed a union and about the most important relationship prior to first union, defined as the relationship that lasted more. During the second quarter of 2012, we revisited the households and performed the data collection of this instrument. Results from the first and second round of the fieldwork are shown in Appendix A-Table A-3. The implementation of both Instruments lead to a response rate of 71.2% as it is shown in Appendix A-Table A-4.

For the collection of retrospective histories, through MxMPP-Instrument 1, respondents were asked, first, the name of the current partner, and then the names of their previous partners. When the data was collected through MxMPP-Instrument 1B respondents were asked, first, the name of the partner with whom they form his/her first union, and then the partner´s name of their previous relationship. After collecting the list of names, interviewers asked all the specifics about each relationship one at a time. For this study, I use information from both instruments, and choose the

relationship associated with the partner with whom the respondent form his/her first union (marriage or cohabitation).

To collect the information about partners´ skin color respondents were shown a skin color palette (see Figure 1) and they were asked to recall the skin color of each one of the partners included in the retrospective history and chose the respective color in the palette. After the interview was over and the interviewers were outside of the household, they rated the skin color of the respondent according to the same palette. The colors of the palette come from the New Immigrant Survey (NIS) skin color scale (Massey and Martin 2003). The data collection of skin color follows the same protocol designed by the NIS, in which interviewers do not rate the skin color in front of the respondent.

Variables

The palette used to collect data on skin color of respondents and their spouses included ten different skin tones where 1 is associated with the lightest skin color and 10 with the darkest; however, for the analysis skin color is collapsed in four ordered categories, 1 being the lightest and 4 the darkest. Skin colors 1 and 2 in the palette were collapsed into the first category, skin color 3 in the palette constitutes the second category, skin colors 4 and 5 were collapsed into the third category, and skin colors 6 to 10 into the fourth category[11]. Homogamy is a dummy variable that indicates whether partners' skin color is the same as respondents' skin color or not. I construct a hypogamy dummy variable to explore whether females show a tendency to marry darker-skinned males, which is coded as follows:

Hypogamy

Male's Skin	Female's Skin Color			
	1-Lightest	2	3	4-Darkest
1-Lightest	0	0	0	0
2	1	0	0	0
3	1	1	0	0
4-Darkest	1	1	1	0

[11] I examine the association between spouses´ skin color using three categories instead of four and find the same results.

Finally, I generate distance variables to examine if the probability of forming a union decreases as the distance between different skin colors increases. The following matrices show how these variables are coded.

Distance 1

Male's Skin	Female's Education			
Color	0-Lightest	1	2	3-Darkest
0-Lightest	0	1	0	0
1	1	0	1	0
2	0	1	0	1
3-Darkest	0	0	1	0

Distrance 2

Male's	Female's Education			
Education	0-Lightest	1	2	3-Darkest
0-Lightest	0	0	1	0
1	0	0	0	1
2	1	0	0	0
3-Darkest	0	1	0	0

Distance 3

Male's	Female's Education			
Education	0-Lightest	1	2	3-Darkest
0-Lightest	0	0	0	1
1	0	0	0	0
2	0	0	0	0
3-Darkest	1	0	0	0

Educational attainment is a dummy variable that indicates if both spouses have more than elementary school.

Methods

The analysis is divided in two parts. In the first part, I analyze a two-way table that is produced by cross-classifying female's and male's skin color (1-Lightest, 2, 3, 4-Darkest), which results in a 4 X 4 = 8 cell table. I use log-linear models to analyze the type of association that exists between partners' characteristics controlling for marginal distributions. I begin with a "conditional independence" model (M F), which assumes no variation in the association between partners' skin color. The formal model can be written as follows.

$$\log(f_{ij}) = \mu + \mu_i^M + \mu_j^F$$

where M denotes male's skin education (i=1,…,4), F is female's skin color (j=1,…,4), and f_{ij} is the expected number of unions between males in skin color category i and females in skin color category j. I add homogamy, hypogamy, and distance terms to the baseline model and compare the models to examine which is the one that fits better the data. Model comparisons rely on the Bayesian Information Criterion (BIC).

Given that there is an association between educational attainment and skin color, in the second part of the analysis, I include controls for education. This implies the analysis of a three-way table that is produced by cross-classifying female's skin color (1-Lightest, 2, 3, 4-Darkest), male's skin color (1-Lightest, 2, 3, 4-Darkest), and education (0: at least one spouse with elementary school or less, 1: both spouses with more than elementary school) which results in a 4 X 4 X 2 = 32 cell table. I follow the same analytical strategy than before. I begin with a "conditional independence" model (ME FE), which assumes no variation in the association between partners' skin color by educational level. The formal model can be written as follows.

$$\log(f_{ijk}) = \mu + \mu_i^M + \mu_j^F + \mu_k^E + \mu_{ik}^{ME} + \mu_{jk}^{FE}$$

where M denotes male's skin education (i=1,…,4), F is female's skin color (j=1,…,4), E is couple's educational attainment (k=1,2), and f_{ijk} is the expected number of unions between males in skin color category i and females in skin color category j , and couple's educational attainment k. Then, I add to the baseline model interaction terms of: homogamyXeducation, hypogamyXeducation, and distanceXeducation, and I compare the fit of the models using the BIC. Finally, I estimate parameters from selected models.

Results

Descriptive Statistics

INSERT TABLE 2-1 HERE

Table 2-1 shows males' and females' skin color distribution, and couples' educational level. In general, the table reveals that individuals are evenly distributed across the first three skin tone categories, and that the group of individuals with darkest skin color comprehends the lowest proportion of the population (10% for men, and 6% for women). In terms education, this table indicates that 42% of the couples are formed by partners with more than 6 years of education.

INSERT TABLE 2-2 HERE

Table 2-2 shows the frequencies and distribution of females' skin color conditional on males' skin color. By looking at the conditional distributions it is not clear if the pattern that emerges is of skin color homogamy or skin color hypogamy. On the one hand, the table shows a tendency for skin color homogamy among the lightest skin color individuals and those in category 3. However, the table also reveals a pattern of skin color hypogamy among females in categories 1 and 3.

INSERT TABLE 2-3 HERE

Table 2-3 shows this conditional distribution stratified by education. Results for couples with less than 6 years of education are similar to those describe above. However, for couples with more than six years of education a tendency for skin color homogamy is more evident.

INSERT TABLE 2-4 HERE

Table 2-4 shows rates of intermarriage for the complete sample and stratified by education. About 37% of the sample marries with individuals of the same skin color. Skin color homogamy is more common among higher educated couples (34% vs. 42%). Moreover, about 36% of females marry darker-skinned partners. Hypogamous unions are more common among less educated couples (39% vs. 31%). Finally, about 46% of couples form unions with partners of adjacent skin color categories, 14% form unions with partners crossing two skin color categories, and 3% with partners crossing three skin color categories. After stratifying by education, the table shows less educated couples are more likely to cross skin color categories.

INSERT TABLE 2-5 HERE

To explore if the data are consistent with "status exchange theory", Table 2-5 shows the female's education distribution conditional male's education among the sample of skin color hypogamous couples[12]. For these couples, I find a pattern of educational homogamy, and not a pattern of educational hypergamy, as expected by this theory.

Next, I proceed with the log-linear analysis to examine the association between male's and female's skin color net of their marginal distributions.

Log-Linear Models

I estimate a series of log-linear models to explore skin color assortative mating. Model specifications and fit statistics of selected models are provided in Table 2-6 and parameter estimates of the selected models are provided in Table 2-7[13]. I provide BIC statistics to measure the goodness of fit of the models. A smaller value of BIC indicates that the reduced model fits the data better than the saturated model.

INSERT TABLE 2-6 HERE

Panel A of Table 2-6 shows models without controlling for education. Model 0 is the saturated model. Model 1 is the conditional independence model that assumes no association between partners' skin color. Models 2 to 6 add homogamy, distance, and hypogamy parameters to Model 1. Based on the BIC statistics all these models improve the fit of Model 1, however, Model 3, the distance model, is most likely to be the true model. Panel B of Table 2-6 shows the models controlling for education. After controlling for education, the table shows that Model 2, the homogamy model, is the one that fits better the data, followed by the distance model.

INSERT TABLE 2-7 HERE

Next, I estimate homogamy and distance parameters from Models 2 and 3. Table 2-7 shows parameter estimates and their *p*-values. Figures 2-2 and 2-3 shows these parameters graphically. The left

[12] Couples in which a woman forms a union with a darker-skinned man, relative to the woman skin color.
[13] In Appendix 2, I estimate an alternative model with 6 categories of skin color without controlling for education and find similar results as the model with four categories without controlling for education.

side of these Figures shows bars that represent parameter estimates without controlling for education, while the right side show bars after controlling for education.

INSERT FIGURE 2-2 HERE

Figure 2-2 shows results from the homogamy models. Without controlling for education, Figure 2-2 shows that homogamous unions are 1.35 times more likely compared to non-homogamous unions (p<.001). After stratifying by education, homogamy is no longer significant for the less educated couples; however, it remains significant and becomes stronger for the more educated couples[14].

INSERT FIGURE 2-3 HERE

Figure 2-3 shows results for the distance models. Without controlling for education, this Figure shows that the log odds of crossing skin color categories are negative and significant. Crossing two skin color categories is 37% less likely than crossing adjacent categories {(1-exp(-0.60-(-0.14)) X 100}; and crossing three skin color categories is 40% less likely than crossing adjacent categories {(1-exp(-1.05-(-0.14)) X 100}. This is consistent with the hypothesis that the probability of forming a union decreases the larger the distance in terms of skin color. After stratifying by education, the parameter estimates for the less educated couples are no longer significant; however, for the more educated couples there is some evidence that forming a union is less likely the greater the difference between skin colors.

Discussion

Since colonial times, ideas of white supremacy continue to organize social hierarchies in Mexico. Even though the M*estizaje* ideology adopted in this country makes racism very difficult to recognize, recent ethnographic and statistical evidence shows that light-skinned individuals enjoy privileges that darker-skinned individuals do not. For example, in terms of educational attainment, the latter group is more likely to hold the lowest levels of education compared to the former (Telles & Steele 2012). During the life course, skin color also exerts impacts in other processes that affect individual life chances. This paper investigates the influence of skin color in the process of partner choice. I examine assortative

[14] I estimate a model controlling for age (see Appendix Table 2-2) and the homogamy differences between the two educational groups is still significant.

mating patterns by skin color using data from the MxMPP, a novel pilot study that collected, for the first time in Mexico, information about skin color of respondents and their spouses. The MxMPP instrument asks interviewers to rate respondent's skin color, and asks respondents to rate the skin color of their spouse, based on the NIS 10-scale color palette. I investigate skin color homogamy using log-linear models to describe the association between partners' skin color, net of marginal distributions.

I consider skin color as a trait hierarchically ordered in my analysis, where lighter skin is preferred to darker skin. This assumption is based on historical and ethnographic evidence from Mexico showing that whiteness is associated with beauty, while dark skin is associated with rurality, manual labor, poverty, and backwardness. Whiteness also represents modernity, wealth, and material acquisition. In this sense, marrying a lighter-skinned partner is considered desirable. Yet, even though lighter-skinned individuals may have an advantage in terms of attractiveness generally, other characteristics such as indigenous origin may offset this advantage, since Indians are usually discriminated based on stereotypical views that conceive them as lazy, stubborn, ignorant, and uncivilized. However, this analysis does not take into account indigenous origin due to sample size restrictions. If skin color is a trait hierarchically ordered, I hypothesized that individuals' preferences to form unions with lighter-skinned individuals combined with competition in the marriage market would lead to skin color homogamy. I find evidence that skin color homogamy exists in Mexico; in particular, the evidence shows there is skin color homogamy among couples in which both spouses attained more than elementary school. By contrast, skin color homogamy is not present among couples in which at least one of the partners had elementary school or less. This finding indicates that the least educated couples are more likely to mix. Moreover, I find that most of the exogamous unions involve persons of proximate skin tones, which indicates that there is still a wide social distance at the extremes of the skin tone spectrum. This is consistent with evidence from Brazil (Telles 2004). I also find evidence that indicates that the probability of forming a union decreases as the distance in terms of skin color increases, specifically for couples with more than elementary school. This finding is consistent with evidence from

the colonial period in Mexico. I did not find evidence that supports "status exchange theory" which posits that light-skinned women interchange higher "racial" status for higher socio-economic status, when they form a union. By contrast, I find that women that marry darker men are, in general, educationally homogamous and not educationally hypergamous, as this theory suggests. This finding is consistent with a study from the U.S. that shows that skin color is not used as social capital by light-skinned Mexican American women to marry upwardly in terms of socio-economic status (Hunter 2002).

Skin color homogamy may be explained by two factors: (1) individual preferences, and (2) opportunities to meet partners of different skin colors (Kalmijn and Flap 2001; Kalmijn 1998). I argue in this paper that skin color preferences are shaped by stereotypes associated with certain ethnic groups. These stereotypes have been reinforced historically, since colonial times, by political discourses and religious ideas, and, nowadays, by television shows, soap operas, films and other mass communication media. Even though racism is not overt in Mexican society, stereotypical views of whites, blacks, and Indians persist. Skin color, hair texture, and facial features, are used as proxies for descent and origin. Based on these features, Mexicans commonly engage in discrimination practices as demonstrated in the National Survey of Discrimination 2010. Additionally, the close association between social class and skin color might also shape individual preferences for certain skin colors; more specifically, since lighter-skinned individuals have economic advantages in the labor market they may become more desirable partners in the marriage market.

Even though whiteness is a site of privilege in Mexico, Moreno (2010) shows that this privilege is contextual. Consequently, it may be possible to argue that for the least educated groups in Mexico, whiteness might be more fluid compared to higher educated groups. Perhaps, this fluidity shortens the social distance that exists between different skin colors. This fluidity may explain why among the least educated groups, there is more mixing. In the case of more educated groups, whiteness may be less fluid, hence a more permanent state for those who experience it. This may reify the social distance that exists between different skin colors, which in turn might explain why among the higher educated

individuals skin color homogamy is more likely. Interestingly, a similar situation occured during the colonial era. Among the lowest social classes that lived in the Indian Republic, lifestyle (as opposed to skin color or race) was used as the main designator of identity, while skin color was the main designator of identity among higher social classes that lived in the Hispanic Republic. Since social distance was not defined in terms of race or skin color within the Indian Republic, there was a high degree of race mixture among blacks and Indians. By contrast, within the Hispanic Republic skin color strongly defined social distance among different social groups which was reflected in the fact that unions between individuals in proximate groups in the socio-racial hierarchy were more common than those formed by individuals in more distant groups (McCaa 1984; McCaa et al. 1983).

Finally, an alternative explanation of the homogamy patterns observed may also be the result of other structural factors in the marriage market. In particular, the degree of contact with potential partners with different skin colors may constraint the choice set from whom individuals select their partners, which may explain why we observe skin color homogamy. Unfortunately, log-linear models do not allow disentangling the effect of preferences and other structural factors that may be shaping the final equilibrium observed in the data.

Overall, this study shows evidence of the effect of skin color in the process of marriage choice in Mexico. Even though Mexican political elites assumed that by adopting the ideology of *Mestizaje* racial discrimination would eventually disappear and a stratification system based only on class differences would emerge, the evidence of this paper shows that skin color continues to have an impact in demographic processes that lead to the social reproduction of inequality.

References

Becker, Gary. 1973. "A Theory of Marriage: Part I", *The Journal of Political Economy* Vol. 81, No.4, pp. 813-846

Bourdieu, P. (1975), "Les strategies matrimoniales dans le système de reproduction", en *Annales E.S.C.*, no. 4-5, pp. 1105

Blossfeld, Hans-Peter. 2009. "Educational Assortative Marriage in Comparative Perspective", *Annual Review of Sociology*, 35: 513-530

Carroll, Patrick J., Jeffrey N. Lamb. 1995. "Los mexicanos negros, el mestizaje, y los fundamentos olvidados de la "Raza Cósmica": Una perspectiva regional", *Historia Mexicana*, 44(3) 403-438

Carroll, Patrick. 2009. "Black Aliens and Black Natives in New Spain's Indigenous Communities", in Black Mexico Race and Society from Colonial to Modern Times edited by Ben Vinson III and Matthew Restall, University of New Mexico Press, Albuquerque

Castillo Palma, Norma A. 2000. "Matrimonios mixtos y cruce de la barrera de color como vías para el mestizaje de la población negra y mulata (1674-1796)", *Signos históricos*, II4, 107-137

ENADIS 2010. Encuesta Nacional sobre la discrimiación en México, Resultados Generales. http://www.conapred.org.mx/userfiles/files/Enadis-2010-RG-Accss-002.pdf

Espino Rodolfo and Michael M. Franz. 2002. "Latino Phenotypic Discrimination Revisited: The Impact of Skin Color on Occupational Status", *Social Science Quarterly,* Vol. 83, No. 2, June 2002, pp. 612-622

Fischer, Andrew B. 2009. "Negotiating Two Worlds", in Black Mexico, Race and Society from Colonial to Modern Times edited by Ben Vinson III and Matthew Restall, University of New Mexico Press, Albuquerque

Hill, Mark E. 2002. “Skin Color and the Perception of Attractiveness among African Americans: Does Gender Make a Difference”, *Social Psychology Quarterly*, Vol. 65, No. 1, Mar. 2002, pp. 77-91

Hunter, Margaret L. 1998. “Colorstruck: Skin Color Stratification in the Lives of African American Women”, *Sociological Inquiry,* Vol. 68, No. 4, Fall 1998, pp. 517-535

Hunter, Margaret L.2002. “If you’re light you’re alright: Light Skin Color as Social Capital for Women of Color”, Gender and Society, Vol. 16, No.2, pp. 175-193

Kalmijn, Matthijs and Hendrik Derk Flap. 2001. “Assortative Meeting and Mating: Unintended Consequences of Organized Settings for Partner Choices”, *Social Forces*, Vol. 79, No. 4, pp. 1289-1312

Kalmijn, Matthijs.1998. “Intermarriage and Homogamy: Causes, Patterns, and Trends”, *Annual Rev. Sociology*, 24:395-421

Knight, Allan.1990. “Racism, Revolution, and Indigenismo Mexico, 1910-1920” in The Idea of Race in Latin America, edited by Richard Graham, University of Texas Press, Austin

Lewis, Laura. 2012. Chocolate and corn and flour: History, Race, and Place in the Making of Black Mexico, edited by Duke University Press

Lin, Nan. 2001. “Social Capital: A Theory of Social Structure and Action”. New York: Cam-bridge University Press.

Love, Edgar F. 1971. “Patterns of Persons of African Descent in a Colonial Mexico City Parish”, *The Hispanic American Historical Review*, Vol. 51, No. 1, pp. 79-91

Lomnitz, Claudio. 2011. “On the Origin of the Mexican Race” on Histories of Race and Racism edited by Duke University Press, pp. 204-217

Mare, Robert D., 1995, Changes in Educational Attainment and School Enrollment, *State of the Union: America in the 1990s*, ed. R. Farley, vol 1 pp. 155-213. New York, Russell Sage Found.

Mare, Robert D. 2008. “Educational Assortative Mating in Two Generations”, Working Paper, http://www.econ.ucla.edu/workshops/papers/History/mare_eam_08.pdf

Mare, R. D., and V. Maralani. 2006. “The Intergenerational Effects of Changes in Women’s Educational Attainments.” *American Sociological Review* 71: 542-64

Massey, Douglas S., and Jennifer A. Martin. 2003. The NIS Skin Color Scale. (http://nis.princeton.edu/downloads/NIS-Skin-Color-Scale.pdf)

McCaa, Robert, Stuart B. Schwartz and Arturo Grubessich. 1979. "*Race and Class in Colonial Latin America: A Critique*", Comparative Studies in Society and History, 21:3, 421-433

McCaa, Robert and Stuart B. Schwartz. 1983. “Measuring Marriage Patterns: Percentages, Cohen’s Kappa, and Log-Linear Models”. *Comparative Studies in Society and History*, Vol. 25, No. 4, pp. 711-724

McCaa, Robert. 1984. “Calidad, Clase, and Marriage in Colonial Mexico: The Case of Parral”, *The Hispanic American Historical Review*, 64(3) 1788-1790

Merton, Robert. 1941. “Intermarriage and the social structure”. *Psychiatry.* 4: 361-374

Moreno Figueroa, Mónica G. 2010. “Whiteness, mestizaje and the logics of Mexican racism”, *Ethnicities*, 10(3), pp. 387-400

Murguia, Edward and Edward Telles. 1996. “Phenotype and Schooling among Mexican Americans”, *Sociology of Education,* Vol. 69, No. 4, pp. 276-289

Navarrete, Federico. 2004. Las Relaciones Interétnicas en México editado por la Universidad Nacional Autónoma de México

Proctor III, Frank “Trey”. 2009. Slave Rebellion and Liberty in Colonial Mexico, in Black Mexico, Race and Society from Colonial to Modern Times edited by Ben Vinson III and Matthew Restall, University of New Mexico Press, Albuquerque

Smits, Jeroen, Wout Ultee and Jan Lammers. 1998. "Educational Homogamy in 65 countries: An Explanation of Differences in Openness Using Country-Level Explanatory Variables", *American Sociological Review,* Vol. 63, No. 2, pp. 264-285

South, S.J. 1991. "Sociodemographic Differentials in Mate Selection Preferences", *Journal of Marriage and Family*, Vol. 53, No. 4, pp.

Telles, Edward. 1993. "Racial Distance and Region in Brazil: Intermarriage in Brazilian Urban Areas", *Latin American Research Review,* Vol. 28, No. 2, pp. 141-162

Telles, Edward. 2004. Race in Another America: The Significance of Skin Color in Brazil, Princeton University Press

Telles, Edward and Liza Steele. 2012. "Pigmentocracy in the Americas: How is Educational Attainment Related to Skin Color", *AmericasBarometer Insights: 2012,* No. 73, pp. 1-8

Udry, J. Richard, Karl E. Bauman, and Charles Chase. 1971. "Skin Color, Status, and Mate Selection", *The American Journal of Sociology,* Vol. 76, No. 4, Jan 1971, pp. 722-733

Vasconcelos, José. 1925. *La Raza Cósmica, Misión de la Raza Iberoamericana, Nota de Viaje a la América del Sur*

Villareal, Andrés. 2010. "Stratification by Skin Color in Contemporary Mexico", American Sociological Review, 75: 652-678

Vinson III, Ben. 2004. La Historia del Estudio de los Negros en México in Afroméxico edited by Centro de Investigación y Docencia Económicas y el Fondo de Cultura Económica, México

Wade, Peter. 1997. Race and Ethnicity in Latin America edited by Pluto Press in London

Table 2-1: Descriptive Statistics

	Unweighted	Weighted
N (couples)	720	
Males' Skin Color (%) [(1)]		
1_Lighest	30%	26%
2	32%	31%
3	31%	32%
4_Darkest	7%	10%
Females' Skin Color (%) [(2)]		
1_Lighest	36%	32%
2	31%	28%
3	28%	34%
4_Darkest	4%	6%
Education		
Both partner's with >6 yrs. Education	42%	42%

Source: Mexican Marital Preference Pilot Study and Mexican Family Life Survey 2002, 2005, 2009/2010.

(1) 1_Lightest: Skin Color 1 (6%) and 2 (20%); 2: Skin color 3 (31%); 3: Skin colors 4 (22%) and 5 (10%); Skin colors 6 (8%) 7(2%) 8 (0.15%) 9 (0.04%)

(2) 1_Lightest: Skin Color 1 (7%) and 2 (25%); 2: Skin color 3 (28%); 3: Skin colors 4 (27%) and 5 (7%); Skin colors 6 (4%) 7(2%) 8 (0.6%) 9 (0.02%)

Table 2-2: Frequency and conditional distribution of female's skin color given male's skin color

Panel A. Frequencies

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	98	68	44	5	215
2	90	76	62	3	231
3	63	70	80	11	224
4_Darkest	11	12	19	8	50
Total	262	226	205	27	720

Panel B. Conditional Distribution (weighted)

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	43%	32%	21%	4%	100%
2	38%	28%	32%	1%	100%
3	21%	30%	43%	6%	100%
4_Darkest	18%	12%	40%	31%	100%
Total	32%	28%	34%	6%	100%

Source: Mexican Marital Preference Pilot Study 2011

Table 2-3: Frequency and conditional distribution of female's skin color given male's skin color by education

Panel A. Frequencies

At least one partner with <=6 yrs. Education

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	51	37	27	3	118
2	50	33	36	2	121
3	43	42	44	9	138
4_Darkest	8	9	15	6	38
Total	152	121	122	20	415

Both partners with >6 yrs. Education

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	47	31	17	2	97
2	40	43	26	1	110
3	20	28	36	2	86
4_Darkest	3	3	4	2	12
Total	110	105	83	7	305

Panel B. Conditional Distribution (weighted)

At least one partner with <=6 yrs. Education

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	44%	26%	28%	2%	100%
2	40%	23%	36%	1%	100%
3	22%	31%	39%	8%	100%
4_Darkest	17%	12%	43%	28%	100%
Total	32%	25%	36%	7%	100%

Both partners with >6 yrs. Education

	Female's Skin Color				
	1_Lighest	2	3	4_Darkest	Total
Male's Skin Color					
1_Lighest	42%	39%	13%	7%	100%
2	36%	34%	29%	1%	100%
3	19%	28%	52%	1%	100%
4_Darkest	20%	10%	33%	38%	100%
Total	32%	32%	31%	6%	100%

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 2-4. Homogamy, Hypogamy and Distance Rates by education (N=720)

	All		At least one partner with <=6 yrs. Education		Both partners with >6 yrs. Education	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
Homogamy	36%	37%	32%	34%	42%	42%
Hypogamy	37%	36%	40%	39%	32%	31%
Unions by distance						
Crossing one category	44%	46%	46%	47%	43%	44%
Crossing two categories	17%	14%	20%	16%	13%	10%
Crossing three categories	2%	3%	3%	3%	2%	4%
N	720		415		305	

Source: Mexican Marital Preference Pilot Study 2011

Table 2-5: Female's educational distribution conditional on male's education for the sample of skin color hypogamous couples(1) (N=265)

	Female's Education			
Male's Education	0-6	7-11	12+	Total
0-6	50.9	42.9	6.3	100
7-11	29.8	57.0	13.2	100
12+	31.3	31.3	37.5	100
Total	38.9	47.9	13.2	100

(1) Skin color hypogamous couples refers to those couples in which the woman form a union with a darker-skinned man, relative to the woman skin color.

Table 2-6: Goodness of Fit of Selected Models of Skin Color Assortative Mating (N=720 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 4 X 4 Contingency table (Males's skin color X Female's skin color)						
0	MF	-41.5	0.0	0	1.000	0
1	M_F	-62.9	42.9	9	0.000	-16
2	M_F_H	-56.0	29.0	8	0.000	-24
3	M_F_D	-44.9	6.9	6	0.334	-33
4	M_F_Hy	-59.5	36.1	8	0.000	-16
Panel B: Models based in a 4 X 4 X 2 Contingency table (Males's skin color X Female's skin color X Education Couple)						
0	MFE	-71.0	59.1	0	1.000	59
1	ME_FE	-94.9	106.9	18	0.000	-11
2	ME_FE_HE	-86.5	90.0	16	0.000	-15
3	ME_FE_DE	-74.7	66.5	12	0.000	-12
4	ME_FE_HyE	-90.3	97.6	16	0.000	-8

Source: Mexican Marital Preference Pilot Study 2011

Notes: Model terms are as follows: M=Male partner's skin color F=Female partner's skin color; H=Homogamy; Hyp=Hypogamy; D=Distance; E: Education (Both partners > 6 yrs. Education.; At least one partner with < =6 yrs. Education)

Figure 2-1: Scale of Skin Color

Figure 2-2: Log odds of Skin Color Homogamy (N=720)

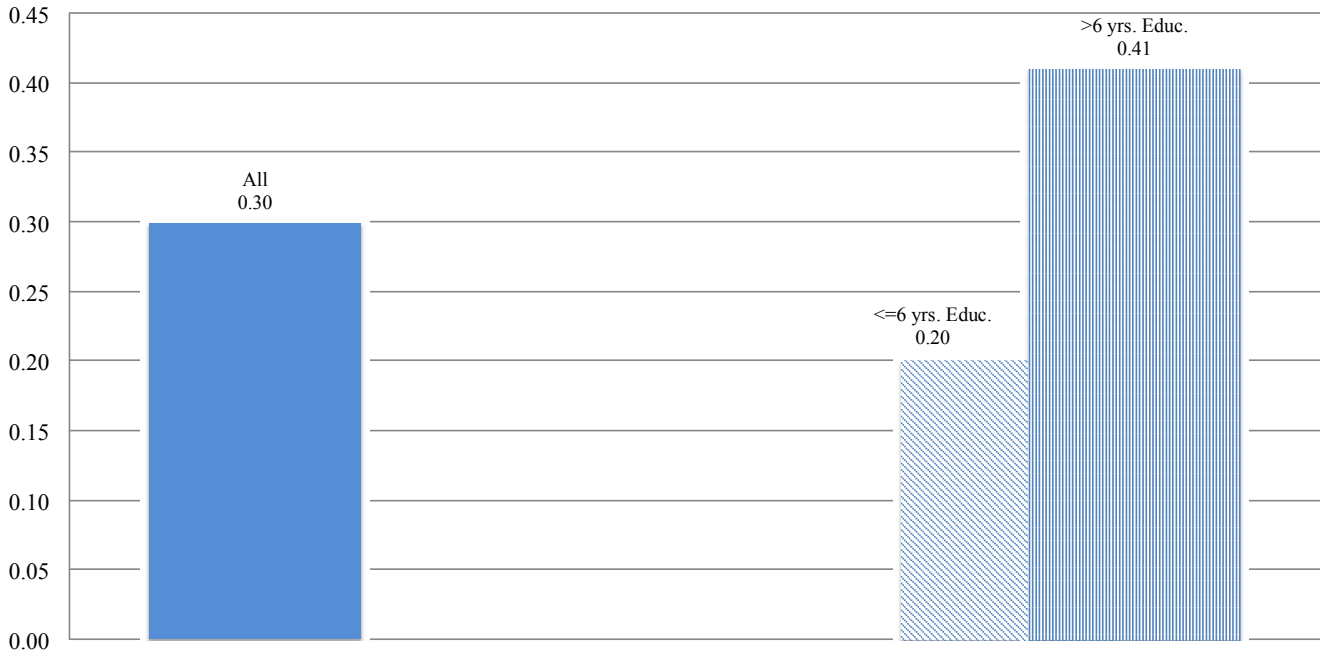
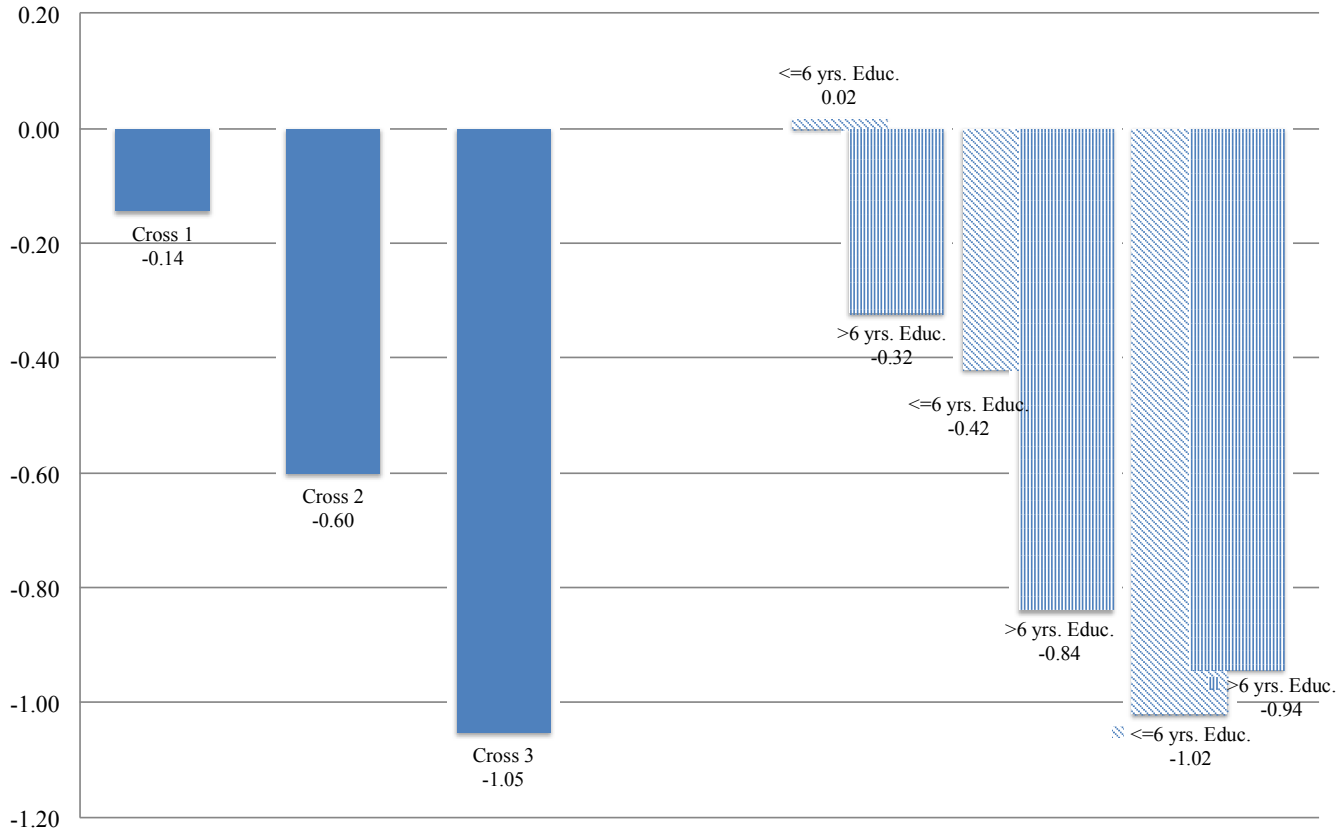


Figure 2-3: Log Odds of Crossing Skin Color Categories (N=720)



APPENDIX TABLES

Table 2-1: Goodness of Fit of Selected Models of Skin Color Assortative Mating (N=720 couples)

	Model	LL	G^2	df	p	BIC
Panel A: Models based in a 6 X 6 Contingency table (Males's skin color X Female's skin color)						
0	MF	-78.2	0.0	0	1.000	0
1	M_F	-112.1	67.8	25	0.000	-97
2	M_F_H	-107.6	58.7	24	0.000	-99
3	M_F_D	-89.9	23.2	21	0.331	-115
4	M_F_Hy	-111.6	66.7	24	0.000	-91

Source: Mexican Marital Preference Pilot Study 2011
Notes: 1_Lightest: Skin Color 1 in palette, 2: Skin Color 2 in palette; 3: Skin Color 3 in palette; 4: Skin Color 4 in palette; 5: Skin Color 5 in palette; 6_Darkest: Skin Color 6 to 10 in palette.

Table 2-2: Homogamy Parameters for Skin Color Assortative Mating for model controlling education and age (N=720)

	Log Odds b_M	p-value	Odds $\exp(b_M)$
Panel A: Homogamy parameters			
Controlling for education and age (MET_FET_HET)			
	Ages 20-40		
Homogamy <=6	-0.004	*0.979*	1.00
Homogamy>6	0.523	*0.000*	1.69
	Ages 41-60		
Homogamy <=6	0.092	*0.813*	1.10
Homogamy>6	0.299	*0.002*	1.35

Source: Mexican Marital Preference Pilot Study 2011

Chapter 3
Estimating mating preferences using a one-sided model

Introduction

Research on assortative mating indicates a tendency of individuals to marry others with similar characteristics (e.g. Mare 2008; Blossfeld 2009; Bisin, Topa and Verdier 2004; Hout 1982 Kalmijn 1998). The evidence indicates that positive marital sorting increases income inequality (Fernández and Rogerson 2000), is positively correlated with wage inequality (Fernández, Guner and Knowles 2005), and that educational assortative mating has a direct effect in the persistence of inequality across generations (Mare and Maralani 2006).

The positive correlation observed between spousal characteristics reflects two forces in the marriage market: demand and supply. On the demand side, individuals' preferences for attributes of their spouses play a key role in determining *who marries whom*; from the supply side the choice of whom to marry is constrained by opportunities to meet people with the desirable attributes individuals are searching for (Kalmijn and Flap 2001). The interaction of supply and demand results in the observed matches.

Determining individuals' preferences is key for disentangling the effect of preferences from opportunities for final matches. Since preferences determine the outcome in the marriage market, estimating preferences may be useful to understand the implications of changes in the distribution of some traits (e.g. education) on the marriage market equilibrium. A better understanding of marriage preferences may be useful to make more accurate population predictions (e.g. fertility, or the persistence of inequality). This is particularly true in situations where the size and composition of the marriage market changes due to migration, natural disasters, or government policies that change the composition of the population.

Research conducted by psychologists often relies on survey methods that investigate stated mating preferences to investigate the underlying preferences that lead final matches. However, some research shows that in real life (in the context of speed dating), how people choose their partners is poorly correlated with their stated preferences (Eastwick and Finkel 2008. Todd, Penske, Fasolo and

Lenton 2007). Moreover, research on survey methods questions the validity of stated preferences data because they show that variations in response formats, question framing, and information provided to the respondent change the estimation of preference parameters in choice models that use this type of data (Ben Akiva et al. 1994). Instead of using stated preferences data to investigate mating preferences, economists and sociologists use information on final matches to infer the underlying preferences that lead to final matches.

There has been a growing interest in estimating preferences in marriage and dating markets. A vast amount of literature on assortative mating relies on marital matches to infer preferences for certain spousal characteristics. One common approach taken by social stratification researchers to infer the underlying preferences in the process of marriage choice is to estimate log-linear models to study patterns of association between partners' characteristics (e.g. Mare 1991; Johnson 1980; Kalmijn 1998; Hout 1982). However, inferences based on these models are problematic since (1) observed marital matches may result from different underlying preferences (Fisman, Iyengar, Kamenica and Simonson 2006, 2008), (2) institutional arrangements in the marriage market may lead to positive assortative patterns even if all individuals have the same preferences (Kalmijn and Flap 2001), and (3) the lack of information about what alternatives are available makes it difficult to know if mate choices reveal preferences or opportunity constraints (Logan, Hoff and Newton 2008).

Another line of research estimate preferences using two-sided matching models, which are structural models that provide a general equilibrium framework to understand how patterns of assortative mating arise (e.g. Choo and Siow 2006a, 2006b, 2006c; Wong 2003; Bisin, Topa, and Vedier 2004; Agarwal and Diamond 2014; Logan, Hoff and Newton 2008; Menzel 2014). However, inferences from these models still rely on data from marital matches to infer preferences, which is problematic because this information is not enough to identify, separately, preference parameters for men and women, nor the identification of preference parameters by themselves (Echenique et al. 2010; Agarwal and Diamond 2014).

More recently, the rise in on-line dating services and speed-dating services has changed the type of information available for researchers to estimate mating preferences. An important advantage of this type of data is that they include information on a set of eligible partners and their characteristics. Recent studies using these data estimate mating preferences relying on one-sided logit models (e.g. Belot and Francesconi 2013; Hitsch, Hortaçsu and Ariely 2010; Banerjee, Duflo, Ghatak, and Lafortune 2009; Lee 2009; Fisman, Iyengar, Kamenica, and Simonson 2006 2008; Kurzban and Weeden 2005), which are inspired by traditional consumer choice models in economics that rely on revealed preference data to predict market behavior (Ben Akiva et al. 1994 1985). Although studies using revealed preferences data overcome several of the limitations of previous studies, they show some shortcomings. First, data are not probabilistic samples. Second, these data include information on early stages in the process of union formation and not on marital matches[15], which is problematic because the final choice is not observed. Moreover, even though dating and marriage markets overlap, participants' preferences may differ in each market. For example, in dating markets the relevant attributes for mate choice may be associated with short-term preferences, while in marriage markets with long-term preferences.

This paper examines mating preferences using information from a novel dataset that collects information on a partial set of available partners before the first union (i.e. marriage or cohabitation) and the final choice. The data come from the Mexican Marital Preference Pilot Project (MxMPP), which is a subsample of the Mexican Family Life Survey (MxFLS), a national representative sample of Mexico. The main objective of this paper is to examine the underlying preferences that lead to positive assortative mating in the union (cohabitation and marriages) market. To do so I estimate, separately for men and women, mating preferences on partner's education, skin color, and age when the relationship started, using one-sided logit models. This project assesses whether undertaking the complicated endeavor of data collection on the sets of available partners during the life course really improves our estimates of preferences compared to estimations using data on final matches.

[15]The exceptions would be the data used by Lee (2009) or by Banerjee, Duflo, Ghatak, and Lafortune (2009). In both studies, a follow up of individuals who get married is conducted and information of their final match is gathered.

The paper is organized as follows. In the next section I present some evidence from previous research. In section 3 I present my hypotheses. In section 4, I describe the data and methods. In section 5, I present the results of the study. In Section 6, I conclude and discuss implications of the results.

Previous research

Traditionally, studies of assortative mating rely on log-linear models to estimate the association between partners' characteristics, net of marginal distributions. By controlling for the effects of marginal distributions, log-linear models allow estimating the association between partner´s traits without confounding the effect of having a higher concentration of husband´s and wife´s in certain categories

Using log-linear models to make inferences about the underlying preferences that lead to positive assortative mating is problematic because the correlation observed between partners' characteristics is shaped by vertical and horizontal preferences[16] for partner's traits, strategic behavior, and meeting opportunities.

Social scientists from distinct fields have developed theoretical models to explain why assortative mating patterns in union formation arise. In the economic literature, most of the research investigating marriage behavior is based on the theoretical model of marriage proposed by Becker (1973). Becker's model assumes (1) agents behave as rational individuals who try to maximize their well-being, implying marriage is voluntary, and (2) marriage market equilibrium is reached through perfect competition. In terms of behavior, these assumptions imply people will marry only if marriage raises their utility above the utility of remaining single. In his model, utility depends directly on the expected value of household production; hence, maximizing utility becomes equivalent to maximizing expected total household production output. One implication of his model is that gains from marriage depend on the elasticity of substitution between men and women's characteristics in household production, so that greater complementarity leads to greater gains. Gains from marriage also depend

[16]Vertical (or hierarchical) preferences are based on comparisons among all alternative partners in the choice set, irrespective of the characteristics of the individual making the choice. Horizontal preferences are based on comparisons between the individual making the choice and each one of his/her alternative partners (i.e. homogamy, hypergamy, or hypogamy).

positively on traits that increase household non-market productivity, such as intelligence, education or health.

Becker (1973) shows that marital matches' describe an optimal equilibrium[17] that comes from a two-sided matching market, where

"The term 'two-sided' refers to the fact that agents in such markets belong, from the outset, to one of two disjoint sets... The term 'matching' refers to the bilateral nature of exchange in these markets" (Roth and Sotomayor; p.1).

Considering one trait at a time, Becker shows that positive assortative mating is an optimal equilibrium when traits are complements in the household production, while substitute traits result in negative assortative mating. Becker's marriage model assumes static and perfect competitive markets, with no search frictions, in which individuals are one-dimensional types, with homogenous preferences, and transferable utilities[18][19].

Extensions of Becker's original model explore the implications for assortative mating by introducing multi-dimensional types of agents (e.g. Choo and Siow 2006a; Galichon and Salanié 2010), or by assuming utilities are non-transferable (e.g. Agarwal and Diamond 2014). Others introduce search frictions and assume non-transferable utilities (e.g. Burdett and Coles 1999 1997; Smith 2006), or matching with incomplete information (Anderson and Smith 2001). In general, new versions of Becker's model show equilibrium exists, and if the expected output is complementary in the underlying types, positive assortative mating is observed (e.g. Smith 2006; Shimer and Smith 2000), with the exception of dynamic matching games with incomplete information (e.g. Anderson and Smith 2001). In this context, if agents are patient enough so that future payoffs from the match are greater than current payoffs, positive assortative mating fails.

[17] Which means that no agent in the marriage market can become better off, by changing partners or becoming single, without making someone worse off.
[18] Transferable utility models assume that each type *i* man who wants to marry a type *j* woman needs to transfer an amount of income to her, while non-transferable utility models do not assume this market-clearing condition.
[19] The transferable utility assumption under frictionless marching implies the existence, uniqueness and stability of the matches (Chiappori 2010).

Two-sided matching models

Extensions of Becker's model are framed as two-sided matching models that describe marital behavior based on game theory assuming the market can be modeled as a one-to-one matching game. Each game establishes different rules for matching depending on assumptions about the structure of the market. Moreover, each game proposes a set of payoffs or outputs for all possible matches, so that before choosing, agents are able to calculate these payoffs and choose the best possible mate or remain single. In equilibrium (i.e. once final matches are attained) no couple prefers to deviate from their assigned match, so that equilibrium matches are stable. The stability condition assures the existence of at least one stable matching in the system (Roth and Sotomayor 1990; 27).

In general, the observed data on final matches are assumed to represent a stable group of outcomes from a particular matching game. Depending on the assumptions of the market structure (e.g. with or without search frictions) matching games will vary. One common feature of these models is that they classify men and women in types (e.g. by age, education, wage, religion). Individuals rank potential partners based on their type and generate preference orderings that are mapped into utility functions. Each agent has a reservation utility (i.e. the utility of remaining single) and a utility of getting married. Utilities are transferable (e.g. Choo and Siow 2006a; Fox 2009a) or non-transferable (e.g. Wong 2003; Agarwal and Diamond 2014; Menzel 2013). If the reservation utility is greater than the utility of marriage, individuals will remain single. The equilibrium in the market is described by a matching function, which is used to identify the parameters of the empirical model.

The high number of individuals in a matching game of the marriage market makes the estimation of preference parameters sometimes infeasible because the number of unknowns is greater than the

information observed by researchers[20] (Fox 2009b; Choo and Siow 2006a). One common result in the literature of two-sided matching models is that it is not possible to identify men and women preferences separately (Choo and Siow 2006a; Galichon and Salanié 2010; Menzel 2013; Agarwal and Diamond 2014). Moreover, some models that assume static marriage markets with transferable utilities are not able to identify preference parameters from monetary transfers (Choo and Siow 2006a). Even though the identification of men and women preferences is not possible, these models are useful to compute how policy interventions or changes in the distributions of traits may affect the distribution of matched characteristics. Moreover, in terms of marital preferences these models show how different traits affect match payoffs (Fox 2009b; Choo and Siow 2006a).

Other extensions of Becker's model are found in the literature on search and matching models (e.g. Burdett and Coles 1999; Smith 2006; Shimer and Smith 2000), which in general assume two-sided dynamic matching games, search frictions (i.e. finding a partner involves a cost of time), non-transferable utility functions, and heterogeneity in preferences. In these models, men and women face a sequential problem when they are searching for a mate and they use a cut-off rule to accept or reject marriage proposals. The optimal strategy is determined by the arrival rate of offers and the distribution of utility pay-offs in the marriage market (Burdett and Coles 1999). Empirical estimations of these models offer some insights regarding marital preferences; in particular they show the relative importance of some traits over others when forming a match. For example, Wong (2003), using a search and matching framework, estimates the relative preference of wage over education. To do so, she assumes: (1) all market participants have the same ranking of potential partners, and (2) agents can be ranked based on a marriage index[21], and (3) the marriage index represents directly the individual's payoff to marriage, which guarantees the existence of positive assortative mating.

[20] Since different types of individuals are likely to rank potential partners differently, if there are *I* types of men and *J* types of women, there is a minimum[20] of *I x J* preference parameters that characterize a man's (woman's) utility for each type of potential spouse. This implies a minimum of *2 x I x J* number of unknown preference parameters; however, researchers only observed each type of men *I*, each type of women *J*, and the match *I X J*, so the number of observables is less than the number of parameters to be estimated (Choo and Siow 2006a).

[21] To calculate the index she generates z a function of wage and education, so that

An alternative approach to estimate preferences using two-sided matching models is provided by Logan, Hoff and Newton (2008). Similar to other two-sided-models, they depart from a behavioral model that assumes one-to-one matching, in which both men and women rank individuals of the opposite sex according to their preferences, and these preferences are mapped into utility functions. However, instead of estimating parameters from a matching function, the authors approximate the choice set of alternative partners for each individual in the market. In their model, the probability that represents the process leading to a stable match is separated in two components: (1) the probability that depends on the matching mechanism, which involves strategic behavior, preferences, and other constraints of the market, and (2) the marginal probability of the stability of the observed match, conditional on preferences. Since the matching mechanism is unknown by researchers, they infer preference parameters based on the second component.

Logan, Hoff and Newton (2008) follow a Bayesian approach in order to estimate the posterior distribution of preference parameters conditional on the stability of the matches. They make parametric assumptions about the distribution of utilities and preferences to approximate this posterior distribution using a Markov Chain Monte Carlo procedure. The authors propose a constrained sampling of preference parameters and utilities in order to estimate a posterior distribution of preferences associated with an approximation of a choice set of available partners. The constrained sampling is based on the following rules: (1) each actor chooses, from his/her choice set, the partner that offers the highest utility, (2) choice sets are constrained by preferences of members of the opposite sex[22], and (3) choice sets are also constrained by the matches of other individuals from the same side of the market, if those

---

z=exp(αw + (1-+α)e)
where 0<α<1
From each person a set of z values is obtained, those values are ordered from lowest to highest, and then the median value is obtained. The median represents the marriage index for each person.

[22] There may be women not available for some men because, even though forming a union with those women would imply a higher utility for men (compared to the utility of remaining single), for those women forming a union with those men would represent a decrease in their utility (compared to the utility of remaining single).

individuals are matched with partners they would prefer[23]. This model does not allow the identification of vertical preference parameter coefficients; it only identifies differences in traits across alternatives (e.g. educational homogamy). Recent critiques of Logan, Hoff and Newton's model suggest that results from their model are sensitive to parametric assumptions, and provide evidence that in two-sided matching models preferences cannot be identified (Agarwal and Diamond 2014; Echenique et al. 2010).

One sided matching models

Recent studies of preferences for mate attributes use revealed preference data to study marriage market behavior (e.g. Belot and Francesconi 2010; Hitsch, Hortaçsu and Ariely 2010; Banerjee, Duflo, Ghatak, and Lafortune 2009; Lee 2009; Fisman, Iyengar, Kamenica, and Simonson 2006a; Kurzban and Weeden 2005). These studies use a rich set of data from on-line dating services, speed-dating events, or newspaper ads samples which allows observing the choice set of available partners and the final partner choice.

Based on consumer choice models, where the choice set is well known (e.g. Ben-Akiva and Lerman 1985), one-sided models usually are estimated through conditional logit models or random effect models that investigate the association of partner's attributes with the probability of making a proposal. The estimation of preferences using one-sided models differs from that employed using two-sided models in that preferences are not estimated from equilibrium outcomes, since they use rich datasets with information about available partners. Using this type of data allows estimating preferences directly, without relying on assumptions about the process leading to choices of the final matches observed. However, preference parameters in these models may also reflect strategic behavior related to anticipation to rejection and meeting opportunities (Belot and Francesconi 2013). For example, in a speed-dating environment, Belot and Francesconi (2013) find that the scarcity of young men in the market reduced women's demand for them.

[23] For some men forming a union with some women may imply a higher utility (compared to the utility of remaining single); however, other men with more desirable characteristics (compared to their own) may be able to form a match with those women, leaving these women out of their choice set.

Empirical Evidence

Log-linear models show ample evidence of the strong association between spouses' characteristics in terms of age, education, and race (e.g. Qian and Preston 1993, Mare 2008; Esteve and McCaa 2007; Blossfeld 2009, Kalmijn 1998).

Empirical estimations based on two-sided models, using representative samples from the U.S. and Canada, show that men prefer to marry younger women while women prefer to marry older men (Logan, Hoff and Newton 2008). In terms of gains from marriage, structural models find that as women age, their gains from marrying younger men fall faster, compared to those of men, whose gains from marrying younger women, as they age, fall at a lower rate. (Choo and Siow 2006b). One possible interpretation of these findings may be that men have stronger preferences to marry younger women because they value physical attractiveness more than women (Buss 1989, Feingold 1990); while women have preferences to marry older men because women value earnings potential more than men, and older men may have a more stable economic situation compared with their younger counterparts. In terms of education and wage, empirical evidence from the U.S. shows that there is a preference for educational homogamy (Logan, Hoff and Newton 2008), and that white men become more desirable in the marriage market as a function of their wage, while black men become more desirable depending on their education (Wong 2003).

Empirical estimations using one-sided models and non-random samples from on-line dating, speed-dating, or ads placed in newspapers to find partners agree on the existence of homogamous preferences over some traits such as age, race and height (Lee 2009; Kurzban and Weeden 2005; Fisman, Iyengar, Kamenica and Simonson 2008). For age, some studies find that most men prefer to marry a women 2 to 3 years younger, and most women to men 2 to 3 years older (Bhrolchain 2001). However, traits such as physical attractiveness seem to be hierarchically ordered by everyone (e.g. Hitsch, Hortaçsu and Ariely 2010; Lee 2009; Kurzban and Weeden 2005). These studies also find that dating matches show a lower degree of homogamy by education, income or wealth than marital matches

in the aggregate (as research on assortative mating indicates), which suggests that people become more selective along the process of dating during the life course[24] as predicted by the "winnowing" hypothesis (Blackwell and Lichter 2004).

Objective and Hypotheses

The main objective of this paper is to investigate the underlying preferences that lead to positive assortative mating in the marriage market in Mexico. To do so, I estimate mating preferences using revealed preference data from a partial choice set of potential alternative partners before the first union (marriage or cohabitation). Previous research suggests that revealed preference data is more adequate to predict market behavior compared to stated mate preferences data (Ben Akiva et al. 1994).

I rely on one-sided logit models (conditional fixed effects logistic regression models) to estimate mating preferences for partner's characteristics, including partner's education, skin color, and age. In this study, I assume that preferences for partner´s characteristics are based on two types of comparisons: comparisons among all potential partners, and comparisons between the individual making the choice and each one of its potential partners. I define vertical or hierarchical preferences as those that rely on comparisons among all potential partners. For example, in order to choose a partner an individual may compare the education of all available partners in his/her choice set and prefer (irrespective of his/her own education) a more educated rather than a lower educated partner. I define horizontal preferences as those that rely in comparisons in relation to the individual making the choice. For example, in order to choose a partner, individuals may compare the education of a potential partner relative to their own education. I say an individual shows preferences for educational homogamy if he/she prefers a partner with the same education relative to themselves; I say an individual shows preferences for educational hypergamy if he/she prefers a partner with higher education relative to themselves; I say an individual

[24] Even though this hypothesis might be true for the general population, some researchers have not found evidence to support this hypothesis for certain contexts. For example, using data from a online dating service from Korea, Lee (2009) finds no increase in the strength of the correlations between wife's and husband's characteristics in different stages of their relationships, from the first date to marriage.

shows preferences for educational hypogamy if he/she prefers partners with lower education relative to themselves.

In this chapter, I am interested in examining vertical (hierarchical) and horizontal (homogamy, hypogamy, and hypergamy) preferences for education, skin color, and age. Based on previous literature, I consider educational attainment and skin color as traits hierarchically ordered (Telles 2004; Wade 1997), hence I expect that both men and women will prefer to marry lighter-skinned and higher-educated partners compared to darker-skinned and lower-educated partners, respectively.

Moreover, based on "status exchange theory", which posits that lower status light-skinned females might exchange their higher racial status with higher social status dark-skinned men (Merton 1941), I expect men's vertical preferences for lighter-skinned women to be stronger than women's vertical preferences for lighter-skinned men. In addition, I expect vertical preferences for higher-educated individuals to be stronger for females than for males. In terms of horizontal preferences for skin color, I expect that women and men will show preferences for lighter-skinned spouses (compared to themselves) rather than for spouses with their same skin color.

Based on the cultural matching hypothesis that posits individuals tend to form unions with others with similar traits, and assuming educational attainment may be a proxy for tastes, values, and lifestyle, I expect to find a preference for educational homogamy. Moreover, given that returns for education are lower for women than for men in the labor market in Mexico, I expect a certain degree of women´s specialization in household production and of men´s specialization in labor production (Becker 1973), hence I expect that women will show preferences for educational hypergamy, while men will show preferences for educational hypogamy.

In terms of age preferences, I expect women will show a preference to form unions with older men relative to them (age hypergamy) and men will show a preference to form unions with younger women relative to them (age hypogamy).

Data and Methods

Data

My sample comes from the from the Mexican Marital Preference Pilot project (MxMPP), a pilot study designed to collect relevant information about the partner selection process of adults in Mexico. These data represent the first effort in Mexico to collect information about (1) a partial choice set of potential partners before the first union (either marriage or cohabitation), and (2) of skin color of respondents, their spouses, and their potential partners before their first unions. The survey instrument designed for the MxMPP was administered to a subsample of the third wave of Mexican Family Life Survey (MxFLS-3), an ongoing longitudinal survey that is nationally-representative of individuals, households, and communities in Mexico.

MxMPP – Sampling Design

The MxMPP sample was selected from a subsample of the third wave of MxFLS-3. This eligible sample included panel and new members of the MxFLS-3, and was selected in three steps. First, respondents were chosen based on the following characteristics: (i) within ages between 20 and 60 years old, and (ii) who were not dead, an international migrant, lost to follow-up, or refused to participate in MxFLS-3. From the 23,792 age eligible respondents, 19.5% were eliminated from the age eligible sample because they were dead, international migrants, refusals, or not found (see Appendix A Table A-1). Second, since the MxMPP shared part of the resources of the MxFLS-3 (such as interviewers, and transportation resources), and the MxFLS-3 was still on the field when the MxMPP sample was selected, the MxMPP eligible sample excluded households who had already been completely interviewed by the MxFLS-3 teams. Hence, 34% of the eligible sample (that ideally should have been considered in the random sampling for the MxMPP) was excluded from the sampling frame. From a comparison of the demographic characteristics between the final eligible sample (that was used for random sampling) and the excluded age eligible sample (see Appendix A – Table A-2), I found that compared to older individuals respondents between the ages of 20 to 29 are more likely to be in the final

eligible sample. Moreover, individuals from rural origins are less likely to be in the final eligible sample. In terms of education, sex, and ever being in a union there are no significant differences between the two samples. The MxMPP sample consists of 1,476 observations that were selected randomly from the 12,589 observations in the final eligible sample.

MxMPP-Data collection

The MxMPP collected information through two instruments. MxMPP-Instrument 1 collected retrospective histories of marriage, cohabitations, and dating relationships during the life course (see Supplementary Materials). This instrument began by asking information about their current relationship and then about previous relationships that lasted six months or more. MxMPP-Instrument 1B collected information about the first union (marriage or cohabitation) and the most important relationship before the first union (defined as the relationship that lasted longer) (see Supplementary Materials). Both instruments collected data about each relationship in the order that follows:

1. Time and duration of the relationship.
2. Meeting places and how the partner was first introduce to the respondent.
3. Socio-economic characteristics of the partners, such as age, education, marital status, employment, occupation, migration status to the United States.
4. Socio-economic characteristics of the partner's parents, such as father's educational level and occupation, and relative economic status of the partner's family.
5. Physical attributes of the partners, such as relative height, physical appearance related to weight, and skin color.
6. Decision to form or finish a union.

The fieldwork collection was divided in two phases. The first phase was conducted the last quarter of 2011 and consisted in the data collection of MxMPP-Instrument 1. In general, MxMPP-Instrument 1 was collected at the same time as the Health Instrument of the MxFLS-3. There was no fixed order for the collection of the instruments (i.e. sometimes the MxMPP-Instrument 1 was collected first and the

MxFLS-3 Health Instrument second, or *viceversa*). The MxFLS-3 Health Instrument collected biomarkers (i.e. blood spots, glucose, blood pressure) and anthropometric measures (i.e. height, weight), and basic demographic information (e.g. age, sex). After MxMPP-Instrument 1 was collected, we found that about 26% of respondents answered having more than 1 relationship that lasted for 6 months or more, which implied an average number of relationships of 1.4. For data quality purposes, a series of phone interviews were conducted to a random sample of 570 respondents, who had been in a union at least once, in order to check if the number of relationships declared in MxMPP-Instrument 1 was accurate. Results from this exercise indicate that about 13% of respondents who had previously answered having only one relationship, changed their answer and declared having more than one relationship prior to the first union. In these cases, MxMPP-Instrument 1 was administered by phone again. Furthermore, 23% of the respondents remained with their previous answer, and the rest was unable to be reach by phone.

Given the interest of collecting information about the set of marriageable partners, some households were revisited to perform the collection of MxMPP-Instrument 1B. Data collection of MxMPP-Instrument 1B was done by itself; no other MxFLS-3 instruments were gathered at the same time. Three are the main differences between MxMPP-Instrument 1 and 1B: (1) MxMPP-Instrument 1 collected relationship information of singles and individuals who had been in a union; while MxMPP-Instrument 1B only collected information of individuals who had been in a union, (2) MxMPP-Instrument 1 collected information about the set of available partners defined as all partners with whom the respondent had formed union (marriage or cohabitation), and other partners with whom the respondent established or tried to established a relationship that lasted for 6 months of more; while MxMPP-Instrument 1B only gathered information about the relationship with the first partner with whom they form a union (marriage or cohabitation) and about the most important relationship prior to the first union, defined as the relationship that lasted more. During the second quarter of 2012, we revisited the households and performed the data collection of this instrument. Results from the first and second round

of the fieldwork are shown in Appendix A-Table A-3. The implementation of both Instruments lead to a response rate of 71.2% as it is shown in Appendix A-Table A-4.

For this study, I use information from both instruments. If respondents only answered MxMPP-Instrument 1, I use the data from this instrument. If respondents only answered MxMPP- Instrument 1B, I use the information from this instrument. If respondents answered both instruments, but in Instrument 1 it was already captured more than one relationships, I used data from this instrument. If Instrument 1 only showed one relationship and no prior relationships prior to the first union, but Instrument 1B collected information on prior relationships, I use data from Instrument 1B.

To collect the information about partners´ skin color respondents were shown a skin color palette (see Figure 1) and they were asked to recall the skin color of each one of the partners included in the retrospective history and chose the respective color in the palette. After the interview was over and the interviewers were outside of the household, they rated the skin color of the respondent according to the same palette. The colors of the palette come from the New Immigrant Survey (NIS) skin color scale (Massey and Martin 2003). The data collection of skin color follows the same protocol designed by the NIS, in which interviewers do not rate the skin color in front of the respondent.

Analytical Sample

From the 1,476 observations of the MxMPP sample, 19% have never been in a union (i.e. marriage or cohabitation), 77% have either been married or cohabiting, and 4% are missing on this item. For this analysis, I drop 280 cases of individuals who have never been in a union, which implies an eligible sample of 1,196. From these observations, 75% were interviewed, 16% were lost to follow-up, and 9% refused to answer the survey. I focus on the choice of first unions of respondents who have at least one previous relationship before their first union.

From the 1,196 eligible respondents, 898 completed the MxMPP survey, and only 376 declared having at least one relationship prior to their first union (see Appendix Table 3-1)[25]. From those 376 respondents, 280 have complete information in the relevant variables for this study (see Appendix Table 3-2). To analyze possible mis-representativeness due to missing data, I ran a logistic regression (N=1,196) of the odds of being in the analytical sample as a function of demographic characteristics. I find that individuals with 7 to 11 years of schooling are 1.3 times more likely to be in the sample compare those with less than 7 years of schooling (p=0.057), similarly respondents with 12+ years of schooling are 1.4 times more likely to be in the analytical sample, compared to those with less than 7 years of schooling (p=0.076). I do not find significant differences in terms of sex, age, and rural origin.

From the 280 respondents I generate a file with 595 couples using the retrospective dating and marital histories. These 595 couples constitute the analytical sample. This implies that for each respondent the sample includes two (or more) relationships: the first union (either marriage or cohabitation) and the relationship(s) prior to the first union.

Methods

To estimate mating preference parameters I use conditional fixed effects logit models. These types of models are widely used in consumer choice studies where the choice set is well known (e.g. Ben-Akiva and Lerman 1985). It is important to acknowledge that preference parameters estimations from these models still confound the effects of strategic behavior and meeting opportunities, in this regard they do not reflect completely preference orderings. However, I estimate these models because by having information about a partial set of available partners, these models provide better estimates of preferences than models that rely only on final matches.

[25] Appendix A Table A-3 shows that in 13% of the cases collected through Instrument 1 respondents under-reported the number of relationships prior to the first union (marriage or cohabitation). We infer from the fact that when the household was re-visited to collect Instrument 1B individuals declared having at least one prior relationship before the first union (marriage or cohabitation). Of the 1,140 cases to be collected in the second phase of the fieldwork, it was not possible to interview again 24% of the individuals who were surveyed already using Instrument 1 (i.e. 276 cases), hence I estimate some under-reporting in 13% of these 276 cases, which implies about 4% of under-reporting of the interviewed sample.

I estimate separately preferences for males and females, and calculate the conditional probability of choosing a partner given that they are within the choice set of each individual using the following logit equation:

$$Prob(u_i = 1|\, z_i) = \frac{exp(z_{im}\gamma)}{\sum_{j=1}^{J} exp(z_{ij}\gamma)}$$

Where i indexes individuals, m indexes partner's characteristics, and j indexes partners within the choice set of each individual. The dependent variable in the analysis is u_i, which is a dichotomous variable equal to one if the individual chose to form a union with that partner or zero otherwise; z_{im} are variables associated with vertical or horizontal preferences for education, skin color, and age of the partner.

To examine vertical preferences for partner's education on the probability of choosing a partner, I define educational attainment by the time when the relationship started as a categorical variable with three classifications: 0-6, 7-11, and 12+ years of schooling. To study horizontal preferences for education I generate two variables: (i) one dummy for educational homogamy that indicates whether both the respondent and his/her partner have the same educational attainment, and (2) a categorical variable with three categories indicating whether the respondent and his/her partner have the same educational level (homogamy), shows a higher educational level (hypergamy), or lower educational level (hypogamy).

The MxMPP gathers information about skin color of partners and skin color of the respondents using a 10-point skin color scale. The scale was shown to the respondent so that they could make an assessment of their spouse or partner's skin color. Similarly, using this scale the interviewers made an assessment of the skin color of the respondent. In this study, I define vertical preferences for partner's skin color as a categorical variable with three ordered classifications where 1 refers to the lightest skin color and 3 to the darkest. I generate two different variables to study horizontal preferences for skin color homogamy: (1) a dummy indicating whether the respondent and his/her partner have the same skin

color, and (2) a categorical variable with three classifications indicating whether the respondent and his/her partner is within the same skin color category (homogamy), whether the partner shows lighter skin color compared to the respondent, and whether the partner shows darker skin color compared to the respondent.

To investigate vertical preferences for age when the relationship started, I include in the regression age as a categorical variable with three categories: 10-20, 21-25, and 26-60. Finally, to measure horizontal preferences for age I first classified men and women in 9 groups depending on the age when the relationship started: 10-15, 16-20, 21-25, 26-30, 31-35, 36-40, 41-45, 46-50, and 51-55. Then I generate two different variables for horizontal age preferences: (1) a dummy variable indicating whether the respondent and his/her partner are within the same age group, (2) a categorical variable indicating whether the respondent and his/her partner are within the same age group (homogamy), whether the partner is in a older age group compared to the respondent (hypergamy), and whether the partner is in a younger age group (hypogamy).

Results

Descriptive Statistics

INSERT TABLE 3-1 HERE

Table 3-1 shows descriptive statistics of the analytical sample stratified by gender. As mentioned before, this sample only includes respondents who declared having at least one relationship prior to first union (marriage or cohabitation). In general, men declared having more relationships than women, since 78% of men had one relationship prior to the first union, and 16% had two; while 96% of women had one relationship prior to first union, and only 7% had two.

This table also shows descriptive statistics of some indicators associated with vertical (or hierarchical) preferences for partner´s education, skin color, and age. In terms of partner's education, the table shows that for men 26% of their female partners have less than 7 years of education, 59% have between 7 and 11 years of education, and 14% have 12 years of education or more. For women, about

35% of their male partners have less than 7 years of education, 44% have between 7 to 11 years of education, and 21% have 12 years of education or more. In terms of skin color, the table shows that men are more likely to form relationships with women with the lightest skin colors; in particular, 41% of their female partners show the lightest skin color. For women, only about 30% form relationships with men with the lightest skin colors, and 41% with men with skin color in the middle of the color-scale. In terms of age when the relationship started, I find that males are more likely to establish relationships with young females, while females are more likely to choose older men. In particular, the sample for men shows that 78% of their female partners shows ages between 10 to 20 years old, and 22% show ages greater than 20 years old; while for women, 53% of their male partners shows ages between 10 to 20, and 47% above 20 years old.

Table 3-1 also shows descriptive statistics of indicators associated with horizontal preferences. In terms of education it shows that about 60% of respondents (irrespective of their gender) form unions with partners with the same educational level. Moreover, 22% of the relationships pursued by males are with females in higher educational categories (relative to males), while 29% of the relationships pursued by females are with males in higher educational categories (relative to females). In addition, 19% of the relationships pursued by men are with women with lower education (relative to males), while 11% of the relationships pursued by women are with men in lower educational categories (relative to females). In terms of skin color, the table shows that about 40% of relationships pursued by men are with females within the same skin color category, 45% are pursued with females with lighter skin color (relative to male respondents), and 14% are pursued with women with darker skin color (relative to male respondents). Women are more likely to form homogamy relationships in terms of skin color, given that 47% of their male partners are within their skin color category, 30% of their relationships are pursued with lighter-skinned color males, and 23% with darker-skinned color males. Finally, preferences for age indicate men are more likely to engage in relationships with partners within the same age category, since 59% of their relationships show age homogamy, while 56% of the relationships pursued by women

show age homogamy. Moreover, 26% of men form relationships with older women (relative to males), and 15% with younger women (relative to males). By contrast, 36% of women form relationships with younger men (relative to females), while 9% with men older (relative to females).

INSERT TABLE 3-2 HERE

Table 3-2 shows the proportion of individuals that formed a union within each educational, skin color, and age horizontal preference categories. For men, I find that 43% of the relationships with women within the same educational category (relative to males) turned into unions (either marriage or cohabitation); 31% of the relationships with women in higher educational levels (relative to males) turned into unions, and 70% of the relationships with women in lower educational levels (relative to males) turned into unions. Similar results are observed for females. In terms of skin color, I find that about 45% of men form unions with women in their same skin color category, and this proportion does not vary across the other two types of relationship categories based on skin color. However, for females I find that 53% of relationships with men with lighter-skin color turned into unions, 50% of relationships with men within their same skin color category turned into unions, and only 41% of relationships with darker-skinned males turned into unions. Finally, in the case of males, 65% of relationships pursued with older women turned into unions, while only 38% of relationships pursued with someone in the same age category turned into unions. I find similar results for women, 97% of the relationships with older men turned into unions, while only 40% of relationships with men in the same age category turned into unions.

In sum, based in the gross proportions shown in this table the data suggest that: (1) pursuing a relationship with someone in a lower educational category may increase the chance of a union, compared to homogamy, (2) for men, horizontal preferences for women´s skin color may not have an effect in the chances of a union, (3) for women pursuing relationships with lighter-skinned men may increase the chance of the union, and (4) for men and women, pursuing a relationship with an older partner may increase the chances of a union. To further investigate if the preferences suggested by the

descriptive statistics hold, I perform a series of log-linear analysis that allows examining the patterns of association between partner´s characteristics, and then I estimate a series of one-sided models through conditional fixed effect logistic regressions that use within-individual differences between traits of alternative partners in the choice set to infer preferences.

Log-linear Analysis

I explore patterns of association between both partner's characteristics by conducting a log-linear analysis. This analysis has two objectives: (1) to check if patterns of association in the data are consistent with other studies of assortative mating in Mexico, and (2) to examine to what degree the estimated preferences from one-sided models are able to explain the equilibrium outcomes observed in final matches. The details of the log-linear analysis can be found in Appendix Table 3-3. From the log-linear analysis, once we control for marginal distributions, I find that homogamy characterizes the pattern of association between partners' education, skin color, and age. In particular, I find that odds of educational homogamy are between 1.8 and 1.9 times the odds to heterogamy; the odds of skin color homogamy are about 1.3 times the odds of heterogamy; and the odds of age homogamy are between 8 and 11 times the odds of heterogamy. Results from the log-linear analysis also show a pattern of age hypergamy in the data, which indicates that women tend to marry older men; in particular, the odds of age hypergamy are between 8 and 12 times the odds of forming a relationship with a men of the same age or younger (see Appendix – Table 3-4). These results are consistent with other studies of Mexico (e.g. López et al. 2008; McCaa and Esteve 2005; Arenas 2014; Quilodrán and Sosa 2001). A study by Quilodrán and Sosa (2001), using the 1990 Mexican vital statistics, shows educational homogamy in 56% of the couples, educational hypergamy in 27% of the couples, and educational hypogamy on the rest. Moreover, they find age homogamy in 10% of the couples, age hypergamy in 70%, age hypogamy in the rest, and that about 45% of the couples show a difference in age of 3 years. In terms of skin color homogamy, Arenas (2014) using information on a sample of first unions (including couples with none,

one, or more relationships prior to the first union) find the same odds ratio for skin color homogamy as the odds estimated using the restricted sample in this paper.

One-Sided Models

Now I estimate one-sided models to investigate mating preferences for partners' characteristics. As I mentioned before, the main strengths of these models are: (1) they are not estimated from equilibrium outcomes given that they use information about a partial set of available partners, and (2) they do not rely in assumptions about the process leading to the final matches. Nonetheless, parameters from these models may not only reflect mating preferences, but may confound the effect of strategic behavior and meeting opportunities. Even though parameters from these models may not only reflect mating preferences, in the analysis that follows I will describe these parameters as indicators of horizontal and vertical preferences. These models are estimated through a series of conditional fixed effect logistic regressions that use within-individual differences in traits across alternative partners in the choice set to estimate preferences. These models control for unobserved traits that do not change across alternative partners making parameters from these models less vulnerable to omitted variable bias.

INSERT TABLE 3-3 HERE

The first three models in Table 3-3 show estimation of horizontal preferences for education, skin color and age. I estimate these preferences using conditional fixed effects logistic regressions of the odds forming a union. The analysis is stratified by gender (i.e. panel A and B shows results for men and women, respectively). Models 1 through 3 estimate horizontal preferences for each trait separately, and Model 4 is a full model with all the traits included in the same regression. For example, Model 1 estimates preferences for educational homogamy, net of preferences for other unobserved characteristics that do not vary across partners within the choice set; while Model 4 estimates preferences for educational homogamy, net of horizontal preferences for skin color and age and for preferences for other fixed unobserved partner's characteristics. For men and women, results of preferences for educational homogamy (vs. heterogamy) and skin color homogamy (vs. heterogamy) are not statistically significant.

Nonetheless, given that the lack of significance may be a consequence of sample size, I examine the value of the coefficients. The data suggests that males may have a preference for educational and skin color homogamy, given that they are 1.06 more likely to choose women with their same education, and 1.19 times more likely to choose women with their same skin color. For females, the coefficient suggests that women prefer non-homogamous relationships in terms of education, and prefer to marry men with a similar skin color to themselves.

By contrast, preferences for age homogamy (vs. heterogamy) do have a significant effect on the odds of choosing a partner. Specifically, males are 60% (p=0.000) less likely to form unions with females within the same age category compared to females in other age categories; while females are 37% less likely (p=0.69) to form unions with males within the same age category. This result is not surprising given that previous research from Mexico shows that in about 70% of the couples women are more likely to marry older men (Quilodrán and Sosa 2001).

INSERT TABLE 3-4 HERE

Table 3-4 shows estimates of parameters associated with male's vertical and horizontal preferences for education, skin color and age. The analysis in this table breaks down the heterogamy category, used in the previous analysis, in two categories: hypergamy and hypogamy. This allows investigating if individuals showing a tendency for heterogamy (rather than homogamy) are more likely to show hypergamous or hypogamous preferences for education, skin color, or age. Hence, horizontal preferences are defined as categorical variables with three classifications: homogamy, hypergamy, and hypogamy. In addition, the analysis shown in this table investigates the importance of vertical preferences in the process of union formation.

I conduct conditional fixed effects logistic regressions to estimate the effect of vertical and horizontal preferences on the conditional probability of forming a union. Models 1, 2 and 3 show gross parameters associated with preferences for education, skin color, and age, respectively. Model 1 shows that males are 6.45 times (p=0.038) more likely to choose women with 12+ years of education rather

than women with 0 to 6 years of schooling, net of horizontal preferences for education and for other fixed unobserved partner's characteristics. In terms of horizontal preferences, I find that men are 70% (p=0.007) less likely to choose more educated women (compared to themselves) rather than women with the same education. By contrast, men are 8.7 times more likely to choose less educated women (compared to themselves) rather than with women with the same education, net of vertical preferences for education and fixed unobserved partner's characteristics.

Model 2 shows results of parameters associated with skin color preferences. In general, I find that these parameters are not significant in the choice process. However, given that the lack of significance may be related to the sample size, I examine the regression coefficients. The coefficients suggest that it may be possible that men prefer lighter-skinned women (compared to themselves) rather than women within their same skin color category, and that men may prefer women with their same skin color rather than darker-skinned women. In terms parameters associated to vertical preferences, the direction of the coefficients suggests that skin color may not be a hierarchical trait for men.

In terms of parameters associated with vertical preferences for age, Model 3 shows that men are about 9 times more likely to choose women between 21 to 25 years old compared to women younger than 20. However, it is possible that these coefficients may be an artifact of the model, since they may only reflect that individuals tend to marry the older of the partners within the choice set, which in the data is the last relationship recorded. The unchosen relationships occur first and it is likely that these relationships are with younger partners given that the chooser himself/herself is younger. In terms of horizontal preferences, I find that men are 5 times more (p=0.000) likely to choose women older than themselves rather than with women in their same age category. This is an unexpected result because most of previous research shows men are more likely to choose younger women. However, given that in this sample most of the individuals are between 10 and 25 years old, a plausible explanation of this finding may be that young men may find attractive older women (relative to them) until certain age

threshold after which as women age they become less attractive. More research will be needed to test this hypothesis.

Model 4 shows estimates of parameters associated with preferences for education, net of preferences for partner's skin color and other fixed unobserved partner's characteristics. Model 4 shows similar coefficients for education as those in Model 1. In terms of skin color preferences, coefficients in this Model remain not-significant (compared to Model 2); however, in the case of vertical preferences for skin color, the value of the coefficients suggest a hierarchical preference for women's skin color, given that the odds ratio show that men are 20% less likely to choose women in the darkest skin category compared to women in the lightest skin category. The odds ratio associated with horizontal preferences for skin color suggest a preference for skin color homogamy compared to a preference for skin color hypergamy or hypogamy. Model 5 shows a full model that includes parameters associated with preferences for education, skin color, and age. Parameters for education, skin color and age are similar across models.

INSERT TABLE 3-5 HERE

Table 3-5 shows estimates of parameters associated with female's vertical and horizontal preferences for education, skin color and age. For women, male's education appears to be a trait hierarchically ordered in all models. Model 1 shows women are 10 times more ($p=0.008$) likely to form a union with men with 12 years or more of schooling than with males with less than 7 years of schooling, net of horizontal preferences for education and fixed unobserved partners' characteristics. Also, results from the table suggest women may show preferences for educational homogamy (rather than educational hypergamy), since men with more education (compared to women's education) are 80% less likely to be chosen compared with men with the same education.

I find that males and females are more likely to form unions with partner´s with lower education rather than with partner´s with the same education. This is an unexpected result given that previous research indicates that women show a preference for educational hypergamy (rather than educational

homogamy). Even though, this may suggest there is a preference for educational hypogamy, one should be cautious when interpreting this result because it may be driven by other factors unrelated to preferences. For example, this result may be driven by women in the top categories in the educational distribution whose only options are to marry within the same educational category or downward.

Parameters associated with women's vertical and horizontal preferences for skin color are not significant across models. However, examining the values of the coefficients suggest a hierarchical preference for men's skin color. Regarding horizontal preferences, the data suggest women may prefer men with lighter skin (relative to themselves) rather than men within the same skin color category. Additionally, the value of the coefficients suggests women may prefer skin color homogamy, rather than men with darker skin (compared to themselves). Skin color results are consistent across models.

Finally, Table 3-5 also shows parameters associated with women's vertical and horizontal preferences for age. I consistently find across models that women are more likely to form unions with older (rather than younger) men. However, as I mentioned before, this may be an artifact of the study design. In terms of horizontal preferences, I find a strong women's preference for age hypergamy rather than for age homogamy. Moreover, I find women prefer age homogamy rather than age hypogamy.

Discussion

Positive assortative mating has been widely documented. Social stratification researchers often rely on log-linear models to provide evidence of this phenomenon, given that these models allow investigating patterns of association between partner's characteristics net of marginal distributions. By controlling for the effects of marginal distributions, log-linear models allow estimating the association between partner´s traits without confounding the effect of having a higher concentration of husband´s and wife´s in certain categories. Even though positive assortative mating increases income inequality in the short and the long run, little is known about how these patterns arise. This paper examines the role of preferences for partner's characteristics on positive marital sorting. In this paper, I estimate log-linear models as a point of departure to investigate the patterns of association between partner's characteristics

in terms of education, skin color, and age. Parameter estimations from these models confound the effects of preferences, strategic behavior, and meeting opportunities of actors in the mating market because these models use data from final matches.

To investigate the underlying mating preferences that lead to positive assortative mating, I estimate one-sided logit models (i.e. conditional fixed effects logistic regressions models). This approach is based on models from consumer choice theory that have been recently used to estimate preferences using non-random probability samples from on-line dating and speed-dating services. To implement these models, I use a novel dataset that collects information on a partial set of available partners before the first union (i.e. marriage or cohabitation). By observing a partial choice set of alternative partners with whom individuals could have formed a union, I estimate parameters associated with mating preferences for men and women separately. Parameters from these models improve estimates from log-linear models because they do not rely only on final matches; however they still confound the effects of strategic behavior and meeting opportunities. Even though, parameters from these models may not completely reveal preference orderings, I examine them because their analysis deepen our understanding of the underlying preferences leading to final matches.

In this chapter, I am interested in investigating vertical (or hierarchical) preferences and horizontal (or homogamy, hypergamy, and hypogamy) preferences for education, skin color, and age. I define vertical or hierarchical preferences as those that rely on comparisons among all potential partners. For example, I say an individual shows vertical preferences for education if after comparing the educational level among all his/her available partners he/she chooses a higher rather than a lower educated partner. Similarly, I say an individual shows vertical preferences for skin color if after comparing the skin tone among all his/her available partners he/she chooses a lighter-skinned rather than a darker-skinned partner. I say an individual shows vertical preferences for age if after comparing the age among all his/her available partners he/she chooses a younger rather than an older partner. I define horizontal preferences as those that rely in comparisons in relation to the individual making the choice.

For example, I say an individual shows horizontal preferences for education, in particular, preferences for educational homogamy if after comparing their own educational level with the education of each one of his/her potential partners, individuals are more likely to form a union with others with their same educational level. I say an individual shows preferences for educational hypergamy if after comparing their own education with the education of each one of his/her potential partners, individuals decide to form a union with someone with higher education relative to them.

My sample comes from the MxMPP, a pilot study that represents the first effort, in Mexico, to collect information about a partial set of alternative partners, as well as, information about skin color of respondents and their partners. Skin color of alternative partners was collected using a skin color palette that was shown to respondents who would choose the skin tone that better suited their partner and previous partners (based on their memory recollection). A possible concern with this methodology to collect skin color is that respondents might misrepresent their partner's skin color, in the sense that they may respond having partners with lighter rather than darker skin colors, which implies that estimates may show social desirability bias. I am not able to address this problem in this study. Further research is needed to address if social desirability might be an issue in studies of skin color in Mexico. Another concern is related with the methodology for collecting respondent´s skin color, in particular, interviewers were asked to rate the skin color of the respondent once the interview was over and never in front of the respondent. This protocol raises a common issue in this type of research which are related with the idea that "money whitens", which means that classification of skin color of respondents may confound the effect of socio-economic status. To what degree this is a problem in Mexico is subject to further investigation.

The analytical sample comprises first unions (marriage or cohabitations) of respondents who declared having at least one previous relationship before their first union. This prior relationship was defined as a one that lasted 6 months or more, or as the relationship that lasted more prior to first union. Given that only about 40% of the sample declared having more than one relationship prior to their first

union, it is important to keep in mind that the estimations from these models describe the behavior of a selected group of the population, which may differ importantly for those who form unions without experiencing any prior relationship. In this study, I investigate preferences for males and females separately.

In terms of vertical (or hierarchical) preferences, as expected I find evidence that suggest that males and females prefer more educated rather than less educated partners. In terms of horizontal preferences, the evidence suggests males and females show a preference for educational homogamy rather than for educational hypergamy. This result is consistent with previous research in Mexico showing a negative tendency in the propensity of women to marry men in higher educational categories (López et al. 2008).

For males, the results suggest there is a preference for educational hypogamy rather than for educational homogamy. This result may reflect that in Mexico a large proportion of marriages continue to show the traditional division of labor in which men specializes in labor production and women in household production, hence men prefer to marry lower educated women (compared to themselves) to maximize the returns of the union. An alternative explanation of this finding may be that if women tend to marry in response to pregnancies, and less educated women (compared to more educated ones) are more likely to become pregnant before marriage then a possible outcome maybe that men might end forming unions with less educated women, regardless of preferences. Further research may be needed to investigate this hypothesis.

Finally, I also find estimates for women that suggest a preference for educational hypogamy rather than educational homogamy. This is an unexpected and surprising result because it contradicts previous research that indicates that women would prefer to marry men with higher education than themselves. This result may not reflect preferences for education but other factors. For example, this result may be driven by women in the top educational categories whose only option is to form unions with men in their same educational category or with men with lower education. It is important to note

that in this study, education refers to education when both men and women meet. Taking this into account, an alternative explanation may be that when men and women meet, women may choose to form a union with men with lower educational levels, just because they are still in the process of acquiring more education. However, as both, men and women, continue their educational trajectories women may end up holding lower educational levels compared to men, which may be consistent with the finding that women end up forming unions with men in higher educational categories. More research is needed to test this hypothesis.

In general, these findings suggest that educational homogamy is mainly driven by vertical (hierarchical) preferences for education. Both men and women prefer higher rather than lower educated partners, however competition in the marriage market leads to positive assortative mating. Positive marital sorting is reinforced by a preference for educational homogamy rather than educational hypergamy.

I do not find any significant effects of skin color preferences on the process of partner's choice. However, the lack of significance may be the result of a small sample size. Henceforth, I examine the preferences suggested by the models to investigate possible dynamics in skin color preferences that may lead to positive assortative mating. For males and females, the data suggest a hierarchical preference for partner's skin color in which lighter skin is preferred over darker skin. In terms of horizontal preferences, the data also suggest that males and females may have preferences for lighter-skinned partners (compared to themselves) rather than for partners within the same skin color. In addition, I find women prefer partners with their same skin color rather than for darker-skinned men (compared to themselves). This evidence suggests skin color is a very vertical trait, because everyone prefers lighter over darker skin color partners in vertical and horizontal terms. Yet, competition in the marriage market leads to skin color homogamy of the final matches.

In general, parameter estimates associated with age preferences, in this study, need to be interpreted with caution. Even though, parameters suggest a preference for older over younger partners,

it is possible that this result may be an artifact of the model, since by design individuals may tend to marry the older of the partners within the choice set which in the data is the last relationship recorded. In the case of women and based on previous research, it is possible that the preference for older men rather than younger men may reflect their preference orderings. The evidence also suggests that men have preferences for age hypergamy rather than age homogamy. Even though this result may contradict the evidence that shows that men prefer younger (rather than older) women, one possible explanation may be that as men age, horizontal preferences for age change, so that young men may show preferences for age hypergamy, while older men for age hypogamy. Finally, I find evidence that suggest women prefer men within their same age category rather than younger men.

Overall, patterns of age homogamy, and to some degree women's age hypergamy estimated through log-linear models (see Appendix Table 3-4) seem to be driven by women's preferences for age homogamy rather than age hypogamy, women's vertical preferences for older (rather than younger) males.

By knowing the partial sets of available partners, estimating mating preferences using one-sided logit models goes beyond measuring associations of traits between spouse's characteristics from log-linear models for two main reasons. First, parameter estimates associated with preferences for men and women are possible to estimate separately. Second, the model allows examining possible dynamics of vertical and horizontal preferences that could lead to positive marital sorting of final matches. However, a common concern of using one-sided models is that preference parameters may still confound the effect of strategic behaviors and meeting opportunities. Strategic behavior may influence individuals to choose an "acceptable" match instead of the most "preferred" match, so that final choices may not reveal true preferences orderings (Belot and Francesconi 2010). Regarding meeting opportunities, the relative abundance of partners with some attributes may exert an impact on preference orderings (e.g. Abramitzky, Delavande and Vasconcelos 2010; Belot and Francesconi 2010). To examine the presence of strategic behavior in the data, future data collection efforts should gather information about marriage

proposals and rejections. Another issue concerning these models is that they underlie on the assumption that marriage is voluntary and that individuals choose their best possible mate. However, in situations in which men or women are forced to form a union, such as in the case of "shot-gun marriages", preference parameters may not reflect true preference orderings.

Other disadvantages of log-linear and one-sided models is that they ignored in the analysis people who decide not to marry, and they are not suited to forecasts how marriages would respond to changes in distribution of traits or to investigate how other structural factors may affect the final equilibrium attained in the marriage market.

To examine whether preferences parameters from one-sided models are reasonable estimates, it would be useful to provide a behavioral model of the marriage market considering its "two-sided" nature, use these preference parameters and the observed distributions of traits of all participants in the market, and compute a set of stable equilibrium matches. If the computed matches resemble the actual matches, then the model may be useful to investigate how changes in the distribution of some traits may alter the equilibrium in the marriage market as well as other implications of strategic behaviors in marriage choice. Estimating parameters using one-sided models and then using this information to compute a set a stable matches using a two-sided model will improve estimations from traditional two-sided models, in which separate preferences for each men and women are not possible to identify, and the identification of preference parameters requires imposing several structural conditions to the marriage market.

Appendix 3

Supplementary Analysis

The analysis consists of estimating a series of log-linear models to explore the patterns of association between partner's characteristics. I focus on three characteristics, educational attainment at the time when the relationship began, skin color, and age of the partners when the relationship began. For each characteristic I examine one contingency table that is produced by cross-classifying female's and male's characteristic. The analysis of education examines a contingency table that cross-classifies female's education (*0-6, 7-11, 12+*) and husband's education (*0-6, 7-11, 12+),* which results in a 3 X 3 =9 cell table. The analysis of skin color examines a contingency table that cross-classifies female's skin color (1-*Lightest , 2, and 3_Darkest*) and male's skin color (1-*Lightest , 2, and 3_Darkest),* which results in a 3 X 3 =9 cell table. The analysis of age examines a table that cross-classifies female's age (*Less than 20, 21-25, 26-30, 31+*) and male's age (*Less than 20, 21-25, 26-30, 31+)* which results in a 4 X 4 =16 cell table.

I begin with a "conditional independence" model (M F), which assumes no variation in the association between partners' characteristics. The formal model can be written as follows.

$$\log(f_{ij}) = \mu + \mu_i^M + \mu_j^F$$

where M denotes male's characteristic, F is female's characteristic, and f_{ij} is the expected number of unions between males in category *i* and females in category *j*. I add homogamy, and hypergamy or hypogamy, terms to the baseline model and compare the models to examine which is the one that fits better the data. Model comparisons rely on the Bayesian Information Criterion (BIC).

Model specifications and fit statistics of selected models are provided in Appendix Table 3-3 of this appendix and parameter estimates of the preferred model are provided in Appendix Table 3-4. G^2 (likelihood ratios) and BIC statistics are provided to measure the goodness of fit of the models. I begin with the conditional independence model (M_F) that assumes that the association between male's and

female's characteristics are not associated. Then I add to the baseline model homogamy, and hypergamy or hypogamy terms.

I perform this analysis for three different samples of couples. The first sample includes all first unions (either marriages or cohabitations) in the MxMPP sample. The second includes first unions of a restricted sample of couples in which at least one of the partners declared having at least one previous relationship before the first union. This sample coincides with the analytical sample that is used in the one-sided model estimated in the central analysis of this paper. It is worth mentioning that even though the analytical sample for the one-sided model has 280 respondents, the reconfiguration of the data in couples format implied dropping duplicated couples, which resulted in samples of couples, per outcome, lower than 280. The third sample includes first unions as well as relationships prior to first union of the 280 respondents in the analytical sample.

Based on the BIC statistics, the analysis of education (Panel A) and skin color (Panel B) shows that the homogamy model (Model 2) fits better the data compared with the independence model, because Model 2 shows the lowest BIC statistics. The analysis of age when the relationship started shows that the model with homogamy and hypergamy parameters (Model 4) is the one that better fits the data. Similar results are obtained for the three samples.

Appendix Table 3-4 shows log-linear parameters for educational, skin color, and age homogamy, as well as, age hypergamy parameters for the best fitting models and for the three samples. The table indicates that the odds of educational homogamy are between 1.83 and 1.92 times the odds of heterogamy, the odds of skin color homogamy are between 1.34 and 1.41 times the odds of heterogamy, and the odds of age homogamy are between 5.39 and 11.44 times the odds of heterogamy. Moreover, the odds of age hypergamy (women forming a union or relationship) with older men are between 8.64 and 12.39 times the odds of homogamy and hypogamy.

References

Abramitzky, Ran, Adeline Delanvande, and Luis Vasconcelos. 2010. "Marrying Up: The Role of Sex Ration in Marriage by Class", http://www.stanford.edu/~ranabr/marriage.pdf

Agarwal, Nikhil and William Diamond. 2014. "Identification and Estimation in Two-Sided Matching Markets", Cowles Foundation Discussion Paper No. 1905

Anderson, Axel and Smith, Lones. 2001. "Assortative Matching, Reputation, and the Beatles Breakup" U of Michigan Working Paper No. 2001-4. Available at SSRN: http://ssrn.com/abstract=292182 or http://dx.doi.org/10.2139/ssrn.292182

Arenas, Erika. 2014. "Skin Color Homogamy in Mexico". Chapter 2 in the dissertation "The Role of Preferences in Union Formation"

Banerjee, Abhijit, Esther Duflo, Maitreesh Ghatak, and Jeanne Lafortune. 2009. "Marry For What: Caste And Mate Selection In Modern India", NBER Working Paper 14958, http://www.nber.org/papers/w14958

Becker, Gary. 1973. "A Theory of Marriage: Part I", *The Journal of Political Economy* Vol. 81, No.4, pp. 813-846

Belot, Michele and Marco Francesconi. 2013. "Dating Preferences and Meeting Opportunities in Mate Choice Decisions ", *The Journal of Human Resources*, Vol. 48, No. 2, 474-508

Ben-Akiva, M., Bradley, T. Morikawa, J. Benjamin, T. Novak, H. Oppewal and V. Rao. 1994. "Combining Revealed and Stated Preference Data", Marketing Letters, Vo. 5, No. 4, pp. 335-350

Ben-Akiva, Moshe and Steven Lerman. 1985. Discrete Choice Analysis: Theory and Application to Travel Demand", MIT Press, Cambridge MA and London, 1985

Bhrolchain, Maire Ni. 2001. "Flexibility in the Marriage Market*", Population: An English Selection*, Vol. 44, No.2, pp. 9-47

Bisin, Alberto, Giorgio Topa and Thierry Verdier.2004."Religious Intermarriage and Socialization in the United States", *Journal of Political Economy*, Vol. 112, no. 3, pp. 615-663

Blackwell, Debra L. and Daniel Lichter. 2004. "Homogamy among Dating, Cohabiting, And Married Couples", *The Sociological Quarterly*, Vol. 45, Issue 4, pp. 719-737

Blossfeld, Hans-Peter. 2009. "Educational Assortative Marriage in Comparative Perspective", *Annual Review of Sociology*, 35: 513-530

Burdett, Kenneth and Melvyn G. Coles. 1997. "Marriage and Class", *The Quarterly Journal of Economics*, 141-168

Burdett, Kenneth and Melvyn G. Coles. 1999. "Long-term Partnership Formation: Marriage and Employment", *The Economic Journal*, 109, F307-F334

Buss, David M. 1989. "Sex Differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures", *Behavioral and Brain Sciences*, Vol. 12, pp. 1-89

Choo Eugene and Aloysius Siow. 2006a. "Who Marries Whom and Why", *Journal of Political Economy*, vol. 114, no. 1

Choo Eugene and Aloysius Siow. 2006b. "Estimating a Marriage Matching Model with Spillover Effects", *Demography*, Vol. 43, no. 3, August 2006: 463-490

Choo Eugene and Aloysius Siow. 2006c. "Lifecycle marriage matching: Theory and Evidence", Working Paper, http://www.gsb.stanford.edu/facseminars/events/applied_microecon/documents/ame_10_07_choo.pdf

Eastwick, Paul W. and Eli J. Finkel. 2008. "Sex Differences in Mate Preferences Revisited: Do People Know What They Initially Desired in a Romantic Partner?", *Journal of Personality and Social Psychology*, Vol. 94, No. 2, pp. 245-264

Echenique, Federico, Sangmok Lee, Matthew Shum, and M. Bumin Yenmez. 2013. "The Revealed Preference Theory of Stable and Extremal Stable Matchings", *Econometrica*, Vol. 81, No.1, pp. 153-171

Esteve, Albert, and Robert McCaa. 2007. "Homogamia Educacional en México y Brasil, 1970-2000 Pautas y Tendencias", *Latin American Research Review*, Vol. 42, No.2, June 2007

Feingold, Allan. 1990. "Gender Differences in Effects of Physical Attractiveness on Romantic Attraction: A Comparison Across Five Research Paradigms", *Journal of Personality and Social Psychology*, Vol. 59, Issue5, p. 981

Fernández, Raquel and Richard Rogerson.2000. "Sorting and Long-Run Inequality", NBER Working Paper 7508, http://www.nber.org/papers/w7508

Fernández, Raquel, Nezih Guner and John Knowles. 2005. "Love and Money: A theoretical and Empirical Analysis of Household Sorting and Inequality", *The Quarterly Journal of Economics*, pp. 273-343

Fisman, Raymond, Sheena S. Iyengar, Emir Kamenica, and Itamar Simonson. 2006. "Gender Differences in Mate Selection: Evidence from a Speed Dating", *The Quarterly Journal of Economics*, May 2006, pp. 673-697

Fisman, Raymond, Sheena S. Iyengar, Emir Kamenica, and Itamar Simonson. 2008. "Racial Preferences in Dating", *Review of Economic Studies*, 75: 117–132

Fox, Jeremy T. 2009a. "Identification in Matching Games", NBER Working Paper Series 15092 http://www.nber.org/papers/w15092.pdf

Fox, Jeremy T. 2009b. "Structural Empirical Work Using Matching Models", http://home.uchicago.edu/~fox/structural_empirical_work_u.pdf

Galichon, Alfred and Salanié, Bernard. 2010. "Matching with Trade-Offs: Revealed Preferences Over Competing Characteristics" Available at SSRN: http://ssrn.com/abstract=1487307 or http://dx.doi.org/10.2139/ssrn.1487307

Hitsch, Gunter J., Ali Hortaçsu, Dan Ariely. 2010. "Matching and Sorting in Online Dating", *American Economic Review*, Vol. 100, No. 1, March 2010

Hout , Michael. 1982. "The Association between Husbands' and Wives' Occupations in Two-Earner Families, *American Journal of Sociology*, Vol. 88, No. 2 (Sep., 1982), pp. 397-409

Johnson, Robert A. 1980. Religious Assortative Marriage in the United States. New York: Academic Press. (Ch. 1, 2).

Kalmijn, Matthijs and Hendrik Derk Flap. 2001. "Assortative Meeting and Mating: Unintended Consequences of Organized Settings for Partner Choices", *Social Forces*, Vol. 79, No. 4, pp. 1289-1312

Kalmijn, Matthijs.1998. "Intermarriage and Homogamy: Causes, Patterns, and Trends", *Annual Rev. Sociology*, 24:395-421

Kurzban, R. and Weeden, J. (2005) "HurryDate: Mate preferences in action", *Evolution and Human Behaviour* 26 , pp. 227-244.

Lee, Soohyung. 2009. "Marriage and Online Mate-Search Services: Evidence from South Korea", mimeo, http://econ.as.nyu.edu/docs/IO/12264/Lee_20091026.pdf

Logan, John Allen, Peter D. Hoff, and Michael A. Newton. 2008. "Two-Sided Estimation of Mate Preferences for Similarities in Age, Education, and Religion", *Journal of the American Statistical Association*, Vol. 103, No. 482

López Ruiz, Luis A., Albert, Esteve i Palós, Anna Cabré i Plá. 2008. "Distancia Social y unions conyugales en América Latina", *Revista Latinoamericana de Población*, Vol. 14, Num. 2, pp. 47-71

Mare, Robert D. 1991. "Five Decades of Assortative Mating", *American Sociological Review* 56(1): 15-32

Mare, Robert D. 2008. "Educational Assortative Mating in Two Generations", Working Paper, http://www.econ.ucla.edu/workshops/papers/History/mare_eam_08.pdf

Mare, Robert. D., and V. Maralani. 2006. "The Intergenerational Effects of Changes in Women's Educational Attainments", *American Sociological Review* 71: 542-64

McFadden, Daniel. 1980. "Econometric Models for Probabilistic Choice Among Products", *The Journal of Business*, Vol. 53, 3, Part 2: Interfaces Between Marketing and Economics, pp. S13-S29

Merton, Robert K. 1941. "Intermarriage and the Social Structure: Fact and Theory", *Psychiatry*, 4:361-374

Menzel, Konrad. 2013. "Large Matching Markets as Two-Sided Demand Systems", http://www.princeton.edu/~erp/large_matching.pdf

Qian, Zhenchao, and Samuel H. Preston.1993. "Changes in American Marriage, 1972 to 1987: Availability and Forces of Attraction by Age and Education", *American Sociological Review*, 1993, Vol. 58, August: 482-495

Quilodrán, Julieta, and Viridiana Sosa. 2001. "El emparejamiento conyugal: una dimensión poco estudiada de la formación de las parejas", http://www.inegi.org.mx/est/contenidos/espanol/sistemas/genero/taller_genero/datos/J_quilodrán4.pdf

Roth, Alvin E. and Marilda A. O. Sotomayor. 1990. Two-sided Matching: A study in game-theoretic modeling and analysis. Econometric Society Monograph No. 18 edited by Cambridge University Press

Shimer, Robert, and Lones Smith. 2000. "Assortative Matching and Search", *Econometrica* 68: 343–69.

Smith, Lones. 2006. "The Marriage Model with Search Frictions", *Journal of Political Economy*, Vol. 114, No. 6, pp. 1124-1144

Telles, Edward. 2004. Race in Another America: The Significance of Skin Color in Brazil, Princeton University Press

Todd, Peter M., Lars Penke, Barbara Fasolo, and Alison P. Lenton. 2007. "Different cognitive processes underlie human mate choices and mate preferences.", PNAS, Vol. 104, No. 38, pp. 15011-15016

Wade, Peter. 1997. Race and Ethnicity in Latin America edited by Pluto Press in London

Wong, Linda Y. 2003. "Structural Estimation of Marriage Models", *Journal of Labor Economics*, 2003, vol. 21, No. 3

Table 3-1. Descriptive Statistics

	Males		Females	
	Unweighted	Weighted	Unweighted	Weighted
Union	45	45	49	49
Number of Relationships Previous to first union (marriage or cohabitation)				
1	78	77	92	94
2	16	19	7	5
3	1	1	1	1
4	2	2	0	0
5	0	0	0	0
6	0	0	0	0
7	3	2	0	0
Partner's Education				
0-6	26	26	31	35
7-11	62	59	50	44
12+	12	14	19	21
Partner's Skin Color				
1_Lightest	43	41	36	29
2	31	28	33	41
3_Darkest	25	31	31	30
Partner's Age				
10-15	14	12	8	8
16-20	67	66	48	45
21-25	14	16	28	30
26-30	3	5	11	9
31-35	1	1	4	4
36-40	1	1	1	2
41-45	0	0	0	1
46-50	0	0	1	1
51-55	0	0	0	0
Educational Preferences				
Educational Homogamy	54	60	52	60
Partners with higher education	29	22	33	29
Partners with lower education	17	19	15	11
Skin Color Preferences				
Skin Color Homogamy	36	40	44	47
Partners with lighter skin	49	45	30	30
Partners with darker skin	14	14	26	23
Age Preferences				
Age homogamy	62	59	50	56
Partners older	29	26	5	9
Partners younger	9	15	46	36
N	286		309	

Source: Mexican Marital Preference Pilot Study 2011

Table 3-2: Proportion of individuals in a union within educational, skin color, and age horizontal preference categories

Horizontal preferences	Males			Females		
	% Union			% Union		
	Unweighted	Weighted	N	Unweighted	Weighted	N
Education						
Educational Homogamy	46	43	155	47	50	161
Partners with higher education	34	31	82	39	34	103
Partners with lower education	61	70	49	76	79	45
Skin Color						
Skin Color Homogamy	46	45	104	49	50	136
Partners with lighter skin	46	46	141	54	53	94
Partners with darker skin	41	45	41	41	41	79
Age						
Age homogamy	38	38	178	43	40	153
Partners older	60	65	83	80	97	15
Partners younger	52	43	25	51	52	141
N (total)	286			309		

Source: Mexican Marital Preference Pilot Study 2011

Table 3-3: Male's and Female's Horizontal preferences for Homogamy by education, skin color, and age (Conditional fixed effects logistic regression of choosing a partner)

	Gross Effects						Net Effects	
	Model 1		Model 2		Model 3		Model 4	
	OR	*p-value*	OR	*p-value*	OR	*p-value*	OR	*p-value*
Panel A: Males								
Homogamy								
Education	1.06	*0.823*					1.08	*0.778*
Skin Color			1.19	*0.536*			1.13	*0.684*
Age					0.40	*0.000*	0.40	*0.001*
N	286		286		286		286	
Log Likelihood	-99.2		-99.0		-92.5		-92.4	
Pseudo-R2	0.000		0.002		0.067		0.068	
Panel B: Females								
Homogamy								
Education	0.86	*0.564*					0.89	*0.658*
Skin Color			1.08	*0.751*			1.12	*0.643*
Age					0.63	*0.069*	0.63	*0.071*
N	309		309		309		309	
Log Likelihood	-107.3		-107.5		-105.8		-105.6	
Pseudo-R2	0.002		0.001		0.016		0.018	

Source: Mexican Marital Preference Pilot Project

Table 3-4: Male's vertical and horizontal preferences (conditional fixed effects logistic regression of choosing a female)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	*p-value*	OR	*p-value*	OR	*p-value*	OR	*p-value*	OR	*p-value*
I. Education when relationship started										
Vertical preferences										
Women's education										
0-6					(ref. category)					
7-11	1.32	*0.594*					1.38	*0.547*	1.75	*0.344*
12+	6.45	*0.038*					6.73	*0.039*	7.57	*0.054*
Horizontal preferences										
Educational Homogamy					(ref. category)					
Women more educated than men	0.24	*0.007*					0.23	*0.005*	0.34	*0.072*
Women less educated than men	8.77	*0.001*					8.86	*0.001*	9.54	*0.002*
II. Skin Color										
Vertical preferences										
Women's skin color										
1_Lightest					(ref. category)					
2			0.98	*0.952*			0.99	*0.982*	0.66	*0.365*
3_Darkest			1.41	*0.641*			0.81	*0.787*	0.32	*0.216*
Horizontal preferences										
Skin Color Homogamy					(ref. category)					
Women with lighter skin than men			1.10	*0.852*			0.71	*0.559*	0.67	*0.540*
Women with darker skin than men			0.59	*0.390*			0.92	*0.898*	1.11	*0.891*
III. Age when relationship started										
Vertical preferences										
Women's age										
10-20					(ref. category)					
21-25					8.99	*0.000*			8.92	*0.001*
26-60					81.59	*0.000*			30.24	*0.009*
Horizontal preferences										
Age homogamy					(ref. category)					
Women older than men					5.12	*0.000*			6.58	*0.000*
Women younger than men					0.30	*0.086*			0.39	*0.269*
N	286		286		286		286		286	
Log Likelihood	-83.23		-98.60		-75.45		-82.95		-66.36	
Pseudo-R2	0.161		0.006		0.239		0.164		0.331	

Source: Mexican Marital Preference Pilot Project

Table 3-5: Women's vertical and horizontal preferences (conditional fixed effects logistic regression of choosing a men)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	*p-value*	OR	*p-value*	OR	*p-value*	OR	*p-value*	OR	*p-value*
I. Education when relationship started										
Vertical preferences										
Men's education										
0-6					(ref. category)					
7-11	2.56	*0.090*					4.47	*0.017*	2.48	*0.213*
12+	10.82	*0.008*					23.04	*0.001*	12.82	*0.034*
Horizontal preferences										
Educational Homogamy					(ref. category)					
Men more educated than women	0.21	*0.002*					0.14	*0.000*	0.15	*0.004*
Men less educated than women	17.06	*0.000*					30.87	*0.000*	15.90	*0.002*
II. Skin Color										
Vertical preferences										
Men's skin color										
1_Lightest					(ref. category)					
2			0.906	*0.827*			0.99	*0.982*	1.14	*0.822*
3_Darkest			0.557	*0.401*			0.47	*0.360*	0.82	*0.836*
Horizontal preferences										
Skin Color Homogamy					(ref. category)					
Men with lighter skin than women			1.20	*0.715*			1.95	*0.272*	1.77	*0.444*
Men with darker skin than women			0.77	*0.601*			0.76	*0.654*	0.54	*0.393*
III. Age when relationship started										
Vertical preferences										
Women's age										
10-20					(ref. category)					
21-25					17.40	*0.000*			15.12	*0.000*
26-60					77.24	*0.000*			42.31	*0.000*
Horizontal preferences										
Age homogamy					(ref. category)					
Men older than women					14.53	*0.008*			12.38	*0.025*
Men younger than women					0.31	*0.006*			0.62	*0.316*
N	309		309		309		309		309	
Log Likelihood	-88.75		-103.76		-68.68		-81.87		-55.83	
Pseudo-R2	0.174		0.035		0.361		0.238		0.481	

Source: Mexican Marital Preference Pilot Project

APPENDIX TABLES

Table 3-1: Analytical Sample

	Respondents	
Eligible Sample [(1)]	1,196	100%
Completed Survey	898	75%
Number of relationships prior to first union		
0	522	58%
1	311	35%
2	31	3%
3	6	1%
4	1	0%
7	1	0%
DK	26	3%
Total	898	
Analytical Sample	280	

[(1)] MxMPP Respondents that have ever been in union from 2002 to 2011 between the ages 20-60 years old

Table 3-2: Demographic Characteristics of Respondents in the Analytical Sample

	Unweighted	Weighted
N	280	
Female	54%	52%
Age		
20-30	33%	29%
31-40	26%	28%
41-50	24%	23%
51-60	17%	20%
Educational attainment		
0-6	33%	29%
7-11	41%	39%
21+	26%	32%
Rural origin	39%	17%

Source: Mexican Family Life Survey 2002, 2005, 2009/2010.

Table 3-3: Goodness of Fit of Models of Assortative Mating by Education, Skin Color, and Age

	Model	N	LL	G^2	df	p	BIC	N	LL	G^2	df	p	BIC	N	LL	G^2	df	p	BIC
		All first unions						First unions of respondents in the analytical sample						All couples of respondents in the analytical sample					
	Panel A: Assortative Mating by Education when the relationship started [(1) (2)]																		
0	M^eF^e	827	-27.0	0.0	0	1.000	0.0	272	-22.6	0.0	0	1.000	0.0	587	-25.7	0.0	0	1.000	0.0
1	$M^e\_F^e$	827	-89.0	124.1	4	0.000	97.2	272	-42.4	39.7	4	0.000	17.2	587	-60.9	70.4	4	0.000	44.9
2	$M^e\_F^e\_H^e$	827	-51.2	48.4	3	0.000	28.3	272	-28.8	12.4	3	0.006	-4.4	587	-37.2	23.1	3	0.000	4.0
3	$M^e\_F^e\_Hyper^e$	827	-60.2	66.5	3	0.000	46.3	272	-31.4	17.5	3	0.001	0.7	587	-43.9	36.5	3	0.000	17.4
4	$M^e\_F^e\_H^e\_Hyper^e$	827	-50.7	47.4	2	0.000	33.9	272	-28.8	12.4	2	0.002	1.2	587	-36.6	21.9	2	0.000	9.1
	Panel B: Assortative Mating by Skin Color [(3) (4)]																		
0	M^sF^s	793	-28.3	0.0	0	1.000	0.0	275	-23.5	0.0	0	1.000	0.0	593	-27.0	0.0	0	1.000	0.0
1	$M^s\_F^s$	793	-45.5	34.4	4	0.000	7.7	275	-28.4	9.7	4	0.045	-12.7	593	-36.9	19.9	4	0.001	-5.6
2	$M^s\_F^s\_H^s$	793	-33.6	10.7	3	0.013	-9.3	275	-24.0	1.1	3	0.778	-15.8	593	-29.9	6.0	3	0.114	-13.2
3	$M^s\_F^s\_Hypo^s$	793	-37.3	18.0	3	0.000	-2.0	275	-25.6	4.1	3	0.249	-12.7	593	-32.6	11.3	3	0.010	-7.9
4	$M^s\_F^s\_H^s\_Hypo^s$	793	-33.5	10.4	2	0.005	-2.9	275	-23.9	0.9	2	0.647	-10.4	593	-29.7	5.4	2	0.066	-7.3
	Panel C: Assortative Mating by Age when the relationship started [(5) (6)]																		
0	M^aF^a	813	-39.0	0.0	0	1.000	0.0	274	-39.0	0.0	0	1.000	0.0	593	-31.9	0.0	0	1.000	0.0
1	$M^a\_F^a$	813	-132.9	187.7	9	0.000	127.4	274	-132.9	187.7	9	0.000	137.2	593	-101.8	139.7	8	0.000	88.7
2	$M^a\_F^a\_H^a$	813	-75.6	73.3	8	0.000	19.7	274	-75.6	73.3	8	0.000	28.4	593	-55.3	46.8	7	0.000	2.1
3	$M^a\_F^a\_Hyper^a$	813	-103.6	129.2	8	0.000	75.6	274	-103.6	129.2	8	0.000	84.3	593	-78.2	92.5	7	0.000	47.8
4	$M^a\_F^a\_H^a\_Hyper^a$	813	-66.9	55.8	7	0.000	8.9	274	-66.9	55.8	7	0.000	16.5	593	-43.8	23.7	6	0.001	-14.6

Source: Mexican Marital Preference Pilot Study
2011

(1) Models based in a 3 X 3 Contingency table (Males's education X Female's education)
(2) Model terms: M^e=Male partner's education, F^e=Female partner's education, H^e=Educational Homogamy,$Hyper^e$=Educational Hypergamy (male's educ> female's educ)
(3) Models based in a 3 X 3 Contingency table (Males's skin color X Female's skin color)
(4) Model terms: M^s=Male partner's skin color, F^s=Female partner's skin color, H^s=Skin Color Homogamy, $Hypo^s$=Skin Color Hypogamy (male's skin color darker than female's skin color)
(5) Models based in 4 X 4 Contingency table (Males's age XFemale's age) where age is classified in 10-20, 21-25, 26-30, 31+
(6) Model terms: M^a=Male partner's age, F^a=Female partner's age, H^a=Age Homogamy, $Hyper^a$=Age Hypergamy (male's age>female's age)

Table 3-4: Log-linear Parameters for Educational, Skin Color, and Age Homogamy for different sample specifications

	Log Odds	p-value	OR	# couples
Panel A: All first unions				
Educational Homogamy	0.64	*0.000*	1.89	827
Skin Color Homogamy	0.34	*0.000*	1.41	793
Age Homogamy	1.68	*0.000*	5.39	813
Age Hypergamy	1.41	*0.000*	4.08	813
Panel B: First unions of analytical sample				
Educational Homogamy	0.65	*0.000*	1.92	272
Skin Color Homogamy	0.29	*0.010*	1.34	275
Age Homogamy	1.99	*0.000*	7.29	274
Age Hypergamy	2.16	*0.000*	8.64	274
Panel C: All partners in analytical sample				
Educational Homogamy	0.60	*0.000*	1.83	587
Skin Color Homogamy	0.32	*0.000*	1.38	593
Age Homogamy	2.44	*0.000*	11.44	593
Age Hypergamy	2.52	*0.000*	12.39	593

Source: Mexican Marital Preference Pilot Study 2011

Appendix A

Mexican Marital Preference Pilot Project

(MxMPP)

2010

Methodological Document and

Project Report

Introduction

The Mexican Marital Preference Pilot Project (MxMPP) is a jointly effort conducted by researchers of the University of California Los Angeles (UCLA) and the Universidad Iberoamericana of Mexico City (UIA). The Project was funded by the University of California Institute for Mexico and the United States (UC-MEXUS).

The MxMPP is a pilot study designed to collect relevant information about the marriage selection process of adults in Mexico. These data has two novel features: First, it collects retrospective histories of marriages, consensual unions, and dating relationships, which includes partners' socio-economic and demographic characteristics, as well as, physical attributes such as skin color. Second, it collects respondent's skin color information.

The MxMPP survey instrument was administered to a subsample of the third wave of Mexican Family Life Survey (MxFLS-3), an ongoing longitudinal survey that is nationally-representative of individuals, households, and communities in Mexico. The MxMPP is the first project that attempts to collect information of a set of marriageable partners during the life-course in Mexico. This information is crucial to uncover the role of preferences in the process of marriage selection.

This document is organized in two sections. Section 1 describes general aspects of the survey, sample design and response rates. Section 2 present the demographic characteristics of the sample, and the tabulations of the data collected. The Appendices include the interviewer's manual and the survey instruments.

Index

1. General Aspects

1.1. Background

The Mexican Marital Preference Pilot Project (MxMPP) is a jointly effort conducted by researchers of the University of California Los Angeles (UCLA) and the Universidad Iberoamericana of Mexico City (UIA) to collect relevant information, at the national level, of the marriage selection process of the adult population between the ages of 20 and 60 years old in Mexico. This collection effort provides a novel dataset specifically designed to examine the role of preferences in the process of union formation; in particular, the role that socio-demographic, economic, and physical characteristics of potential partners have in the process of *who marries whom.* This survey will be publicly available at the Mexican Family Life Survey website.

1.2. Instruments

The project includes two similar instruments that only differ in the definition of the set of available marriageable partners, and the target sample.

Instrument 1:

Target population

This instrument was collected to individuals between ages 20 to 60, independently of their marital status.

Definition

The first instrument collects retrospective information about the set of all marriageable partners during the life-course. We define a marriageable partner as: (i) all partners with whom the respondent had formed union (i.e. marriage or consensual union), and (ii) other partners with whom the respondent established or tried to established a relationship that lasted for 6 months of more. We established the "6 months" cut-off to obtain information about marriageable partners,

and not about casual romantic relationships that might not be relevant in the marriage choice process. To establish the "6 months" cut-off, we conducted a pilot with 20 individuals and tested the survey instrument using also a "3 months" cut-off. In general we found that individuals who were asked the instrument using the "6 months" cut-off reported, in general, less than 3 relationships, while those who were asked the instrument using a "3 months" cut-off reported consistently more than 4 relationships. Given the time and budget constraints, we decided to use the "6 months" cut-off in the survey instrument 1.

Instrument 1B:

Target population

This instrument was collected to individuals between ages 20 to 60, who have been in a union, either marriage or consensual union, at least once.

Definition

This instrument collects retrospective information about the most important relationship before the first union (i.e. marriage or consensual union). The most important relationship is defined as the relationship that lasted more, before the first union.

Information collected in both instruments

Both survey instruments collect the following information about the partners (see Appendices A.2 and A.3):

- Time and duration of the relationship.
- Meeting places and how the partner was first introduce to the respondent.
- Socio-economic characteristics of the partners, such as age, education, marital status, employment, occupation, migration history to the United States.

- Socio-economic characteristics of the partner's parents, such as father's educational level and occupation, and relative economic status of the partner's family.
- Physical attributes of the partners, such as relative height, physical appearance related to weight, and skin color.
- Decision to form or finish a union.

1.3. Sample Design

The MxMPP was administered to a subsample of the third wave of Mexican Family Life Survey (MxFLS-3), an ongoing longitudinal survey that is nationally-representative of individuals, households, and communities in Mexico.

MxFLS – Sampling Design

The MxFLS-1 sampling design was provided by the Instituto Nacional de Estadística Geografía e Informática (INEGI) of Mexico and shares the same sampling framework that the 2002 Mexican National Employment Survey (ENE-2002). The sample is representative of the households that existed in Mexico in 2002. Primary sampling units are representative at the national, urban-rural, and regional levels. The sampling design is probabilistic, stratified, multi-staged and by cluster. The sample size is 8,440 households with 35,677 individual interviews. The MxFLS-1 oversample rural communities with less than 2,500 inhabitants. For further description about sampling design, please refer to the MxFLS-1 sample design documentation (Rubalcava and Teruel 2007).

The second wave of the MxFLS (MxFLS-2) was conducted in 2005, and MxFLS-3 was conducted between 2009 and 2010. The MxFLS refreshes its sample every subsequent wave by: (i) adding new household members living in panel[26] households; and by (ii) adding new households

[26] Panel refers to households or individuals who were part of the original sample in 2002.

of panel members that leave their original household. Consequently, 4,522 observations were added in MxFLS-2, and 8,136 in MxFLS-3.

MxMPP – Sampling Design

The MxMPP sample was selected from a subsample of the MxFLS-3. This sample included panel and new members. The sample was selected in three steps. First, respondents were chosen based on the following characteristics: (i) within ages between 20 and 60 years old, (ii) who were not death, international migrant, individuals not found, or refusal. As shown in Table A-1, from the 23,792 eligible age respondents, 19.5% were eliminated from the age eligible sample because they were dead, international migrants, refusals, or individuals not found.

INSERT TABLE A-1 HERE

Second, since the MxMPP shared part of the resources of the MxFLS-3 (such as interviewers and transportation resources), and the MxFLS-3 was still on the field when the MxMPP sample was selected, households who had already been completely interviewed by the MxFLS-3 teams were excluded from the final eligible sample. Hence, 34% of the eligible sample (that ideally should have been considered for random sampling) was excluded from the sampling frame. sampling frame. From a comparison of the demographic characteristics between the final eligible sample (that was used for random sampling) and the excluded eligible sample (see Table A-2), I found that compared to older individuals respondents between the ages of 20 to 29 are more likely to be in the final eligible sample. Moreover, individuals from rural origins are less likely to be in the final eligible sample. In terms of education, sex, and ever being in a union there are no significant differences between the two samples.

INSERT TABLE A-2 HERE

Third, from the remaining 12,589 respondents we selected randomly 1,476 respondents. These 1,476 respondents were the target sample for Instrument 1. However, given that Instrument 2 was designed to collect information of individuals who have been in a union at least once, from these 1,476 respondents only 1,114 were included in the target sample for Instrument 1B.

1.4. Fieldwork Collection

The fieldwork collection was divided in two phases. The first phase, conducted the last quarter of 2011, consisted in the data collection of Instrument 1. After Instrument 1 was collected, we found that about 26% of respondents answered having more than 1 relationship that lasted for 6 months or more, which implied an average number of relationships of 1.4 relationships on average. For data quality purposes, we conducted a series of phone interviews to a random sample of 570 respondents, who had been in a union at least once, in order to check if the number of relationships declared in Instrument 1 was accurate. During this exercise, we realized that about 13% of respondents who had previously answered having only one relationship, changed their answer and declared having more than one relationship. In these cases, Instrument 1 was administered by phone again. Furthermore, we also find that 23% of the respondents remained with their previous answer, and the rest was unable to reach by phone.

Given that our interest was to collect information about the set of marriageable partners. We decided to collect Instrument 1B, which would focus on collecting information only of individuals who had been in a union at least once. During the second quarter of 2012, we revisited some of the households and performed the data collection. Results from the first and second are shown in Table A-3.

INSERT TABLE A-3 HERE

1.5 Response Rates

The implementation of both Instruments lead to a response rate of 71.2% as it is shown in the next Table A-4. Among the individuals not found, 2% were international migrants, 13% were internal migrants, and the rest was not at home when we visited the household.

INSERT TABLE A-4 HERE

In the next section, we present the demographic characteristics of the sample and the tabulations of all the questions per Instrument.

2. Results

2.1 Demographic Characteristics of the Sample

Table A-5 shows a comparison of the demographic characteristics of the complete sample and the sample that was interviewed during the fieldwork.

INSERT TABLE A-5 HERE

To detect significant differences between the complete sample and the interviewed sample, we run a logistic regression of the log odds of being interviewed, shown in Table A-6. This regression indicates that, compared with the complete sample, the interviewed sample is less likely to include males, more likely to include respondents between the ages of 41 to 50, as well as respondents from rural areas, and less likely to include individuals with 12 years of education or more.

INSERT TABLE A-6 HERE

2.2 Tabulations

The MxMPP data is compiled in four data sets per Instrument. Table A-7 shows the files' structure of the survey.

INSERT TABLE A-7 HERE

Next, we tabulate answers for each section per instrument.

2.2.1 Instrument 1

Front Page: File pm1_portad.dta

State

edo	freq.	%	Cum
3	58	6.0%	6.0%
5	55	5.7%	11.7%
9	17	1.8%	13.4%
10	59	6.1%	19.5%
11	73	7.5%	27.1%
14	33	3.4%	30.5%
15	94	9.7%	40.2%
16	75	7.8%	48.0%
17	39	4.0%	52.0%
19	60	6.2%	58.2%
20	73	7.5%	65.8%
21	22	2.3%	68.0%
25	104	10.8%	78.8%
26	60	6.2%	85.0%
30	100	10.3%	95.3%
31	45	4.7%	100.0%
Total	967	100.0%	

Age

edad	freq.	%	Cum
20	34	4%	4%
21	37	4%	7%
22	37	4%	11%
23	37	4%	15%
24	45	5%	20%
25	40	4%	24%
26	37	4%	28%
27	29	3%	31%
28	33	3%	34%
29	35	4%	38%
30	22	2%	40%
31	18	2%	42%
32	23	2%	44%
33	22	2%	46%
34	20	2%	49%
35	23	2%	51%
36	21	2%	53%
37	22	2%	55%
38	23	2%	58%
39	22	2%	60%
40	28	3%	63%
41	24	2%	65%
42	24	2%	68%
43	21	2%	70%
44	16	2%	72%
45	14	1%	73%
46	19	2%	75%

47	18	2%	77%
48	18	2%	79%
49	18	2%	81%
50	34	4%	84%
51	24	2%	87%
52	22	2%	89%
53	21	2%	91%
54	15	2%	93%
55	19	2%	95%
56	15	2%	96%
57	9	1%	97%
58	12	1%	98%
59	8	1%	99%
60	8	1%	100%
Total	967	100%	

Sex

sexo	freq.	%	Cum
1_Male	423	44%	44%
3_Female	544	56%	100%
Total	967	100%	

Marital Status

marital	freq.	%	Cum
1_ConsUnion	174	18%	18%
2_Separated	40	4%	22%
3_Divorced	15	2%	24%
4_Widowed	18	2%	26%
5_Married	535	56%	81%
6_Single	181	19%	100%
Total	963	100%	

Supplements

sup	freq.	%	Cum
0	941	98%	98%
1	20	2%	100%
Total	961	100%	

Result of the Interview

resint	freq.	%	Cum
20_Complete	920	96%	96%
22_Incomplete: Refused to give more inf	4	0%	96%
24_Incomplete: Other	1	0%	96%
25_Not Interviewed: Refusal	11	1%	97%
26_Not Interviewed: Unable to find	22	2%	99%
28_Not Interviewed: Other	5	1%	100%
Total	963	100%	

Relationship history (part 1): File pm1_hp1.dta

HP00: INTERVIEWER: VERIFY IF THE RESPONDENT IS/HAS BEEN MARRIED OR LIVES/HAS LIVED IN A CONSENSUAL UNION

hp00	freq.	%	Cum
1_Yes	790	85%	85%
3_No	136	15%	100%
Total	926	100%	

HP01: Have you ever had a partner's relationship that lasted for six months or more?

hp01	freq.	%	Cum
1_Yes	93	66%	66%
3_No	48	34%	100%
Total	141	100%	

HP02: Would you like to begin a partner's relationship the next year?

hp02	freq.	%	Cum
1_Yes	31	63%	63%
3_No	18	37%	100%
Total	49	100%	

HP03: How many partner relationships have you ever had that lasted for six months or more?

hp03_1	freq.	%	Cum
1_NumbRelationships	871	100%	100%
7_Refused	2	0%	100%
Total	873	100%	

hp03_2	freq.	%	Cum
1	627	72.0%	72.0%
2	167	19.2%	91.2%
3	57	6.5%	97.7%
4	17	2.0%	99.7%
5	1	0.1%	99.8%
7	1	0.1%	99.9%
8	1	0.1%	100.0%
Total	871	100.0%	

HP04: Are these approximately (...)

hp04_1	freq.	%	Cum
1_Less than 10	1	50%	50%
8_DK	1	50%	100%
Total	2	100%	

hp04_2	freq.	%	Cum
22_Less than 5	1	100%	100%
Total	1	100%	

Relationship history (part 2): File pm1_hp2.dta

Sequence

sec	freq.	%	Cum
1	880	71.9%	71.9%
2	240	19.6%	91.5%
3	75	6.1%	97.6%
4	21	1.7%	99.3%
5	3	0.2%	99.6%
6	2	0.2%	99.8%
7	2	0.2%	99.9%
8	1	0.1%	100.0%
Total	1,224	100.0%	

HP07: In what month and year did your relationship with [...] began?

hp07	freq.	%	Cum
1_Month/Year	634	54%	54%
8_DK	545	46%	100%
Total	1,179	100%	

hp07_m	freq.	%	Cum
1	57	11%	11%
2	40	8%	18%
3	39	7%	26%
4	36	7%	33%
5	45	9%	41%
6	53	10%	51%
7	31	6%	57%
8	47	9%	66%
9	46	9%	74%
10	34	6%	81%
11	52	10%	91%
12	49	9%	100%
Total	529	100%	

hp07_y	freq.	%	Cum
1965	1	0%	0%
1966	2	0%	0%
1967	7	1%	1%
1968	4	0%	1%
1969	7	1%	2%
1970	6	1%	2%
1971	9	1%	3%
1972	8	1%	4%
1973	18	2%	5%
1974	17	1%	7%
1975	15	1%	8%
1976	17	1%	9%
1977	15	1%	11%
1978	17	1%	12%
1979	14	1%	13%
1980	21	2%	15%
1981	25	2%	17%
1982	23	2%	19%
1983	21	2%	21%
1984	29	2%	23%
1985	20	2%	25%
1986	21	2%	27%
1987	20	2%	29%
1988	19	2%	30%
1989	22	2%	32%
1990	31	3%	35%
1991	22	2%	36%
1992	18	2%	38%
1993	25	2%	40%
1994	15	1%	41%
1995	27	2%	44%
1996	35	3%	47%
1997	34	3%	50%
1998	37	3%	53%
1999	33	3%	55%
2000	48	4%	60%
2001	40	3%	63%
2002	52	4%	67%
2003	39	3%	71%
2004	46	4%	75%
2005	46	4%	78%
2006	51	4%	83%
2007	54	5%	87%
2008	61	5%	92%
2009	47	4%	96%
2010	35	3%	99%

2011	7	1%	100%
Total	1,181	100%	

HP08: What was your age when you started your relationship with [...]?

hp08	freq.	%	Cum
1_Age	565	99%	99%
8_DK	8	1%	100%
Total	573	100%	

hp08_a—os	freq.	%	Cum
12	3	1%	1%
13	11	2%	2%
14	17	3%	5%
15	49	9%	14%
16	51	9%	23%
17	64	11%	35%
18	63	11%	46%
19	54	10%	55%
20	61	11%	66%
21	24	4%	70%
22	36	6%	77%
23	20	4%	80%
24	15	3%	83%
25	23	4%	87%
26	11	2%	89%
27	9	2%	90%
28	6	1%	92%
29	6	1%	93%
30	5	1%	93%
31	4	1%	94%
32	2	0%	95%
33	5	1%	95%
34	1	0%	96%
35	4	1%	96%
36	4	1%	97%
37	2	0%	97%
38	1	0%	98%
39	2	0%	98%
40	4	1%	99%
41	3	1%	99%
42	1	0%	99%
46	1	0%	99%
47	1	0%	100%
48	1	0%	100%
50	1	0%	100%
Total	565	100%	

HP09: What was the age of [...] when your relationship started?

hp09	freq.	%	Cum
1_Age	1,177	97%	97%
8_DK	34	3%	100%
Total	1,211	100%	

hp09_a—os	freq.	%	Cum
13	23	2%	2%
14	31	3%	5%
15	68	6%	10%
16	88	7%	18%
17	114	10%	28%
18	121	10%	38%
19	110	9%	47%
20	89	8%	55%

21	71	6%	61%
22	69	6%	67%
23	52	4%	71%
24	41	3%	75%
25	48	4%	79%
26	38	3%	82%
27	32	3%	85%
28	31	3%	87%
29	18	2%	89%
30	23	2%	91%
31	8	1%	91%
32	16	1%	93%
33	6	1%	93%
34	9	1%	94%
35	14	1%	95%
36	7	1%	96%
37	6	1%	96%
38	4	0%	97%
39	5	0%	97%
40	10	1%	98%
41	1	0%	98%
43	2	0%	98%
44	2	0%	98%
45	3	0%	99%
46	5	0%	99%
47	5	0%	99%
48	1	0%	99%
51	1	0%	100%
52	2	0%	100%
53	1	0%	100%
55	1	0%	100%
56	1	0%	100%
Total	1,177	100%	

HP10: Where did you first meet with [...]?

hp10_1	freq.	%	Cum
1_Work/work-related activity	237	20%	20%
2_School/School-related activity	173	14%	34%
3_Church/Church-realted activity	20	2%	36%
5_On-line (but not through an internet	6	0%	36%
6_Vacations	10	1%	37%
7_Bar/Disco/Restaurant	31	3%	39%
8_Social Organization/Club/Gym	17	1%	41%
9_Neighborhood	521	43%	84%
10_Other	188	16%	99%
11_Dont remember	6	0%	100%
12_Refused	2	0%	100%
Total	1,211	100%	

HP11: Who first introduced you to [...] when you met him/her?

hp11_1	freq.	%	Cum
1_Family	126	10%	10%
2_Coworkers	71	6%	16%
3_Classmates	64	5%	21%
4_Neighbors	53	4%	26%
5_Other Mutual Friends	171	14%	40%
6_Introduced self or partner introduced	707	58%	98%
7_Other	26	2%	100%
9_Refused	1	0%	100%
Total	1,219	100%	

HP12: Which was the education level of [...] when you started dating him/her in this period?

hp12	freq.	%	Cum
1_Level	1,102	91%	91%
2_NoSchooling	50	4%	4%
8_DK	60	5%	5%
Total	1,212	100%	

hp12_nivel	freq.	%	Cum
1_Preschool/Kinder	2	0%	0%
2_Elementary	243	22%	22%
3_Secondary School	380	34%	57%
4_Open Sec School	123	11%	68%
5_High School	173	16%	83%
6_Open High School	46	4%	88%
7_Trade School	8	1%	88%
8_Undergraduate	118	11%	99%
9_Graduate	9	1%	100%
98_DK	1	0%	100%
Total	1,103	100%	

HP13: What grade had [...] reached when you started dating him/her in this period?

hp13	freq.	%	Cum
1_Grade	1,068	93%	93%
8_DK	83	7%	100%
Total	1,151	100%	

hp13_grado	freq.	%	Cum
0_Didnot finish 1st	5	0%	0%
1_First	87	8%	9%
2_Second	137	13%	21%
3_Third	449	42%	64%
4_Fourth	40	4%	67%
5_Fifth	41	4%	71%
6_Sixth	172	16%	87%
7_Seventh	4	0%	88%
8_Other	10	1%	89%
9_Graduated	122	11%	100%
Total	1,067	100%	

hp13_otro	freq.	%	Cum
GRADUADO	1	33%	33%
OCTAVO	1	33%	67%
PASANTE	1	33%	100%
Total	3	100%	

HP14: Before you dated [...] in this period, had he/she ever been married or ever lived in a Consensual union in the past?

hp14	freq.	%	Cum
1_Yes	218	18%	18%
3_No	959	79%	97%
8_DK	38	3%	100%
Total	1,215	100%	

HP15: While dating [...] in this period, did he/she have children of any past relationship?

hp15	freq.	%	Cum
1_Yes	175	14%	14%
3_No	1,024	84%	99%
8_DK	14	1%	100%
Total	1,213	100%	

HP16: While dated [...] in this period, was he/she working or contributing with economic resources in his/her household?

hp16	freq.	%	Cum
1_Yes	666	55%	55%
3_No	518	43%	97%
8_DK	31	3%	100%
Total	1,215	100%	

HP17: What was his/her activity?

hp17	freq.	%	Cum
1_Farmer of his/her plot	80	12%	12%
2_Family worker without remuneration	30	5%	17%
3_Non-agricultural worker/employee	430	65%	82%
4_Rural laborer, or farmland	53	8%	90%
5_Boss, employer, or business holder	13	2%	92%
6_Self-employed	53	8%	100%
8_DK	3	0%	100%
Total	662	100%	

HP18: Where was [...] born? (Loc/Mpio/State/Country)

hp18_1cl	freq.	%	Cum
1_Loc/Col	570	47%	47%
3_Same	390	32%	79%
8_DK	250	21%	100%
Total	1,210	100%	

hp18_1cm	freq.	%	Cum
1_Mun/Del	504	41%	41%
3_Same	598	49%	91%
8_DK	114	9%	100%
Total	1,216	100%	

hp18_1ce	freq.	%	Cum
1_State	384	32%	32%
3_Same	810	66%	98%
8_DK	25	2%	100%
Total	1,219	100%	

hp18_1cp	freq.	%	Cum
1_Country	145	12%	12%
3_Same	1,051	86%	98%
8_DK	23	2%	100%
Total	1,219	100%	

HP19: Has/Did [...] ever lived/ live in the United States (...) with you? (INTERVIEWER: DO NOT INCLUDE VACATIONS)

hp19_1	freq.	%	Cum
1_Yes	94	8%	8%
3_No	1,114	92%	100%
8_DK	5	0%	100%
Total	1,213	100%	

hp19_2	freq.	%	Cum
1_Yes	69	6%	6%
3_No	1,112	94%	100%
8_DK	4	0%	100%
Total	1,185	100%	

HP20: While dating [...] now/in that period, which was the education level of his/her father?

hp20	freq.	%	Cum
1_Level	383	32%	32%
2_NoSchooling	167	14%	46%
3_FatherAbsent/Died	70	6%	51%
8_DK	585	49%	100%
Total	1,205	100%	

hp20_nivel	freq.	%	Cum
1_Preschool/Kinder	1	0%	0%
2_Elementary	165	43%	43%
3_Secondary School	117	30%	74%
4_Open Sec School	16	4%	78%
5_High School	13	3%	81%
6_Open High School	7	2%	83%
7_Trade School	7	2%	85%
8_Undergraduate	54	14%	99%
9_Graduate	3	1%	100%
98_DK	1	0%	100%
Total	384	100%	

HP21: Which was the last grade [...]'s father finished?

hp21	freq.	%	Cum
1_Grade	320	63%	63%
8_DK	186	37%	100%
Total	506	100%	

hp21_grado	freq.	%	Cum
0_Didnot finish 1st	3	1%	1%
1_First	7	2%	3%
2_Second	25	8%	11%
3_Third	94	30%	41%
4_Fourth	23	7%	48%
5_Fifth	8	3%	51%
6_Sixth	91	29%	80%
8_Other	8	3%	82%
9_Graduated	55	17%	100%
98_DK	1	0%	100%
Total	315	100%	

HP22: During this period when you dated [...], Which was the occupation of [...]'s father?

hp22	freq.	%	Cum
1_Occupation	954	79%	79%
8_DK	255	21%	100%
Total	1209	100%	

HP23: Compare the economic situation of your family with the family of [...]. While you have been/were dating him/her, would you say that the situation of your family is/was (...)

hp23	freq.	%	Cum
1_MuchBetter	44	4%	4%
2_Better	260	21%	25%
3_Same	690	57%	82%
4_Worse	178	15%	96%
5_MuchWorse	18	1%	98%
8_DK	26	2%	100%
Total	1,216	100%	

HP24: Would you say that [...] is/was(..) compared to other men/women of the same age

hp24	freq.	%	Cum
1_MuchTaller	49	4%	4%
2_Taller	272	23%	27%
3_AsTallAs	591	49%	76%
4_Shorter	252	21%	96%
5_MuchShorter	30	2%	99%
8_DK	13	1%	100%
Total	1,207	100%	

HP25: In your opinion, ¿with which of the following images do you identify [...] when you were dating him/her in this period?

hp25	freq.	%	Cum
1_Skinniest	107	9%	9%
2	183	15%	24%
3	298	25%	49%
4	219	18%	67%
5	163	13%	80%
6	91	8%	88%
7	97	8%	96%
8	43	4%	99%
9_Fattest	11	1%	100%
Total	1,212	100%	

HP26: In your opinion, Which is the skin color that is more similar to the skin color of [...]?

hp26	freq.	%	Cum
1_Lightest	179	15%	15%
2	369	31%	45%
3	328	27%	73%
4	202	17%	89%
5	75	6%	95%
6	37	3%	99%
7	12	1%	100%
8	2	0%	100%
9	3	0%	100%
10_Darkest	1	0.00	100%
Total	1,208	100%	

HP27: Did you marry or live in consensual union with [...]?

hp27	freq.	%	Cum
1_Yes	849	70%	70%
3_No	363	30%	100%
Total	1,212	100%	

HP28: The decision to marry or live in consensual union was taken by (...)?

hp28_1	freq.	%	Cum
1_Parents of you and your partner	15	2%	2%
2_Parents of both, with the authorization you and your partner	15	2%	4%
3_You and your partner, with authorization of your parents	124	15%	18%
4_You and your partner, completely	609	72%	90%
5_Your partner	45	5%	95%
6_Yourself	38	4%	100%
7_Other	1	0%	100%
Total	847	100%	

HP29: In this/that period that you are/were dating [...], Have/Did you establish a more formal engagement?

hp29	freq.	%	Cum
1_Yes	263	72%	72%
3_No	104	28%	100%
Total	367	100%	

HP30A: In this/that period that you are/were dating [...], please tell me if:
□1. You consider to marry/live in consensual union with [...]

hp30a_1	freq.	%	Cum
1_Yes	123	47%	47%
3_No	134	52%	99%
8_DK	2	1%	100%
Total	259	100%	

2. [...] considered to marry/live in consensual union with you

hp30a_2	freq.	%	Cum
1_Yes	119	47%	47%
3_No	128	51%	98%
8_DK	6	2%	100%
Total	253	100%	

HP30B: In this/that period that you are/were dating [...], please tell me if:
1. You told your friends about your relationship with [...]

hp30b_1	freq.	%	Cum
1_Yes	69	69%	69%
3_No	31	31%	100%
Total	100	100%	

2. You wanted to engage formally with [...]

hp30b_2	freq.	%	Cum
1_Yes	44	44%	44%
3_No	55	56%	100%
Total	99	100%	

3. [...] wanted to engage formally with you

hp30b_3	freq.	%	Cum
1_Yes	50	51%	51%
3_No	45	45%	96%
8_DK	4	4%	100%
Total	99	100%	

5. [...] considered to marry/live in consensual union

hp30b_5	freq.	%	Cum
1_Yes	27	27%	27%
3_No	68	69%	96%
8_DK	4	4%	100%
Total	99	100%	

HP31: How did [...] treated you?

hp31	freq.	%	Cum
1_VeryGood	58	24%	24%
2_Good	142	58%	82%
3_Regular	35	14%	96%
4_Bad	8	3%	100%
5_VeryBad	1	0%	100%
Total	244	100%	

HP32: During this period when you dated [...]¿In which month □and year did your relationship with him/her ended?

hp32	freq.	%	Cum
1_Month/Year	267	22%	22%
2_StillTogether	742	61%	83%
8_DK	201	17%	100%
Total	1210	100%	

hp32_m	freq.	%	Cum
1	20	9%	9%
2	13	6%	15%
3	19	9%	24%
4	12	5%	29%
5	18	8%	37%
6	15	7%	44%
7	21	10%	53%
8	20	9%	62%
9	15	7%	69%
10	13	6%	75%
11	25	11%	86%
12	30	14%	100%
Total	221	100%	

hp32_y	freq.	%	Cum
1972	2	1%	1%
1973	1	0%	1%
1976	2	1%	2%
1977	1	0%	2%
1980	1	0%	3%
1981	1	0%	3%
1982	2	1%	4%
1983	1	0%	4%
1984	1	0%	4%
1985	1	0%	5%
1987	2	1%	6%
1988	3	1%	7%
1989	4	1%	8%
1990	1	0%	9%
1991	3	1%	10%
1992	5	2%	12%
1993	7	3%	14%
1994	7	3%	17%
1995	4	1%	18%
1996	7	3%	21%
1997	8	3%	24%
1998	8	3%	27%
1999	10	4%	31%
2000	11	4%	35%
2001	8	3%	38%
2002	11	4%	42%
2003	9	3%	45%
2004	14	5%	51%
2005	12	4%	55%
2006	10	4%	59%
2007	24	9%	68%
2008	18	7%	75%
2009	25	9%	84%
2010	32	12%	96%
2011	11	4%	100%
Total	267	100%	

HP33: ¿What was your age when you ended the relationship with [...] in this period?

hp33	freq.	%	Cum
1_Age	276	88%	88%
8_DK	36	12%	100%
Total	312	100%	

hp33_edad	freq.	%	Cum
13	3	1%	1%
14	3	1%	2%
15	6	2%	4%
16	18	7%	11%
17	24	9%	20%
18	20	7%	27%
19	32	12%	38%
20	23	8%	47%
21	15	5%	52%
22	22	8%	60%
23	13	5%	65%
24	6	2%	67%
25	8	3%	70%
26	6	2%	72%
27	9	3%	75%
28	11	4%	79%
29	4	1%	81%
30	7	3%	83%
31	3	1%	84%
32	4	1%	86%
33	6	2%	88%
34	1	0%	88%
35	4	1%	90%
36	3	1%	91%
37	1	0%	91%
38	2	1%	92%
39	1	0%	92%
40	2	1%	93%
41	2	1%	94%
42	2	1%	95%
43	2	1%	95%
45	1	0%	96%
47	2	1%	96%
48	1	0%	97%
49	2	1%	97%
50	2	1%	98%
51	1	0%	99%
52	1	0%	99%
53	1	0%	99%
54	1	0%	100%
59	1	0%	100%
Total	276	100%	

HP34: INTERVIEWER: IS THERE ANOTHER PARTNER RELATIOSHIP?

hp34	freq.	%	Cum
1_Yes	340	28%	28%
3_No	863	72%	100%
Total	1,203	100%	

Interviewer's notes: File pm1_ne.dta

NE01: What is your evaluation of the accuracy of the answers?

ne01	freq.	%	Cum
1_Excellent	424	47%	47%
2_Good	407	45%	93%
3_Regular	56	6%	99%
4_Bad	10	1%	100%
Total	897	100%	

NE02: Was there a question specially difficult for the respondent?

ne02	freq.	%	Cum
1_Yes	69	8%	8%
3_No	827	92%	100%
Total	896	100%	

NE05: Who else was present during the interview (in addition to the respondent)?

ne05	freq.	%	Cum
1_Nobody	607	78%	78%
2_Kid_5OrLessYearsOld	40	5%	84%
3_Kid_Older_5YearsOld	27	3%	87%
4_Spouse/Partner	47	6%	93%
5_AnAdult_HouseholdMember	42	5%	99%
6_AnAdult_NOT_HouseholdMember	11	1%	100%
Total	774	100%	

NE05_a: Which is the skin color that's matches better the skin tone of the respondent?

ne05_a	freq.	%	Cum
1_Lightest	37	4%	4%
2	196	23%	27%
3	322	37%	64%
4	214	25%	89%
5	61	7%	96%
6	26	3%	99%
7	8	1%	100%
8	3	0%	100%
Total	867	100%	

2.2.2 Instrument 1B

Front Page: File pm1b_portad.dta

State

edo	freq.	%	Cum
3	32	5.0%	5.0%
5	37	5.8%	10.8%
9	19	3.0%	13.8%
10	35	5.5%	19.2%
11	48	7.5%	26.7%
14	34	5.3%	32.0%
15	64	10.0%	42.0%
16	33	5.2%	47.2%
17	35	5.5%	52.7%
19	59	9.2%	61.9%
20	40	6.3%	68.1%
21	44	6.9%	75.0%
25	77	12.0%	87.0%
26	53	8.3%	95.3%
30	27	4.2%	99.5%
31	3	0.5%	100.0%
Total	640	100.0%	

Age

edad	freq.	%	Cum
20	18	3%	3%
21	16	3%	5%
22	17	3%	8%
23	17	3%	11%
24	31	5%	15%
25	11	2%	17%
26	21	3%	20%
27	18	3%	23%

28	23	4%	27%
29	12	2%	29%
30	18	3%	32%
31	12	2%	33%
32	14	2%	36%
33	13	2%	38%
34	15	2%	40%
35	18	3%	43%
36	16	3%	45%
37	16	3%	48%
38	20	3%	51%
39	17	3%	54%
40	18	3%	56%
41	21	3%	60%
42	18	3%	63%
43	14	2%	65%
44	16	3%	67%
45	11	2%	69%
46	18	3%	72%
47	12	2%	74%
48	13	2%	76%
49	12	2%	78%
50	24	4%	81%
51	19	3%	84%
52	17	3%	87%
53	14	2%	89%
54	16	3%	92%
55	13	2%	94%
56	13	2%	96%
57	5	1%	96%
58	8	1%	98%
59	8	1%	99%
60	7	1%	100%
Total	640	100%	

Sex

sexo	freq.	%	Cum
1_Male	272	43%	43%
3_Female	368	58%	100%
Total	640	100%	

Marital Status

marital	freq.	%	Cum
1_ConsUnion	123	20%	20%
2_Separated	44	7%	27%
3_Divorced	11	2%	28%
4_Widowed	12	2%	30%
5_Married	390	62%	92%
6_Single	50	8%	100%
Total	630	100%	

Result of the Interview

resint	freq.	%	Cum
20_Complete	628	98%	98%
22_Incomplete: Refused to give more inf	2	0%	99%
25_Not Interviewed: Refusal	7	1%	100%
26_Not Interviewed: Unable to find	1	0%	100%
Total	638	100%	

Relationship history (part 1): File pm1b_hp1.dta

HP00: INTERVIEWER: VERIFY IF THE RESPONDENT IS/HAS BEEN MARRIED OR LIVES/HAS LIVED IN A CONSENSUAL UNION

hp00	freq.	%	Cum
1_Yes	624	98%	98%
3_No	14	2%	100%
Total	638	100%	

HP01: Have you ever had a partner's relationship that lasted for six months or more?

hp01	freq.	%	Cum
1_Yes	8	57%	57%
3_No	6	43%	100%
Total	14	100%	

HP02: Would you like to begin a partner's relationship the next year?

hp02	freq.	%	Cum
1_Yes	1	100%	100%
Total	1		

HP03: How many partner relationships have you ever had that lasted for six months or more?

hp03_1	freq.	%	Cum
1_NumbRelationships	606	98%	98%
7_Refused	10	2%	100%
Total	616	100%	

hp03_2	freq.	%	Cum
0	64	10.5%	10.5%
1	300	49.3%	59.9%
2	151	24.8%	84.7%
3	53	8.7%	93.4%
4	20	3.3%	96.7%
5	4	0.7%	97.4%
6	6	1.0%	98.4%
7	1	0.2%	98.5%
8	6	1.0%	99.5%
10	3	0.5%	100.0%
Total	608	100.0%	

HP04: Are these approximately (...)

hp04_1	freq.	%	Cum
1_Less than 10	7	50%	50%
8_DK	7	50%	100%
Total	14	100%	

hp04_2	freq.	%	Cum
21_50 Or More	5	83%	83%
22_Less than 5	1	17%	100%
Total	6	100%	

Relationship history (part 2): File pm1b_hp2.dta

Sequence

sec	freq.	%	Cum
1	625	62%	62%
2	376	38%	100%
Total	1,001	100.0%	

HP07: In what month and year did your relationship with [...] began?

hp07	freq.	%	Cum
1_Month/Year	245	25%	25%
8_DK	752	75%	100%
Total	997	100%	

hp07_m	freq.	%	Cum
1	27	13%	13%
2	19	9%	21%
3	12	6%	27%
4	7	3%	30%
5	20	9%	40%
6	19	9%	48%
7	11	5%	53%
8	20	9%	63%
9	19	9%	72%
10	20	9%	81%
11	22	10%	91%
12	19	9%	100%
Total	215	100%	

hp07_y	freq.	%	Cum
1965	1	0%	0%
1966	5	1%	1%
1967	4	0%	1%
1968	7	1%	2%
1969	8	1%	3%
1970	15	2%	4%
1971	19	2%	6%
1972	8	1%	7%
1973	26	3%	10%
1974	18	2%	12%
1975	24	2%	14%
1976	18	2%	16%
1977	24	2%	18%
1978	19	2%	20%
1979	20	2%	22%
1980	18	2%	24%
1981	36	4%	28%
1982	21	2%	30%
1983	18	2%	32%
1984	18	2%	34%
1985	25	3%	37%
1986	31	3%	40%
1987	27	3%	43%
1988	19	2%	45%
1989	19	2%	47%
1990	24	2%	49%
1991	23	2%	52%
1992	12	1%	53%
1993	23	2%	55%
1994	19	2%	57%
1995	19	2%	59%
1996	26	3%	62%
1997	21	2%	64%
1998	23	2%	66%
1999	25	3%	69%
2000	49	5%	74%
2001	40	4%	78%
2002	31	3%	81%
2003	29	3%	84%
2004	32	3%	88%

2005	24	2%	90%
2006	26	3%	93%
2007	21	2%	95%
2008	18	2%	97%
2009	11	1%	98%
2010	12	1%	99%
2011	4	0%	100%
2012	1	0%	100%
Total	961	100%	

HP08: What was your age when you started your relationship with [...]?

hp08	freq.	%	Cum
1_Age	737	98%	98%
8_DK	15	2%	100%
Total	752	100%	

hp08_a—os	freq.	%	Cum
9	1	0%	0%
12	3	0%	1%
13	12	2%	2%
14	32	4%	7%
15	69	9%	16%
16	71	10%	25%
17	103	14%	39%
18	107	14%	54%
19	69	9%	63%
20	57	8%	71%
21	30	4%	75%
22	44	6%	81%
23	31	4%	85%
24	22	3%	88%
25	27	4%	92%
26	12	2%	93%
27	8	1%	95%
28	10	1%	96%
29	5	1%	97%
30	4	1%	97%
31	3	0%	98%
32	2	0%	98%
33	1	0%	98%
34	2	0%	98%
35	3	0%	99%
36	1	0%	99%
37	1	0%	99%
39	1	0%	99%
40	2	0%	99%
41	1	0%	99%
42	2	0%	100%
45	1	0%	100%
48	1	0%	100%
Total	738	100%	

HP09: What was the age of [...] when your relationship started?

hp09	freq.	%	Cum
1_Age	957	96%	96%
8_DK	39	4%	100%
Total	996	100%	

hp09_a—os	freq.	%	Cum
13	10	1%	1%
14	28	3%	4%
15	66	7%	11%

16	82	9%	19%
17	122	13%	32%
18	118	12%	45%
19	83	9%	53%
20	83	9%	62%
21	59	6%	68%
22	56	6%	74%
23	45	5%	79%
24	34	4%	82%
25	36	4%	86%
26	24	3%	89%
27	19	2%	91%
28	18	2%	92%
29	16	2%	94%
30	10	1%	95%
31	4	0%	96%
32	5	1%	96%
33	2	0%	96%
34	3	0%	97%
35	4	0%	97%
36	5	1%	98%
37	2	0%	98%
38	2	0%	98%
39	1	0%	98%
40	3	0%	98%
41	1	0%	99%
44	2	0%	99%
45	4	0%	99%
46	4	0%	100%
47	3	0%	100%
69	1	0%	100%
Total	955	100%	

HP10: Where did you first meet with [...]?

hp10_1	freq.	%	Cum
1_Work/work-related activity	140	14%	14%
2_School/School-related activity	107	11%	25%
3_Church/Church-realted activity	20	2%	27%
5_On-line (but not through an internet	2	0%	27%
6_Vacations	13	1%	28%
7_Bar/Disco/Restaurant	30	3%	31%
8_Social Organization/Club/Gym	16	2%	33%
9_Neighborhood	454	45%	78%
10_Other	199	20%	98%
11_Dont remember	10	1%	99%
12_Refused	7	1%	100%
Total	998	100%	

HP11: Who first introduced you to [...] when you met him/her?

hp11_1	freq.	%	Cum
1_Family	101	10%	10%
2_Coworkers	51	5%	15%
3_Classmates	54	5%	21%
4_Neighbors	64	6%	27%
5_Other Mutual Friends	157	16%	43%
6_Introduced self or partner introduced	549	55%	98%
7_Other	13	1%	99%
8_DK	5	1%	100%
9_Refused	3	0%	100%
Total	997	100%	

HP12: Which was the education level of [...] when you started dating him/her in this period?

hp12	freq.	%	Cum
1_Level	904	91%	91%
2_NoSchooling	32	3%	3%
8_DK	61	6%	6%
Total	997	100%	

hp12_nivel	freq.	%	Cum
1_Preschool/Kinder	4	0%	0%
2_Elementary	259	29%	29%
3_Secondary School	316	35%	64%
4_Open Sec School	74	8%	72%
5_High School	132	15%	87%
6_Open High School	35	4%	90%
7_Trade School	8	1%	91%
8_Undergraduate	70	8%	99%
9_Graduate	8	1%	100%
98_DK	1	0%	100%
Total	907	100%	

HP13: What grade had [...] reached when you started dating him/her in this period?

hp13	freq.	%	Cum
1_Grade	819	89%	89%
8_DK	102	11%	100%
Total	921	100%	

hp13_grado	freq.	%	Cum
0_Didnot finish 1st	2	0%	0%
1_First	100	12%	12%
2_Second	111	14%	26%
3_Third	238	29%	55%
4_Fourth	35	4%	59%
5_Fifth	22	3%	62%
6_Sixth	100	12%	74%
7_Seventh	2	0%	74%
8_Other	5	1%	75%
9_Graduated	206	25%	100%
Total	821	100%	

hp13_otro	freq.	%	Cum
3	10	100%	100%
Total	10	100%	

HP14: Before you dated [...] in this period, had he/she ever been married or ever lived in a Consensual union in the past?

hp14	freq.	%	Cum
1_Yes	131	13%	13%
3_No	841	84%	97%
8_DK	25	3%	100%
Total	997	100%	

HP15: While dating [...] in this period, did he/she have children of any past relationship?

hp15	freq.	%	Cum
1_Yes	108	11%	11%
3_No	873	88%	99%
8_DK	14	1%	100%
Total	995	100%	

HP16: While dated [...] in this period, was he/she working or contributing with economic resources in his/her household?

hp16	freq.	%	Cum
1_Yes	612	62%	62%
3_No	362	36%	98%
8_DK	20	2%	100%
Total	994	100%	

HP17: What was his/her activity?

hp17	freq.	%	Cum
1_Farmer of his/her plot	65	11%	11%
2_Family worker without remuneration	29	5%	15%
3_Non-agricultural worker/employee	373	61%	76%
4_Rural laborer, or farmhand (agricultu	58	9%	86%
5_Boss, employer, or business holder	13	2%	88%
6_Self-employed	68	11%	99%
8_DK	6	1%	100%
Total	612	100%	

HP18: Where was [...] born? (Loc/Mpio/State/Country)

hp18_1cl	freq.	%	Cum
1_Loc/Col	454	46%	46%
3_Same	285	29%	74%
8_DK	257	26%	100%
Total	996	100%	

hp18_1cm	freq.	%	Cum
1_Mun/Del	512	52%	52%
3_Same	371	37%	89%
8_DK	111	11%	100%
Total	994	100%	

hp18_1ce	freq.	%	Cum
1_State	437	44%	44%
3_Same	538	54%	98%
8_DK	22	2%	100%
Total	997	100%	

hp18_1cp	freq.	%	Cum
1_Country	13	1%	1%
3_Same	968	97%	98%
8_DK	15	2%	100%
Total	996	100%	

HP19: Has/Did [...] ever lived/ live in the United States (...) with you? (INTERVIEWER: DO NOT INCLUDE VACATIONS)

hp19_1	freq.	%	Cum
1_Yes	81	8%	8%
3_No	908	91%	99%
8_DK	7	1%	100%
Total	996	100%	

hp19_2	freq.	%	Cum
1_Yes	49	5%	5%
3_No	933	94%	99%
8_DK	9	1%	100%
Total	991	100%	

HP20: While dating [...] now/in that period, which was the education level of his/her father?

hp20	freq.	%	Cum
1_Level	336	34%	34%
2_NoSchooling	149	15%	49%
3_FatherAbsent/Died	81	8%	57%
8_DK	428	43%	100%
Total	994	100%	

HP21: Which was the last grade [...]'s father finished?

hp21	freq.	%	Cum
1_Grade	260	74%	74%
8_DK	92	26%	100%
Total	352	100%	

hp21_grado	freq.	%	Cum
1_First	12	5%	5%
2_Second	12	5%	9%
3_Third	61	24%	33%
4_Fourth	18	7%	40%
5_Fifth	9	3%	43%
6_Sixth	60	23%	67%
7_Seventh	1	0%	67%
8_Other	2	1%	68%
9_Graduated	83	32%	100%
Total	258	100%	

HP22: During this period when you dated [...], Which was the occupation of [...]'s father?

hp22	freq.	%	Cum
1_Occupation	809	81%	81%
8_DK	185	19%	100%
Total	994	100%	

HP23: Compare the economic situation of your family with the family of [...]. While you have been/were dating him/her, would you say that the situation of your family is/was (...)

hp23	freq.	%	Cum
1_MuchBetter	16	2%	2%
2_Better	171	17%	19%
3_Same	617	62%	81%
4_Worse	148	15%	96%
5_MuchWorse	24	2%	98%
8_DK	20	2%	100%
Total	996	100%	

HP24: Would you say that [...] is/was(..) compared to other men/women of the same age

hp24	freq.	%	Cum
1_MuchTaller	34	3%	3%
2_Taller	232	23%	27%
3_AsTallAs	503	51%	77%
4_Shorter	198	20%	97%
5_MuchShorter	15	2%	99%
8_DK	14	1%	100%
Total	996	100%	

HP25: In your opinion, ¿with which of the following images do you identify [...] when you were dating him/her in this period?

hp25	freq.	%	Cum
1_Skinniest	50	5%	5%
2	168	17%	22%
3	290	29%	51%
4	225	23%	74%
5	145	15%	88%
6	68	7%	95%
7	37	4%	99%
8	12	1%	100%
9_Fattest	1	0%	100%
Total	996	100%	

HP26: In your opinion, Which is the skin color that is more similar to the skin color of [...]?

hp26	freq.	%	Cum
1_Lightest	104	10%	10%
2	232	23%	34%
3	295	30%	63%
4	205	21%	84%
5	98	10%	94%
6	44	4%	98%
7	16	2%	100%
8	3	0%	100%
Total	997	100%	

HP27: Did you marry or live in consensual union with [...]?

hp27	freq.	%	Cum
1_Yes	638	64%	64%
3_No	359	36%	100%
Total	997	100%	

HP28: The decision to marry or live in consensual union was taken by (...)

hp28_1	freq.	%	Cum
1_Parents of you and your partner	15	2%	2%
2_Parents of both, with the authorization you and your partner	18	3%	5%
3_You and your partner, with authorization of your parents	79	12%	18%
4_You and your partner, completely	436	69%	86%
5_Your partner	67	11%	97%
6_Yourself	18	3%	100%
7_Other	3	0%	100%
Total	636	100%	

HP29: In this/that period that you are/were dating [...],□Have/Did you establish a more formal engagement?□

hp29	freq.	%	Cum
1_Yes	177	50%	50%
3_No	179	50%	100%
Total	356	100%	

HP30A: In this/that period that you are/were dating [...], please tell me if:
1. You consider to marry/live in consensual union with [...]

hp30a_1	freq.	%	Cum
1_Yes	89	50%	50%
3_No	87	49%	99%
8_DK	1	1%	100%
Total	177	100%	

2. [...] considered to marry/live in consensual union with you

hp30a_2	freq.	%	Cum
1_Yes	51	35%	35%
3_No	78	54%	90%
8_DK	15	10%	100%
Total	144	100%	

HP30B: In this/that period that you are/were dating [...], please tell me if:
1. You told your friends about your relationship with [...]

hp30b_1	freq.	%	Cum
1_Yes	105	59%	59%
3_No	69	39%	98%
8_DK	3	2%	100%
Total	177	98%	

2. You wanted to engage formally with [...]

hp30b_2	freq.	%	Cum
1_Yes	76	43%	43%
3_No	94	53%	97%
8_DK	6	3%	100%
Total	176	100%	

3. [...] wanted to engage formally with you

hp30b_3	freq.	%	Cum
1_Yes	63	36%	36%
3_No	99	56%	92%
8_DK	14	8%	100%
Total	176	100%	

4. You consider to marry/live in consensual union with

hp30b_4	freq.	%	Cum
1_Yes	8	5%	5%
3_No	164	93%	97%
8_DK	5	3%	100%
Total	177	100%	

5. [...] considered to marry/live in consensual union

hp30b_5	freq.	%	Cum
1_Yes	16	9%	9%
3_No	153	87%	96%
8_DK	7	4%	100%
Total	176	100%	

HP31: How did [...] treated you?

hp31	freq.	%	Cum
1_VeryGood	44	13%	13%
2_Good	210	64%	77%
3_Regular	64	19%	96%
4_Bad	7	2%	98%
7_Refused	5	2%	100%
Total	330	100%	

HP32: During this period when you dated [...]¿In which month □and year did your relationship with him/her ended?

hp32	freq.	%	Cum
1_Month/Year	121	12%	12%
2_StillTogether	534	54%	66%
8_DK	334	34%	100%
Total	989	100%	

hp32_m	freq.	%	Cum
1	4	4%	4%
2	7	7%	11%
3	11	11%	22%
4	5	5%	27%
5	6	6%	33%
6	10	10%	43%
7	11	11%	55%
8	5	5%	60%
9	6	6%	66%
10	9	9%	75%
11	14	14%	89%
12	11	11%	100%
Total	99	100%	

hp32_y	freq.	%	Cum
1954	1	1%	1%
1976	1	1%	2%
1977	1	1%	3%
1980	1	1%	3%
1983	2	2%	5%
1984	1	1%	6%
1985	1	1%	7%
1986	2	2%	8%
1988	2	2%	10%
1989	2	2%	12%
1990	1	1%	13%
1991	2	2%	14%
1992	4	3%	18%
1994	3	3%	20%
1995	1	1%	21%
1996	2	2%	23%
1997	2	2%	24%
1998	6	5%	29%
1999	3	3%	32%
2000	8	7%	39%
2001	6	5%	44%
2002	7	6%	50%
2003	7	6%	55%
2004	8	7%	62%
2005	5	4%	66%
2006	5	4%	71%
2007	4	3%	74%
2008	6	5%	79%
2009	8	7%	86%
2010	8	7%	92%
2011	4	3%	96%
2012	4	3%	99%
2013	1	1%	100%
Total	119	100%	

HP33: ¿What was your age when you ended the relationship with [...] in this period?

hp33	freq.	%	Cum
1_Age	333	94%	94%
8_DK	22	6%	100%
Total	355	100%	

hp33_edad	freq.	%	Cum
13	5	1%	1%
14	12	4%	5%
15	26	8%	13%

16	28	8%	21%
17	35	10%	32%
18	42	13%	44%
19	36	11%	55%
20	35	10%	66%
21	23	7%	72%
22	23	7%	79%
23	13	4%	83%
24	8	2%	86%
25	6	2%	87%
26	3	1%	88%
27	8	2%	91%
28	5	1%	92%
29	2	1%	93%
30	6	2%	95%
31	2	1%	95%
32	2	1%	96%
34	2	1%	96%
35	3	1%	97%
36	1	0%	98%
38	1	0%	98%
40	2	1%	99%
42	2	1%	99%
48	2	1%	100%
50	1	0%	100%
Total	334	100%	

HP34: INTERVIEWER: IS THERE ANOTHER PARTNER RELATIOSHIP?

hp34	freq.	%	Cum
1_Yes	379	38%	38%
3_No	616	62%	100%
Total	995	100%	

Interviewer's notes: File pm1b_ne.dta

NE01: What is your evaluation of the accuracy of the answers?

ne01	freq.	%	Cum
1_Excellent	172	28%	28%
2_Good	362	60%	88%
3_Regular	68	11%	100%
4_Bad	3	0%	100%
Total	605	100%	

NE02: Was there a question specially difficult for the respondent?

ne02	freq.	%	Cum
1_Yes	53	9%	9%
3_No	551	91%	100%
Total	604	100%	

NE05: Who else was present during the interview (in addition to the respondent)?

ne05	freq.	%	Cum
1_Nobody	436	75%	75%
2_Kid_5OrLessYearsOld	24	4%	79%
3_Kid_Older_5YearsOld	26	4%	84%
4_Spouse/Partner	44	8%	91%
5_AnAdult_HouseholdMember	34	6%	97%
6_AnAdult_NOT_HouseholdMember	16	3%	100%
Total	580	100%	

NE05_a: Which is the skin color that's matches better the skin tone of the respondent?

ne05_a	freq.	%	Cum
1_Lightest	18	3%	3%
2	82	14%	17%
3	186	32%	49%
4	157	27%	75%
5	73	12%	88%
6	56	10%	97%
7	15	3%	100%
8	2	0%	100%
Total	589	100%	

References

Rubalcava Luis, and Graciela Teruel. 2007. “The Mexican Family Life Survey: First Wave”, http://www.ennvih-mxfls.org/es/ennvih.php?seccion=2&subseccion=8&ver=1&session=40099119436

TABLES

Table A-1: Selection of the sample

Age eligible respondents (within ages 20 to 60)	23,792	100%
Dead	328	1.4%
International Migrants	2,554	10.7%
Refusals	163	0.7%
Not found	1,615	6.8%
Eligible Sample	19,132	100%
Eligible Sample Excluded from Random Sampling	6,543	34%
Final Eligible Sample used for Random Sampling	12,589	66%

Table A-2: Odds of being in the final eligible sample compared to the age eligible excluded sample

	OR	S.E.	p-value
Age			
20-29		(ref. category)	
30-39	0.754	0.033	0.000
40-49	0.772	0.035	0.000
50-60	0.847	0.042	0.001
Years of schooling			
0-6		(ref. category)	
7-9	1.062	0.043	0.133
10-11	0.991	0.067	0.896
12+	1.030	0.045	0.496
Rural	0.671	0.022	0.000
Male	1.053	0.033	0.097
Ever in a Union	1.040	0.046	0.309
N	18,113		

Table A-3: Comparison of number of relationships collected per Instrument

	N	%
Same response in both Instruments	295	26%
More than 1 relationship in Instrument 1 vs. 1 relationship in Instrument 2	13	1%
More than 1 relationship in Instrument 1B vs. 1 relationship in Instrument 1	146	13%
Information collected only with Instrument 1	276	24%
Information collected only with Instrument 1B	130	11%
Not interviewed	280	25%
Total	1,140	100%

Table A-4: Response Rate

Completed	1,051	71.2%
Not Found	274	18.6%
Refusal	146	9.9%
Dead	5	0.3%
Total	1,476	100.0%

Table A-5: Sample Characteristics

	Complete Sample		Interviewed Sample	
N	1,476		1,051	
Male	697	47%	466	44%
Age				
20-30	594	40%	399	38%
31-40	343	23%	245	23%
41-50	293	20%	230	22%
51-60	246	17%	177	17%
Mean Age	36.4		36.9	
SD Age	11.7		11.6	
Rural	567	38%	453	43%
Ever in a Union	1,143	77%	864	82%
Marital Status				
Single	335	23%	225	21%
Married/Consensual Union	948	64%	747	71%
Separated/Divorced	59	4%	46	4%
Widow	23	2%	23	2%
DK	111	8%	10	1%
Education				
0-6	516	35%	392	37%
7-9	419	28%	320	30%
10-11	93	6%	75	7%
12+	430	29%	262	25%
DK	18	1%	2	0%

Source: Mexican Marital Preference Pilot Project

Table A-6: Log odds of being interviewed (N=1410)

	Coef	SE	P
Male	-0.493	0.125	0.000
Age			
20-30		(ref group)	
31-40	0.294	0.172	0.087
41-50	0.468	0.190	0.014
51-60	0.096	0.193	0.620
Rural	0.607	0.138	0.000
Ever in a Union	0.148	0.169	0.383
Education			
0-6		(ref group)	
7-9	0.163	0.169	0.335
10-11	0.450	0.293	0.125
12 +	-0.417	0.165	0.012
Constant	0.849	0.208	0.000

Source: Mexican Marital Preference Pilot Project

Table A-7: Files' structure

Section	Instrument 1	Instrument 1B
Front Page	pm1_portad	pm1b_portad
Relationship history (part 1)	pm1_hp1	pm1b_hp1
Relationship history (part 2)	pm1_hp2	pm1b_hp2
Interviewer's notes	pm1_ne	pm1b_ne