

Do Educated Women Less Likely to get Married?

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Abstract:

In the past, there are some research indicate that highly educated women marry less. But a new analysis of U.S. census data indicates that--despite cultural messages to the contrary--the success gap, in which better educated women marry less, is actually shrinking. The purpose of this article is to analyze how the increase of women's educational attainment has influenced marriage. Also this paper is going to look into the effects women's education has on her spouse. Many studies show that women's education level can increase her husband's earning at higher occupation level.

JEL Classification: J1,I21

Keywords: Marriage; Women; Education

I. Introduction

Today, more and more people realized the importance of a good education. Over the years, social views have changed; the role of women had transformed in the labor market as well as in the family. Nowadays, women are encouraged to attain higher level of education and achieve career success of their own instead of get marry young and become a house wife. Evidence suggests that, up to a point, an additional year of schooling is likely to raise an individual's earnings about 10 percent. However, several studies showed that women face a conflict between their roles in the two worlds. Many research suggested that there is the "success penalty" or the disadvantage to women in the marriage market.

While male are more likely to find a wife or have a family if he is successful, women seems to be the opposite. According to Matsui (2004), highly educated women, working either full time or part time or as students and living in a larger city all tend to delay marriage. Also, in Elaina Rose's 2003 study, she pointed out several source of the penalty such as the "female hypergamy" and other psychological behaviors of male chauvinistic.

The aim of this paper is to examine whether higher education level would disadvantage women in marriage. If education does disadvantage women in marriage, would women with different race receive a divergent treatment. Using econometric examination of the evidence to explain and predict the "magic number" of education attainment that is best for marriage.

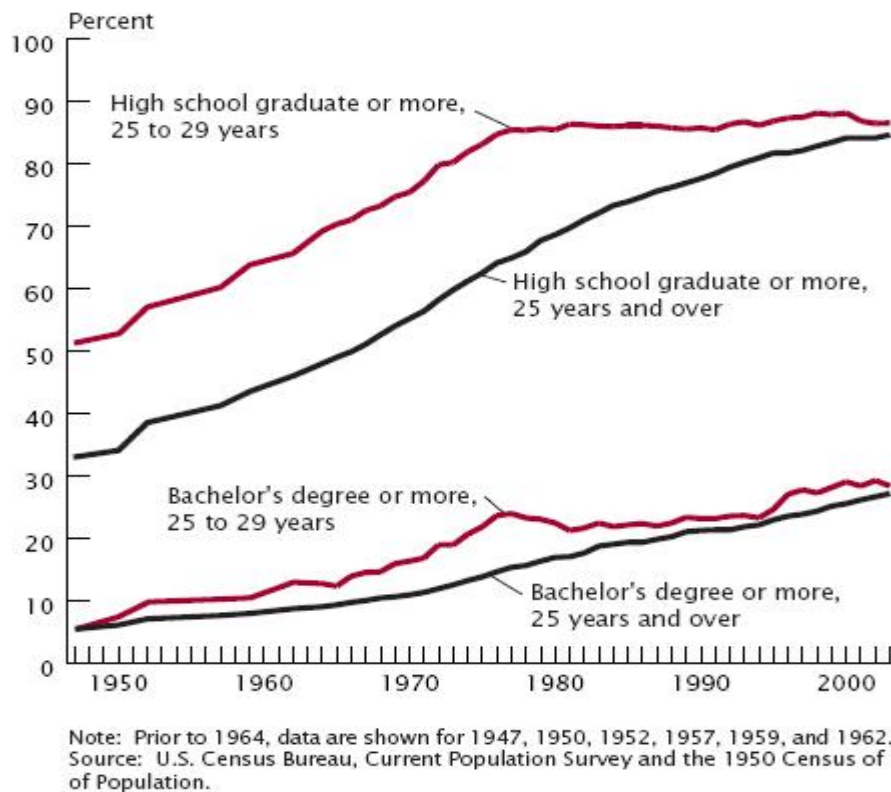
II. Trend

The population in the United States is becoming more educated, but significant differences in educational attainment lie within age, sex, race, and origin. In 2003, over four-

fifths (85%) of all adults 25 years or older reported they had completed at least high school; over one in four adults (27%) had attained at least a bachelor's degree.

Figure 1

**Educational Attainment of the Population
25 Years and Over by Age: 1947 to 2003**

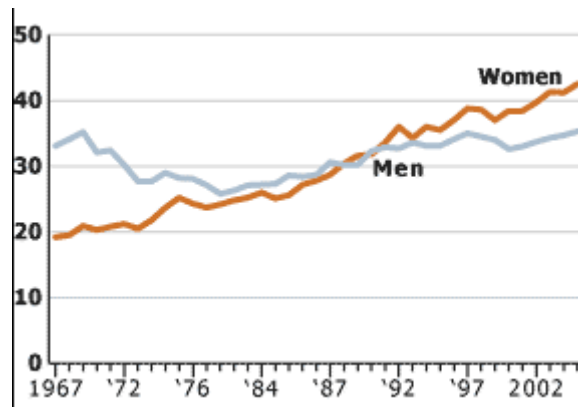


Study done by the census also shows that the younger population is more educated than the older population.

Figure 2 shows that since 1991, the proportion of young women enrolled in college has exceeded the enrollment rate for young men, and the gap has widened over time. In 2005, about 43 percent of women ages 18 to 24 were enrolled in college, compared with 35 percent of young men. This represents a major shift in the gender balance at U.S. colleges and universities. In 2005, women make up the majority—54 percent—of the 10.8 million young adults enrolled in

college. Several reasons have been cited for this crossover, including gender differences in academic achievement (girls generally do better in high school than boys), changes in societal values, and a shift in women's expectations for future employment.

Figure 2: Proportion of 18 to 24 year old Men and Women Enrolled in College, 1967 -2005



Source: U.S. census Bureau

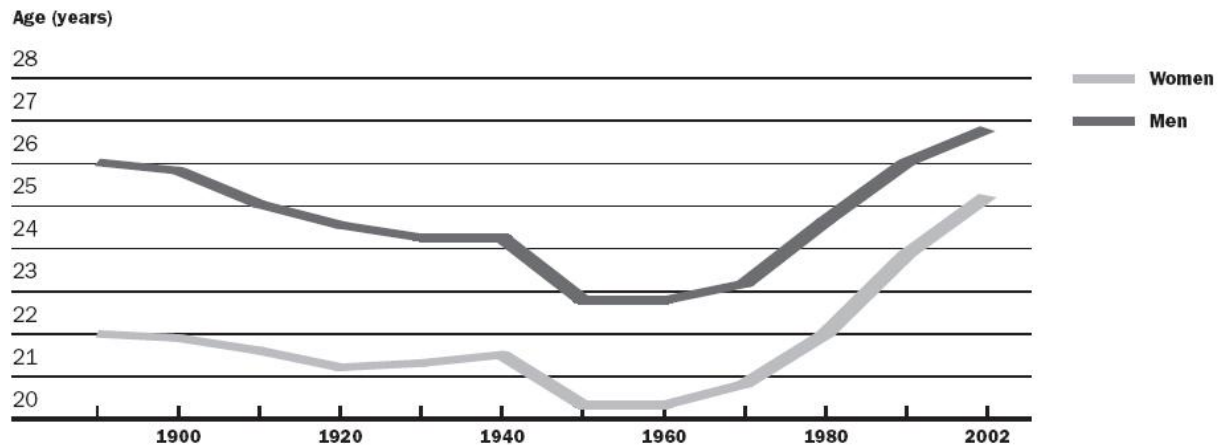
Some researchers have focused on these trends as a positive development for young women, who still lag behind men in labor force participation rates and earnings. Others view these trends as evidence of the growing social, behavioral, and economic problems facing young men, particularly those in lower-income groups.

Colleges need to balance women's advantage in enrollment rates against their disadvantage in the post-college labor force. Women's earnings, relative to those of men, have not kept up with their gains in educational attainment. In 2005, the median weekly earnings for women working full-time were \$585, compared with \$722 for men.

The tradeoff that women make between education and marriage seems to be going the way. In 1980, a woman with three years of graduate school was 13 percent less likely to be married than a woman with only a high-school diploma. By 2000, that gap shrank to less than 5 percent.

Figure 3 shows the median age at marriage, for men and women from 1890 to 2002. In 1890 the median age was relatively high, about twenty-six for men and twenty two for women. During the first half of the twentieth century the typical age at marriage dropped. By the 1950s it had reached historic lows, roughly twenty three for men and twenty for women. Women today are marrying substantially later than they ever have.

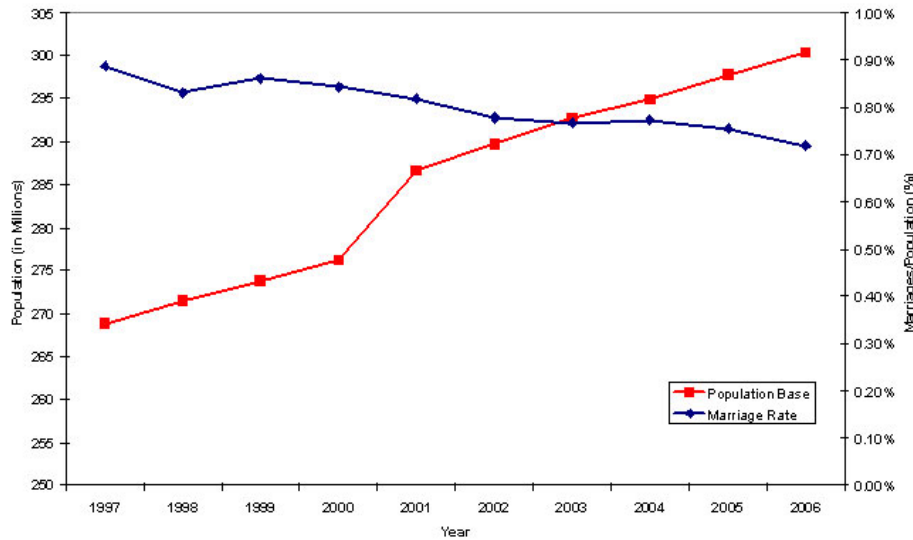
Figure 3: Median Age at Marriage, 1890-2002



Source: U.S. Bureau of the Census, "Estimated Median Age at First Marriage, by Sex: 1890 to Present," 2003, www.census.gov/population/socdemo/hh-fam/tabMS-2.pdf (accessed July 23, 2004).

About half of young adults live with a partner before marrying. Cohabitation is far more common today than it was in the early or mid-twentieth century. Cohabitation today is a diverse, evolving phenomenon. For some people, it is a prelude to marriage or a trial marriage. For others, a series of cohabiting relationships may be a long-term substitute for marriage which would in terms decrease the marriage rate (Cherlin, 2005). Figure 4 shows that since 1997, U.S. marriage rate has been declining while the population base increased.

US Population and Marriage Rates 1997 to 2006



III. Literature Review

There are many reasons to believe that education can improve women’s well being, even for women with very limited labor force participation. In particular, evidence suggests that education reduces mortality (Lleras-Muney, 2002), increases the cognitive ability of women’s children (Murnane, 1981), reduces the incidence of criminal activity (Lochner and Moretti, 2001), aids in overcoming addiction (Sander, 1995), and improves the health of women’s children (Thomas, Strauss, and Henriques, 1991 and Currie and Moretti, 2002). Goldin (1992) presents suggestive evidence that college attendance may have improved the marriage outcomes of women who attended school in the 1960’s and 1970’s.

Rose (2003) discussed the source of women’s success penalty, female hypergamy, which says that women tends to marry up thus lack of suitable husbands for high caste girl. On the contrary, men tends to “go down a step to take a wife” because “a woman from a more distinguished family than her husband may consider herself superior and act haughtily toward

him". Hypergamy with respect to education can lead to a success penalty as it tends to disadvantage women at the top of the distribution. Similar this idea was Becker's positive assortative mating theory. He suggests that when one spouse specializes in household production, there will be negative assortative matching on wages though there is likely to be positive assortative mating on non-wage income and spouse characteristics. However, Juhn and Murphy (1997) think that men with high wages tend to marry women with favorable labor market prospects, because marrying a college educated spouse is associated with significantly higher family income. Women who attended college were much more likely to marry college educated husbands.

According to Rose (2003), there is indeed a tradeoff between motherhood and marriage for women with more than a college degree. 81.5 percent of women with 16 years of education were mothers at age 40-44, while only 63.4 percent of women with a professional degree or doctorate had children. The difference in black and white marriage rates lies primarily at the lower end of the education distribution. Lefgren and McIntyre found that beyond high school, education is associated with reductions in the probability of ever having been married. Beyond college completion, additional education is associated with fewer and less stable marriages.

IV. Data and Methodology

Data in this study relies on the 2008 Current Population Survey. The data set contains information on marital status, race, education attainment, metro level, as well as total personal income. Using these data, we will be exploring the relationship between education attainment

and marriage outcomes for women between the ages of 35-45 who are currently residing in the U.S. The final sample consists of 29,904 women. Table 1 shows summary statistics.

The average age for women in this sample is 40 – about the middle of the range of ages we are examining. Nearly 87.85% (26273 women) have been married at least once, only 12.14% (3631 women) have never been married. 77.48% of women are in the labor force and 22.52% of women are not. The average income for women in our sample is \$23,479.83. Education in this study is reported in categories as opposed to years. For our analysis, we combine all individuals who complete less than or equal to 12th grade (receive no diploma). We also group together all individuals who are high school graduate or attended college but did not earn a bachelor or received associate degree. Finally, we combined masters and professional degrees.

Table1: Summary Statistics for 2008 Current Population Survey

Variable	Mean
Age	40 (3.14)
Income and Wages	23,479.83 (32,132.28)
In Labor force	0.7748 (0.44)
Low education (less than 12th grade)	0.1072
High school graduates	0.5911
College graduate	0.2093
Master and professional degrees	0.0925
Total observations	29,904

Using the 2008 CPS data, we begin to analyze the relationship between education and marriage outcomes. As mentioned earlier, education is reported in categories as opposed to years. For this reason we focus on the marginal change in marriage outcome associated with moving up to the next education category.

Prior studies have largely utilized multiple regression, probit, or logit models to analyze statistical relations between marriage and other explanatory variables. Because of the discrete nature of the dependent variable in this study, ordinary least squares regression would be an inappropriate model.

The standard ordered probit model is widely used to analyze discrete data of this variety and is built around a latent regression of the following form:

$$\hat{Y} = x'\beta + \varepsilon$$

Where x and β are standard variable and parameter matrices, and ε is an error term.

Using the ordered probit model, we included the following explanatory variables: race, education level, metropolitan of reside city, and income level.

$$Y^*_1 = \beta_0 + \beta_1 \text{Metro}_i + \beta_2 \text{Race}_i + \beta_3 \text{Educ}_i + \beta_4 \text{Inc}_i + \varepsilon \quad (1)$$

Where

Y^*_1 = unobserved marital status

Y_i = observed marital status

$Y_i = 0$ if $Y^* \leq 0$, indicating the woman is not currently married

$Y_i = 1$ if $0 \leq Y^* < \mu_1$, indicating the woman has at least been married once

One possible difficulty in interpreting the results of parameters estimated for equation (1) involves the use of Metro and Inc as explanatory variables. Never the less, we find that Income is an important variable to examine because some studies have shown that income level has close correlation on marriage rate. And it also is important to when conducting marginal analysis. But from a practical standpoint, the primary rationale for placing the income level in the model is that woman with higher income tend to have higher position jobs which require a higher level of

education consequently defer the marriage age. Also, the opportunity cost for a women in high level position is much higher than other women, therefore, they are less prompt to leave their high paid job to get married and to start a family.

V. Empirical results

Table 2 reports the results of the regression (1). The likelihood ratio chi-square of 1279.56 with a p-value of 0.000 tells us that our model as a whole is statistically significant, as compared to model with no predictors. At 5% significance level, all other variables show to be significant, except Metro level. For female ages between 35 to 45, the negative coefficient for income level and black suggest a negative relationship between marriage. Dy/dx represents the marginal effect of the regression.

Table 2: Regression results

Variable	Coefficient	Standard Error	Dy/dx	P > z
Metro	.0133361	.0098953	.0025258	0.178
Age	.0295089	.0030805	.005589	0.000
Incwage	-2.30e-06	2.80e-07	-4.35e-07	0.000
White	.3655167	.0583832	.0794416	0.000
Asian	.2299523	.0725908	.0381904	0.000
Black	-.4859689	.061616	-.1139563	0.000
Mp	.2484719	.0373603	.045128	0.000
Cg	.293801	.0545458	.0471297	0.000
hs	.2301687	.0353469	.0437882	0.000
cons	-.4189307	.1396479		

(*) dy/dx is for discrete change of dummy variable from 0 to 1

(*) LR chis2(9) = 1279.56, prob>chi2 = 0.000

Table 3 shows the predicted probabilities when variables are set to specific values. As we see from the table, for a black women, if she holds a master or professional degree, her chance of being married at age 35 is 78%, while she would have 82% chance of being married is she only

has a college degree, which confirm the success penalty other studies have been suggesting. A black woman would have a higher chance of being married at 35 if she is a college graduate than if she holds a master degree. However, if the same black women has only a high school degree, her chance of being married at age 35 decreases to 77.4%, which means a low education has negative effect on marriage outcome. The same black woman with instead of age 35, she is now age 45, her chance of being married does not varied much across with different levels of education. This is not surprising because more women would be married at least once at age 45. Same trend for white and Asian women, however with a lower degree.

Table 3: Predicted Probabilities of Marriage and Education

	35	45
Master or Professional Degree		
Black	0.7881	0.8632
White	0.9028	0.9444
Asian	0.9267	0.9597
College Graduate		
Black	0.8209	0.8876
White	0.9217	0.9565
asian	0.9419	0.9690
High School Graduate		
Black	0.7743	0.8527
White	0.8944	0.9389
Asian	0.9199	0.9554

Table 4 illustrates women's financial wellbeing and education in the United States. The incomes reported are the predicted incomes for women of the given education category. The change in incomes is the marginal increase in income associated with increasing one educational category. According to the results, we can draw conclusion that in the United States, women who have never been married tend to make more money than married women in the job market when

having similar education background. Moreover, women who have never been married receive greater benefits than married women when she increases her education attainment. For married women, on average income increase by \$10,3078 when increase education level from college graduate to master or professional degrees. On the other hand, income for women who never married enhance by \$19,207, nearly doubles, by going from college graduate to have master or a higher degree.

Table4: Women’s Financial Wellbeing and Education

	Married Women Income	Change Married Women Income	Never Married Women Income	Change Never Married women Income
Loweduc	7942.083		7156.493	
HS	17544.02	+9601.937	19128.6	+11972.107
CG	23342.11	+5798.09	25519.24	+6390.64
MP	33720.65	+10378.54	44726.49	+19207.25

Table 5 summaries the probability of women married at age 35 and at age 45. We notice that with the same income, women who are older are more likely to be married or at least married once. For a women with master degree or higher, if she is at age 45, she would have less change of being married. However, for women with a college degree, she is more likely to be married at age 45, that is probably because most women in this sample at 45 are currently married or at least married once. We think that is because education takes time, therefore most women would have to defer their timing on marriage to pursue their education. For all women at any age level, with a low education level (less than twelve years of education) are less likely to be married.

Table 5: Probability of Women Married

	Age 35	Over Age 45
Same Income Level	-1.95e-06 (1.05e-06)***	-2.51e-06 (9.08e-07)***
MP	.1547215 (.0665018)*	.0922271 (.0747227)*
CG	-.1347805 (.1323798)	.2649926 (.1653271)
HS	-.0986707 (.0618746)*	.0426073 (.068662)*
Loweduc	-.0289546 (.1149206)	-.5116825 (.1129493)

VI. Conclusion

Using the 2008 CPS data, this paper try to examine whether high education attainment would disadvantage women in the marriage market. Due to different limitations, the paper was not able to conclude on the exact effects of education on marriage outcome. The result is measure in the likelihood of being married once or never been married. The evidence in this paper suggests that education is correlated with women's well-being in the marriage market. There is little indication that highly educated women are being disadvantage. College graduate seems to have the highest percentage of being married at least once at age 35-45. On the other hand, the more schooling a woman receive; she is more likely to be married at least once. Women who did not receive at least twelve years of school have a higher probability not married, same for all races.