

Online Resource 1

Trends in Economic Homogamy: Changes in Assortative Mating or the Division of Labor in Marriage?

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DATA SOURCE DETAILS

Our main source of data is the PSID, which is a longitudinal study that originated in 1968 with a nationally representative sample of households and an oversample of low-income households. One issue with the PSID is that, while the sample was representative of the population in 1968, the U.S. population has changed substantially since the late 1960s, primarily due to immigration. In 1990 and 1997/1999, new samples of Latino households and immigrant families, respectively, were included to ensure representativeness. We restrict the sample to household heads and their spouses and exclude the Latino sample, the immigrant refresher sample, and the low-income oversample so that changes in these samples do not affect our results.

Marriage dates in the PSID are taken from the 1985–2013 marital history file. Respondents who were not present in 1985 or a later interview year do not have marriage date information in this file (Institute for Social Research 2009). When information on marriage dates is missing (6 % of couple years), we use age at first marriage, which is available in 1968 and 1976, to calculate marriage dates, following Lillard and Panis (1998). We impute the remaining missing marriage dates in the PSID using June CPS data and a linear regression that predicts wife’s age at marriage as a function of husband’s and wife’s education, husband’s and wife’s age at interview, interview year, and interview year squared. To avoid bias from left censoring, we drop marriages that were formed more than five years prior to the first year a marriage was observed (7 % of marriages).

Our measure of economic homogamy is based on couples’ prior calendar year’s annual labor income (earnings). PSID labor income includes wages and salaries, bonuses, overtime, tips, commissions, and other labor income, as well as labor income from farms and unincorporated businesses from 1970 to 1993. Beginning in 1994, PSID labor income excludes labor income from farms and unincorporated businesses. Sensitivity checks suggest that our results are robust to the change in the definition of earnings between 1993 and 1994. Husbands’ wage and salary income is measured consistently across years, but this measure is not available consistently for wives. We examined trends in the correlation between husbands’ wage and salary income and the expanded version of labor income for wives, and they were very similar to those presented in the article.

SAMPLE CHARACTERISTICS

Table S1 shows descriptive statistics for our sample. It shows the well-known stagnation of men’s annual earnings and the rise in women’s. It also shows increasing earnings variability, particularly among wives. The proportion of wives and husbands with higher education increased with the rising educational attainment of the population. Employment rates and hours declined somewhat for husbands and increased for wives. Wives’ average age among prevailing marriages

increased with the rising age at marriage and the aging of the population. The average number of children decreased through 2009 and the proportion of childless couples increased. Average marital duration remained quite constant over this period and the proportion of marriages that are remarriages increased, although declined somewhat in the 2010s.

SENSITIVITY TO SAMPLE RESTRICTIONS

Would our results differ if we included the Latino sample, the immigrant refresher sample, and the low-income oversamples as well as marriages that were formed more than five years prior to the first year a marriage was observed? To test this, we retained these observations and weighted the results. Figure S1 shows that trends for newlyweds and prevailing marriages are very similar to those presented in the article.

SENSITIVITY TO THE CHANGING COMPOSITION OF MARRIAGES

The composition of marriages changed over the period of analysis. Couples marry later than they did in the 1970s and marriage is often preceded by cohabitation. Women with higher education are more likely to ever marry than women with less education, but the reverse was true in the 1970s. Couples have fewer children and the proportion of married couples without children has increased. These well-known shifts are reflected in our data (Table S1). Are trends in economic homogamy influenced by these compositional shifts? While a detailed analysis of the mechanisms influencing changes in assortative mating and the division of paid labor is beyond the scope of this article, we present supplementary analyses that assess the potential role of compositional shifts. The results suggest that compositional changes do not play a major role. These findings support the idea that behavioral changes in marriage were crucial to increase spouses' economic homogamy.

Patterns by Union Type

The rise of cohabitation as either an alternative or a prelude to marriage means that our sample of married couples in recent years might over-represent stable and privileged couples. This compositional shift could be responsible for part of the increase in economic homogamy if these couples are more economically homogamous than cohabiting couples. Figure S2 shows that including cohabiting unions, who are identified beginning in 1983, does not substantially alter the observed trends. Other sensitivity tests indicate that our results are also robust to excluding remarriages (Figure S3), and dropping couples who eventually separate or divorce (Figure S4).

Changing Age at Marriage

Marrying later could facilitate assortative mating and increase economic similarity among newlyweds if spouses are better able to sort on long-term economic prospects at older ages. The shift towards delayed marriages could also increase overall economic homogamy if spouses' economic similarity is typically higher among couples who have been married longer, e.g., after women have returned to work. We conducted a re-weighting exercise to simulate trends in economic homogamy using wives' joint age and marital duration distributions in 1970. Figure S5

shows that trends for both newlyweds and prevailing marriages are largely unaffected by changes in the age distribution.

Changing Fertility and Patterns for Childless Couples

Changes in fertility can affect spouses' economic homogeneity during marriage. Figure S6 shows life course patterns for childless couples. The sample excludes couples who were ever observed having children in the household to exclude empty nesters. Marriage decade-marital duration cells with sample sizes of less than 100 are omitted from the calculations. For marriages formed in the 1970s through the 1990s, it is evident that couples without children have much less deep U-shaped life course trends than in the full sample. The correlation between spouses' earnings still declines after marriage, but to a much lesser extent. Data on future years is needed to discern the pattern for more recent cohorts.

To further investigate the role of fertility, we simulated trends in economic homogeneity re-weighting the sample using the 1970 distribution of number of children. Figure S7 compares observed and counterfactual trends and shows that changes in the proportions of couples with different number of children do not substantially affect observed patterns in economic homogeneity. Perhaps it is not surprising that patterns of economic resemblance among newlyweds do not shift appreciably when number of children is held constant at its 1970 values, given that it remains the case that most children are born within marriage in the United States. However, we might have expected larger impacts of the shifting numbers of children in prevailing marriages given the results in Figure S6. Our counterfactual results presented in Figure S7, however, estimate the impact of holding the *distribution* of the number of children constant, and not the *effects* of numbers of children on earnings homogeneity. It is likely that, for example, the effects of having one child on women's labor supply have changed markedly over time, a scenario consistent with the hypothesis that change in the division of paid labor within marriage has been the driving force of changes in economic homogeneity.

Patterns by Wives' Education

Because wives with higher education are more likely to be employed and to ever marry, it is possible that the rise in economic homogeneity reflects the increasing prevalence of these couples. Figures S8 and S9 show that the increase in economic homogeneity is not concentrated in one education group, however. Figure S8 shows life course patterns by wives' education. They show that the U-shaped trends in the correlation between spouses' earnings are generally flatter (but higher) for women with less education than those with more. The correlation between spouses' earnings declines less for women with a high school degree or less than for college graduates, but also rebounds less at higher marital durations. Figure S9 shows that the correlation between spouses' earnings increased similarly for all groups.

Figure S10 compares observed trends and simulated trends obtained from re-weighting the sample using the distribution of wives' education in 1970. The results show that increases in economic homogeneity would have been greater, not smaller, if the composition of wives' education had not changed. While counter to the idea that increasing positive selection into marriage can increase overall economic similarity, this result is consistent with the finding in Figure S9 that the level of economic similarity for couples with lower-educated wives is substantially higher than for couples with college-educated wives. Regardless, these results imply

that our findings that changes among newlyweds explain very little of the change in economic homogamy among prevailing marriages holds after controlling for the shifting educational composition of married couples.

PREDICTED FULL-TIME FULL-YEAR EARNINGS

Table S2 presents fit statistics and sample sizes from our estimates of spouses' earnings potential. We estimate earnings potential adapting Xie et al.'s (2003) method. We use census/ACS IPUMS data (Ruggles et al. 2010) on full-time full-year (FTFY) workers to predict earnings as a linear function of age, age squared, education, three-digit occupation, race, and parental status.

Age and age squared are continuous variables and range 16–70. Education is measured using dummy variables for the following categories: 1 = up to grade 4; 2 = grades 5, 6, 7, or 8; 3 = grade 9; 4 = grade 10; 5 = grade 11; 6 = grade 12; 7 = first year of college; 8 = 2 or 3 years of college; 9 = 4 years of college; and 10 = 5 or more years of college. Occupation is measured using dummy variables for each three-digit occupational code. Race is measured with dummy variables for black and Hispanic. Parental status is a dummy variable indicating whether individuals reside with children under 18.

Regressions are run separately by sex and survey year and use person weights. We fit the same equation without three-digit occupation dummies to estimate earnings for those who do not report an occupation. We use our models to predict earnings for all combinations of our independent variables in the census/ACS data and linearly interpolate predicted values in years without data (1971-1979, 1981-1989, and 1991-1999). We use the 1990 occupation classification in the census/ACS (occ1990), and convert the PSID occupations to occ1990 using a crosswalk (see https://usa.ipums.org/usa/volii/occ_ind.shtml). We merge predicted earnings to the PSID using the independent variables in the prediction equation.

This method produces a measure of spouse's earnings potential based on FTFY workers of individuals' age, sex, education, occupation, race, and parental status in that year (or the average over all occupations for those who did not report an occupation). These earnings estimates rely on a number of assumptions. For instance, our model assumes that the effects of covariates are not interactive (e.g. that the effect of education does not vary by age or occupation). We also do not take into account variation in earnings across states or by location. In sum, our analysis of sorting on earnings potential is based on the assumption that spouses' perceptions of their partners' earnings potential are roughly based on national averages of what individuals like them working FTFY make in any given year.

DETAILS ON CENSUS DECOMPOSITION

Because much of the increase in economic homogamy occurred between 1970 and 1980, and the majority of couples during this period were married in the 1950s and 1960s, prior to when the PSID began collecting earnings information, we use the 1940, 1960, 1970, and 1980 U.S. decennial censuses to decompose this portion of the trend. We use Eqs. (1)-(5) in the text following the same procedure used for the PSID. For instance, to determine the portion of the trend between 1970 and 1980 in the census that is due to changes among newlyweds, we set correlation for newlyweds in the census equal to their 1940 values and allow the trajectories to vary as observed. Next, we use the decomposition of the increase in economic homogamy between 1970 and 1980 in the census to estimate the extent to which trends among newlyweds and trends after the first year of marriage contribute to the portion of the PSID trend from 1970 to 2013 that was attributable to changes among marriages formed before 1970.

Figure S11 shows life course patterns in the correlation between spouses' earnings between 1940 and 1980 and is the census analog to Fig. 3. The downward trajectory in the correlation between spouses' earnings for prevailing marriages between 1940 and 1970 seen in Fig. 1 is reflected in Fig. S11. It is also evident that the upward shift in the correlation for prevailing marriages between 1970 and 1980 in the census (a less dramatic increase than in the PSID) is not due to changes among newlyweds, but to increases in the correlation between spouses' earnings among couples who have been married for more than a decade, particularly among those married in the 1950s and 1960s.

DETAILS ON INEQUALITY ANALYSIS

To estimate the extent to which change in the correlation between spouses' earnings have affected trends in inequality, we decompose the coefficient of variation (CV). The CV can be decomposed into three parts: (1) husbands' and wives' earnings inequality, (2) husbands' and wives' share of total earnings, and (3) the correlation between their earnings (see Cancian et al. 1993 for details). Formally stated, the CV in a given year is given by:

$$CV_t^2 = S_{th}^2 CV_{th}^2 + S_{tw}^2 CV_{tw}^2 + 2r_t S_{th} S_{tw} CV_{th} CV_{tw}$$

Where CV_{th} and CV_{tw} are the coefficient of variation for husbands' and wives' earnings respectively, S_{th} and S_{tw} are their respective shares of total family earnings, and r_t is the correlation between their earnings.

To calculate counterfactual inequality trends we utilize the counterfactual correlation trends estimated with Eqs. (1)–(5) in the text (see also Table 3 in the appendix). For instance, to estimate the level of inequality that would exist if the correlation among newlyweds had remained at 1970 levels, we substitute r_t with r_t' and compute trends in the CV using the counterfactual earnings distribution generated by r_t' (see Eq. (2)). The difference between the observed inequality trend and the counterfactual trend is an estimate of the portion of the increase in inequality that is attributable to changes in correlations among newlyweds. We follow a similar procedure as outlined in Table 3 in the appendix to estimate the impact of changes after the first year of marriage and the impact of shifts in the marital duration distribution. To decompose the

contribution of earlier marriages into parts due to changes in the correlation among newlyweds and changes in the correlation during marriage, we repeat this exercise using the 1940-1980 census data.

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Table S1. Descriptive Statistics by Survey Year

Measure	Survey Year				
	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
Annual Earnings (2012 \$1,000s)					
Husbands	56.5 (30.0)	54.9 (32.4)	57.4 (39.1)	62.6 (46.2)	59.2 (44.8)
Wives	13.4 (16.9)	18.8 (20.5)	26.4 (28.6)	32.8 (38.5)	32.6 (40.2)
Annual Hours					
Husbands	2212 (735)	2178 (745)	2210 (743)	2182 (768)	2060 (837)
Wives	801 (841)	1119 (891)	1342 (890)	1418 (909)	1369 (920)
Wages (for those with Non-Zero Annual Earnings) ^a					
Husbands	27.8 (26.6)	27.4 (24.2)	30.3 (30.6)	34.4 (71.7)	34.8 (63.5)
Wives	16.9 (12.8)	17.0 (17.8)	20.8 (31.2)	23.3 (20.3)	23.7 (19.7)
Non-Zero Annual Earnings (%)					
Husbands	97.9	97.0	93.0	93.0	90.2
Wives	63.0	76.3	82.2	81.7	79.5
Wife's Age					
	33.0 (9.8)	33.5 (8.3)	36.5 (8.3)	37.9 (9.1)	38.0 (9.0)
Marital Duration (Years)					
	11.7 (8.9)	10.8 (7.8)	11.8 (8.2)	11.4 (8.4)	11.4 (8.1)
Remarried (Wife) (%)					
	11.6	19.2	24.0	25.0	20.4
Years of schooling					
Husbands	12.5 (2.7)	13.3 (2.4)	13.7 (2.2)	13.8 (2.1)	14.2 (2.1)
Wives	12.3 (2.2)	13.0 (2.1)	13.5 (2.1)	14.0 (2.0)	14.5 (2.0)
College degree (%)					
Husbands	24.3	28.3	33.5	34.6	39.9
Wives	15.4	20.7	27.8	35.3	46.2
Number of children					
	1.5 (1.3)	1.4 (1.1)	1.3 (1.1)	1.2 (1.1)	1.4 (1.2)
Childless couples (%)					
	27.9	27.1	31.4	34.2	32.2
<i>n</i> (Couple-Years)	15,661	17,485	17,148	10,171	3,804

Source: 1970-2013 Panel Study of Income Dynamics.

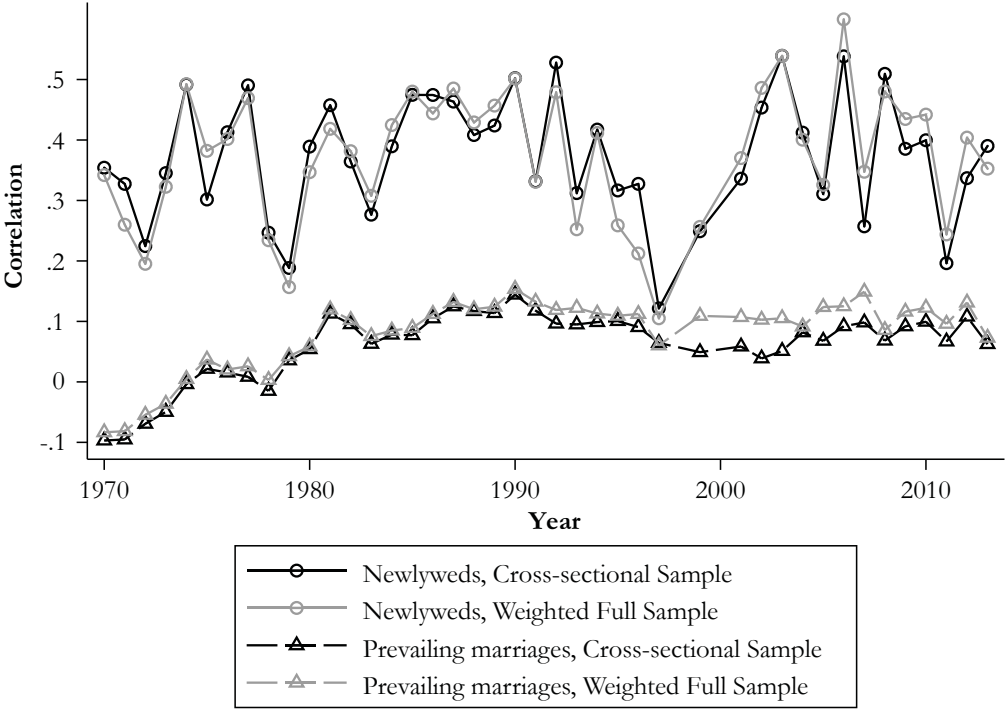
^aSample size differs from full sample.

Table S2. Fit Statistics and Sample Sizes for Predicted Full-Time Full-Year Earnings

Survey Year	Women		Men	
	R ²	<i>n</i>	R ²	<i>n</i>
1970	0.275	61,081	0.372	234,635
1980	0.226	529,633	0.334	1,368,701
1990	0.278	749,542	0.381	1,452,727
2000	0.254	913,353	0.385	1,553,260
2001	0.295	82,429	0.422	139,034
2002	0.301	73,400	0.426	122,303
2003	0.325	81,385	0.436	134,832
2004	0.336	81,146	0.407	134,468
2005	0.307	192,019	0.435	320,678
2006	0.306	195,640	0.435	322,947
2007	0.308	198,303	0.436	323,527
2008	0.302	224,603	0.422	347,930
2009	0.327	219,958	0.431	330,442
2010	0.337	214,973	0.435	317,540
2011	0.334	207,698	0.437	308,842
2012	0.332	210,309	0.437	315,632
2013	0.323	213,891	0.435	321,425

Sources: 1970-2000 U.S. decennial censuses and 2001-2013 American Community Survey.

Fig. S1 Comparison of Trends: Full Sample Weighted Results and Cross-Sectional Sample Unweighted Results



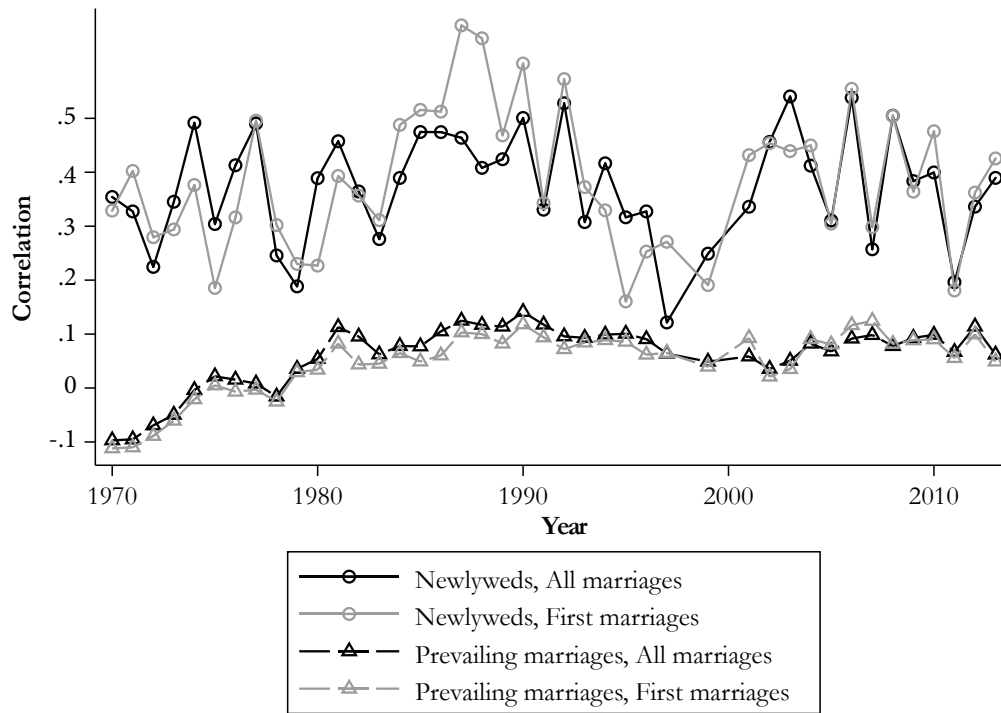
Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Fig. S2 Comparison of Trends: Prevailing Marriages and Prevailing Unions (Marriage and Cohabitation)



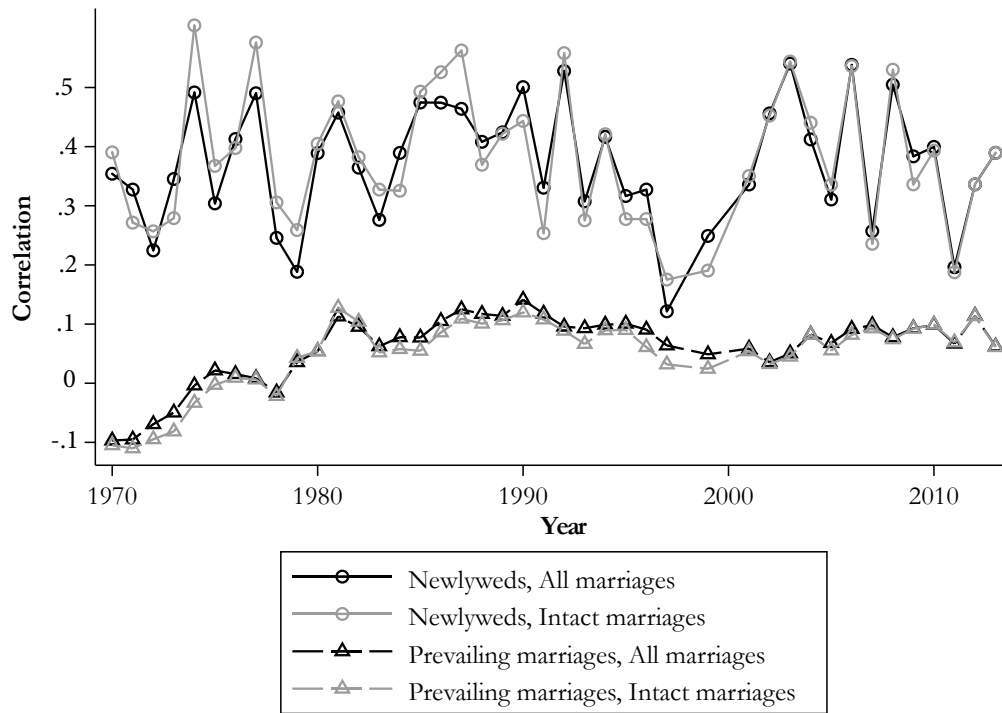
Source: 1970-2013 Panel Study of Income Dynamics (PSID). Cohabitors identified from 1983 forward.

Fig. S3 Comparison of Trends: All Marriages (First and Later Marriages) and First Marriages Only



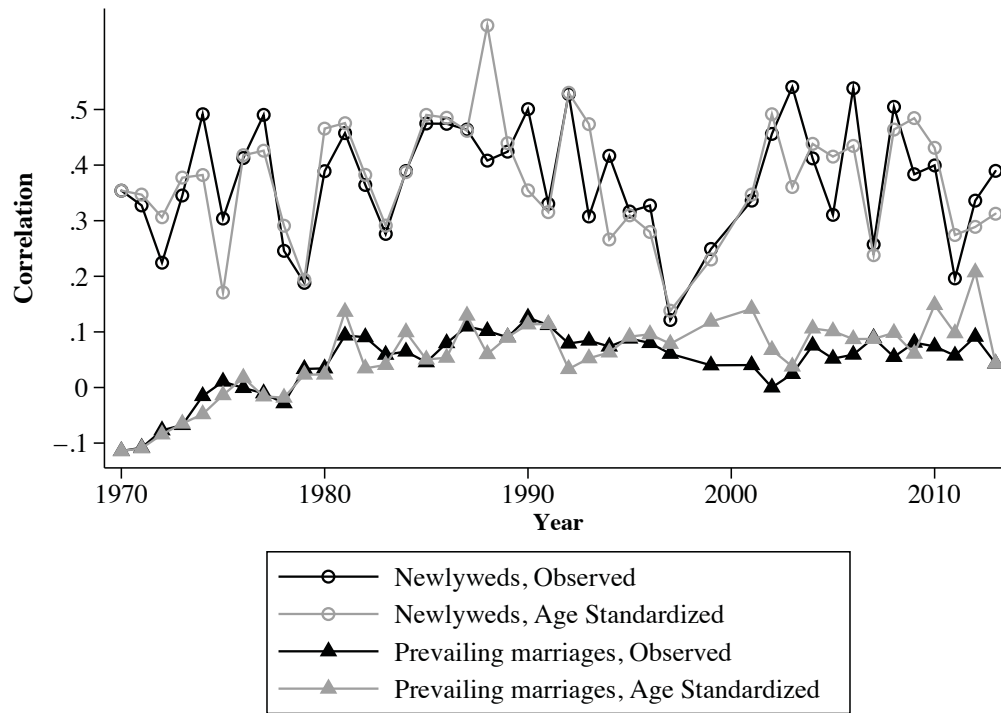
Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Fig. S4 Comparison of Trends: All Marriages and Intact Marriages (Excluding Couples who Divorce/Separate)



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Fig. S5 Comparison of Trends: Observed and Simulated Trends Holding Wives' Age Constant at its 1970 Distribution.



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

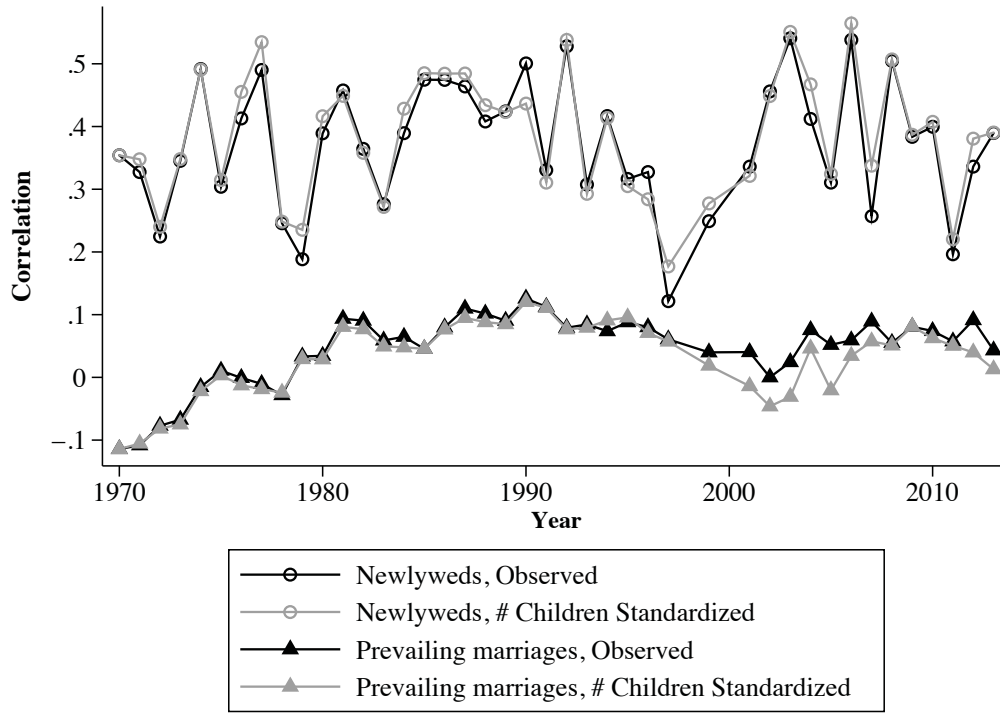
Fig. S6 Trends in the Correlation Between Husbands' and Wives' Earnings by Marriage Decade and Marital Duration for Childless Couples



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Notes: Trend lines are lowess smoothed. Marriage decade-marital duration cells with sample sizes of less than 100 are omitted.

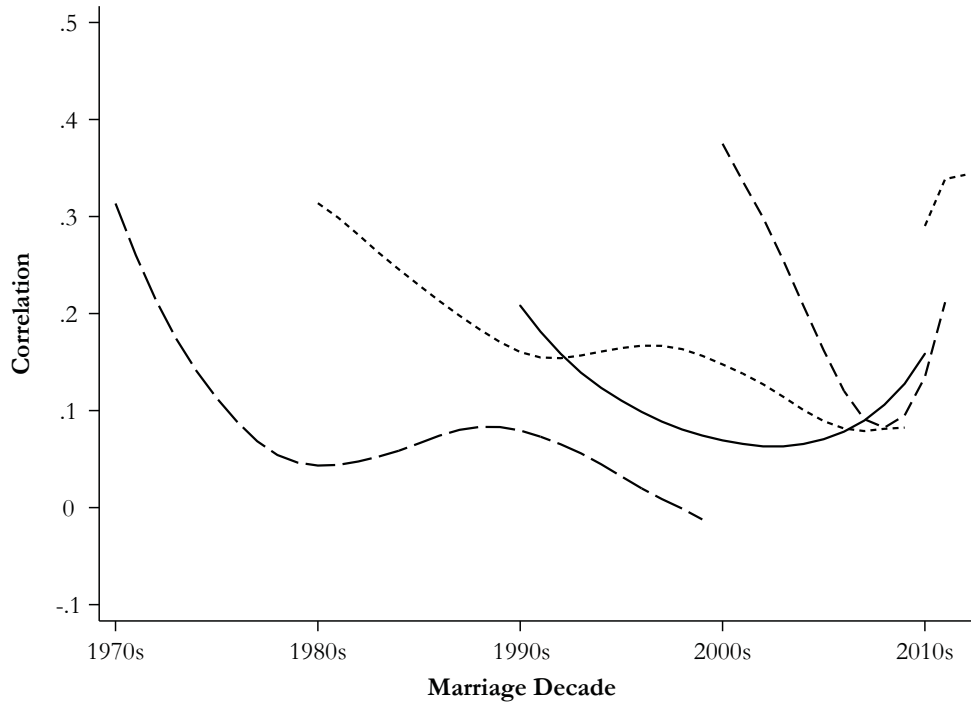
Fig. S7 Comparison of Trends: Observed and Simulated Trends Holding Number of Children Constant at its 1970 Distribution



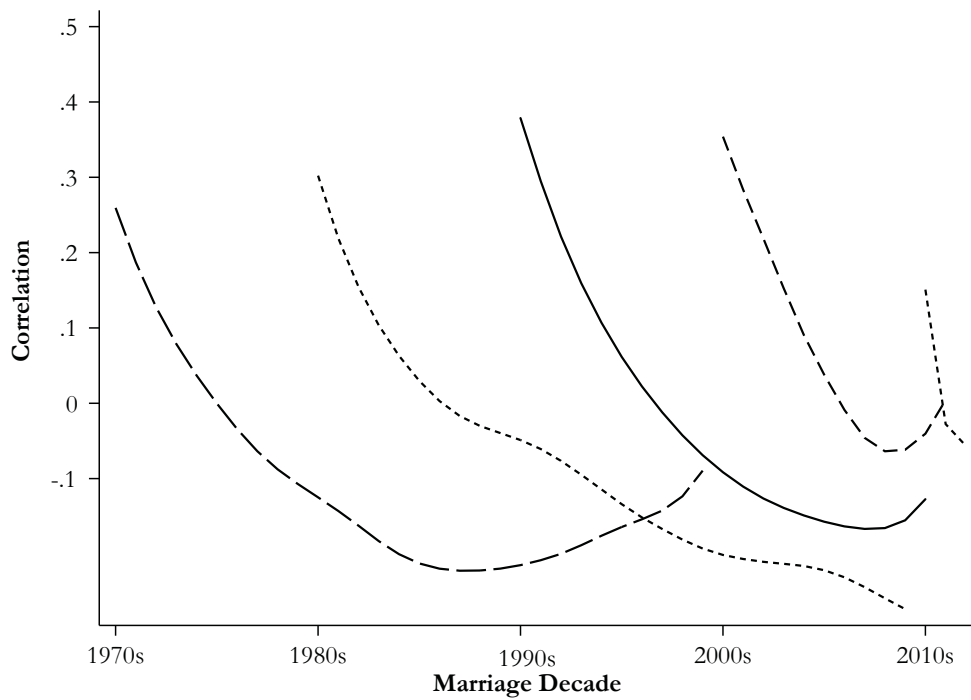
Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Fig. S8 Trends in the Correlation Between Husbands' and Wives' Earnings by Marriage Decade, Marital Duration, and Wives' Education

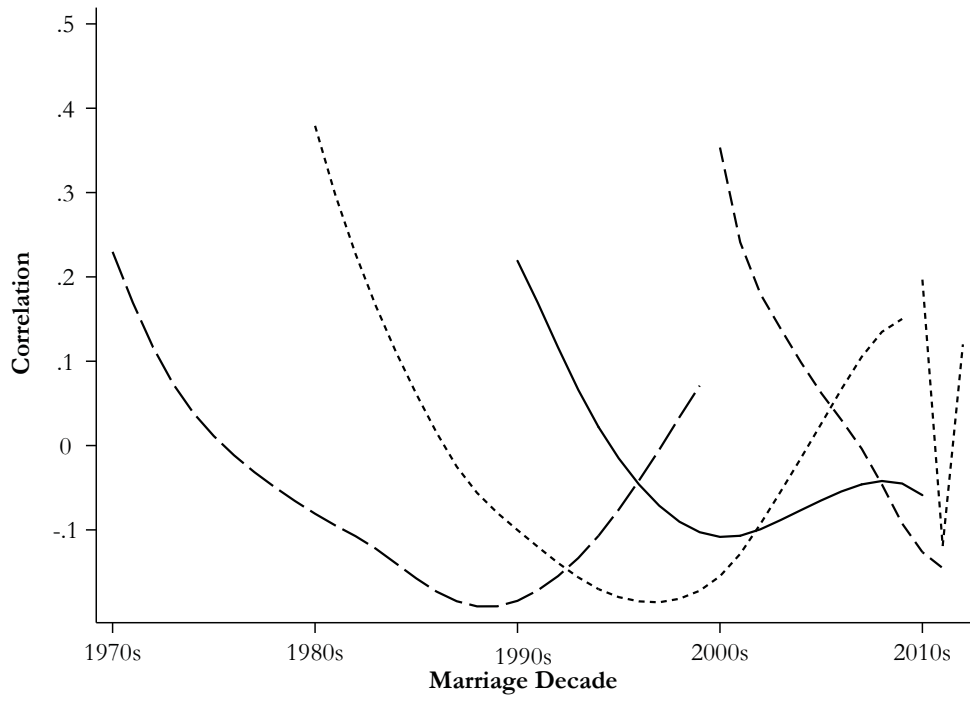
Panel A. High School or Less



Panel B. Some College



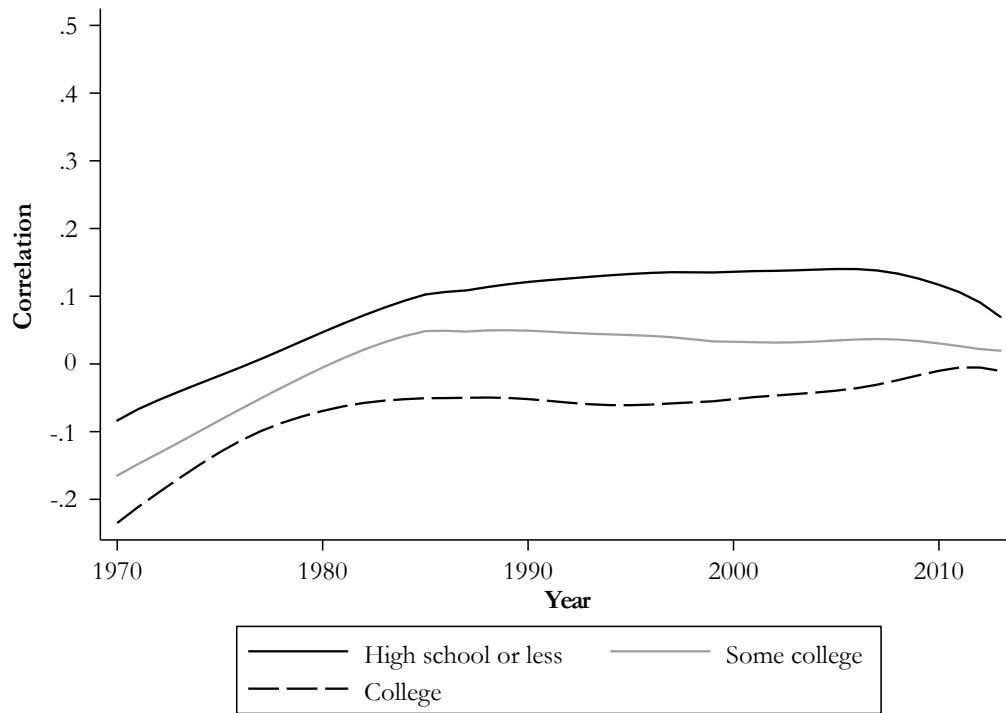
Panel C. College



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Notes: Trend lines are lowess smoothed.

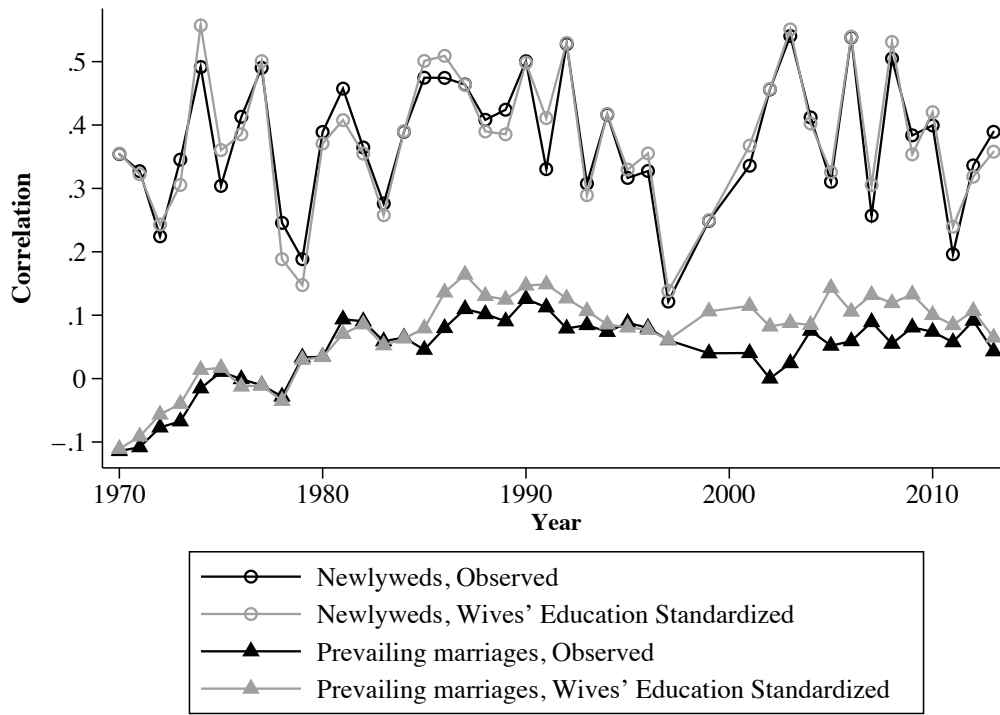
Fig. S9 Trends in the Correlation Between Husbands' and Wives' Earnings Among Prevailing Marriages by Wives' Education



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

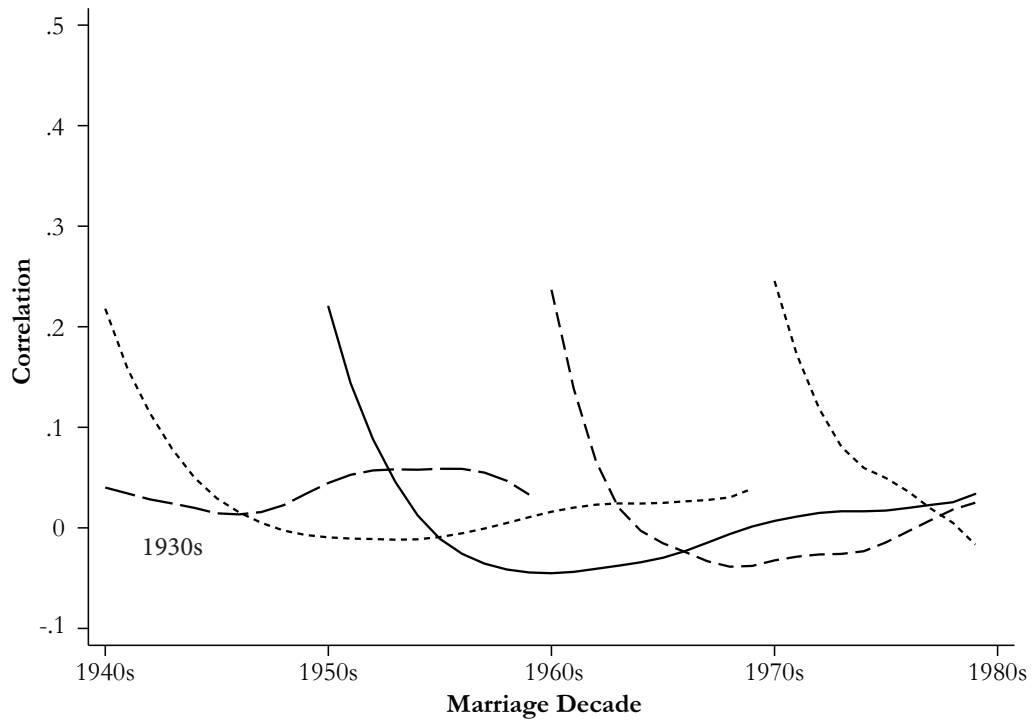
Notes: Trend lines are loess smoothed.

Fig. S10 Comparison of Trends: Observed and Simulated Trends Holding Wives' Education Constant at its 1970 Distribution



Source: 1970-2013 Panel Study of Income Dynamics (PSID).

Fig. S11 Trends in the Correlation Between Husbands' and Wives' Earnings by Marriage Decade and Marital Duration



Source: 1940, 1960, 1970, and 1980 U.S. decennial censuses.

Notes: Trend lines are lowess smoothed.