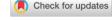


ARTICLE





The male marital earnings premium contextualized: Longitudinal evidence from the United States, Germany, and the United Kingdom

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Abstract

Objective: To examine the effect of marriage entry on annual *net* rather than *gross* earnings across different institutional settings.

Background: Previous research focused on men's gross wage marital premium to explore whether selection or specialization explains premiums. However, gross wages do not reflect disposable resources because taxes still have to be deducted. As the tax treatment varies across countries and by marital status, it is also relevant to consider such aspects.

Method: We use panel data from the United States (PSID), Germany (SOEP), and the United Kingdom (UKHLS) to examine annual male net earnings changes over marriage entry using fixed effect models with individual slopes. The models enable us to assess marriage-related net earnings while adjusting for heterogeneous age slopes before marriage in addition to any time-constant heterogeneity. Our sample contains 3244 US men, 4581 German men, and 7140 British men.

Results: Our results reveal a male marital net earnings premium only in Germany—a country with sizeable institutional marriage privileges. We go on to show heterogeneity in marriage effects by cohort, partner's education, and children. Results highlight that men from earlier cohorts and those married to partners with low education tend to benefit more.

Conclusion: Results add novel insights to our understanding of marital premiums and highlight the relevance of tax policy contexts as an institutional driver underlying marital premiums.

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KEYWORDS

comparative, family policy, income or wages, labor market, marriage

INTRODUCTION

Research on the association between marriage and men's economic well-being, and more specifically their gross hourly wages, has a long tradition within the social sciences. Across different studies, marriage entry has been associated with 5%–20% higher male wages (Barg & Beblo, 2009; Cheng, 2016; Killewald & Gough, 2013; Killewald & Lundberg, 2017; Ludwig & Brüderl, 2018; McDonald, 2020). Theoretical explanations for economic marital premiums have predominantly focused on two causal mechanisms: potentially higher *productivity* of married compared to unmarried men partially due to specialization within marriage and *employer preference* to hire and promote married men over unmarried men. Additionally, higher wages of married men have also been discussed to be a result of the *selection* of economically more successful men into marriage or to be purely spurious (Bonnet et al., 2018; Budig & England, 2001; Killewald & Gough, 2013; Killewald & Lundberg, 2017; Ludwig & Brüderl, 2018; McDonald, 2020).

Previous wage premium research deliberately focused on men's gross hourly wages (i.e., individuals' pay before income and payroll taxes are deducted) instead of net hourly wages (i.e., employee's pay after all direct taxes are deducted) to explore the "direct" effects of marriage on men's wages or to explore potentially non-causal explanations while minimizing the likelihood to capture influences of policies and institutions including tax benefits or penalties tied to legal marriage (Barg & Beblo, 2009; Ludwig & Brüderl, 2018). However, we argue that it is additionally relevant to understand the significance of such country-specific policies for the economic well-being of individuals as they transition into marriage.

The income tax policy system has the potential to *directly* increase or reduce the economic resources of men as they enter a marriage depending on the country-specific regulations around the taxation of married spouses compared to the unmarried. Additionally, the marital tax treatment likely also steers men's productivity behavior and thus *indirectly* influences the effect of marriage on wages. Partners may make conscious decisions on whether getting married reduces or increases disposable income and whether dual earning or other employment constellations during the marriage are more viable and financially beneficial, depending on how economically favorable or unfavorable the tax system is of a specific constellation. These decisions are relevant because clearly it matters to individuals how much disposable income they have at the end of the month for consumption or savings.

Direct and indirect effects of income tax policies are not necessarily homogeneous even within a specific country. Depending on the country's system, the level of tax advantages or disadvantages can differ across couples depending on partners' relative income. For instance, couples within joint taxation regimes commonly benefit most when income differences between partners are high. Such within-couple income inequalities are closely linked to intra-couple differences in education, evolving gender norms, or childcare responsibilities.

Adding to previous literature on the male marital wage premium, the present study theoretically discusses and empirically scrutinizes men's annual net earnings instead of hourly gross wages over the transition into marriage. While gross wages may inform us about productivity and a preferential treatment in the labor market, net earnings indicate the actual economic situation of individuals in light of the policy context. We address three research questions: (a) Is marriage entry associated with a male annual net earnings premium? (b) How does this differ by institutional settings? (c) How heterogeneous are these effects along characteristics, such as the presence of children, cohort, or partner's education?

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To capture how different institutional settings lead to tax advantages or disadvantages that shape net earnings for married men, we focus on the United States, Germany, and the United Kingdom. Each country provides a unique policy context regarding the tax treatment of married couples: In the United States, married spouses can either benefit or lose from marriage depending on the couple's earnings situation, although marriage penalties have been dominant for the last 40 years (penalizing context). In Germany, married spouses are given generous fiscal privileges that are particularly high for married couples with unequal earnings (beneficial context) (Fasang et al., 2013; Pollmann-Schult, 2011). In contrast, the British policy context provides only limited tax-related benefits for married couples compared to the unmarried. Thus, marriage itself is economically less decisive from a tax perspective for individuals in the United Kingdom (marginally beneficial context). Taken together, each of the three countries provides a fundamentally different policy treatment of the married.

We draw on three well-established longitudinal household panel studies: the US Panel Study of Income Dynamics (PSID), the German Socio-Economic Panel (SOEP), and the UK Household Longitudinal Study (UKHLS). Using fixed effects regression analyses with individual slopes, we assess changes in men's annual net earnings as they transition from being nevermarried (i.e., single or cohabiting) into being first-time married. Changes in annual net earnings upon marriage can result from changes in the tax treatment based on the legal marital status or changes in men's labor market activity, productivity and employer preferences. Thus, we contribute to the economic literature on the marriage tax and the sociological literature on the male marital wage premium. Unlike most previous economic literature on the marriage tax, we can observe within-unit changes as men transition into marriage rather than comparing the tax burden of married men to unmarried men from a cross-sectional perspective (Christl et al., 2023; Immervoll et al., 2009). Yet, contrasting the sociological male marital premium literature, we address the relevance of the institutional context by focusing on net rather than gross earnings. We highlight the tax treatment of the married because marital benefits are explicitly distributed through the tax system—and not through transfers, cash payments, or other benefits—in each of the three countries in our study.

Our results indicate that married men in Germany—a conservative context that promotes marriage and provides institutional support for a male-breadwinner model—benefit from a marital premium on annual net earnings. We only find suggestive evidence for a marital premium for men in the United Kingdom. Results for men in the United States suggest a marital penalty on annual earnings but vary by model specification, highlighting the heterogeneity within the US tax system. However, even for Germany we find substantive heterogeneity in marriage effects. Here, men married to low-educated spouses benefit the most from the beneficial tax treatment. Overall, and resonating with Cooke and Baxter (2010), our results underscore the relevance of the institutional context in assessing marital premiums.

BACKGROUND

Explanations of how marriage may affect wages

A large body of research has highlighted that married men have higher gross wages than single or cohabiting men (Barg & Beblo, 2009; Pollmann-Schult, 2011). The predominantly discussed causal explanations for men's marital wage premium relate to married men's increased productivity and employer preferences for married men.

The most popular theory to explain married men's higher wages refers to the specialization hypothesis, according to which spouses are expected to specialize either in paid labor or home production to maximize the household's overall production (Becker, 1993). The division of labor is determined by each spouse's earnings' potential, meaning that the spouse with the higher potential will specialize in paid labor. In contrast, the other spouse will specialize in unpaid labor. According to Becker (1985), women are more likely to "specialize" in non-market work based on their lower earnings potential and inherent biological differences allowing men to devote more time and effort to paid labor. Resource-bargaining perspectives extend Becker's economic theory of the family by suggesting that the gendered division of labor results from spouses' negotiations about obligations and resources (Blood & Wolfe, 1960; Blumberg & Coleman, 1989; Brines, 1994). According to this perspective, spouses with higher resources shift "undesired" housework to the spouse with lower resources and thus lower bargaining power. This theory is essentially gender-neutral, claiming that relative earnings rather than gender are the determining factor in how labor is divided within the household. However, previous research has highlighted that women's higher earnings do not necessarily translate into a reduction of their own and an increase of their male partner's unpaid labor (Bittman et al., 2003). Rather men's housework contributions are relatively consistent irrespective of his own or partner's income share. To explain such persistent gender inequalities in the division of labor, researchers have relied on gender perspectives around gender norms and "doing gender" (Anon, 1991; West & Zimmerman, 1987). According to these perspectives, husband and wife will consciously and unconsciously gravitate towards gender-stereotypical tasks due to deeply ingrained normative expectations. Overall, notions around the gendered specialization of spouses claim that married men devote more time and effort to their labor market activities and less time to unpaid labor because household chores are commonly covered by their female partners. This may lead to greater productivity and subsequently higher male wages (Bardasi & Taylor, 2008). However, notions around specialization as the main driver of male wage premiums have been questioned in recent studies, for instance, because married women might also experience wage premiums and men's housework time does not substantially mediate their marriage premium (e.g., Killewald & Gough, 2013; Pollmann-Schult, 2011).

Productivity and thus wages of married men may also increase as a result of behavioral changes unrelated to whether specialization takes place within the couple or not. For instance, according to the *motivation theory* men may be motivated to invest more in their career based on normative believes that husbands are meant to financially provide for their family (Cheng, 2016). Similarly, married men may be happier and follow a healthier lifestyle than unmarried men. Better health and a sense of financial responsibility for other family members may make married men more productive at work than unmarried men. However, it needs to be acknowledged that such behavioral changes may not be necessarily the result of marriage itself but can already appear during pre-marital cohabitation, highlighting an anticipation effects of marriage (Dougherty, 2006; Killewald & Gough, 2013).

In addition to productivity theories, researchers have also discussed the possibility of positive discrimination of married men by employers. If marriage generates a biased perception, employers may regard married men as more competent, productive, reliable, and dedicated than unmarried men. As a result, some studies have shown that married men are more likely to be invited for job interviews or offered higher starting salaries than unmarried men (Bielby & Baron, 1986; Carlsson, 2011; McDonald, 2020).

Is the effect really causal?

Next to the previously discussed causal mechanisms of a male marital wage premium, researchers have also argued that this premium may simply be due to selection of economically more successful men—measured for instance by the employment status and earnings—into marriage (Sweeney, 2002; Xie et al., 2003). Specifically, men with higher economic potentials embody the ability to act as a financial provider, a desirable trade in potential partners. As such, these men are more sought after in the marriage market (Xie et al., 2003). In line with

gendered ideas about men's responsibility to act as a financial provider, several studies have highlighted that marriage is postponed until certain economic goals have been achieved (Gibson-Davis et al., 2018).

In addition to the selection argument, some researchers have also highlighted that the association between marriage and men's wages to be more spurious resulting from maturation processes. Precisely, marriage commonly takes place during young adulthood, which also coincides with a time of rapid career progress and wage growth (Cheng, 2016; Dougherty, 2006; Killewald & Lundberg, 2017).

In line with ideas of a postponement of marriage until financial markers are achieved or notions around the overlap of marriage with a time of high wage growth, Ludwig and Brüderl (2018) as well as Killewald and Lundberg (2017) showed that US married men are on a steeper career trajectory already before marriage when compared to never-married men. Whether this holds for other contexts has not been explored yet.

Tax policies as a driver of male marital wage premiums

Previous research focused on *gross* earnings (i.e., pay received before taxes are withheld) rather than *net* earnings (i.e., pay received after taxes). This has been necessary to assess explanations for a marriage premium while reducing potential bias introduced through institutional interventions such as taxation. However, depending on the country context, taxes can substantially alter economic well-being over the transition into marriage. Additionally, taxes can also influence decisions on marriage entry or exit and the division of labor in married couples. Using panel data from Germany, Barg and Beblo (2009) emphasize the significance of incentives in the tax code for married couples to specialize. Similarly, Pollmann-Schult (2011) highlights the role of tax policies for the labor market participation of secondary earners. Hence, the tax system is frequently cited as a mechanism that regulates the labor market behavior of individuals in couples and, therefore, shapes gross *and* net wages (Pollmann-Schult, 2011; Richardson, 2000). In general, the marital wage premium and penalty literature acknowledges the relevance of taxation by emphasizing that gross wages depend on the institutional context (de Hoon et al., 2015).

In the present study, we extend previous research on gross wages by considering how marriage entry is associated with annual net earnings across different country contexts. This is relevant for at least two reasons: First, institutional interventions through taxation have the potential to reduce or exacerbate any marriage-related advantages or disadvantages highlighted in previous literature. Second, any marital premiums in gross wages illustrate only a fraction of the effective socio-economic significance of marriage because gross wages are not what individuals receive and can consume or save. To add to the picture of how marriage is associated with changes in men's economic well-being and, by extension, other family members' well-being, it seems relevant to consider net earnings and thus provide an indication of what men—and thus also the household if we assume a certain degree of economic pooling—have at their disposal.

Income taxation of married couples and its implications

Why single out the income tax system when examining the relevance of the institutional dimension in marital premiums? We argue that it is the tax system within which the institutional differentiation between the married and unmarried is most visible. There are ample ways in which the policy context shapes individuals' economic standing, including parental leave schemes, child benefits, public childcare, and the like. However, virtually none of these policies are tied to marriage. Only income tax regulations are *explicitly* and *exclusively* bound to the legal marital status. This makes income tax policies of unique interest for the marriage premium literature.

The ways in which countries advantage or disadvantage married spouses through the tax system are manifold. Generally, countries differ in the tax filing unit applied to married individuals compared to the unmarried. In most cases, spouses file tax returns either jointly or individually. In an individual tax system, married individuals are not treated differently from unmarried—single or cohabiting—individuals. In contrast, in a tax system with joint filing, spouses are treated as a unit (Dingeldey, 2001; Schwarz, 2012). Depending on the country's tax system, the resulting tax burden can lead to substantial advantages or disadvantages within the joint filing system (Alm & Melnik, 2005).

The US income tax system provides either a marriage benefit or penalty depending on the within-couple earning gap and the level of income (McCaffery, 2009). A tax premium arises when spouses' incomes are added, and the combined tax exemption is more than that of two comparable single individuals. Thus, it is particularly spouses with substantially unequal earnings, which is often the case for couples with a stay-at-home spouse, that can benefit financially from this system. However, the overall prevalence of couples with a stay-at-home spouse and thus substantially unequally earning spouses is comparatively low in the US (Kowalewska & Vitali, 2021). Rather most couples are dual earners who would face only small premiums or even penalties, which generally occurs when married couple's combined tax exemption is less than that of two single individuals. Considering that the existence of a tax benefit or penalty for married couples also depends on the overall income position of the couple, dual earners in the higher income strata are more likely to experience a tax penalty. However, even dual-earner couples in the lower income strata are frequently penalized. As such, the system overproportionally punishes households that cannot afford a stay-at-home spouse (Alm et al., 1999). It is worth noting that couples who face tax penalties related to joint filing also have the option to file taxes separately. In such a case, however, they lose important tax credits and often face a higher tax rate (Internal Revenue Service, 2022). Filing separately is therefore rather uncommon (about 2.5% of all tax returns in 2020, see Internal Revenue Service, 2023). Although the federal income tax system has been reformed numerous times over the last decades, marriage penalties still exist (Pomerleau, 2015) and were widely present during our observational period (Eissa & Hoynes, 2000). In sum, US married couples are usually treated jointly with regard to the tax filing system. The outcome of this joint treatment is most likely a tax penalty considering the high prevalence of dual-earner couples in the US.

Although couples file jointly in Germany and the United States, the German case differs substantially from the US because the joint tax treatment of married couples is characterized by the so-called "full splitting." Effectively, this means that the incomes of both spouses are combined and divided by two before applying the standard tax schedule to each half. Because the income tax has a progressive design (i.e., higher income individuals have to pay a higher share in taxes for any additional income) the "full splitting" of spouses' incomes leads to substantial tax benefits for married couples, particularly if spouses have unequal earnings. This way, the spouse with higher earnings, commonly the male partner, can avoid bearing a considerable tax burden by marrying a lower-income spouse. However, the spouse with lower earnings, commonly the female partner, cannot benefit similarly from this arrangement and might even see their tax burden increased. Microsimulation studies have shown how this mechanism leads to significant tax reductions for one-earner couples, particularly in the upper income strata (Bach et al., 2012). However, even when the within-couple income gap is small, German couples are not penalized as is the case in the United States but simply receive smaller tax advantages. Thus, married couples in Germany are treated jointly and receive a tax benefit, which differs in its magnitude depending on couple's income and each spouse's contribution.

The German and US system of joint filing stands in sharp contrast to the individualized income tax schedule in the United Kingdom. In 1990, the former system of joint assessment of married couples in the United Kingdom was replaced by a system of individual filing (Giles & Johnson, 1994). However, the individual filing of tax returns does not mean that there is no

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| | Tax assessment | Effect |
|----------------|-------------------|------------------|
| United States | Joint filing | Penalty |
| Germany | Joint filing | Benefit |
| United Kingdom | Individual filing | Marginal benefit |

institutionalized advantage for the married. British married spouses and individuals in a civil partnership are entitled to shift up to one tenth of the partner's personal tax allowance to the other partner (Alm & Melnik, 2005). This so-called "marriage allowance" is beneficial for the couple if one partner has earnings below their personal income tax allowance. However, this merely translates into a benefit of up to £252 per year, which is far less than the potential benefit from the German full splitting where almost up to £10,000 in tax allowance can be shifted every year. Thus, married couples in the United Kingdom are treated *individually with only marginal tax benefits*. Table 1 summarizes the three settings.

This general picture masks substantive heterogeneity in the tax treatment based on the couple's characteristics. For instance, the eligibility for tax credits can be contingent on the number of dependent children and own or partner's income. The tax burden will be jointly determined, for instance, by marital status, personal income level, spouse's income level, the difference in the two, and the presence of children. In other words: myriad combinations of a couple's characteristics will jointly impact the tax treatment.

What does this effectively mean for household pocketbooks? That there is substantive heterogeneity in marriage effects across income combinations and couple characteristics. For instance, German couples only benefit if they have unequal earnings. Yet in the United States, it is the interaction of child tax credit eligibility and joint filing which potentially penalizes individuals. Therefore, upon marriage, two otherwise identical couples might see their tax burden either increased or diminished depending on the presence of dependent children. We illustrate these patterns across the three contexts in Table S1.

In sum, although the three countries differ in the degree to which married couples receive a beneficial tax treatment, the effect of marriage on net earnings is contingent on each couple's compliance with characteristics that are rewarded through the tax system. In other words, men in couples that adopt a traditional division of labor are more likely to benefit from marriage in the German context or be at least penalized less as would be the case in the US context. Effectively, men in couples where the woman is less likely to work full-time—be it because of lower human capital, conservative ideas of gender roles, or childrearing responsibilities—will benefit differently compared to men married to high educated women with a strong labor market attachment and no children.

The present study

In the present study, we examine how the effect of marriage on men's net earnings varies across institutional contexts. We argued that the tax treatment of married individuals is a key dimension of the policy environment that moderates the effect of marriage on earnings because marital benefits are distributed through the income tax system.

In Germany, a male marital net earnings premium can be a result of the tax schedule—as long as partners have unequal earnings, which is commonly the case for German couples (Haupt & Strauß, 2022). In the United Kingdom, premiums are more moderate compared to Germany because the higher earning partner, commonly the man, can only use a fraction of the lower earning partner's tax exemption. On the contrary, most US men likely experience a

marriage penalty due to the strong prevalence of dual-earner couples despite a favorable tax treatment of spouses that have very unequal incomes. This translates into substantially different changes in tax burdens as men transition into marriage across the three contexts. These marriage-related changes in the tax burden directly impact men's net earnings and the income they have to their disposal. Specifically, we expect that:

Hypothesis 1. *Net earnings hypothesis*: Marriage entry is associated with a net earnings premium for men in Germany and the United Kingdom, and a net earnings penalty for men in the United States. The premium can be expected to be more substantial in Germany than the United Kingdom.

Given that within-couple earnings differences partially determine whether a couple receives a tax advantage or penalty upon marriage, we expect substantial heterogeneity in the effect of marriage on tax burdens and net earnings by partner's earnings constellations. More specifically, men in couples that are more likely to either have or to establish a traditional division of labor would benefit more than those who do not. Within-couple differences could stem from differentials in partners' income potential, either due to educational differences (a), conservative gender norms enforcing versions of male earners with stay-at-home housewives (b), or the presence of dependent children (c). We therefore examine heterogeneity in marriage effects by looking at these three characteristics implicated in the earnings differential in couples: heterogeneity by partner's education (lower earnings potential of the spouse), by cohort (individuals of earlier birth cohorts being more likely to adhere to conservative gender norms compared to individuals of later birth cohorts), and by the presence of children. Starting with educational differences, we expect married men to benefit more when their spouse has a lower potential for a high-earning career, which would be reflected by lower educational achievements. In joint tax regimes, benefits for men are largest when within-couple earnings differentials are highest. Lower-educated women are less likely to achieve similar (or higher) earnings than their higher-educated husbands, thereby increasing the probability of a traditional division of labor. We therefore expect:

Hypothesis 2a. Partner's education hypothesis: The marital premium in Germany and the United Kingdom is higher for men married to lower-educated women. The marital penalty in the United States is lower for men married to lower-educated women.

If individuals hold strong egalitarian gender norms, it is unlikely they adhere to a traditional division of labor—regardless of incentives in the tax treatment. Later born cohorts usually have more egalitarian beliefs about gender roles in terms of providing, caring, and housekeeping than earlier born cohorts. This is also reflected in a higher prevalence of dual-earner couples among later born cohorts (Cunningham, 2007; Trappe & Sørensen, 2006). As a result, we expect heterogeneity in marital premiums by cohorts. That is, marital premiums should be higher among German and UK men from earlier born cohorts because of stronger adherence to traditional gender norms. The situation is more complex in the US, where tax policies changed several times throughout the last decades. Generally, marriage tax penalties where more prevalent in the late 20st century compared to the early 21st century (Alm & Sebastian Leguizamon, 2015). We therefore expect a higher marriage penalty for earlier born cohorts in the US due to a more punitive tax treatment in the 70s and 80s. In summary, we expect:

Hypothesis 2b. Cohort hypothesis: The marital premium in Germany and the United Kingdom is higher for men from earlier born cohorts compared to later born cohorts. The marital penalty in the United States is lower for men from later born cohorts compared to earlier born cohorts.

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Finally, we address heterogeneity in marriage effects by the presence of children. Couples with dependent children are more likely to adopt a traditional division of labor which ultimately benefits the paid work of the husband. That is, men's marital premiums should be higher among German and UK men with dependent children compared to childless men. Again, the US case complicates the picture because couples can lose substantive child tax benefits by filing jointly. In fact, previous research established that households with dependent children often suffer severe marriage penalties (Carasso & Steuerle, 2005; Ellwood & Liebman, 2001). In summary, we expect:

Hypothesis 2c. *Children hypothesis*: The marital premium in Germany and the United Kingdom is higher for fathers than childless men. The marital penalty in the United States is higher for fathers than childless men.

DATA AND METHODS

Data

The present study used nationally representative, high quality panel data from the US Panel Study of Income Dynamics (PSID, 1977–2017), the German Socio-Economic Panel Study (SOEP, 1984–2019), and the UK Household Longitudinal Study (UKHLS, 2009–2019). All three surveys cover a wide range of topics including detailed measures of each household members' income and their retrospective and prospective marital status and marital transitions. For all three datasets, the same households and their members are interviewed over time to allow analyses of temporal changes.

In addition to data from the individual surveys, we relied on harmonized measures provided through the Cross-National Equivalent File (CNEF). The CNEF is managed at the Department of Human Sciences at The Ohio State University (US) which also grants access to the harmonized data. The CNEF harmonizes core information such as income and demographic variables across panel data from currently nine countries including the three countries considered in the present study. The applied harmonization algorithms consider country-specific differences in the underlying surveys to provide highly comparable measures for cross-country longitudinal analyses. Most importantly for the current study, the CNEF provides a set of generated variables that are not available in the original data (Frick et al., 2007). These measures include estimates of the tax burden, which can be used to clearly estimate net income from respondents' self-reported information on their gross income. The generation of such tax-related measures is highly complex because it requires in-depth knowledge of the countries' tax systems. For all datasets, tax simulation programs are used to provide comprehensive and comparable tax measures across countries: For the United Kingdom, tax information and net earnings are provided on the individual level by the data provider with tax estimation routines written by highly experienced UK-based researchers. For German data, tax estimations are provided in the CNEF file and based on the Tax-Benefit Microsimulation of the German Institute for Economic Research. For the US PSID data, the CNEF tax estimations rely on the tax simulation program, TAXSIM, of the National Bureau of Economic Research (Feenberg & Coutts, 1993).

Sample

For our analytical sample, we selected successfully interviewed working men aged 18 to 59 living in private households if they either (1) experienced a transition from being never-married—

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single or cohabiting—to their first marriage during panel participation or (2) remained never-married—single or cohabiting—during the panel. It was necessary that we observe respondents before they marry to compare men's earnings before marriage to their earnings after marriage entry. We followed men up until 5 years within their marriage or until their last year in marriage if their marriage dissolved, whichever comes first. Due to the shorter observation period in the United Kingdom, longer observation periods were avoided to assure comparability across countries. In multi-person households, we only include household heads or their partners. We implemented a range of other restrictions (see Figure 1 for an overview of this process including information on the number of excluded cases). First, we excluded men in same-sex couples because it can be expected that norms around the division of labor differ substantially in these couples compared to different-sex couples (Rothblum, 2017). Moreover, same-sex couples were not entitled to marry and thus excluded from marriage-related tax benefits during most of our observation period. Second, we excluded observations from men living in house-holds with non-relatives or distant relatives. Third, we excluded observations with missing

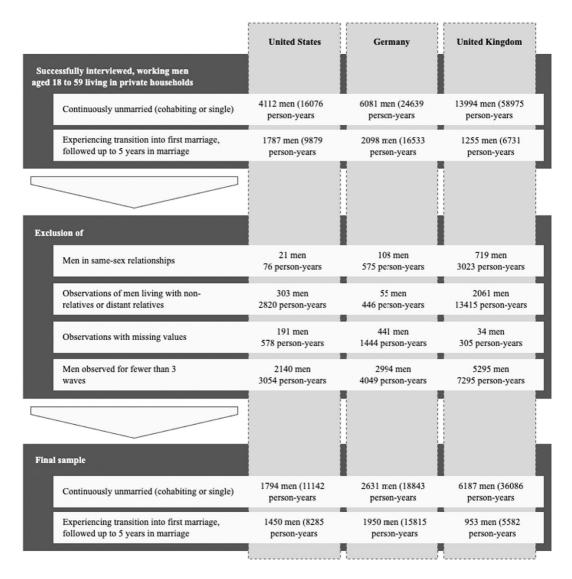


FIGURE 1 Exclusion criteria and sample selection flowchart.

values on any of the analytical variables as well as men that report non-positive earnings. Finally, we restricted the sample to men that were observed in at least three survey waves. This was necessary as we used data-demanding fixed effects analyses with one individual slope variable (FEIS). A detailed explanation of the data requirements of the applied FEIS models is provided in Section 3.4. After the implementation of those restrictions, our analytical sample included 3244 respondents providing 19,427 person-years from the United States, 4581 respondents providing 34,658 person-years from Germany and 7140 respondents providing 41,668 person-years from the United Kingdom. We disaggregate our sample into groups for the analyses on heterogeneity in marriage effects. Specifically, we generate two groups for each of our three measures: men with lower versus higher-educated partners (i.e., high school or less vs. more than high school as the highest educational level achieved), men born before versus in or after 1976, and men with versus without children in at least one observation. The decision to divide the sample into two cohorts based on the birth year 1976 was of rather analytical nature and less driven by theoretical considerations to ensure a sufficient number of marriage entries in the two sub-samples. A disaggregation onto more than two groups for these three dimensions was unfeasible due to sample size limitations.

Measures

Outcome variables

Our main outcome variable was annual *net earnings*. Net earnings were calculated by subtracting income and payroll taxes from gross earnings. If households report other gross income apart from labor earnings that are subject to income taxation, we multiplied the simulated tax burden by the share of labor earnings of total gross income to arrive at the tax burden on labor income. We assessed net earnings at the individual level. For the individual-level analysis we followed previous literature and proportionally assigned net earnings based on the individual contribution to the household's gross income (Avram & Popova, 2021). We provide a detailed discussion of our approach and its advantages and disadvantages in the Data S1B.

To illustrate the relevance of the tax treatment of married couples, we additionally show the relative individual *tax burden*. The tax burden reflects the income and payroll taxes individuals must pay in relation to their gross income. We assessed marriage-related changes in this burden and express the tax burden as a share of gross earnings.

All monetary information was top and bottom coded and adjusted using the Consumer Price Index (CPI). For comparability reasons, we express monetary measures in 2017 US dollars. As common in income research, we transformed net earnings using the natural logarithm.

Explanatory variables

Our main explanatory variable was a time-varying dummy indicator of respondents' *marital status*. In line with our main interest, the dummy indicated whether a respondent is never-married (reference) or currently married for the first time. To generate this variable, we relied on self-reported information on respondents' prospective and retrospective marital status.

Covariates

As we used fixed effects models that account for any observed and unobserved time-constant factors and to avoid overcontrolling, we only included few time-varying covariates. We added a

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dummy indicator of currently in education (no student [ref], and student) and a measure for the number of children living in the household (no children in household [ref], one child, two children, and three or more children) to account for any fatherhood premium as well as tax advantages tied to parenthood. Additionally, we added a dummy to capture whether never-married respondents are cohabiting [ref] or single. Thus, our reference group for our analyses were childless cohabitors. Finally, we added indicators of the survey period in intervals of 5 years to capture period effects of national earnings trends in the population. We included grouped indicators instead of yearly dummies to avoid collinearity with our individual age slopes. Note that the indicator for the number of children was dropped for our sub-group analyses on the parenthood status.

Analytical strategy

Previous research on the association between marriage and economic outcomes commonly used fixed effects (FE) panel models. These models can illustrate how changes over time in individuals' characteristics are associated with changes over time in their outcomes. Solely relying on within individual variation in the selected variables while discarding any between individual variation, FE models implicitly account for any observable and unobservable time-constant heterogeneity. However, conventional FE panel models require strict exogeneity of covariates, which does not hold if the assumption of parallel trends is violated. This assumption implies that although treatment and control group may have different levels of the outcome prior to the treatment, their trend in the pre-treatment outcome should be the same. Thus, FE models may result in biased results in the case of heterogeneous pre-treatment slopes or growth curves that are related to the outcome measure (Allison, 1990). To address this issue, we followed the current state of the art and use fixed effects models with individual-specific slopes (FEIS).

FEIS relax the parallel trends assumption by de-trending and de-meaning the data using a time-varying estimate of the outcome variable—in our case respondents' net earnings (Rüttenauer & Ludwig, 2020). Thus, the FEIS model additionally accounts for potentially different slopes or growth curves in the pre-marital earnings between the treatment (i.e., respondents that transition into their first marriage) and control group (i.e., respondents that stay unmarried during the panel). This is relevant for the present study because previous research has shown that economically more successful men with steeper wage growth rates are more likely to transition into marriage (Ludwig & Brüderl, 2018). Compared to conventional FE models, FEIS models require more person-years for the estimation. Precisely, a FEIS estimation requires j + 1 person-years per unit where j refers to the number of slope parameters plus the individual intercept. For the current study, we used respondents' age as our slope parameters and thus included respondents with at least three person-years. We implemented FEIS using Stata's user-written ado xtfeis (Ludwig, 2015). Standard errors were clustered on the individual-level.

We present our findings in several steps. First, we provide information on average annual net earnings for never-married, not-yet-married, and married men in order to provide a descriptive overview of our core concept. The category of never-married men refers to our control group while the remaining two categories refer to our treatment group—once before marriage and once after marriage entry. In this descriptive overview we also present annual mean gross earnings and tax burdens to provide a more comprehensive picture for the reader. We then show the main results of our FEIS models on the average effect of marriage on tax burdens and annual net earnings before we investigate heterogeneity in the effect of marriage by partner's education, cohort, and children. Finally, we elaborate on potential limitations of our analyses and present supplementary analyses and discuss implications for future research.

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RESULTS

Descriptive statistics

Table 2 illustrates annual mean gross and net earnings as well as the tax burden (i.e., income and payroll tax burdens) of never-married, not-yet married, and married men across the three countries of our study. Note that the relative difference in gross and net earnings is effectively equal to the tax burden. As illustrated in Table 2 and in line with previous research (Pollmann-Schult, 2011), married individuals on average outearn never-married individuals. The difference between married and never-married men is most prominent in the United States, However, tax burdens of married men are also higher than those of never-married men across all three countries. Given the progressive schedule of the income tax systems (i.e., higher tax rates for those with higher income) this is not surprising. Therefore, a higher tax burden during marriage does not indicate the lack of a favorable tax treatment of the married. Considering the substantial difference in gross earnings, the difference between the tax burdens of unmarried and married men is smallest in Germany—potentially indicating the benefits of joint tax filing. However, these descriptive patterns might be driven by age effects, disparities based on childbearing patterns, or other demographic characteristics. Thus, we now turn to the results of our FEIS models which better accounts for these aspects.

The effect of marriage on the tax burden

Before exploring how men's net earnings change in the transition to marriage, we briefly examined marriage-related changes in men's tax burdens. This will provide a first indication on the relevance of the policy system regarding the economic consequences of marriage in each institutional setting. Based on our earlier theoretical elaborations, we expected marriage to increase the tax burden in the United States (tax penalty) because of the strong prevalence of dual earner couples and their unfavorable tax treatment compared to unmarried individuals. In contrast, we expected marriage to decrease the tax burden in Germany and the United Kingdom because their tax systems benefit men in unequal-earning couples but do not penalize men in dual earning couples (tax benefit). However, we assumed that German men would benefit more than British men due to substantively higher benefits in Germany than in the United Kingdom. We examined these expectations using FEIS models that adjust for time-constant respondent characteristics and heterogeneity in individual slopes. This is the same analytical approach as we take for our main analysis described in the previous data and method section. Figure 2 plots the effect of marriage on the individual tax burden while keeping individual gross earnings constant (see full regression results in Table A2). Note that these models adjust for a set of time-varying characteristics including the number of children. Because we show the effect on the tax burden, negative coefficients indicate lower taxes (i.e., a tax benefit) and positive coefficients indicate higher taxes (i.e., a tax penalty).

In line with our expectations, our results indicate a significant decrease of the tax burden as men transition into marriage in Germany. Keeping gross earnings constant, German men see their income tax burden reduced by two percentage points on average. Although these reductions appear small, they can be considered substantial because a small percentage point decrease can translate into a large reduction in absolute terms. Contrary to our expectations, our results for the United States and the United Kingdom do not indicate any substantial marriage-related changes in the tax burden for men.

The identified changes in the tax burdens or lack of changes can provide a first indication on marriage related changes in net earnings. Our findings on the tax burden suggest that German men should see their net earnings increased after marriage. For the US and the UK, our

TABLE 2 Summary statistics.

| | United States | | | Germany | | | United Kingdom | | |
|----------------------|---------------------|-----------------|---------|---------------|-----------------|---------|----------------|-----------------|---------|
| | Never married Not-y | Not-yet-married | Married | Never married | Not-yet-married | Married | Never married | Not-yet-married | Married |
| Gross earnings (log) | 10.04 | 10.27 | 10.59 | 10.32 | 10.44 | 10.72 | 10.49 | 10.39 | 10.52 |
| Net earnings (log) | 98.6 | 10.06 | 10.36 | 96.6 | 10.06 | 10.35 | 10.21 | 10.13 | 10.24 |
| Tax burden (%) | 15.60 | 18.14 | 19.47 | 29.33 | 31.26 | 30.24 | 23.23 | 22.56 | 23.82 |
| Age | 33.18 | 27.85 | 30.68 | 36.10 | 31.25 | 34.50 | 41.77 | 32.82 | 34.91 |
| No children | 0.75 | 0.84 | 0.47 | 0.82 | 0.80 | 0.39 | 0.31 | 0.59 | 0.39 |
| 1 child | 0.10 | 0.08 | 0.28 | 0.11 | 0.13 | 0.38 | 0.23 | 0.20 | 0.30 |
| 2 children | 0.09 | 90.0 | 0.16 | 0.05 | 0.05 | 0.19 | 0.33 | 0.15 | 0.24 |
| 3+ children | 0.05 | 0.03 | 0.09 | 0.02 | 0.02 | 0.04 | 0.13 | 90.0 | 0.07 |
| In education | 0.01 | 0.03 | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 |
| Observations | 11,142 | 4677 | 3608 | 18,843 | 0908 | 7755 | 36,088 | 2792 | 2800 |
| | | | | | | | | | |

Note: Unweighted data. Data: SOEP, UKHLS, and PSID.

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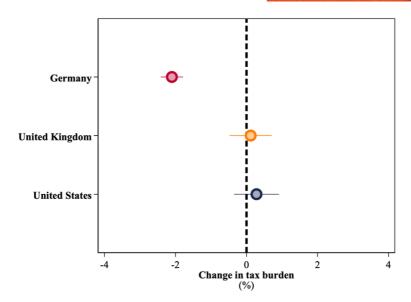


FIGURE 2 The effect of marriage on tax burdens. Whiskers indicate 95% confidence intervals. Data: SOEP, UKHLS, and PSID.

results for the tax burden indicate that the tax system might not directly alter net earnings upon marriage. To further examine how this translates into changes in the economic standing of married men, we now turn to our results on net earnings.

The effect of marriage on individual net earnings

Following the literature on the income tax treatment of the married, we expected men to experience an annual net earnings premium in Germany and the United Kingdom, but a net earnings penalty in the United States. Because we did not find any alteration of the tax burden upon marriage entry in the United States and the United Kingdom, an effect of marriage on net earnings could only result from indirect incentives or changes unrelated to the tax system, such as, changes in working hours, employment-related behavioral changes, and employer discrimination.

Figure 3 depicts the coefficients from FEIS models that adjust for a small set of timevarying characteristics, including the number of children (see full regression results for this figure in Table A2). In Germany, the effect of marriage on net earnings is positive and significant. German men experience a net earnings increase of almost 4% as they get married ((exp (0.036) – 1) * 100). The net earnings premium is also positive in the United Kingdom—but not statistically significant and smaller than in Germany as we had anticipated. UK men increase their net earnings by 3% as they enter marriage ($(\exp(0.029) - 1) * 100$). For the United States, the coefficient is negative indicating that US men decrease their net earnings by 8% as they get married $((\exp(-0.079) - 1) * 100)$. This is also in line with our theoretical expectations. Overall, we find support for our net earnings premium hypothesis.

Considering the clear tax benefit among German men visible in Figure 2, our results suggest that German men's earnings are elevated by the institutional system after marriage entry. The interpretation is different in the United Kingdom and the United States, where marital tax benefits do not seem to explain the marriage premium or penalty.

Furthermore, we expected substantive heterogeneity in marital premiums by education. That is, marital premiums should be higher for men married to lower-educated women as they

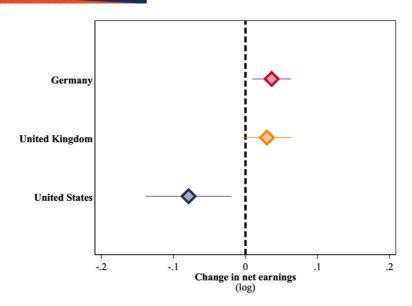


FIGURE 3 The effect of marriage on net earnings. Whiskers indicate 95% confidence intervals. Data: SOEP, UKHLS, and PSID.

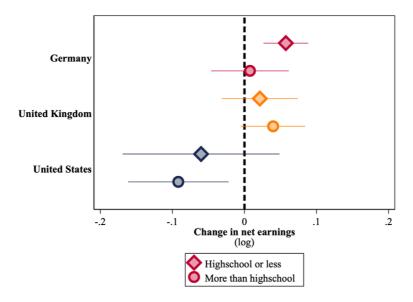


FIGURE 4 The effect of marriage on net earnings by partner's education. Whiskers indicate 95% confidence intervals. Data: SOEP, UKHLS, and PSID.

may earn less and/or be less attached to the labor market than their male partners thereby leading to substantial earnings differences. As in all main analyses, we controlled for the number of children to avoid capturing specialization that is due to parenthood. Figure 4 depicts the effect of marriage on net earnings by spousal education (full results in Table A3). As in the previous figure, coefficients are overall positive for German and UK men but negative for US men. In line with our expectations, we found substantially higher earnings premiums for German men that marry a lower-educated partner compared to men married to a higher-educated partner.

Similarly, the earnings penalty is more substantial among US men married to higher-educated women when compared to men married to lower-educated women. We found no meaningful differences between the two groups in the UK. Although the difference between coefficients in the US and Germany is not statistically significant, these findings underscore substantive heterogeneity in male marriage premiums: In contexts where the tax system benefits and incentives a traditional division of labor, men marrying women with lower earnings potential (and higher likelihood to stay home) seem financially better off through marriage.

Next, we expected heterogeneity in marital premiums by cohorts. Specifically, we anticipated that marital premiums should be higher among German and UK men from earlier born cohorts because of stronger adherence to traditional gender norms. Conversely, we expected a higher marriage penalty for earlier born cohorts in the US due to a more punitive tax treatment before the 2000s. Figure 5 depicts the effect of marriage on net earnings by cohorts (men born before vs. in or after 1976) (full results in Table A4).

Results indicate that German and UK men born before 1976 benefit from marriage entry while effects are non-substantial for men born after 1975. Again, differences between coefficients are not significant. However, the pattern clearly underscores our theoretical expectations. This also holds for US men, where the marital penalty is significantly different from zero for the earlier born but not the later born cohort.

Finally, we expected heterogeneity in marriage effects by the presence of children. Parenthood might be crucially implicated in productivity changes or employer preferences commonly to the advantage of fathers. In order not to capture fatherhood premiums or tax advantages associated with dependent children, we included the time-varying number of children in our main analyses. Because the presence of children might still be a channel through which marital premiums for men develop, we additionally ran our analyses separately for childless men and those who eventually became fathers. We did not adjust for the number of children in this subgroup analysis. Figure 6 shows that our findings are overall robust to this additional specification while adding nuances: Noteworthy is particularly the large marriage penalty for US fathers while childless men experience no meaningful marriage penalty (full results in Table A5). Although this might be surprising at first sight, it resonates well with previous literature

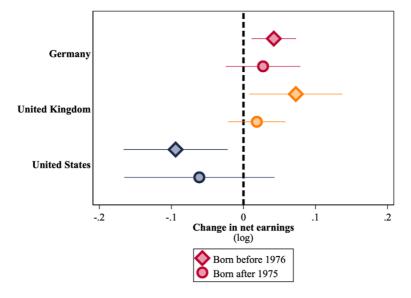


FIGURE 5 The effect of marriage on net earnings by cohort. Whiskers indicate 95% confidence intervals. Data: SOEP, UKHLS, and PSID.

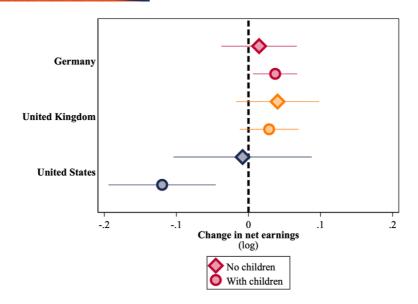


FIGURE 6 The effect of marriage on net earnings by children. Whiskers indicate 95% confidence intervals. Data: SOEP, UKHLS, and PSID.

emphasizing the diametral interaction of child tax credit eligibility and joint filing in the US (Ellwood & Liebman, 2001). Differences in net earnings premiums by children are particularly intriguing considering recent research that indicated the lack of a causal fatherhood gross wage premium in the three countries (Mari, 2019). We speculate that there is no need for fathers to disproportionally increase labor market activity when tax and transfer benefits tied to dependent children will modify their earnings regardless. For instance, in the US, it might not be worth pursuing a marginal wage increase if it is then taxed away entirely.

In summary, we found clear evidence in favor of a male marital net earnings premiums where there is institutional support for a traditional division of labor within couples underscoring the relevance of contextualizing marital premiums.

Supplementary analyses

In supplementary analyses, we show that our average findings for German and UK men are overall robust to changing the outcome to hourly wages. The coefficient becomes insignificant in the United States (Figure A1). We additionally estimate FEIS models with quadratic age slopes, yielding similar results (Figure A2). Our main findings remain consistent when excluding the never-married from our sample, keeping only not-yet-married and married person-years (Figure A3). We further address variation in income taxes across US states by adding a state control to our main analysis, effectively controlling for cross-state movers. This addition does not alter our results (Figure A4).

A growing body of literature has highlighted potential bias within weighted average fixedeffects estimators due to heterogeneous treatment effects by treatment time. To address this issue, we replicate our main analysis using the event-study difference-in-differences (DiD) method developed by Sun and Abraham (2021). To this end, we use the Stata's user-written ado xtevent (Freyaldenhoven et al., 2023). Additionally, we adjust this supplementary analysis for heterogeneous wage trends over time relaxing the assumptions of parallel trends between treated and untreated groups. Results in Figures A5 and A6 underscore the robustness of our results and confirm main findings on the link between marriage entry and tax burdens and net earnings across the three contexts.

DISCUSSION

Tax policies have the potential to importantly drive family decisions in light of disposal incomes that families have available to fulfill economic needs. While previous research acknowledged the relevance of institutional determinants, such as taxes, there has been little inclusion of the marriage tax literature in the marital wage premium tradition. The present study had the aim to connect these two strands of literature and extend the marital wage premium literature to focus more closely on how different institutional settings and specifically their tax system facilitate (or prevent) marital premiums. To this end, we examined the association between marriage entry and changes in annual net earnings of men in three substantially different country contexts, the United States, Germany, and the United Kingdom.

We expected a substantial male marital net earnings premium in Germany and a more moderate premium in the United Kingdom. Furthermore, we anticipated a male marital net earnings penalty in the United States. To test our theoretical expectations, we used harmonized, longitudinal data from the three countries and applied FEIS models to examine the extent of a male marital premium on annual net earnings. We focused on annual net earnings instead of gross wages because taxes incentivize individuals to maximize their potential take-home pay rather than their gross productivity.

Overall, our results demonstrated how the policy context can lead to different economic outcomes as individuals get married and how men are advantaged or penalized. Specifically, we revealed that marriage is particularly beneficial for men in Germany as they experience a substantial marital premium on net earnings. Marriage seems slightly less advantageous for men's net earnings in the UK. Findings suggest a marriage penalty in the United States although this result is not robust across several supplementary analyses. We provided tentative evidence that the increase in take-home pay of German married men is attributed to the special tax treatment of married couples. Furthermore, we show substantive heterogeneity in marriage effects by cohort, partner's education, and the presence of children with German men from earlier born cohorts, with lower-educated spouses, and with children, benefiting more than others.

Our results add substantial knowledge to the ongoing discussion on the causal effects of marriage on economic well-being. We theoretically contribute to the understanding of institutional policies tied to marriage by highlighting and scrutinizing the role of tax policies in changing earnings among married couples. Although institutional redistribution efforts—including parental leave schemes, child benefits, public child-care—are targeted at a variety of groups, only income taxation is explicitly and exclusively bound to the legal marital status.

Opportunity and constraints of individuals' decision making over the life course in general and particularly regarding labor market decisions are embedded in institutional arrangements. Economic outcomes of marital decisions, life-course events and transitions in the individual biography are constantly shaped by the policy context. We thus highlight the relevance to consider the context-dependency for the marital wage premium literature.

We may also speculate that married men's benefits come at the cost of women—particularly in Germany according to our results. Given that women have substantially lower wages, Germany increases gender inequality through the design of its income tax system. Incentives in the tax burden are generally seen as an important driver of gender differentials in labor market participation rates and household-level economic well-being. Joint filing of married couples is often cited as a main institutional driver of weak labor market attachment of secondary-earners (Bick & Fuchs-Schündeln, 2017, 2018). Likewise, a substantial body of literature has criticized

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joint filing for its negative consequences on gender equality because joint filing increases dependence of female partners (Schechtl, 2021; Schwarz, 2012). However, more research is needed to fully unpack the consequences of the tax system for economic gender inequalities particularly in conservative countries such as Germany.

Several of our study's limitations are noteworthy. First, the availability of comparative panel data is key to providing critical research on the consequences of context-related differences for instance based on tax policies. While substantial progress has been made thanks to the CNEF and CPF, many restrictions remain. Given the lack of harmonized variables, we had to rely on very parsimonious models. We argue that this is well in-line with FEIS models that control for time-constant unobserved heterogeneity as well as individual trends prior to treatment. However, an exploration of additional underlying mechanisms and heterogeneities in the effect may require additional harmonized variables that are not readily available.

Second, there is no straightforward way to arrive at individual tax contributions and individual net earnings within married couples in the United States and Germany because the tax system treats the couple as one unit (Avram & Popova, 2021). Due to the progressive tax schedule, we thus overestimated the tax burden of the lower-income spouse in dual-earner couples with unequal earnings because we proportionally assigned individual taxes based on the earnings share of the individual in the household. We note that male net earnings are thus lower-bound estimates whenever men earn more than women (see Data S1B). This implies that our findings of a marital net earnings premium in Germany and a net earnings penalty in the United States are most likely conservative estimates.

Despite these limitations, we argue that our findings provide novel insights into the emergence and development of men's economic premiums associated with marriage across different institutional settings. The policy context, particularly the tax system, uniquely shapes marital premiums across countries. Thus, our study highlights the need for a comparative perspective of classical sociological debates—and demonstrates its merits regarding marital premiums and penalties on annual net earnings.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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