# Is There a Male Marriage Wage Premium? A Meta-Regression Analysis

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## Abstract

There is a substantial research literature that discusses and documents a wage premium for married men. Our meta-analysis of 50 studies and 403 estimates identifies omitted-variable bias as the most important dimension in explaining this extensive empirical literature. After correcting for likely misspecification biases, no instantaneous marriage-wage premium remains. However, our findings are consistent with a more complex, differential wage-premium that accumulates gradually with the length of a man's marriage. Results from this meta-regression analysis cast doubt upon both the 'selection' and the 'specialization' explanation for the marriage-wage premium.

Keywords: Marriage premium, wages, productivity, meta-regression analysis, omitted-variable bias

JEL classification: J12, J31

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**Is There a Male Marriage Wage Premium? A Meta-Regression Analysis**

Several dozen studies in economics have found that married men earn between 10% and 50% higher wages than their single counterparts. The primary explanations for this phenomenon are employer discrimination towards married men, selection of higher ability men into marriage, and increased productivity as a result of greater specialization of labor for married men. Although many clever hypotheses have been offered, the existing literature provides mixed results about which factors are responsible for the observed wage premium.

Is it is possible that the marriage wage premium has not been fully explained or adequately estimated in spite of the volume of research conducted? Key variables: productivity, household specialization of labor and ability are very difficult to measure empirically. Many studies control for unobservable individual factors such as ability by using fixed effects models. Most, but not all, find a significant marriage premium even after controlling for individual-specific fixed effects, so it remains unclear how important selection is in explaining this phenomenon.

Specialization of labor within the home is arguably even more difficult to measure than ability. One important issue is whether the benefits from specialization occur as a one-time (or instantaneous) increase in wages at marriage (an intercept shift) or if the premium increases over time as a couple is more able to specialize effectively. The variable "years of marriage" is often included to address this issue. Our meta-regression analysis documents how omitted-variable biases still dominate this well-developed empirical literature.

In this paper, we employ meta-regression analysis (MRA) to examine the size of the male marriage wage premium, whether selection or productivity differences are primarily responsible, and whether the wage premium is changing over time with changes in gender norms and family structure. MRA is the statistical analysis of previously reported research results (Stanley and Jarrell, 1989). In hundreds of applications, MRA has explained much of the disparate empirical findings routinely found in empirical economics (Stanley, 2001). In labor economics, MRA has been profitably employed to understand: the union-wage gap (Jarrell and Stanley, 1990; the employment effect of the minimum wage (Card and Krueger, 1995; Doucouliagos and Stanley, 2009), participation and productivity (Doucouliagos, 1995), the gender wage gap (Stanley and Jarrell, 1998; Jarrell and Stanley, 2004; Weichselbaumer and Winter-Ebmer, 2005), unions and productivity (Doucouliagos and Laroche, 2003), the wage curve (Nijkamp and Poot, 2005), the effect of immigration on wages (Longhi, Nijkamp and Poot, 2005) and efficiency wages (Krassoi-Peach and Stanley, 2009), to cite a few. This MRA focuses on the time period of the data, whether fixed effects methods were used, and whether or not "years of marriage" was included in the researchers' wage equation as well as many other variables previously found to be important in the wage determination literature (see Table 2).

The Male Marriage Wage Premium

Estimates of the marriage wage premium come from a standard log-wage regression that includes, among other considerations, a control for marital status.

$$\ln W_i = \beta X_i + \delta M_i + \varepsilon_i \qquad (1)$$

where W is the worker's wage, X is a vector of worker characteristics thought to affect his earnings, and M is his marital status. The coefficient on the dummy variable for marital status is the estimate of interest in this analysis. When multiplied by 100, the coefficient on the marital status dummy variable can be read as an approximate percentage wage premium that married men enjoy. The exact percent premium is given by $(e^{\delta} - 1)*100$.

If an unobserved factor influences both wages and marital status, the estimates from equation 1 will be biased. For example, it is possible that some desirable personality characteristic, like 'charisma,' could affect both wages and marital status. If 'charisma' positively affects both wages and the likelihood of being married, then $\delta$ will be upwardly biased. If sample selection is the main channel for the marriage-wage premium, then the observed marriage premium is simply the artifact of some unobserved individual characteristic. To address this possibility, individual effects are often explicitly incorporated into the wage equation:

$$\ln W_{it} = \beta X_{it} + \delta M_{it} + \alpha_i + \varepsilon_{it} \qquad (2)$$

where $W_{it}$ is the wage of individual $i$ in year $t$, and $\alpha_i$ captures the time-invariant characteristics of individual $i$ (e.g., his 'charisma') and its potential to affect wages.

Using panel data with fixed effects renders these individual time-invariant individual effects ($\alpha_i$) harmless. If the estimate of the marriage premium, $\delta$, falls significantly when individual fixed effects are included in the wage regression, this is evidence that selection of more desirable men into marriage is one important cause of the wage premium.

If, on the other hand, marriage is causally related to wages, it then becomes important to ask how the benefits of marriage accrue. If specialization of labor within the household is the causal mechanism, one might expect the benefits of marriage to increase over time, as couples adjust to their comparative advantages. Kenny (1983) contends that most of the wage differential between married and unmarried men is the product of additional human capital accumulation during marriage. Since human capital accumulation takes time, there is reason to expect the marriage premium to grow with years married rather than as a lump-sum increase on the wedding day.

If the marriage premium is due to specialization of labor within the home, it stands to reason that having a wife who devotes more of her time to home production allows the husband to concentrate on market work, resulting in a positive wage premium. Over recent decades, women have entered the labor force in large numbers, and time spent in home production has steadily decreased. It is of interest to find the effects of these changes in family structure on the wage premium. Some work has been done in this area. Gray (1997) uses data from the National Longitudinal Survey of Young Men from 1976, 1978, and 1980 and National Longitudinal Survey of Youth from 1989, 1991, and 1993 to examine the changing marriage wage premium. In the early period, the marriage premium appears to be mainly a result of increased productivity of married men. In the 1989-1993 period, however, the fixed effects regressions show no marriage wage premium, evidence that the productivity effects of marriage have declined. A meta-regression analysis allows for a much more comprehensive view of the changes in the marriage premium over time across the entire research literature.

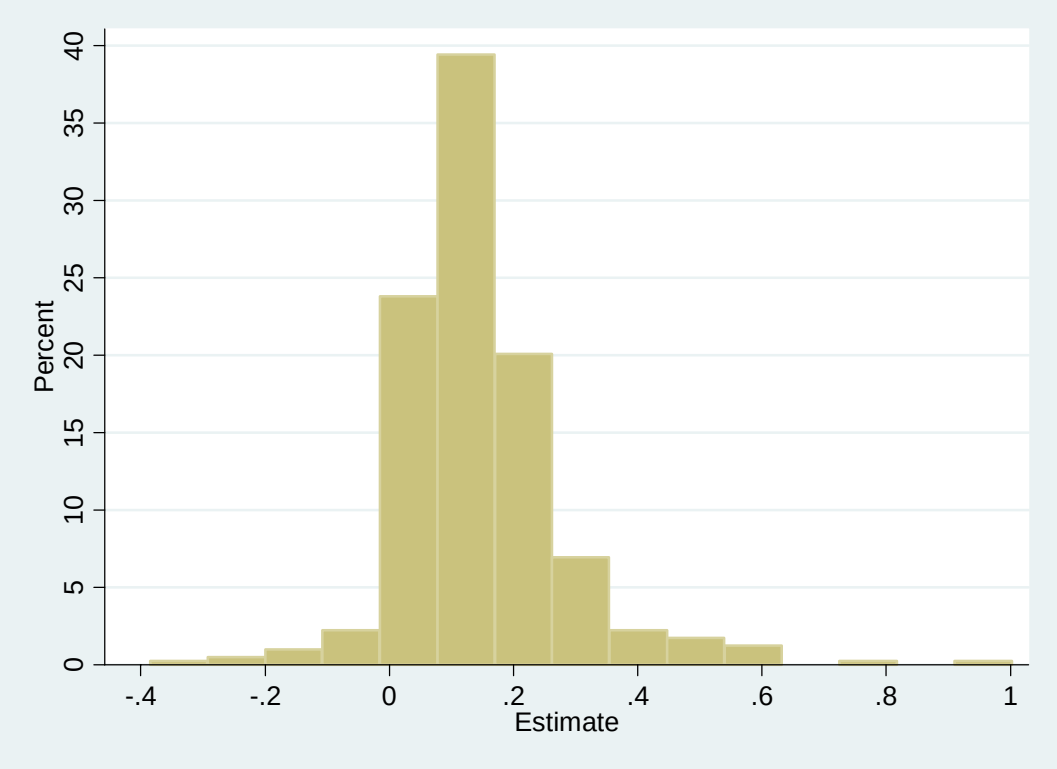
## Methods

To identify all the empirical estimates of the marriage wage premium, we searched the EconLit database and the RePEc (Research Papers in Economics) database, which contains over 300,000 working papers and 500,000 journal articles. After having identified a dozen early influential papers, we used the Social Sciences citation index to find papers that cited these seminal works. This process uncovered 75 papers. We reviewed each paper individually to determine whether it contained at least one empirical estimate of the effect of marriage on male wages. Eliminating those that did not left 50 relevant papers containing empirical estimates of this wage premium. Some studies were excluded because regressions included married men only or also included women, resulting in incomparable premium measures. The remaining 50 studies contain 403 estimates of the marriage wage premium. Because marriage is a common control variable in wage regressions, estimates of the marriage premium may also be found in papers about compensating wage differentials, the effect of self-employment, occupational segregation, and other topics in labor economics. About 35% of the estimates come from studies that are not primarily concerned about the marriage-wage premium.

## Results

On average, these studies report that married men earn 15.5% more than their single counterparts. The smallest wage premium reported is -0.385, and the maximum was 1.002. Approximately 61% of the estimates are between 0.05 and 0.2.

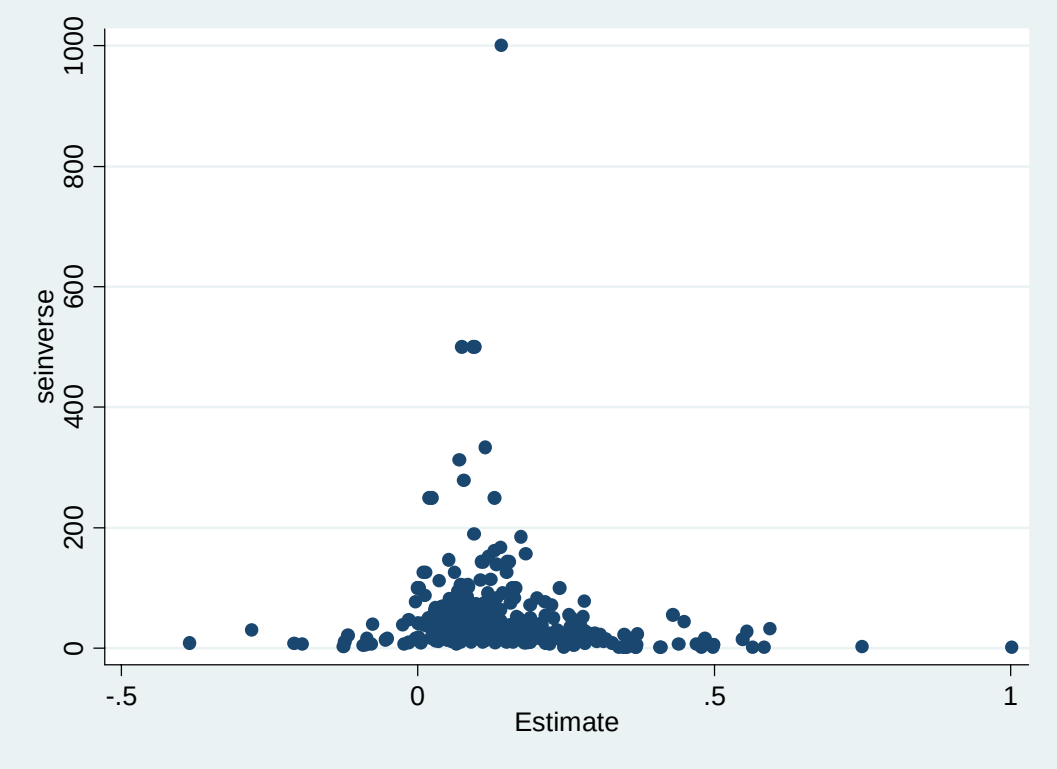
Figure 1: Distribution of the Reported Marriage-Wage Premiums




A positive coefficient on a marriage dummy variable in a wage regression has become the norm in labor economics. Whenever there is an established research expectation, there is also a threat that researchers will change their research methods until they arrive at the expected results or, alternatively, that journal editors and referees will discount papers that do not find statistical significance in the expected direction.

Examination of a funnel graph (Figure 2), a scatter diagram of precision (1/standard error) against the estimate, is a commonly used method of identifying publication selection. In the absence of publication selection, the estimates should vary symmetrically around the 'true' effect. Selective reporting can cause estimates to be biased and to exaggerate empirical effects. Publication selection bias is identified by a funnel graph that is asymmetric or skewed to one side or the other.

Figure 2: Funnel Graph of Reported Marriage-Wage Premiums




Visual inspection of the funnel graph indicates approximate symmetry, but looks can be deceiving. Perhaps there is some slight leaning towards the right? Fortunately there is a simple test for publication selection (Egger et al., 1997; Stanley, 2005; Stanley 2008). If estimates are selected for their statistical significance, selection will be more intense and the resulting publication bias will be larger for larger standard errors. In this case, the reported estimated marriage premium will depend on its own standard error:

$$\hat{\delta}_i = \alpha_1 + \alpha_0 Se_i + u_i \qquad (3)$$

where $\hat{\delta}_i$ is the estimated marriage premium, and $Se_i$ is the associated standard error of $\hat{\delta}_i$. MRA equation (3) will clearly contain heteroskedasticity, because $Se_i$ differs greatly from one study, or estimate, to the next. Weighted least squares (WLS) is the

conventional remedy for heteroskedasticity, which can be implemented either by using a WLS routine with $1/Se_i^2$ as the weight or by dividing MRA equation (3) by $Se_i$ .

$$t_i = \beta_0 + \beta_1(1/Se_i) + v_i \qquad (4)$$

where $t_i$ is the t-value for the estimated marriage premium. If $\beta_0$ is significantly different from zero, this is evidence of publication selection (Egger et al., 1997). This test is known as the funnel asymmetry test (FAT). Testing whether $\beta_1 = 0$ is the precision-effect test (PET) (Stanley, 2005; Stanley, 2008). Finding $\beta_1 > 0$ is evidence that there is a positive marriage premium after correcting for publication selection.

The results of this FAT-PET-MRA for male marriage premiums are found in Table 1. The funnel asymmetry test shows no evidence of publication selection (t=1.23; p>.05), while the precision effect test shows a significantly positive empirical effect of marriage on wages (t=37.145; p<<.001). Thus, our meta-analysis confirms the presence of some average male marriage wage premium, at least from the perspective of this entire research literature.

**TABLE 1**
**Tests for Publication Selection**
*(Dependent Variable: t)*

| **FAT-PET-MRA** | | **PEESE** | |
|---|---|---|---|
| Intercept | 0.321 | Se | 1.269 |
| | (1.23) | | (0.93) |
| (1/Se) | 0.109 | (1/Se) | 0.110 |
| | (37.14) | | (44.62) |

Notes: (t-values in parentheses)

Having established the existence of a marriage wage premium, the magnitude of this premium becomes of central interest. The fixed-and random-effects weighted averages are the conventional summary statistics in meta-analysis (0.111, 0.125; respectively), and they should not be unduly influenced by publication selection in this area of research. Their 95% confidence intervals are: (0.109, 0.112) and (0.119, 0.131); respectively. Note how these estimates of the overall marriage premium are quite close to the FAT-PET-MRA estimate of $\beta_1$. However, estimates of $\beta_1$ are known to be biased downward when there is a genuine empirical effect (Stanley, 2008), and Stanley and Doucouliagos (2007) propose a nonlinear version of (3) to provide a less biased corrected estimate of empirical effect. This simple MRA model replaces $Se_i$ in equation with $Se_i^2$. Its WLS version is:

$$t_i = \gamma_0 Se_i + \gamma_1 (1/Se_i) + e_i \qquad (5)$$

The estimated $\gamma_1$ is the value of the marriage premium corrected for publication selection. Stanley and Doucouliagos (2007) call this corrected estimate 'precision-effect estimate with standard error' (PEESE). This PEESE estimate is found in column 2 of Table 1, and it estimates the true marriage premium to be about 11%, very consistent with our previously reported summary statistics. PEESE, PET, fixed-effects weight average and the random-effects weighted average are within one percentage point, and the simple mean male marriage premium is only a few percent larger (0.144). Thus, the overall male marriage wage premium is approximately 11%.

However, this single value is an average across the reported research and does not take into account how the premium is affected by omitted-variable biases, the number of years married or other factors that are likely to influence its magnitude. If the typical

study contains some net bias (for example, by omitting variable(s) that are positively related to both wages and marriage) and if these omissions are independent of *se*, then our corrected estimate will also be biased even after correcting for potential publication selection. To the task of revealing which factors exert a significant influence on the marriage wage premium or bias the reported estimates, we now turn.

TABLE 2
**Meta-Independent Variable Definitions**

| | |
|---|---|
| *se* | Is the standard error of the estimated marriage-wage premium |
| *Sixties = 1* | if the data was from the time period 1960-1969 |
| *Seventies = 1* | if the data was from the time period 1970-1979 |
| *Eighties = 1* | if the data was from the time period 1980-1989 |
| *Nineties = 1* | if the data was from the time period 1990-1999 |
| *Two thousands = 1* | if the data was from the time period 2000-2009 |
| *fe = 1* | if the study used fixed effects estimation |
| *ols = 1* | if the estimates were obtained using ordinary least squares regression |
| *incl_yearsmarried =1* | if the study included the number of years that the respondent had been married |
| *whiteonly = 1* | if the sample was restricted to white men only |
| *incldivorce = 1* | if the study included a dummy variable for whether the worker was divorced |
| *lnhrlywge = 1* | if the dependant variable in the regression was the natural log of the hourly wage |
| *usdata = 1* | if the data were collected in the United States |
| *omitage = 1* | if the study omitted the worker's age |
| *omitexp = 1* | if the study omitted the worker's years of job experience |
| *omitkids = 1* | if the study omitted whether or not the worker has children |
| *omitocc = 1* | if the study omitted the worker's occupation |
| *omitindustry = 1* | if the study omitted the worker's industry of employment |
| *omitgovt = 1* | if the study omitted a government/private employment distinction |
| *omitunion = 1* | if the study omitted the union/nonunion status of the worker |
| *omitregion = 1* | if the study omitted the worker's geographical region of employment |
| *omiteduc = 1* | if the study omitted the worker's years of education |
| *omitvet = 1* | if the study omitted whether the worker was a Veteran |
| *omiturban = 1* | if the study omitted whether or not the worker was employed in an SMSA |
| *omittenure = 1* | if the study omitted the worker's tenure with his current employer |
| *notaboutmarriage = 1* | if the study was not specifically about the marriage wage premium |
| *restrictedage = 1* | if the ages studied use a smaller range than the conventional, 25-64 |

Multi-variable Meta-regression analysis

Like every other meta-analysis in economics, the conventional Q-test shows clearly that there is excess heterogeneity (Q= 9626.4; df=457; p<.001). What factors affect the marriage wage premium? Is the premium caused by selection or productivity differences? Is it is changing over time as gender roles have evolved? Can obvious misspecification biases be identified, and their effects moderated?

Twenty-seven explanatory variables are coded based on researchers' experience and what the literature regards as important. Table 2 defines all of these variables, and Table 3 reports their summary statistics.

Fifteen percent of the estimates are from data collected in the 1960s, 42% from the 1970s, 46% from the 1980s, 41% from the nineties, and 17% from the 2000s. The numbers do not add to 100% because approximately 40% of the studies use panel data which spanned more than one decade. Twenty six percent of the wage equations employ fixed effects to control for time-invariant, unobserved, individual effects. Eleven percent include the number of years of marriage, 76% of the studies used US data, and 39% of the studies have an age range that was more restricted than 25-64. With regards to control variables contained in the regressions used to estimate the marriage premium, 87% of studies omit whether the individual worked for the government, 72% omitted the worker's union status, 52% omit the workers age, 33% his region, and 65% his tenure. However, only 27% omit his experience and 3.5% his educational attainment.

Table 4 is the correlation matrix for the meta-independent variables (excluding the year dummies). Most correlations were small, with a few exceptions. Because a study could not simultaneously use fixed effects and OLS, there is a large

negative correlation between those two variables. Studies that were restricted to white men only were unlikely to omit union status, as were those that included industry of occupation. If worker's industry was included in the study, his occupation was very likely to be included as well, with the correlation between *omitindustry* and *omitocc* of 0.77. Studies that omitted geographic region were also likely to omit whether the respondent lived in an urban or rural area.

TABLE 3
Summary Statistics for Coded Variables

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *estimate* | 403 | 0.144 | 0.132 | -0.385 | 1.002 |
| *se* | 403 | 0.071 | 0.146 | 0.001 | 1.089 |
| *sixties* | 403 | 0.151 | 0.359 | 0 | 1 |
| *seventies* | 403 | 0.422 | 0.494 | 0 | 1 |
| *eighties* | 403 | 0.462 | 0.499 | 0 | 1 |
| *nineties* | 403 | 0.407 | 0.492 | 0 | 1 |
| *twothousands* | 403 | 0.174 | 0.379 | 0 | 1 |
| *fe* | 403 | 0.266 | 0.442 | 0 | 1 |
| *ols* | 403 | 0.623 | 0.485 | 0 | 1 |
| *incl_yearsmarried* | 403 | 0.112 | 0.315 | 0 | 1 |
| *whiteonly* | 403 | 0.342 | 0.475 | 0 | 1 |
| *incldivorce* | 403 | 0.454 | 0.499 | 0 | 1 |
| *lnhrlywge* | 403 | 0.677 | 0.468 | 0 | 1 |
| *usdata* | 403 | 0.757 | 0.430 | 0 | 1 |
| *omitage* | 403 | 0.516 | 0.500 | 0 | 1 |
| *omitexp* | 403 | 0.270 | 0.445 | 0 | 1 |
| *omitkids* | 403 | 0.610 | 0.488 | 0 | 1 |
| *omitocc* | 403 | 0.598 | 0.491 | 0 | 1 |
| *omitindustry* | 403 | 0.660 | 0.474 | 0 | 1 |
| *omitgovt* | 403 | 0.868 | 0.338 | 0 | 1 |
| *omitunion* | 403 | 0.720 | 0.450 | 0 | 1 |
| *omitregion* | 403 | 0.333 | 0.472 | 0 | 1 |
| *omiteduc* | 403 | 0.035 | 0.183 | 0 | 1 |
| *omitvet* | 403 | 0.826 | 0.379 | 0 | 1 |
| *omiturban* | 403 | 0.419 | 0.494 | 0 | 1 |
| *omittenure* | 403 | 0.645 | 0.479 | 0 | 1 |
| *notaboutmarriage* | 403 | 0.352 | 0.478 | 0 | 1 |
| *restrictedage* | 403 | 0.390 | 0.488 | 0 | 1 |

TABLE 4
Correlation Matrix for Meta-Independent Variables

| | fe | ols | yrs | whit | div | wge | us | age | exp | kids | occ | ind | gov | unio | reg | educ | vet | urb | ten | notmar | resag |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| fe | 1.00 | | | | | | | | | | | | | | | | | | | | |
| ols | -0.75 | 1.00 | | | | | | | | | | | | | | | | | | | |
| incl_yearsmarried | 0.25 | -0.23 | 1.00 | | | | | | | | | | | | | | | | | | |
| whiteonly | 0.04 | -0.08 | 0.28 | 1.00 | | | | | | | | | | | | | | | | | |
| incldivorce | 0.08 | -0.03 | 0.18 | 0.25 | 1.00 | | | | | | | | | | | | | | | | |
| lnhrlywge | 0.25 | -0.26 | 0.21 | 0.26 | 0.25 | 1.00 | | | | | | | | | | | | | | | |
| usdata | 0.07 | -0.05 | 0.15 | 0.31 | 0.01 | 0.23 | 1.00 | | | | | | | | | | | | | | |
| omitage | -0.20 | 0.27 | 0.04 | 0.00 | -0.29 | -0.09 | -0.04 | 1.00 | | | | | | | | | | | | | |
| omitexp | -0.21 | 0.04 | -0.14 | -0.24 | -0.04 | -0.31 | -0.05 | -0.32 | 1.00 | | | | | | | | | | | | |
| omitkids | -0.22 | 0.27 | -0.14 | -0.08 | -0.24 | -0.22 | -0.09 | 0.02 | 0.18 | 1.00 | | | | | | | | | | | |
| omitocc | 0.10 | -0.08 | -0.18 | -0.47 | -0.07 | -0.13 | -0.02 | -0.07 | 0.33 | 0.09 | 1.00 | | | | | | | | | | |
| omitindustry | -0.03 | 0.01 | -0.26 | -0.59 | -0.11 | -0.15 | -0.14 | -0.05 | 0.30 | 0.00 | 0.77 | 1.00 | | | | | | | | | |
| omitgovt | 0.13 | -0.14 | 0.14 | -0.15 | 0.06 | 0.11 | -0.02 | -0.13 | 0.06 | 0.08 | 0.43 | 0.17 | 1.00 | | | | | | | | |
| omitunion | -0.08 | 0.12 | -0.18 | -0.64 | -0.10 | -0.18 | -0.25 | 0.00 | 0.19 | 0.14 | 0.59 | 0.64 | 0.43 | 1.00 | | | | | | | |
| omitregion | -0.02 | -0.07 | -0.03 | -0.31 | -0.16 | -0.04 | -0.39 | 0.24 | -0.04 | 0.13 | 0.16 | 0.18 | 0.15 | 0.34 | 1.00 | | | | | | |
| omiteduc | 0.01 | -0.02 | 0.19 | -0.14 | 0.07 | -0.10 | -0.05 | 0.05 | 0.13 | -0.02 | 0.16 | 0.14 | 0.07 | 0.12 | 0.13 | 1.00 | | | | | |
| omitvet | 0.19 | -0.18 | 0.04 | -0.18 | 0.26 | 0.05 | -0.23 | -0.19 | 0.16 | -0.18 | 0.20 | 0.18 | 0.17 | 0.05 | 0.03 | 0.02 | 1.00 | | | | |
| omiturban | -0.16 | 0.08 | -0.06 | -0.32 | -0.15 | -0.10 | -0.56 | 0.08 | 0.06 | 0.27 | 0.07 | 0.11 | 0.00 | 0.28 | 0.60 | 0.22 | -0.15 | 1.00 | | | |
| omittenure | -0.31 | 0.20 | -0.10 | -0.16 | 0.06 | -0.15 | -0.18 | -0.01 | 0.25 | 0.19 | 0.15 | 0.32 | 0.05 | 0.29 | 0.18 | 0.14 | -0.13 | 0.36 | 1.00 | | |
| notaboutmarriage | -0.33 | 0.34 | -0.26 | -0.14 | -0.20 | -0.19 | 0.03 | 0.28 | 0.24 | 0.16 | 0.14 | 0.27 | -0.14 | 0.16 | -0.07 | -0.14 | -0.14 | -0.16 | 0.22 | 1.00 | |
| restrictedage | 0.21 | -0.25 | 0.09 | 0.17 | -0.19 | 0.08 | 0.35 | -0.10 | -0.12 | -0.02 | -0.15 | -0.31 | 0.15 | -0.20 | 0.06 | -0.07 | -0.05 | -0.31 | -0.43 | -0.28 | 1.00 |

To minimize the possibility of omitted variable bias in our MRA, all 27 explanatory variables were included in the initial regression. In order to minimize specification searching and its own potential bias, we systematically drop the variable with the least explanatory power in each regression until all variables are statistically significant. This process yields a multivariate MRA that explains over 55% of the variation among the reported estimates of the male marriage wage premium (Table 5).

Table 5 provides very clear evidence that variables included (or omitted) in a researcher's wage equation and the methods she chooses can have a large effect on the reported marriage premium. In particular, including years married ($t=-12.2$; $p< .001$), omitting union status ($t=4.87$; $p< .001$) or using US data has a substantial effect on the reported estimates. In general, omitted-variable bias is the most influential aspect of this area of research. Together, these omitted variables (*omitage, omitunion, omitregion,*

*omittenure*, and *incl_yearsmarried)* are responsible for about half of our MRA's explanatory power ($F_{(5,387)}$= 47.7; p<.001).

TABLE 5
Meta-Regression Results

| | |
|---|---|
| Number of obs | 403 |
| F( 15, 387) | 34.71 |
| Prob > F | 0.000 |
| R-squared | 0.5736 |
| Adj R-squared | 0.5571 |
| Root MSE | 0.03296 |

| Variable | Coefficient | Std. Err. | t-Value | Significance Level |
|---|---|---|---|---|
| *se* | 0.976 | 0.224 | 4.35 | 0.000 |
| *seventies* | 0.021 | 0.007 | 2.95 | 0.003 |
| *eighties* | 0.024 | 0.007 | 3.31 | 0.001 |
| *nineties* | 0.029 | 0.008 | 3.56 | 0.000 |
| *twothousands* | 0.021 | 0.010 | 1.98 | 0.049 |
| *fe* | -0.022 | 0.011 | -2.09 | 0.037 |
| *ols* | 0.020 | 0.010 | 2.09 | 0.037 |
| *incl_yearsmarried* | -0.069 | 0.006 | -12.2 | 0.000 |
| *usdata* | 0.064 | 0.007 | 9.02 | 0.000 |
| *omitage* | -0.019 | 0.007 | -2.87 | 0.004 |
| *omitunion* | 0.052 | 0.011 | 4.87 | 0.000 |
| *omitregion* | -0.023 | 0.008 | -2.74 | 0.006 |
| *omittenure* | 0.030 | 0.009 | 3.44 | 0.001 |
| *notaboutmarriage* | 0.040 | 0.009 | 4.32 | 0.000 |
| *restrictedagerange* | -0.019 | 0.006 | -3.41 | 0.001 |
| _cons | -0.032 | 0.015 | -2.14 | 0.033 |

The importance of omitted-variable bias is further evidenced by the significance of fixed effects estimation, *fe*. Including fixed effects lowers the wage premium by approximately 2%, suggesting that individual specific characteristics and selection into marriage do play a role in the wage premium, but are not the primary cause of the reported magnitudes. However, the single most influential factor is whether a study includes (or omits) year married. We estimate that the omission of years married, which 89% of the studies do, increases the typical marriage wage premium by 6%. This

omission along with omitting a worker's union membership, which is found in 72% of the studies, can explain nearly our entire aggregate estimate (11%) of the marriage-wage premium.

Once we allow for the potential biasing effects of omitting these and other variables, no male marriage premium remains. The meta-regression analysis reported in Table 5 allows us to estimate the magnitude of the marriage wage premium were none of the relevant covariates omitted. We define our benchmark study as one which uses U.S. data, fixed effects to control for individual characteristics, and does not omit age, union status, region, tenure, or rely upon a restricted age range. The MRA model reported in Table 5 implies that one time intercept shift from marriage is approximately -4% {CI= (-7%; -0.7%)} for this benchmark study. That is not to say that marriage has no effect on male workers' wages. Rather, once likely omitted-variable and selection biases are 'corrected,' no instantaneous increase in male workers' wages due to marriage can be identified in this extensive research literature.

Although we could identify no publication bias overall (recall Table 1), the significance of *se* in Table 5 ($t=4.35$; $p< .001$) does indicates a selection for statistically positive marriage wage premiums after we control for other likely biases. However, any simple understanding of publication selection in this literature seems to be contradicted by the MRA coefficient on *notaboutmarriage*, which suggest that the marriage-wage premium is 4% smaller ($t=4.32$; $p< .001$) for those studies that focus on this premium. This is the opposite of what a simple selection for statistically positive wage premiums would imply. It is likely explained by the fact that studies about the marriage-wage premium typically include as many covariates as possible, which as we have seen above,

tends to lower the estimated wage premiums. When we focus on those studies that are not about the marriage premium along with the absences of biases describe above for our benchmark study, this MRA model predicts a wage premium almost exactly zero.

The studies in our MRA span 5 decades during which much has changed about the nature of marriage, family structure, social norms, and productivity itself. Meta-regression analysis allows us to examine how the marriage premium has responded to these changes. Previous evidence has found the wage benefits of marriage to be decreasing over time. Blackburn and Korenman (1994) find the premium to have decreased by 10 percentage points between 1967 and 1988. Gray (1997) finds that the marriage premium drops from 9% in the period 1976-1980 and becomes statistically insignificant in the 1989-1993 period after controlling for individual specific characteristics. Without controlling for other factors our data shows a wage premium that is roughly declining over time (see Table 6). The raw marriage-wage premium was significantly higher in the 60s than in the other decades. The wage premium dropped notably in the 70s and 80s but remained relatively stable afterwards.

TABLE 6
Wage Premium by Decade

| Variable | Obs | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| Sixties | 61 | 0.180 | 0.184 | -0.39 | 0.75 |
| Seventies | 170 | 0.152 | 0.143 | -0.13 | 1.00 |
| Eighties | 186 | 0.123 | 0.103 | -0.28 | 0.57 |
| Nineties | 164 | 0.108 | 0.082 | -0.28 | 0.43 |
| Two thousands | 70 | 0.120 | 0.062 | -0.08 | 0.26 |

The raw estimates show a wage premium that was highest in the 1960s, but when controls are added for relevant study characteristics, all decades have a significantly higher wage premium than the 1960s (the omitted category, recall Table 5). This may be due to changing norms in the literature over time. As seen in Table 5, inclusion of years

married is the single most important determinant of the magnitude of the marriage wage premium. In studies that used data from the 1960s, only 7% included years married. In the 1990s, however, 17% of studies included a control for years married.

## Discussion

What explains our finding that there is no male marriage-wage premium once likely estimation biases are factored out? To address this question, let us review the three main explanations found in this literature for the existence of a positive male marriage-wage premium. The first is 'selection.' This hypothesis suggests that certain men are more desirable as both as mates and as employees due to some factor unobservable to the researcher but not to employers or women. Fixed-effects estimation is the traditional method to control for such unobservable characteristics. Our MRA shows that selection does play a role, because studies that included individual fixed effects found estimates of the wage premium that were approximately 2% lower than those that did not. However, this does not completely explain the reported wage premium, because it is typically much larger than 2%. Furthermore, the importance of including the number of years married, as clearly revealed by our MRA, is not consistent with the selection hypothesis. We would also not expect the selection process to differ significantly between the 1960s and any other decade, so the significance of the time dummies is problematic for this hypothesis as well.

The second major hypothesis, 'specialization,' is that married men are more productive than single men; that is, marriage has a causal effect on both productivity and

wages. This enhanced productivity could be the result of many factors. Married men might be better at work because their wives specialize in home production, freeing husbands to specialize on market work. The importance of years married is compatible with this explanation. We expect that couples would perfect their household roles over time. However, the observed consistency of the marriage premium over time causes difficulty for this specialization hypothesis. If specialization of labor within the home is the main cause of the wage premium, it stands to reason that the premium would decrease as more women enter the labor force and generally spend less time in home production. In addition, as divorce rates rise, it becomes more costly for a woman to sacrifice her own career so that he can better specialize in his. We find that while the simple average of wage premium has fallen over time, when compared to the 1960s, the wage premium was significantly higher in the 1970s, 80s, 90s, and 2000s. This suggests that specialization of labor within the home is not the primary cause of the marriage-wage premium.

Other direct tests of the specialization hypothesis have found it to be an incomplete explanation of the wage premium. Loh (1996) uses the wife's labor force participation as a proxy for specialization within the home and finds that the marriage premium does not diminish when this control is added. Hersch and Stratton (2000) include self-reported information on time spent by men in nine different household production activities as a measure of household specialization. They find very little difference in the amount of time spent on home production by married and single men, and the inclusion of these variables do not affect estimates of the marriage premium.

In a related hypothesis, married men may also be more productive because they invest more in human capital than their single counterparts in part because of the

financial investment of their wives. As divorce rates have increased over time, investments in one's spouse's human capital become less appealing. If this were the primary cause of the premium, we would also expect it to be declining over time and it is unclear why years of marriage would be such an important factor. Increased productivity may also be the result of the stronger labor force attachment of married men and/or employers' perception of stronger attachment. If marriage causes men to 'settle down,' be more stable, and focused on work and career, this additional commitment may cause higher productivity and wages. It is reasonable for these factors to increase with years of marriage as well, because marriage duration will roughly correspond to an increased likelihood of addition of children. This 'married with children' explanation is also consistent with a stable marriage premium over time because society's changing gender roles within and outside the home need not lessen a man's commitment to his family.

Even if married men are not significantly more productive than their single male counterparts, employers might believe that they are more stable and more likely to remain with the firm, long term, thereby saving the employer future training and hiring costs. If so, discrimination towards married men might be the source of this premium, whether or not there are, in fact, actual productivity differences. If employers perceive married men to be more 'stable,' a positive male marriage wage premium might result.

## Conclusion

Our meta-regression analysis (MRA) has finds a sizable and rather stable male marriage wage premium. Various overall estimates give remarkably similar values of approximately 11%, and we find no aggregate evidence of publication bias. However,

this simple summary of the research on the male wage premium is largely overturned through a more complex interplay of effects revealed by our multivariate MRA. Meta-regression analysis identifies that differential omitted-variable biases explains a substantial portion of the variation found in this research literature. Omitted-variable bias is the single most influential research dimension and is seen in the significant effects of: *omitage, omitunion, omitregion, omittenure, incl_yearsmarried,* and *fe*. When our MRA model is used to filter out these potential omitted-variable and selection biases, no evidence of a male marriage wage premium remains.

This finding does not mean that marriage has no effect on wages, but rather that the research literature contains no support of the notion that there is a one-time increase in male wages on the wedding day. This result tends to reject the 'selection' hypothesis; that is, that married men tend to possess some unobserved, but productive, characteristic. If this selection hypothesis were true, we would expect a positive wage premium even after the number of years of marriage is controlled. Here, we find a small (-4%), but statistically *negative* premium once likely biases are filtered.

Nonetheless, our findings are still consistent with the notion that a marriage-wage premium exists if it is a more complex phenomenon that gradually accumulates over the years of marriage. Casual observation of our research base suggests that there is still a marriage-wage premium if one considers the typical number of years men are married. To address, rigorously, the marginal contribution of an additional year married upon wages would require a separate meta-analysis of the estimated coefficients on year married among these reported wage equations and is thereby beyond the scope of the present study.

Furthermore, we find no evidence that the marriage-wage premium is declining over time as expected in the 'specialization' hypothesis. This is the view that married men are more productive due to the more efficient specialization within the home. Note that the 'specialization' hypothesis is consistent with the absence of an instantaneous marriage-wage premium, as found here, and with one which gradually increases over the course of the marriage. If this explanation were true, the well-documented changes in gender roles and divorce rates over recent decades would be expected to gradually lessen a 'specialization' marriage-wage premium. Yet, after likely biases are controlled for, the marriage-wage premium appears to have *increased* in the1970s and to have remain stable afterwards (note the coefficients on *seventies, eighties, nineties* and *twothousands* in Table 5). Thus, on balance, our meta-analysis also casts doubt on the 'specialization' hypotheses while supporting the 'married with children' view. No doubt, further detailed analysis is still needed to uncover the more nuanced complexities that likely underlie our observed decade effects and the underlying socio-economics of marriage.

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