Marriage change in Taiwan:
Is gender inequality or education driving the change?

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The past twenty years have seen two distinct marriage trends in Taiwan: rising age at marriage and declining proportion currently married at every age (see Figure 1 and Table 1). Taiwan appears to be on the path of later and less marriage, first observed in Japan and becoming more common throughout East Asia (Jones 1997; Retherford, Ogawa et al. 2001; Yip and Lee 2002). Furthermore, there are not yet signs that trends towards lower marriage prevalence have begun to stabilize (Thornton and Lin 1994).

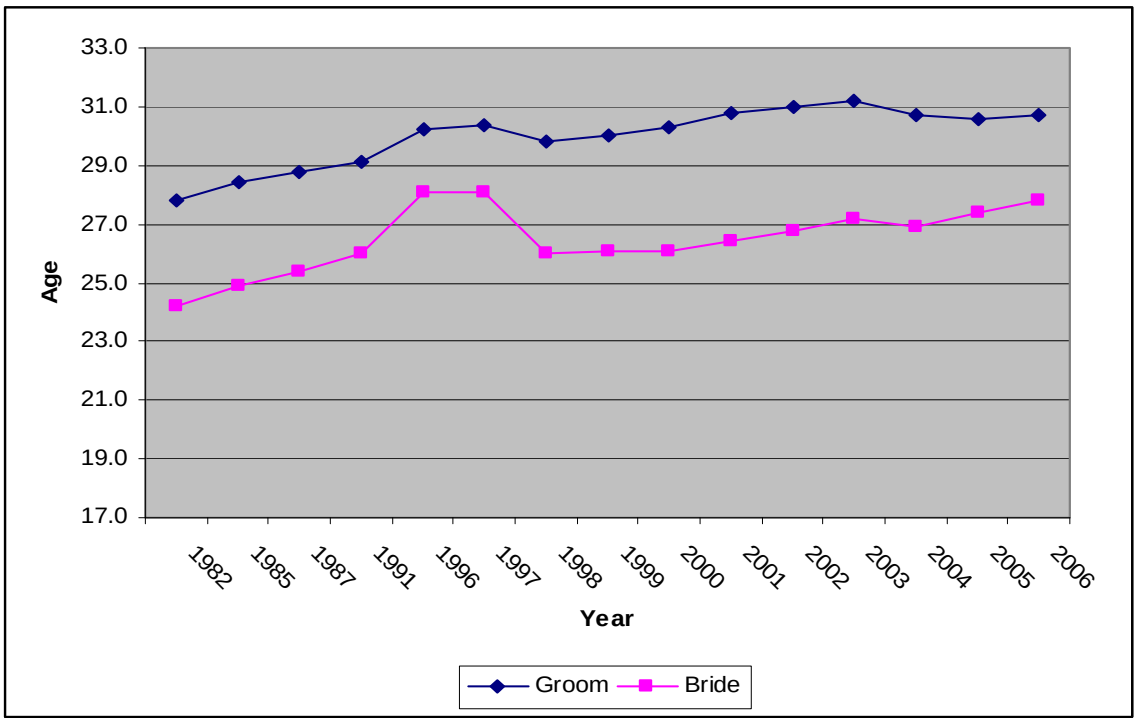
In the East Asian context two explanations of marriage change have been proposed and thus are broadly relevant to Taiwan: gender inequality within the family system and educational change. Gender theories focus on the disjuncture between gender equality in individual-oriented institutions and gender inequality within family-oriented institutions. Education-based explanations, on the other hand, look to the workings of the marriage market within the context of dramatic changes in educational opportunities. The key difference between gender and educational explanations is that educational theories see no change in the intent to marry, only a change in the timing or in the availability of suitable partners. That is to say the problem is not with marriage itself but in the marriage market. Gender theories, on the other hand, see the discontent of women with traditional marital gender roles as the driver of marital change due to "staying away" behaviour.

Given the rapid social and economic changes that occurred in Taiwan during the latter half of the 20th century, including a rapid expansion of education for women, combined with a highly gender-stratified family system, Taiwan is an ideal setting for evaluating these competing theories of marriage change. The challenge lies in isolating the separate effect of gender asymmetry, if any, due to the fact that the tension between gender roles arises from underlying changes in women's experiences, namely increased exposure to education and the labor market. Though educational-assortative mating and gender theories both link marriage change to educational change, they model differently the mechanism connecting educational change to the changes in marriage. This paper will test the competing theories using data from the 2002 Taiwan Social Change Survey.

Background

The trend toward later marriage in Taiwan can be seen clearly in the rising mean age at marriage. For women, age at first marriage has risen from 24.2 years in 1982 to 27.8 years in 2006. This is an increase of 3.6 years. Though women's mean age at first marriage has declined from its peak of 28.1 years in 1997, the overall trend for this 24 year period has been a steady increase in age at first marriage. For men, on the other hand, the trend has reversed over the past 3 years. Through 2003, age at first marriage for men showed the same pattern as age at first marriage for women. Men's age at first marriage increased 3.4 years from 1982 through 2003. Since then, men's age at first marriage has declined to 30.7 years, for an overall increase of 2.9 years from 1982-2006. The decline in recent years may represent a response in the marriage market to changing population age structure.

Figure 1: Age at first marriage by sex: Taiwan, 1982-2006



Source: Taiwan-Fuchien Demographic Fact Book, various years, Ministry of the Interior, Republic of China.

The delayed marriage trend can also be seen in the rising proportion never married. For women, the proportion never married has risen dramatically over the past 20 years, particularly during the peak childbearing years (Table 1 and Figure 2). In 2006,

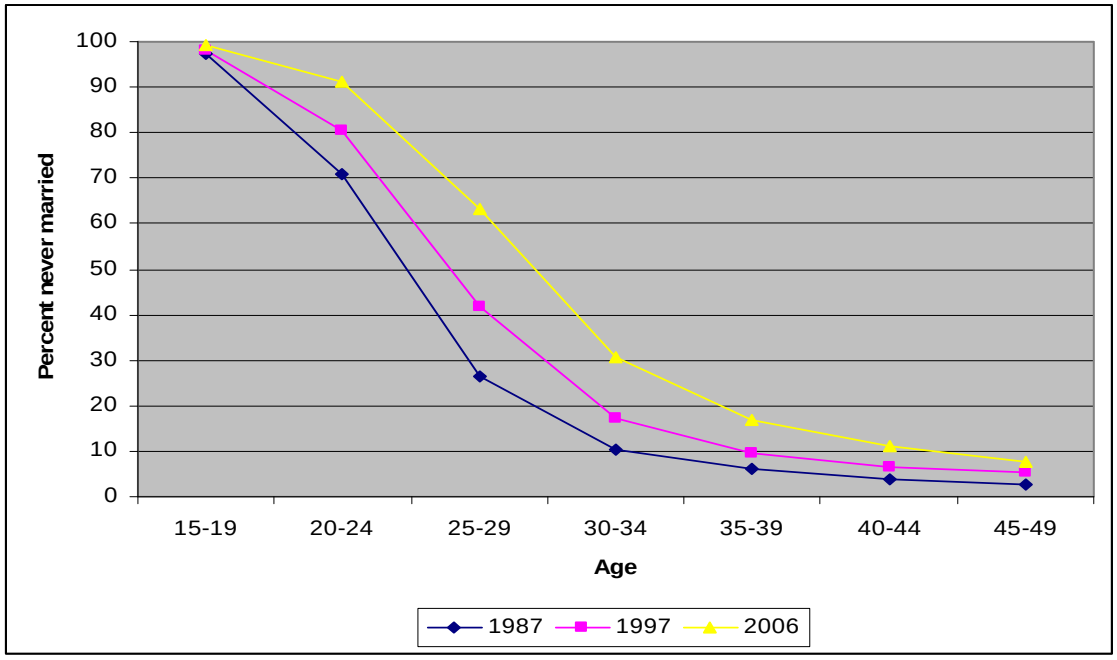
63.4% of women 25-29 had never been married compared to just 20.4% in 1982. This is an increase of 141%. The proportion of never married women aged 30-34 increased 200%. For men, too, the change in proportion never married has been equally dramatic, particularly at ages 30-34 and 35-39. In these age groups, the proportion of never married men increased more than 200%.

Table 1: Percent never married by sex: Taiwan, 1982-2006

	1982	1987	1992	1997	2002	2006
Women						
15-19	96.1	97.5	97.5	98.0	98.7	99.4
20-24	61.6	70.9	75.6	80.3	86.8	91.1
25-29	20.4	26.3	34.3	41.6	53.1	63.4
30-34	8.2	10.2	13.6	17.1	23.6	30.8
35-39	4.3	6.3	8.1	9.4	12.9	17.0
40-44	2.8	3.9	5.9	6.7	8.3	11.1
45-49	2.3	2.8	4.1	5.4	6.2	7.6
Men						
15-19	99.2	99.5	99.3	99.5	99.8	99.9
20-24	88.1	91.3	91.4	93.8	95.6	97.2
25-29	42.3	51.7	58.2	65.3	72.7	79.9
30-34	14.0	18.5	25.8	32.4	37.5	45.8
35-39	7.1	8.6	12.2	16.5	19.2	23.5
40-44	5.2	5.9	7.5	9.3	11.7	14.2
45-49	5.5	4.7	5.7	5.9	7.4	9.5

Source: Taiwan-Fuchien Demographic Fact Book, various years, Ministry of the Interior, Republic of China.

Figure 2: Trends in percent never-married, women of childbearing ages: Taiwan, 1987-2006



Source: Taiwan-Fuchien Demographic Fact Book, various years, Ministry of the Interior, Republic of China.

In addition to delayed marriage, Taiwan also appears to have experienced a slight rise in non-marriage. In 2006 7.6% of women and 9.5% of men aged 45-49 had never married. Though these proportions may seem low, in a historical context of nearly universal marriage, this change over the past few decades has been significant. Since 1982, the proportion never married at the end of the childbearing years has increased 171% for women and 73% for men.

Theories of marriage change

The dramatic rise in age at first marriage in Taiwan is a phenomenon mirrored in other East Asian countries. In particular, Japan's experience with later and less marriage suggests two competing explanations for marital change centered on gender and education. Gender theories focus on family gender roles and on differential levels of gender equality between individual-oriented institutions and family-oriented institutions and how these affect women specifically. Explanations rooted in educational change, on the other hand, focus on delayed entry into the marriage market and marriage market imbalances that result from a differential educational distribution by gender.

McDonald (2000) and others argue that it is precisely this disparity in gender equality inside and outside the home creates marital dissatisfaction and avoidance of marriage among younger women. Many women now prefer the social and economic independence that they have gained from gender equity in education and the labour market, but this seems to be incompatible with their expected role as wife and mother, which creates conflicts in women's lives (Mason and Jensen 1995).

In Taiwan rapid economic development has been accompanied by expansion of opportunities for women outside the family. In the labour market, women's labour force participation rates, especially married women and mothers, have risen steadily, as have women's wages (Chen 2000 Figures 4.1, 4.2, 4.5, 4.6). In education, levels of educational advancement and enrolment rates for female students have exceeded males' since the early 1980s (Statistical Yearbook of the Republic of China 2004, Table 42 and 43). These shifts in education and the labour market have changed what it means to be a young single woman. Increasing educational and employment opportunities allow

women to pursue roles other than wife and mother. And increasing age at marriage confers longer periods of independence from the burdens of child care and partner care. This lengthened period of independence has come to stand in increasingly sharp contrast with the male-dominated family system where gender-related roles and attitudes have been slow to change.

In the family setting, women in Taiwan still perform traditional and experience lingering (and persistent) gender inequalities tied to their roles of wife and mother (Greenhalgh 1985; Chiang 2000; Xu and Lai 2004). At home, it is still women who shoulder the vast majority of household work, even as the labor force participation of married women and mothers of young children has risen (Chen 2000; Xu and Lai 2004). A 2000 survey on marriage, fertility and employment revealed that young married women on average spend from 6-8 hours a day on housework, a burden which does not begin to ease until they reach their 40s, and which remains above 4 hours a day into their 60s (Directorate-General of Budget Accounting and Statistics 2000). [1]

Attitudinal surveys of unmarried persons in Japan and Korea support the theory of gender asymmetry. These surveys indicate that women have less traditional views of marriage and gender roles than men, as well as more liberal views about the necessity of marriage (Choe 1998; Tsuya, Mason et al. 2004). That this dramatic shift in attitudes parallels behaviour change, though not proof of causation, is consistent with the idea that traditional gender attitudes in the family are incompatible with a shift towards gender equality in other areas of life (Choe 1998; Kaneko 1999; Atoh 2001; Retherford, Ogawa et al. 2001; Tsuya, Mason et al. 2004).

While gender theories focus on the dissonance in the level of gender equality in family- and non-family-oriented institutions that may motivate women to stay away from marriage for an extended period of independence or for good, educational theories of marriage change, on the other hand, model marriage change as the unintended by product of women's increasing educational attainment. Within educational theories, there are two potential, and not mutually exclusive, mechanisms by which education may lead to later and less marriage.

[1] This is similar to the amount of time spent on housework reported by Japanese wives. Retherford, Ogawa, Matsukura 2001.

First, the association between education and late marriage may simply be a fact of longer school enrolment (as distinct from educational investment or attainment), which delays entry into the marriage market. In the early stages of marital timing change, increasing enrolment in junior and then senior high school delays marriage simply by making young women unavailable for marriage, particularly in societies where marriage is traditionally young (Cochrane 1979). This delayed marriage effect may persist if educational gains continue at the tertiary level, which has been the case in Taiwan over the past 25 years, as shown in Table 2.

The salience of longer time in school is particularly relevant in societies that widely regards student roles as incompatible with adult family roles. In Japan, school enrolment is a near-perfect predictor of non-marriage (Raymo 2003), and in Korea students express the view that they are 'not ready' to marry (Choe 1998). In addition, finishing school increasingly has come to be regarded by societies as a prerequisite for marriage (Blossfeld 1995; Raymo 2003).

Table 2: Net percentage of graduates entering advanced levels of study by sex

School year	Junior High School		Senior High School		Vocational School	
	Male	Female	Male	Female	Male	Female
1982	70.9	72.2	40.8	52.5	…	…
1985	70.1	72.6	35.5	45.7	…	…
1988	75.7	83.5	37.3	54.9	7.7	2.5
1991	83.1	89.2	55.2	48.4	14.5	13.0
1994	85.8	91.3	55.6	59.3	16.1	16.3
1997	90.2	94.0	60.3	63.7	22.5	24.0
2000	94.5	96.2	67.7	69.7	33.8	42.8
2003	94.7	96.8	73.5	76.2	58.9	66.3

Source: Statistical Yearbook of the Republic of China 2004, Table 43.

Second, education may lead to later or less marriage through assortative mating. According to Jones (1997), the changing educational composition of populations has been a key factor in increasing rates of non-marriage across Asia, as increasing proportions of women join the higher educational categories where non-marriage has always been more common. While in the West it has been found that highly educated women are more likely to be married (Ellwood and Jencks 2004) in the context of Asia

traditional preferences in education matching have generated a phenomenon commonly referred to as "marrying down". It is common across Asia for a woman to marry a man more educated than herself and for a man to marry a women with less education. This pattern of matching leaves highly educated women and less educated men disadvantaged in the partner search (Jones 1997; Basu 2002). But it is unclear to what extent education differentially impacts the marriage prospects of men and women in Taiwan. On the one hand, under the traditional arranged marriage system parents sought a potential bride or groom of the same standing as their child because it was believed to increase compatibility (Thornton and Lin 1994). Given the continued involvement of parents in dating and mate selection, it possible that this value persists. On the other hand, Chang reports that educated women prefer to marry men even more highly educated than themselves for the added financial security it brings (quoted in Shu-ling 2004).

Hypotheses

From the preceding discussion of gender-asymmetry and educational models of marriage we can derive the following hypotheses regarding marriage change in Taiwan.

1. If marital change is primarily in the form of delayed entry into the marriage market due to longer time in education, we would expect to observe no difference in the probability of marriage between different education groups, only differences in the timing of marriage. Therefore, we would expect the effect of education to be strong at the youngest ages but to decrease over time (delayed entry hypothesis).
2. In a marriage market where patterns of mate selection are associated with educational characteristics, we should observe that education is a significant predictor of odds of ever marrying. In a "diagonal" pattern like the one common in Asia, we would expect women with the highest education to have the lowest odds of marriage due to the more restricted pool of eligible partners (i.e. men of the same educational group) and increased competition for these eligible partners given the asymmetrical opportunity structure. That is to say, in the highest educational group, men may consider women of both the same and lower

educational groups, while women may only consider men of the same educational ranking, broadly speaking. And the reverse would be true for men at the lowest level of education. Thus we would expect to observe that the relationship between education and marriage is negative for women but positive for men (marriage market matching hypothesis).

3. Gender asymmetry theory connects marital change to exposure to individual-oriented institutions such as education via attitudes towards traditional gender roles. Therefore, we should expect to observe that gender role attitudes have a differential impact on odds of marriage for women and for men. Women with non-traditional gender attitudes should be less likely to marry. Men with non-traditional gender roles should be equally likely to marry as other men (gender inequality hypothesis).

Data and methods

To test these hypotheses I use the 2002 Taiwan Social Change Survey, which is administered by the Institute of Sociology and Center for Survey Research. The Family and Gender module was administered as the third survey of the fourth wave, and, in addition, it is part of the International Social Survey Project: Family and Changing Gender Roles III, 2002[2]. Out 3624 eligible respondents, 1983 completed the survey for a response rate of 55%.

The dependent variable evaluated here is whether respondents have ever been married. The survey asks respondents their current marital status. Currently married, divorced and widowed categories were collapsed to create a dichotomous response variable representing never married or ever married. Logistic regression was used to test the relationship between gender, educational attainment, marriage market entry, traditional attitudes and the odds of being ever married.

[2] International Social Survey Program (2002). Family and Changing Gender Roles III, Cologne, Germany: Zentralarchiv fur Empirische Sozialforschung [producer], 2004. Cologne, Germany: Zentralarchiv fur Empirische Sozialforschung/Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributors], 2004. **ICPSR Version**.

In this analysis, there are four categories of educational attainment: less than a high school diploma, high school graduate, some post-secondary education and university graduate.

Traditional attitudes were represented by responses to the following statement of marital gender roles: "What women really want is home and kids." Respondents were asked to choose their response from a 5 point scale ranging from strongly agree to strongly disagree. These responses were collapsed into three categories representing traditional attitudes (strongly agree and agree), neutral attitudes (neither agree nor disagree), and non-traditional attitudes (disagree and strongly disagree).

Age is controlled in all the models. In addition, the analysis is confined to the subset of respondents ages 25-54 for two reasons. First, looking at respondents younger than 55 allows me to control for the dramatic cohort differences in educational opportunities. Second, respondents between the ages of 18-24 have not all completed their education.

Results

According to the delayed entry hypothesis, education affects marriage simply by shifting entry into the marriage market to a later age. Thus, we would expect to observe that the effect of education gets weaker over time, as individuals with the highest education have time to catch up with their peers who entered the marriage market earlier. To assess this hypothesis I test for the differential effect of educational attainment across age groups.

Table 3 shows that, as expected, educational attainment is only associated with marriage for the youngest respondents. Among 25-34 year olds, post-secondary education decreases the odds of marriage significantly compared to those with a high school diploma. Some college education is associated with a 46% reduction in the odds of marriage while a college degree is associated with a 73% reduction in the odds of marriage and is highly significant. But beyond age 35, post-secondary education no longer has a statistically significant relationship with the odds of marriage. This finding supports the hypothesis that recent marital change in Taiwan is related to longer time

spent in education through delayed entry into the marriage market with the implication that the association between education and marriage is temporary rather than permanent.

Table 3: Odds of marriage (sd) by age group, 25-54 year olds

	25-34	35-44	45-54
Less than high school	1.97	1.30	1.15
	(0.79)	(0.57)	(0.83)
High school diploma (ref)	1.00	1.00	1.00
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More than high school	0.53*	0.50	0.32
	(0.14)	(0.21)	(0.25)
College graduate	0.27***	0.81	0.40
	(0.07)	(0.43)	(0.34)
Female	2.31***	0.81	1.22
	(0.50)	(0.27)	(0.64)
N	403	406	387
Log likelihood	-252	-132	-64
df	4	4	4
LR chi2	52.31	5.26	4.94

The delayed entry hypothesis is further supported by registration data indicating progressively later age at marriage with increasing educational attainment (Table 4). In 2003 female college graduates on average were 3 years older at the time of marriage than their junior and senior high school counterparts.

Table 4: Median age at marriage for women by educational attainment

	College graduate and above	Junior college graduate	Senior high graduate	Junior high graduate	Primary graduate	Self-taught	Illiterate
1982	27.3	..	25.0	22.8	22.9	22.8	24.8
1987	27.8	..	26.0	23.9	23.5	23.2	34.8
1994	28.3	..	26.8	24.3	24.6	26.3	65.3
2000	28.0	26.5	24.7	24.3	25.2	..	..
2003	28.3	27.4	25.5	24.9	26.7	..	..

Source: Taiwan-Fuchien Demographic Fact Book, various years, Ministry of the Interior, Republic of China

While the delayed entry hypothesis looks at the effect over time, the marriage market hypothesis and the gender inequality hypothesis are formulated around the differential association between education and gender role attitudes and marriage for

women and men. To evaluate whether and how these explanatory variables operate differently by sex, each models is estimated separately for men and women. Model 1, shown in Table 5, looks first at the relationship between marriage and education. For men there seems to be no association between educational attainment and marriage. Only college degree achieves statistical significance at the .05 level and is associated with 50% reduced odds of marriage. For women, however, educational attainment is clearly important in explaining ever married status. Women with the lowest education have the highest odds of marriage and are almost 3 times as likely to be married as women with a high school diploma. Post-secondary education, on the other hand, reduces odds of marriage. Women with a college degree show 70% reduced odds of marriage ($p<.001$) compared to women with a high school diploma.

Attitudes towards traditional marital gender roles also help to explain marriage for women but not for men. Model 2 shows that for women, neutral and non-traditional attitudes reduce the odds for marriage by 57% and 65%, respectively, compared to women with traditional views of marriage. For men, however there is no association between attitudes and marriage.

Table 5: Odds of marriage by sex (sd), 25-54 year olds[†]

	Model 1		Model 2		Model 3	
	Men	Women	Men	Women	Men	Women
Less than high school	0.75	2.94*			0.74	3.35*
	0.27	1.41			0.28	1.74
High school diploma (ref)	1.00	1.00			1.00	1.00
	---	---			---	---
More than high school	0.59	0.46*			0.58	0.47*
	0.19	0.14			0.20	0.15
College graduate	0.47*	0.29***			0.50*	0.34**
	0.15	0.09			0.17	0.12
Traditional attitudes			1.00	1.00	1.00	1.00
			---	---	---	---
Neutral attitudes			1.15	0.43*	1.18	0.61
			0.48	0.15	0.51	0.23
Non-traditional attitudes			0.80	0.35**	0.85	0.46*
			0.32	0.12	0.34	0.16

[†]All models control for age.

Finally, model 3 tests the relative importance of these competing explanations for marital change. As in models 1 and 2, there is very little explanatory power of either educational attainment or gender role attitudes for explaining marital outcomes for men. The coefficients in model 3 are virtually identical to models 1 and 2. For women, also, the results in model 3 are similar to the previous model. However, what is most important to note is that the statistical significance of traditional attitudes declines while education remains strong. This suggests that the role of educational characteristics in marriage market matching may be more important than gender inequality in the family for explaining the changing patterns of marriage in Taiwan.

The lack of strong results for men in all of the models, however, suggests that the results presented here are only weakly supportive of the marriage market hypothesis over the gender inequality hypothesis. As stated above, both hypotheses indicate something about the direction of the relationship between education (positive) or non-traditional attitudes (neutral) and marriage outcomes for men. However, the odds ratios reported in Table 5 are not in the expected direction. For men, as for women, odds of marriage declines with high education and non-traditional attitudes.

Likewise, the results presented here are only cross-sectional estimates of these relationships at one point in time. The dramatic and rapid social changes have likely created strong cohort effects on these relationships. In particular, given that the recentness of women's expansion into tertiary education, it may be too early to estimate the full effects of college education on marriage outcomes for women.

Conclusion

Taiwan has experienced a dramatic postponement of marriage in recent decades that has contributed to sustained below-replacement fertility. Though the traditional family system in Taiwan and findings from other East Asian countries suggests the relevance of gender inequality theories for explaining this change in marriage behaviour, this analysis does not find evidence to support the gender roles hypothesis. Instead, the results suggest that change in marriage is associated with the dramatic shift in education that has been occurring at the same time. In this analysis, I find weak support for both

aspects of the education-marriage relationship – delayed entry and marriage market matching. Furthermore, the results suggest that the relationship between educational attainment and marriage is stronger for women compared to men. However, given the cross-sectional nature of the data and the recentness of women's gains in tertiary education, this analysis cannot comment on the long-term implications of marriage market matching for the youngest women. To fully understand how the new era of education is shaping the marriage process, we must complement cross-sectional studies with longitudinal or time-series analysis.

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