



“Schooling Can’t Buy Me Love”: Marriage, Work, and the Gender Education Gap in Latin America

Citation

Ganguli, Ina, Ricardo Hausmann and Martina Viarengo. 2010. Schooling Can’t Buy Me Love: Marriage, Work, and the Gender Education Gap in Latin America. Faculty Research Working Paper Series, RWP10-032, John F. Kennedy School of Government, Harvard University.

Published version

<http://web.hks.harvard.edu/publications/workingpapers/citation.aspx?PubId=7358>

Link

<http://nrs.harvard.edu/urn-3:HUL.InstRepos:4448873>

Terms of use

This article was downloaded from Harvard University’s DASH repository, and is made available under the terms and conditions applicable to Other Posted Material (LAA), as set forth at

<https://harvardwiki.atlassian.net/wiki/external/NGY5NDE4ZjgzNTc5NDQzMGIzZWZhMGFIOWI2M2EwYTg>

Accessibility

<https://accessibility.huit.harvard.edu/digital-accessibility-policy>

Share Your Story

The Harvard community has made this article openly available.
Please share how this access benefits you. [Submit a story](#)



HARVARD Kennedy School
JOHN F. KENNEDY SCHOOL OF GOVERNMENT

“Schooling Can’t Buy Me Love”: Marriage, Work, and the Gender Education Gap in Latin America

Faculty Research Working Paper Series

Ina Ganguli

Harvard Kennedy School

Ricardo Hausmann

Harvard Kennedy School

Martina Viarengo

Harvard Kennedy School

June 2010
RWP10-032

The views expressed in the **HKS Faculty Research Working Paper Series** are those of the author(s) and do not necessarily reflect those of the John F. Kennedy School of Government or of Harvard University. Faculty Research Working Papers have not undergone formal review and approval. Such papers are included in this series to elicit feedback and to encourage debate on important public policy challenges. Copyright belongs to the author(s). Papers may be downloaded for personal use only.

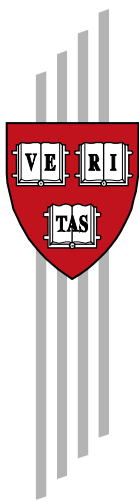
www.hks.harvard.edu

“Schooling Can’t Buy Me Love”:
Marriage, Work, and the Gender Education Gap
in Latin America

Ina Ganguli, Ricardo Hausmann, and Martina Viarengo

CID Working Paper No. 197
June 18, 2010

© Copyright 2010 Ina Ganguli, Ricardo Hausmann, and Martina Viarengo
and the President and Fellows of Harvard College



Working Papers

Center for International Development
at Harvard University

“Schooling Can’t Buy Me Love”:
Marriage, Work, and the Gender Education Gap in Latin America¹

Ina Ganguli, Ricardo Hausmann, and Martina Viarengo
Harvard University
John F. Kennedy School of Government
Center for International Development

Abstract

In this paper we establish six stylized facts related to marriage and work in Latin America and present a simple model to account for them. First, skilled women are less likely to be married than unskilled women. Second, skilled women are less likely to be married than skilled men. Third, married skilled men are more likely to work than unmarried skilled men, but married skilled women are less likely to work than unmarried skilled women. Fourth, Latin American women are much more likely to marry a less skilled husband compared to women in other regions of the world. Five, when a skilled Latin American woman marries down, she is more likely to work than if she marries a more or equally educated man. Six, when a woman marries down, she tends to marry the “better” men in that these are men that earn higher wages than those explained by the other observable characteristics. We present a simple game theoretic model that explains these facts with a single assumption: Latin American men, but not women, assign a greater value to having a stay-home wife.

Keywords: marriage, family structure, education

JEL subject codes: J12, I2

¹ We acknowledge support received from the Women and Public Policy Program, the Women’s Leadership Board at Harvard Kennedy School, the Center for International Development at Harvard University and the Exxon Corporation. We would like to thank Iris Bohnet, Marcela Escobari, and Lant Pritchett for helpful discussions. The usual caveats apply.

I. Introduction

In many countries, including Latin America, the gender gap in education has reversed: women are getting more education than men. In fact, as we report, the cohort in which the education gap was closed for the first time was born mostly in the 1950s, so the phenomenon is quite old. The US-based literature that tries to explain this fact has focused on the returns to education in the marriage market: if there is positive assortative matching, an additional year of schooling will translate into a more educated spouse and hence a bigger overall return to one's own educational effort. With these priors, it is thus surprising to find out, as we do in this paper, that skilled Latin American women are less likely to be married than unskilled women and this is not true for skilled men. Moreover, Latin American women when they marry, have a very high probability of doing so with a less skilled spouse. Women who marry "down" tend to work more often than women who marry a spouse with equal or more education. And when they marry down, they tend to choose the relatively more skilled men in the sense that their wages are higher than would be predicted by their other observable characteristics.

A burgeoning literature on marriage markets in recent years has attempted to provide a theoretical basis for the matching behavior of men and women, including under conditions when women get more education than men. The empirical evidence on both marriage markets and the reversal of the education gap, however, has been focused on the US. In this paper we seek to add to the literature on marriage markets and the gender education gap with empirical evidence from Latin America. Using census data for over 40 countries from IPUMS International, we illustrate a number of "facts" related to the changing nature of marriage and family as an institution and its relationship to education. In particular, we examine the differences in "matching" behavior among skilled and unskilled men and women, while emphasizing to what extent Latin American countries seem to follow a distinctive pattern compared to other countries in our sample.

To account for these facts we present a simple model, where we highlight the role played by the valuation of the returns to staying at home coupled with intra-household power. We will conclude with a discussion of how this model can account for our stylized facts and to why these results differ from the existing literature on these topics, as in Chiappori et al. (2009).

The simplest explanation is that skilled men in the US and Latin America differ in their valuation of the returns to having a stay-home wife vis a vis a working wife, but not so skilled women. US skilled men prefer a working skilled wife to a stay-home wife while Latin American men do not. Latin American women prefer a skilled husband that agrees for her to work, but Latin American men would rather have a low-skilled wife who stays at home. However, a low-skilled husband would agree on a high skilled wife working. The wife will agree to marry a lower skilled husband provided his salary is not too low. Otherwise, she would rather stay single. This logic explains why we find so many skilled women being single, marrying down and doing so mainly with the more productive low skilled men.

II. Data

Data for the analysis comes from the International Integrated Public Use Microdata Series (IPUMS-International). Compiled by the Minnesota Population Center, the IPUMS data includes the largest publicly available individual-level census data. It consists of decennial records of persons and households. Data for select countries from Africa, Asia, Europe and Latin America, is available between 1960 and 2005.

We use the Census data to analyze marriage, education, and employment behavior among individuals in Latin American countries, as well as other countries that are included in the IPUMS data. For our analysis, we utilize the most recent wave of the Census available for each country. Since data on income and wages are not available for most Censuses, when possible, the Census data have been complemented by Household Survey data for Latin American countries harmonized by the Inter-American Development Bank that include wages and/or income.

We focus our analysis in this paper on individuals aged 30-55. We focus on individuals in this age group as they would have already completed their education, and having a broader age group allows us to have a significant large sample to average time. In the following sections, we will analyze marriage, education, and employment outcomes of individuals in this age group for each country. Then, we compile the results for all the countries in our sample to create a country-level dataset that allows us to show patterns across countries.

In addition to the Census and Household Survey data, we also use data from the 2000 World Values Survey (WVS) to supplement our analysis. The WVS data includes data from representative national surveys that ask respondents questions related to their sociocultural, moral, religious and political values. In each country questionnaires are administered to around 3,000 interviewees. For the purpose of our analysis we use information from the 2000 and 2005 waves which is provided for 79 and 52 countries, respectively, and we rely on questions related to marriage and preferences with respect to the role of women within the household.

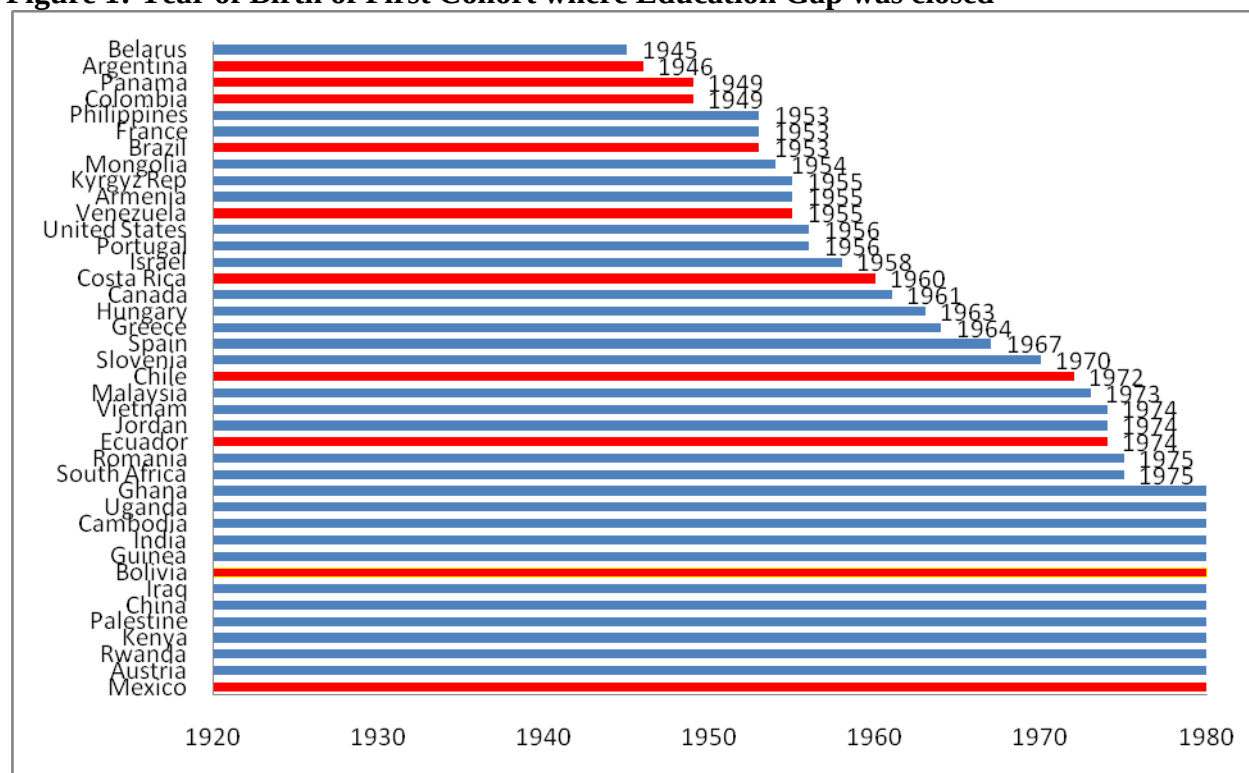
III. Facts

Fact #0: “Woman is smarter”: The gender gap in education has essentially reversed

We first observe that there has been a reversal of the gender gap in education in many countries around the world, including in Latin America. This fact has been extensively documented for the United States (Goldin 2001, Goldin and Katz 2006) and the OECD countries (OECD 2002). However, this is a phenomenon that is taking place in other developed and developing countries as well. Figure 1 shows the year of birth of the first cohort in which the gender education gap reversed using Census data, where we define the gender education gap as the difference in average years of schooling between men and women. Among Latin American countries, we can

observe that in the 2000s, the education gap had not only closed, but also reversed for all countries in the region except for Bolivia and Mexico.

Figure 1: Year of Birth of First Cohort where Education Gap was closed



Notes: The gender gap is calculated as the difference in average years of schooling between men and women; The sample also includes countries where the gender gap in education has not reversed; LAC are in red.
Source: IPUMS census data

Among the determinants of the reversal in the gender education gap in the literature, mainly based on the U.S. experience, are changes in labor market opportunities as well as lower cost for acquiring education faced by women (i.e., a different endowment of non-cognitive skills that makes staying in school longer easier for women) which complement long run changes in technology and social norms (Goldin and Katz 2006). Moreover, increased education can be a way for women to face less discrimination. In Latin America, the reversal appears to be driven by increases in education among the most educated (Duryea et al., 2007). The existing literature also documents the high inequality in income, health and education and the more rapid growth of tertiary enrollments among the children of richer households in Latin American countries (World Bank, 2003).

In this paper, we do not examine the determinants of this change for the countries in our sample, but rather we investigate some possible consequences of the change in relative supplies of skilled

individuals on household formation and organization. In the traditional literature, educational attainment is a significant predictor of women's family formation patterns (Becker 1971, 1973, 1991; Rindfuss et al. 1980). In Becker's (1971) classic model, marriage is based on the joint production of outputs that are broadly related to "human activities and aspirations". In this framework, gains from marriage arise from the division of labor between household and market activities, the gains being greater the more complementary are spouses' characteristics. Gains are weighted against search costs and market opportunities. This model predicts that spouses specialize in market and household sectors according to their comparative advantage. Also, specialization of roles implies greater productivity and "dependence on others for certain tasks". In traditional societies women have relied on men for income and protection whereas men have relied on women for the rearing of children and home-related work (Becker 1991, p.43).

In the remainder of the paper we ask whether educational attainment affects the pattern of family formation for skilled versus unskilled individuals in an asymmetric way first by looking at how the probability of forming a family varies by education level. Then we will focus on the division of roles within the household and specific family characteristics.

Fact #1: Clear tendency for skilled women to be less likely to be married than unskilled women in LAC (very different from the United States).

First, we examine the probability that individuals marry given their skill level. If we consider the probability that a skilled individual aged 30-55 (i.e., one who has attained secondary or higher levels of education) has of being married² relative to the less skilled, we see that skilled women tend to be less married than unskilled women. Moreover, we see an asymmetry between men and women. In the Figures 2a and 2b below, we graph the OLS coefficients on the dummies for "skilled" in separate regressions for women and men predicting whether someone is married. This is the coefficient β_1 from the following regression:

$$Married_i = \alpha + \beta_1 Skilled_i + \varepsilon_i \quad (1)$$

where i denotes an individual. We can see that in 25 countries out of 43, skilled men are more likely to be married than unskilled men, whereas this occurs only in 16 countries for women. Also, if we focus on the positive coefficients, the magnitude of the difference is sizeable. The probability of the skilled being married for women is below 0.05 in 15 countries out of 16 (except for the United States where it is equal to 0.11) while for men it is below 0.05 for 14 countries and above in the remaining 11.

Interestingly, this phenomenon does not seem to be closely related to income per capita for both men and women. In the case of women, developed countries are overrepresented in the group of countries in our sample where skilled women are less likely to be married than unskilled, but in

² We define "being married" as either being legally married or living in cohabitation. There have been different attitudes along the income distribution to formalizing unions and these are not issues we want to deal with. In addition, divorce has tended to become more available so that the difference between married and cohabitation has narrowed.

OECD countries with high levels of GDP per capita (United States, the Netherlands, United Kingdom) the probability for skilled women to be married is greater relative to unskilled. The top eight countries where skilled women are less likely to be married are Catholic, whereas Communist and former communist countries are overrepresented among those where skilled women are more likely to be married. We will investigate later to what extent this may be related to differences in policies that make marriage and motherhood compatible with work.

On the other hand, we can see that in most developed countries, skilled men are more likely to be married than unskilled and the probability for skilled men to be married is greater in developed countries with higher levels of income per capita (Austria, United States, the Netherlands, United Kingdom) and former communist countries (Hungary, Romania, Slovenia). We see that Southern European countries (Italy, Greece, Spain, Portugal) are countries where skilled men are less likely to be married, and Rwanda is the country where skilled men are the least likely to be married relative to unskilled. This cohort experienced genocide approximately at the ages 24-49, so it appears to be important to understand the social consequences and how this may have affected marrying and household formation. On the other hand, in most Communist countries, skilled men have either a positive probability of being married or a very small negative probability of not being married relative to unskilled.

Latin America presents a distinctive picture with respect to the other countries. In all Latin American countries in our sample skilled women have a lower probability of being married than unskilled women. Apart from Italy and Spain, the other countries where skilled women are the least likely to be married are from Latin America (Bolivia, Panama, Colombia and Mexico). Only in Argentina are skilled women more likely to be married than unskilled women, but with a low probability, below 0.05. The same phenomenon is not so clear-cut for men. For some Latin American countries, skilled men are more married than unskilled (Argentina, Panama, Venezuela, Chile), while for others the opposite is true (Bolivia, Brazil, Mexico)

Figure 2a. Probability of being married (OLS) – dummy on skilled (Secondary +), Women

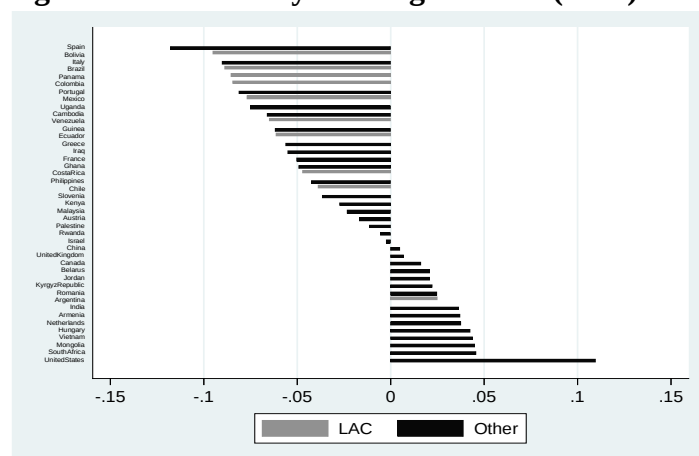
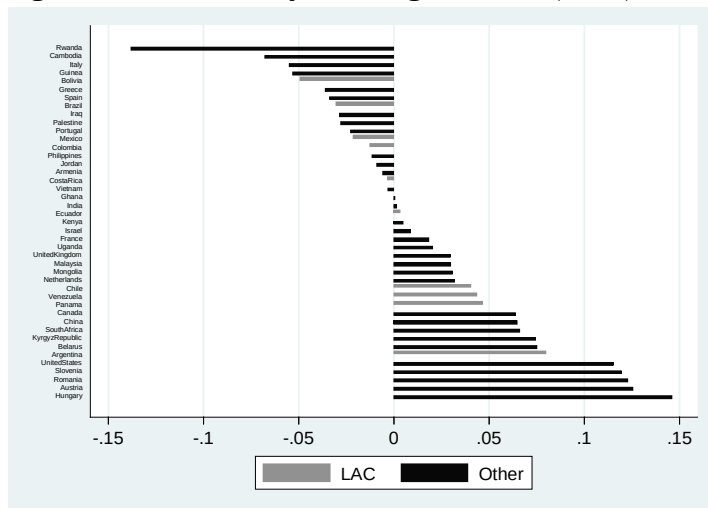


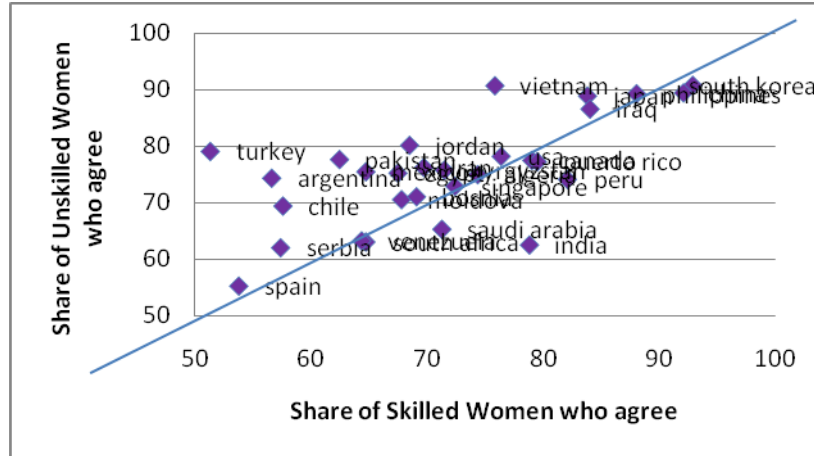
Figure 2b. Probability of being married (OLS) – dummy on skilled (Secondary +), Men



Marriage rates have traditionally been higher in the United States than in the other developed countries (Stevenson and Wolfers 2007). However, here we observe that the probability of marriage for skilled individuals relative to unskilled is higher in the US than in any other developed or developing country in our sample. A possible explanation for the recent upsurge in the marriage rate among skilled individuals (and women in particular) relies on the changing nature of marriage, which is shifting from a production- to a consumption-based legal union benefiting highly skilled individuals more than their less educated counterparts (Isen and Stevenson 2010). However, this explanation does not seem to apply to most countries in our sample, and in particular to Latin American countries, where skilled women are less likely to be married than unskilled women. Moreover, in Latin America and the majority of the countries in our sample, there is an asymmetry by gender: skilled women are more likely to be unmarried than unskilled women whereas skilled men are more likely to be married than unskilled men. We therefore want to explore this issue further by comparing the likelihood of family formation between skilled men and women.

When we look at the World Values Survey question about whether being a housewife is just as fulfilling as working for pay, we see that in Argentina and Chile, a lower share of skilled women agree with the statement than in other LAC, and the difference between unskilled women and skilled women is greater. These are also the countries where unskilled women are no more likely to be married than skilled women.

Figure 3. Women who agree that being a housewife is just as fulfilling as working for pay, 30-55

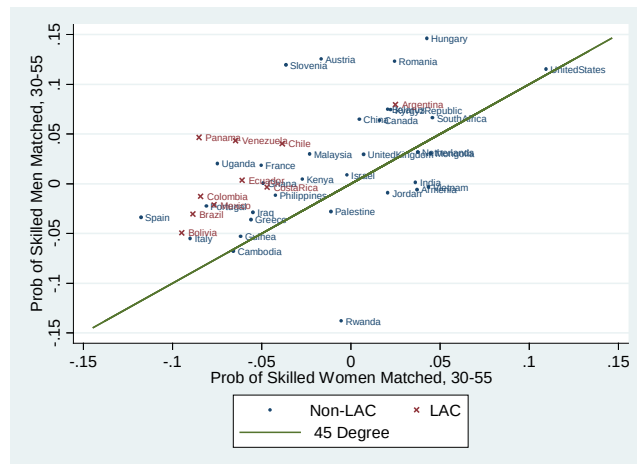


Fact #2: Skilled men are more likely to be married than skilled women

Next, if we plot the same coefficients β_1 from (1) for the probability of skilled women to be married (horizontal axis) against the probability of skilled men to be married (vertical axis) we can see whether there is asymmetric behavior between skilled men and skilled women in how they marry. In countries above the diagonal, skilled men are more likely to be married than skilled women (relative to unskilled men and women), while in countries below the diagonal, skilled women are more likely to be married than skilled men. We can see that most countries are above the diagonal.

The graph also allows us to identify the cluster of Latin American countries and compare them to the other countries. This cluster of Latin American countries are all above the diagonal, meaning that in all these countries, skilled men are more likely to be married than skilled women. We also see again that Argentina is an outlier with respect to the other Latin American countries, as skilled women are more likely to be married than unskilled women (a positive coefficient). Among the other countries, Southern European countries are concentrated in the bottom left corner with low probability of marrying for both skilled men and skilled women. As previously noted, on the other end of the spectrum, the United States exhibits the highest probability for both skilled men and women to be married. In two Arab countries (Palestine and Jordan) skilled women are more likely to be married than skilled men whereas the opposite holds true for Iraq. In African countries, but Rwanda, skilled men are more likely to be married than skilled women.

Figure 4. Probability of being married (OLS) – dummy on skilled (Secondary +) for men vs. women



From this and the previous fact we observe that the option value of staying single is greater for skilled than unskilled women and for skilled women than skilled men in Latin America, but not in other countries like the United States. There is evidence that being skilled and having stable employment is a desirable quality for men in the marriage market (Oppenheimer, Kalmijn, & Lim, 1997; Rapaport, 1964). On the other hand, there is no conclusive evidence that the same applies to women given the fact that in traditional societies they have not been expected to be the main “breadwinner” of the family.

We will not estimate returns to education due to data limitations in the census data for most countries. Increasing returns to higher education and declining returns to high school education have been found in almost all Latin American countries (for urban males, aged 30-50): the highest returns to primary education in Brazil (and lowest in Honduras), to secondary education in Brazil (and lowest in Bolivia), the highest returns to higher education in Chile (and lowest in Honduras) [Duryea et al. 2003]. Moreover, returns to education have been found to be higher for women than for men. Dougherty (2005) finds that education doubly affects the earnings of women. It increases their skills and productivity, and it reduces the gap in male and female earnings attributable to discrimination, which accounts for about half of the differential in the returns to schooling. Next, we examine how labor force participation varies for married individuals.

Labor Force

Fact #3: Married men are more likely to work than unmarried men, while married women are less likely to work than unmarried women.

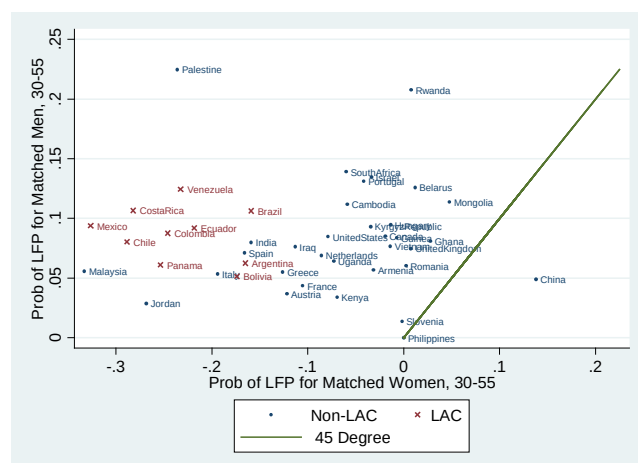
Next, we examine the labor market behavior of married individuals. In the figure below, we plot the OLS coefficient on a dummy for marital status in separate regressions for men (vertical axis) and women (horizontal axis) predicting whether someone is in the labor force after controlling for education. The plotted coefficients are β_1 from the following regression for each individual i :

$$Labor\ Force_i = \alpha + \beta_1 Married_i + \beta_2 Years\ of\ Educ_i + \varepsilon_i \quad (2)$$

We can see that almost all countries are above the diagonal line, meaning that almost everywhere, married men are more likely to work than married women. Moreover, we see that in all countries, married men are *more* likely to work than unmarried men (positive coefficient), while in most countries, married women are *less* likely to work than unmarried women (negative coefficient). China is only the exception to this. Given that it is a Communist country, with a strict family planning policy and a gender imbalance among the younger cohorts (cite), it would be interesting to study these aspects further for the effect on family formation and the division of roles within the household. Among countries with a positive probability of female labor force participation of married women relative to unmarried, we find Communist and former Communist countries (China, Slovenia, Czech Republic, Belarus, Mongolia and Romania). Also, in Rwanda the probability for married women to work is positive and this may be related to changes in the division of labor within the household determined by a marked gendercidal component the genocide (i.e., predominantly Tutsi and Hutu men were targeted).

In all Latin American countries, married women have a lower probability of working than unmarried and the magnitude is quite considerable: below -0.2 for seven out of ten Latin American countries we have in our sample. Similarly, the Southern European countries exhibit lower labor force participation probability for married women than unmarried, with being for Portugal closer to zero than for the other olive-belt countries. Other countries with very low probabilities for labor force participation of married women relative to unmarried include South Asian (India, Malaysia) and Arab countries (Jordan and Palestine).

Figure 5. Probability of labor force participation (OLS) for married men vs. women (dummy on married, i.e. relative to unmarried)



Country-level regression for Fig. 5: Latin America Dummy on Difference (Prob Married Men's LFP - Prob Married Women's LFP)

Latin America Dummy	0.173** (0.036)
---------------------	--------------------

As predicted by the production-based household model previously described, we expected that a greater share of married men than married women would be employed in the labor market. However, we also notice that in some countries the probability for married women to be in the labor force is positive. This can be due to the increased labor market returns to education and the higher opportunity cost for women not to be in the workforce (Attanasio 2009) but also to a change in the organization of the roles within the household. Therefore we are going to examine how households are sorted (FACT# 4) and how this may be related to the division of roles within the family and in the labor market (FACT# 5)

Characteristics of Spouse and Household

We next examine the composition of the household and the degree of assortative matching between spouses. We measure this by comparing spouses' level of education. We acknowledge the importance of other variables that could be good indicators of marital sorting. However, we focus on education categories rather than income because a wife's income may be dependent on the husband's. On the other hand, wages are available for a limited number of countries and will be explored later. According to the existing literature, the level of education is a good predictor of an individual's socio-economic status.

So far we have seen that in Latin America, skilled women are less likely to be married than unskilled women, and skilled women are less likely to be married than skilled men. Now we

look closer at the matching behavior of women more closely to understand the decision of marrying down or not marry at all.

Fact #4: Skilled LAC women are more likely to marry down than in other countries.

In the graph below, we plot the share of women 30-55 in each country who “marry down” (women who have more education than their husband) against the gender education gap in that country (average years of schooling of men – average years of schooling of women). We observe a clear Latin American pattern: of the countries in our sample, Latin American married women “marry down” more than women in other countries. We can also see that there seems to be a negative relationship between the gender gap and the share of women marrying down, i.e. as the gender gap reverses, more married women have more education than their spouses.

In order to test whether married women in Latin American countries are more likely to marry down than in other countries, we run a country-level regression where we regress the share of women marrying down on a dummy for Latin American countries and control for the gender gap and GDP. The regression results show that the coefficient on the Latin American dummy is positive, indicating that after controlling for the gender gap and GDP, women in Latin American countries do have an unusual tendency to marry down. The coefficient on the gender gap is negative, confirming that as the gender gap reverses, more married women have more education than their spouses.

Figure 7. Share of Wives Marrying Down

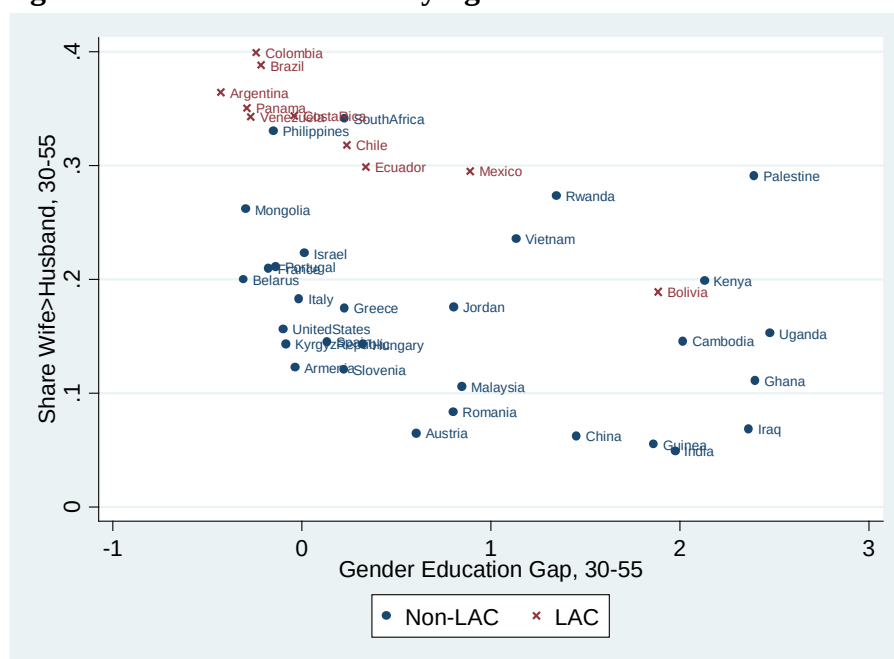


Table 1. Country-level regression of Share of Women Marrying Down

Gender Education Gap	-0.0625**
	(0.0126)
Latin America Dummy	0.1181**
	(0.0232)
GDP	-0.000004**
	(0.0000)
Constant	0.2547**
	(0.0243)
R-Squared	0.743

* significant at 5%; ** significant at 1%

Fact #5: In LAC, women who marry down are more likely to work than those who marry up/same.

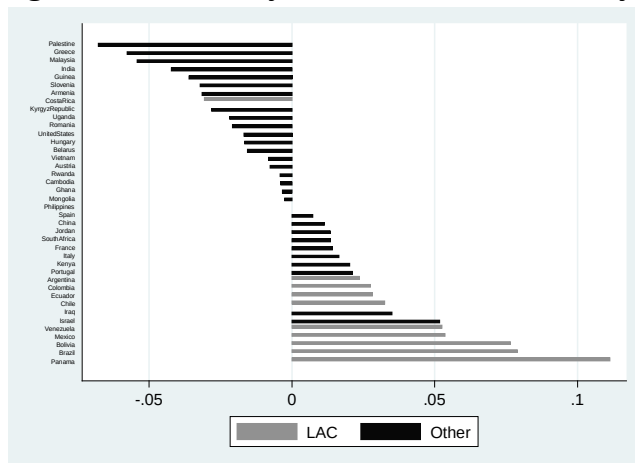
Now we look at the labor force participation among women who marry down. Do women who marry down tend to work more than other women or less? In the figure below, we present the coefficients on a dummy for women who marry down (compared to women who marry up or the same) predicting labor force participation, after controlling for the woman's education and her husband's education. This is β_1 from the following regression for each woman i in a country:

$$\text{Labor Force}_i = \alpha + \beta_1 \text{Marry Down}_i + \beta_2 \text{Yrs of Educ}_i + \beta_3 \text{Husband's Yrs of Educ}_i + \varepsilon_i$$

(3)

In our sample of countries, which are mostly developing countries, we see that in Latin America, women who marry down are more likely to work than women who marry up or the same. Meanwhile, in most other countries, including the United States, women who marry down are less likely to work (but the coefficient is small and likely not significantly different from 0). Women who marry down in Panama, Brazil, and Bolivia are especially more likely to work than their counterparts who marry up or the same.

Figure 8. Probability of LFP For Wives Marrying down



Country-level Regression for Figure 8:

Latin America Dummy on Difference of LFP For Wives Marrying down, controlling for GDP (but GDP not significant)

Latin America	0.057**
Dummy	(0.015)

We therefore find a pattern that is consistent with the US pattern highlighted by Chiappori et al. (2009) whereby, if married, women are more likely to “marry down”; however we find that this seems to be an even more defining characteristic of Latin American countries.

Fact #6: Women who marry down marry the “better” men (higher residual from wage regression)

So far we have only considered the education level of the husband a woman is married to. However, there are other characteristics of a husband that women care about. In this section, we consider what types of men women who marry down choose. If they marry down, perhaps they marry men who have better labor market outcomes. To investigate this further, we run the following wage regressions separately for the husbands of women who marry down, marry up, and marry husbands of the same educational level:

$$\text{Husband's Wage}_i = \alpha + \beta_1 \text{Husband's Yrs of Educ}_i + \varepsilon_i \quad (4)$$

After controlling for the husband’s education, we graph the residual ε_i from the wage regression – the part of wages that is not explained by education and not observed by us. This may include qualities like ability, attractiveness, height, etc. From the graphs, we see that for all Latin American countries, women who marry down marry the “better” men in terms of this residual. Residuals from husband wages and their level of significance are reported in the table in the next page.

Figure 9. Residual from Husband's Wages

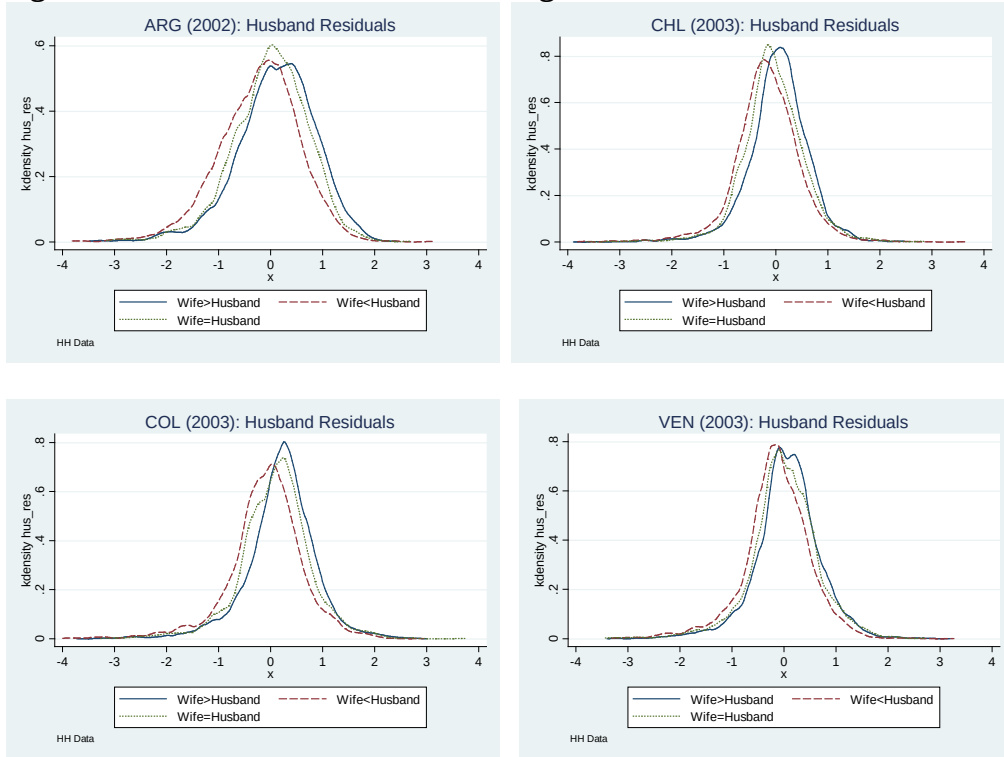


Table 2. Residual from Regression Predicting Husband's Wages

	Marry Down	Marry Up	Diff	P-value	Marry Same	Diff	P-value
ARG 2002	0.115	-0.229	0.344	0.000	-0.003	0.118	0.000
BOL 2002	0.447	-0.102	0.549	0.000	0.007	0.440	0.000
CHL 2003	0.047	-0.169	0.217	0.000	-0.045	0.093	0.000
COL 2003	0.148	-0.124	0.273	0.000	0.060	0.088	0.000
CRI 2004	0.069	-0.133	0.202	0.000	-0.093	0.162	0.000
DOM 2003	0.097	-0.105	0.202	0.000	0.047	0.050	0.219
GUA 2002	0.275	-0.026	0.301	0.000	-0.044	0.319	0.002
HON 2003	0.252	-0.164	0.416	0.000	0.037	0.215	0.000
JAM 2002	-0.136	-0.195	0.058	0.737	-0.093	-0.044	0.734
MEX 2004	0.166	-0.142	0.308	0.000	0.038	0.129	0.000
NIC 2001	0.115	-0.172	0.287	0.000	-0.103	0.217	0.003
PAN 2003	0.107	-0.189	0.296	0.000	-0.037	0.144	0.000
PER 2002	0.218	-0.240	0.458	0.000	0.001	0.217	0.000
PRY 2002	0.103	-0.135	0.238	0.002	0.008	0.095	0.281
SLV 2002	0.160	-0.136	0.297	0.000	0.007	0.154	0.000
URY 2003	0.145	-0.089	0.234	0.000	-0.014	0.159	0.000
VEN 2003	0.069	-0.144	0.213	0.000	0.002	0.067	0.000

IV. Discussion: Why is Latin America Different?

From our 7 facts, we see that Latin America appears to be different from other countries with regard to the marriage behavior of skilled and unskilled men and women. In this paper, we will not attempt to provide a formal explanation for these facts, but we will discuss some possible explanations of our findings and why we think they are puzzling. Our explanation will rely on a difference with respect to preferences about a wife's labor force participation

1) Skilled women are more likely to prefer "Working" rather than "Staying-at-home"

Increased Empowerment

Women are now more educated in Latin America, and in most countries of the region, women are more educated than men (Fact #0). This fact and labor market returns to education that are higher for women than for men have increased the opportunity cost for women to stay out of the workforce.

A large literature has shown that women are more risk averse than men in most contexts and tasks³ (e.g., Dohmen et al. 2005; Lusardi and Mitchell 2008; Aiano et al. 2010). That is, empirical evidence shows that men and women have different emotional reactions to uncertain situations and risk taking, and overall men exhibit greater confidence and risk tolerance⁴. Risk aversion has also been found to be decreasing with education and income levels (Riley and Chow 1992). In this regard, marriage has traditionally been perceived by women as a sort of insurance, and as a source of financial security that decreases the “overall variance of a married woman’s asset position” (Bertocchi et al. 2010).

Greater Instability Associated with Marriage

However, the family is not a static institution and significant changes have taken place reshaping the nature of marriage and leading to a greater instability associated with it. First of all, divorce rates have increased in Latin America (see table 1). Recent studies have shown that unilateral divorce laws have the effect of increasing women’s labor force participation by increasing the incentive to maintain one’s outside options and to acquire market skills (Stevenson 2008). Moreover, Rasul (2006) shows that marriage rates are lower in the context of unilateral divorce, where the divorce can be requested by either spouse. In this context, divorce consequently introduces a greater anticipation of potential instability from marriage.

Divorce laws are quite recent in many Latin American countries (Uruguay passed divorce laws in 1907, Mexico in 1917, Argentina in 1954, Brazil and Colombia in 1977, and Chile in 2004, (Lew and Eleche 2008). Evidence of the changes in legislation and the effects of the introduction of unilateral divorce are limited to developed countries. However, evidence related to developing countries shows that enforcing alimony and child support payments from their ex-husbands is often more difficult (Goode 1993). On the other hand, cohabitation is a phenomenon increasingly widespread in Latin America. There is no conclusive evidence on whether the *de facto* union leads to a lower investment in household production (Stevenson and Wolfers 2006) or is just revealing of a preference for a non-institutionalized union.

³ Recent reviews include Byrnes et al. (1999), Eckel and Grossmann (2008), Croson and Gneezy (2009).

⁴ See Croson and Gneezy (2009) for a review of the existing evidence.

Table 3: Changes in the Nature of Marriage for Latin American Women, 30-55

Country	Share of Single Women		Share of Married Women		Share of Divorced Women	
	1970	2000	1970	2000	1970	2000
Argentina	0.12	0.25	0.80	0.62	0.04	0.09
Bolivia	0.09	0.13	0.78	0.76	0.03	0.06
Brazil	0.10	0.15	0.77	0.72	0.05	0.08
Chile	0.15	0.18	0.74	0.71	0.06	0.09
Colombia	0.14	0.19	0.71	0.65	0.09	0.10
Costa Rica	0.15	0.15	0.76	0.73	0.05	0.11
Ecuador	0.11	0.14	0.78	0.74	0.05	0.09
Mexico		0.10		0.77		0.08
Panama	0.09	0.11	0.75	0.71	0.13	0.15
Venezuela	0.15	0.16	0.70	0.68	0.09	0.13

Note: The first and last wave of data available in each Census is used for each country.

2) *Men differ across countries with respect to their preferences about their wife's labor force participation*

Traditional Roles within the Household

One assumption in the recent literature on matching is that roles in the household are gender neutral. However, since we observe that women in LAC do tend to marry down, we consider whether traditional roles for men and women persist in LAC than in the US, for example. Using data from the WVS question about whether someone agrees that you “need children to be self-fulfilled” we see that LAC is very different from the US. In LAC, having children remains an aspiration for a greater share of women in Latin America, whereas a much lower share of women in the United States agree that they need children to be self-fulfilled. Surprisingly, we observe that a lower share of women in Latin America find housework as fulfilling as working in the labor market than in the US.

Table 4: Women's Preferences, Labor Force Participation and Having Children

Country	Being a housewife just as fulfilling as working for pay			Need children to be self-fulfilled		
	% skilled women	% unskilled women	difference	% skilled women	% unskilled women	difference
Argentina	40.51	56.33	-15.82	36.67	59.24	-22.57
Chile	41.03	60.10	-19.07	57.14	62.61	- 5.47
Mexico	67.44	81.14	-13.70	28.89	51.21	-22.32
Peru	60.39	57.72	+ 2.67	38.73	46.41	- 7.68
Venezuela				49.58	61.31	-11.73
Spain	53.85	55.33	- 1.48	34.92	42.93	- 8.01
USA	81.82	70.80	+11.02	12.05	16.89	- 4.84

Note: share of women who either “strongly agree” or “agree”; data are only available for a limited number of Latin American countries.

Source: World Value Surveys (2000, 2005)

For men, we use the WVS questions about whether being a housewife just as fulfilling as working for pay and whether a working mother can have good relationship as non-working mother. We see that for the most part, men in LAC countries are more likely to strongly agree that being a housewife is just as fulfilling as working for pay. Meanwhile, they are more likely to strongly disagree that a working mother can have a good relationship with her children as a non-working mother.

Table 5. Men's Preferences, Women Working Outside of the Home

	Being a housewife just as fulfilling as working for pay	A working mother can have good relationship as non-working mother
	% Strongly Agree	% Strongly Disagree
Argentina	20.02	6.19
Chile	33.23	5.64
Mexico	36.9	10.37
Peru	17.53	1.92
Venezuela	42.38	15.99
Spain	23.59	3.41
Canada	26.57	1.73
USA	22.91	3.94

Source: World Value Surveys (2000)

We consider the possibility that men in Latin American countries prefer skilled women to stay at home due to the existence of some traditional social norms that lead to gendered roles in the household, whereas men in the U.S. prefer skilled women to work outside of the home so that they can have a greater income and higher levels of joint consumption. Moreover, we assume that educated women in both countries prefer to work rather than staying home. This is because higher labor market returns to education for women have increased the opportunity cost for women to stay out of the workforce. We assume that there is an increased utility for educated women to work which is related to the fact that educated women would pursue a “career” as opposed to having a low-skilled “job”. This difference with respect to the men and women’s preference of a wife’s labor force participation is enough to change the equilibrium of the matching process.

We assume that there are some gains associated with marriage and these are related to the spouse’s level of schooling and earning capacity, to some returns for the woman to stay at home, and the pleasure of being matched. Specifically the three factors we are going to consider are:

- Earning capacity (wages)
 Skilled individuals earn a wage h
 Unskilled individuals earn a wage l

 Where: $h > l$
- Returns to “stay at home”
 R_w : women’s return to “stay at home”
 R_m : men’s return of wives’ “staying at home”

Where: $R_w < R_m$

Because of women's disutility from housework (e.g., cooking: both spouses enjoy but women also make the effort of cooking)

- Balance of Power within the Household

Monetary income gets distributed as a domestic bargain that has to do with the relative outside option of each partner. Consider Π to be the share of household monetary income appropriated by the husband.

Π_{ss} : if both spouses are skilled

Π_{uu} : if both spouses are unskilled

Π_{us} : if man is unskilled and woman is skilled

Π_{su} : if man is skilled and woman is unskilled

Where:

$$\Pi_{su} > \Pi_{ss}$$

$$\Pi_{uu} > \Pi_{us}$$

We assume that Π_{ij} is not dependent on whether the wife stays at home or works. This is a strong assumption that makes our result harder to obtain. This is so because if a working woman's outside option is greater if she works than if she stays at home, then she may want to work because it improves her power within the household but that is the reason why men would rather have her stay at home. We assume away this effect in this first discussion. We also assume that there is no gender discrimination in the labor market so that the outside options are symmetric for both spouses. More simply, let us assume:

$$\Pi_{ss} = 1/2$$

$$\Pi_{uu} = 1/2$$

$$\Pi_{su} > 1/2$$

$$\Pi_{us} < 1/2$$

We assume that men can be skilled or unskilled, married or single, but they always work, whereas women can be skilled or unskilled, married or single but they can either work or stay at home. Individuals maximize the following utility function:

$$U(W\Pi, R)$$

Where W is the wage level (i.e., high or low as previously described), Π is the control over wages which depends on the bargaining process within the household, which is related to their income earning potential outside of the union, and hence on their relative skill level. R is the gender-specific return from the wife staying at home.

The payoff matrix for men and women can be represented as follows:

		Marry a Skilled Woman		Marry an Unskilled Woman	
		Work	Stay Home	Work	Stay Home
Skilled Man	h	$2h \Pi_{ss}$ [$2h(1-\Pi_{ss})$]	$(h + R_m)\Pi_{ss}$ [$(h + R_w)(1-\Pi_{ss})$]	$(h + l) \Pi_{su}$ [$(h + l) (1-\Pi_{su})$]	$(h + R_m)\Pi_{su}$ [$(h + R_w) (1-\Pi_{su})$]
Unskilled Man	l	$(1+h) \Pi_{us}$ [$(1+h) (1-\Pi_{us})$]	$(1 + R_m)\Pi_{us}$ [$(1 + R_w)(1-\Pi_{us})$]	$2l \Pi_{uu}$ [$2l(1-\Pi_{uu})$]	$(1 + R_m)\Pi_{uu}$ [$(1 + R_w)(1-\Pi_{uu})$]

Note: Payoffs for women are in parentheses

We show what conditions determine matching outcomes.

- A skilled man would prefer a stay-at-home skilled wife if:

$$(h + R_m)\Pi_{ss} > 2h \Pi_{ss}$$

Which implies that a skilled man prefers a skilled stay-at-home wife if he values the returns from a stay-at-home wife more than her wage, thus if:

$$R_m > h$$

- A skilled man would prefer an unskilled stay-at-home wife to a skilled working wife if:

$$(h + R_m)\Pi_{su} > 2h \Pi_{ss}$$

Which simplifies to:

$$R_m > 2h \Pi_{ss} (1 / \Pi_{su}) - h$$

where $2h \Pi_{ss} (1 / \Pi_{su}) - h < h$ since $(\Pi_{ss} / \Pi_{su}) < 1$

Note that this is less stringent than: $R_m > h$

Two issues are highlighted by these conditions: it is not just the valuation of h vs R_m but also the fact that marrying an unskilled woman implies greater control over the resources of the household since $\Pi_{ss} < \Pi_{su}$.

- A skilled woman prefers to work rather than being married and staying at home with a skilled man if:

$$2h(1-\Pi_{ss}) > (h + R_w)(1-\Pi_{ss})$$

Which implies that a skilled woman prefers to work if her wage is greater than her returns from being a stay-at-home wife, that is if:

$$h > R_w$$

- A skilled woman who marries an unskilled man prefers to work rather than staying at home with an unskilled man if:

$$(h+l)(1-\Pi_{us}) > (R_w + l)(1-\Pi_{us})$$

Which implies that a skilled woman prefers to work if her wage is greater than her returns from being a stay-at-home wife, that is if:

$$h > R_w$$

- A skilled woman prefers to marry an unskilled man and to work rather than remaining single if:

$$(l+h)(1-\Pi_{su}) > h$$

Which means that a woman would be willing to “marry down” (i.e., marry a man with a lower level of education) if the wage differential can be compensated by her greater power in the household:

$$\left(1 - \frac{(1 - \pi_{us})}{\pi_{us}}\right) > \frac{h}{l}$$

We assume men and women are symmetric, but they differ with respect to their returns from a stay-at-home wife, where $R_m > R_w$ being housework associated with a cost for women (i.e., opportunity cost and effort).

Therefore, in the setting described above, the Nash-equilibrium is the following:

- The skilled man would marry an unskilled woman who stays at home if the skilled woman would rather work than stay at home, provided that:

$$R_m > h \left(\frac{\pi_{ss}}{\pi_{su}} - 1 \right)$$

- The skilled woman would marry an unskilled man rather than staying single if the utility arising from the household balance of power is greater than the wage differential (condition previously shown).
- The unskilled man would marry a skilled woman who works if her earning capacity is high enough to compensate him from the loss of bargaining power within the household:

$$h > (1/\Pi_{us} - 1) l$$

- The unskilled woman would marry a skilled (or unskilled) man and stay at home rather than remaining single if:

$$R_w > 1$$

Which is less stringent than $R_w > h$ as an unskilled woman, all else equal, has a lower labor market opportunity cost than a skilled woman

To explain the puzzle in our facts we assume that men in Latin America and the U.S. differ with respect to their preference about their wife's labor force participation where:

Latin American men prefer a stay-at-home wife than a working wife:

$$R_m > h$$

Whereas for American men:

$$R_m < h$$

This leads to an entirely different matching equilibrium. In the US a skilled man wants to marry a skilled woman and have her work, which also happens to be her best option. By contrast, in Latin America, a skilled woman would also rather marry a skilled man and work, but men would

rather marry an unskilled woman who stays at home. So a skilled woman is left with the option of remaining single and working, marrying an unskilled man who will allow her to work or marrying a skilled man who requires that she stay at home. Given these options, she would rather marry a low skilled man provided his income is not too low, but otherwise, she would rather stay single.

These conditions help explain why we observe so few skilled Latin American women marrying skilled men and when they do so, they tend to stay at home. By contrast, they marry down more frequently and when they do so, they both work and tend to marry the “better” men. Otherwise, they are better off staying single.

V. Conclusion

We observe that the marriage market in Latin America shows very different patterns than those observed elsewhere, and especially those observed in the US, where much of the literature has been focused. We have shown that educated women in Latin America are less likely to get married, and when they marry, they are more likely to marry someone with a lower level of education. When women marry a less skilled man, they are more likely to work than when they marry an equally or more highly skilled man. Moreover, when women marry a less skilled man they tend to marry the “better” men in that these men earn a higher income than would be expected given their other observables.

To account for the differences in behavior we observe, we require mainly a difference in the valuation of the returns to a skilled woman staying at home. Latin men value their return from staying at home more than their market wage but women disagree. Because of this, men would rather marry down and have their wife stay at home. Women would rather marry down and work if the husband’s income earning potential is high enough, but would rather stay single otherwise.

We have assumed that power depends on potential income rather than actual income, so that a woman’s power does not depend on whether she works or not. But if we relax this assumption, it may be that a woman’s return from work is not just her income but also her increased power within the household. This only helps strengthen our effect, but would not help distinguish Latin America from other regions.

Positive assortative matching is assumed as a *neogenous* preference in the literature on marriage markets in the US, but even if it existed, it may not overwhelm other considerations such as intra-household power and the different perception of the returns from staying at home for husbands and wives. To explain our results we not only need that Latin men have different preferences than US men in the sense that the former consider $R_m > h$ while the latter have $R_m < h$. It is also the case that Latin women tend to disagree because they value $R_w < h$ where $R_m > R_w$. This wedge would grow if there is a difference in the woman’s household power depending on whether she actually works or not, as her human capital may erode if she stays at home as argued in Attanasio et al. (2009).

We note that programs that make it easier for women to work, such as day care centers, would probably tend to cause greater female labor force participation, *ceteris paribus*, but it would also imply that disagreements within the household over the advantages of staying at home would increase. If these policies do not affect the return of a stay home wife relative to a man, they may not affect the marriage market equilibrium.

References

- Arano, K., Parker, C. and Terry, R. (2010). "Gender-Based Risk Aversion and Retirement Asset Allocation," *Economic Inquiry* 48, 147-155.
- Attanasio O., H. Low and V. Sanchez-Marcos (2009). "Explaining Changes in Female Labour Supply in a Life-cycle Model", *American Economic Review*, vol. 98(4), pp. 1517-52.
- Atal, Hopo and Winder (2009), "New Century, Old Disparities. Gender and Ethnic Wage Gaps Latin America", *IDB WP 109*
- Bertocchi G., M. Brunetti and C. Torricelli (2010), "Marriage and Other Risky Assets: A Portfolio Approach", CEPR Discussion Paper No. 7162
- Byrnes, James P., David C. Miller, and William D. Schafer (1999). "Gender Differences in Risk-Taking: A Meta-analysis." *Psychological Bulletin*, 125(3): 367–83.
- Chiappori P. A., M. Iygun and Y. Weiss (2009), "Investment in Schooling and the Marriage Market", *American Economic Review*, 2009, 99:5, December, 1689-1713.
- Croson, R. and Gneezy, U. (2009). Gender Differences in Preferences, *Journal of Economic Literature* 47, 448–474.
- Cruces and Galiani (2007). "Fertility and Female Labor Supply in Latin America: New Causal Evidence", *Labour Economics*, 14, pp.565-573
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J. and Wagner, G. G. (2005). Individual Risk Attitudes: New Evidence from a Large, Representative, Experimentally-Validated Survey, DIW Discussion Papers 511.
- Duryea S. & Sebastian Galiani & Hugo Ñopo & Claudia Piras (2007). "The Educational Gender Gap in Latin America and the Caribbean," RES Working Papers 4510, Inter-American Development Bank, Research Department
- Suzanne Duryea & Olga Lucia Jaramillo & Carmen Pagés-Serra (2003). "Latin American Labor Markets in the 1990s: Deciphering the Decade," RES Working Papers 4331, Inter-American Development Bank, Research Department
- Eckel, Catherine C., and Philip J. Grossman (2008). "Men, Women and Risk Aversion: Experimental Evidence." In *Handbook of Experimental Economics Results, Volume 1*, ed. Charles Plott and Vernon Smith, 1061–73. New York Elsevier.
- Goode, Williams J., (1993). *World Changes in Divorce Patterns*. New Haven and London: Yale University Press.

Adam Isen & Betsey Stevenson, (2010). "Women's Education and Family Behavior: Trends in Marriage, Divorce and Fertility," NBER Working Papers 15725, National Bureau of Economic Research

Jelin, E. and Díaz-Muñoz, A. R. (2003). Major trends affecting families: South America in perspective. United Nations Department of Economic and Social Affairs Division for Social Policy and Development Programme on the Family. Lew and Beleche 2008.

Lusardi, A. and Mitchell, O. S. (2008). Planning and Financial Literacy: How Do Women Fare?, *American Economic Review, Papers & Proceedings* 98, 413–417.

Psacharopoulos, George & Tzannatos, Zafiris (1993). "Economic and Demographic Effects on Working Women in Latin America," *Journal of Population Economics*, Springer, vol. 6(4), pages 293-315, November

Rasul, Imran (2006). Marriage markets and divorce laws. *Journal of Law, Economics, and Organization* 22, no. 1:30–69.

Riley, William B., Jr., and K. Victor Chow (1992). Asset Allocation and Individual Risk Aversion, *Financial Analysts Journal*, November-December: 32-37.

Stevenson, B. (2008). "Divorce Law and Women's Labor Supply," NBER Working Paper, No. 14346.

Stevenson, Betsey and Justin Wolfers (2007). Marriage and Divorce: Changes and Their Driving Forces. *Journal of Economic Perspectives*, Vol. 21, No. 2 (Spring, 2007), pp. 27-52.

Betsey Stevenson & Justin Wolfers (2006). "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress," *The Quarterly Journal of Economics*, MIT Press, vol. 121(1), pages 267-288, 02

United Nations (2000). Demographic Yearbook 1960-1999. New York: United Nations.

World Bank Report (2003), "Inequality in Latin America and the Caribbean: Breaking with History?"