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The Marriage Wealth Premium Revisited: Gender Disparities and Within-Individual Changes in Personal Wealth in Germany

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Abstract: This study examines the association between marriage and economic wealth of women and men. Going beyond previous research, which focused on household wealth, I examine personal wealth, which allows identifying gender disparities in the association between marriage and wealth. Using unique data from the German Socio-Economic Panel Study (2002, 2007, 2012), I apply random-effects and fixed-effects regression models to test my expectations. I find that both, women and men, experience substantial marriage wealth premiums not only in household but also in personal wealth. I do not find consistent evidence for gender disparities in these general marriage premiums. Additional analyses indicate, however, that women's marriage premiums are substantially lower than men's premiums in older cohorts, in the lower half of the wealth distribution, and when only considering non-housing wealth. Overall, this study provides new evidence that women and men do not gain equally in their wealth attainment through marriage.

Keywords: marriage premium, wealth, gender, life course

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Introduction

Marriage has been linked to a wide range of beneficial outcomes such as enhanced economic attainment (Waite 1995). Continuously married, heterosexual individuals are consistently found to have more household wealth compared to the never married or individuals with disrupted marital histories (Painter et al. 2015; Wilmoth and Koso 2002; Zagorsky 2005). A recent study estimated the unadjusted marriage premium in household wealth for men in their first marriage compared to never married men to be about 220% in the United States (Ruel and Hauser 2013). Marriage premiums are also found in other diverse contexts such as Germany (Sierminska et al. 2010) – the country case of the current study – and Mexico (Torche and Spilerman 2009). Examining this wealth premium, in addition to the well-researched marriage wage premium (Cheng 2015; Killewald and Gough 2013; Light 2004), is relevant because wealth is only moderately correlated with wages, is more unequally distributed than wages and provides distinct advantages such as enhanced consumption potential and real and psychological safety nets (Keister and Moller 2000; Pfeffer 2011; Spilerman 2000).

I identify two major shortcomings in previous literature on the marriage wealth premium. First, the exclusive focus on household-level wealth in prior research ignores that individuals' financial wellbeing may not be accurately captured by household-level measures alone – a type of ecological fallacy (Bennett 2013; Deere and Doss 2006; Ulker 2009). Previous research has called for a gender-sensitive within-household perspective on the marriage premium in personal wealth (Denton and Boos 2007; Ruel and Hauser 2013; Vespa and Painter 2011), but no research has addressed this issue yet, mainly due to a lack of personal wealth data (Schmidt and Sevak 2006). Any conclusions about gender disparities in the marriage premium in previous research are, therefore, severely limited. It remains unclear whether marriage induces similar wealth benefits for both spouses (Deere and Doss 2006; Ulker 2009). Second, economically more resourceful individuals select into marriage (Schneider 2011; Xie et al.

2003) and those prone to accumulate wealth may be more likely to marry due to unobserved characteristics (Lupton and Smith 2003). This selectivity may have led to an overestimation of the marriage wealth premium in previous research (Hao 1996; Painter et al. 2015; Wilmoth and Koso 2002).

Focusing on individuals rather than households, I examine the association between marriage and wealth using unique longitudinal data from the German Socio-Economic Panel Survey (SOEP; 2002, 2007, 2012). In contrast to other surveys, the SOEP innovatively records personal wealth of all adult household members. Personal wealth is defined as all assets that individuals (solely and jointly) own less their debts. The sum of all household members' personal wealth equals the conventional measure of household wealth used in previous literature. Using these data and tracking individuals over time enables me to make two main contributions to the literature. First, I assess the marriage wealth premium using both measures of personal wealth and of household wealth to gain a more holistic picture of the individual-level and gender-specific consequences of marriage for economic attainment. Second, to reduce potential selection bias, I assess the immediate marriage wealth premium by examining within-individual changes in wealth associated with changes in marital status using longitudinal fixed-effects regression models. Using personal wealth instead of household wealth facilitates such within-individual analyses (Lupton and Smith 2003). Because the marriage premium may only materialize in the long run and to replicate previous studies, I complement the within-individual fixed-effects regression models with between-individual regression models using retrospective marital histories for a subsample of older respondents.

Background

Prior Empirical Research

Previous studies have found an association between marital status and wealth at the household level. Continuously married spouses in their first marriages have more net wealth than the (cohabiting and non-cohabiting) never married, divorced and widowed during mid-life and at older ages (Addo and Lichter 2013; Halpern-Manners et al. 2015; Holden and Kuo 1996; Keister 2003; Land and Russell 1996; Lupton and Smith 2003; Painter et al. 2015; Painter and Vespa 2012; Sierminska et al. 2010; Torche and Spilerman 2009; Wilmoth and Koso 2002).¹ The association holds across the wealth distribution, but seems to be larger at the top of the distribution (Addo and Lichter 2013; Lupton and Smith 2003; Schmidt and Sevak 2006). When considering distinct wealth components, Addo and Lichter (2013) found the marriage premium to be mostly concentrated in housing wealth. The marriage premium was smaller for non-housing wealth, which mainly includes financial assets. The evidence for the marriage wealth premium is exclusively based on between-individual research designs which are vulnerable to selection into marriage.

Scholars have attempted to disaggregate the household-level wealth premium to the personal level to examine gender disparities. For instance, Wilmoth and Koso (2002) made the strong assumption of equal sharing of wealth in the household by assigning half of the household wealth to each partner and found a larger marriage premium for women than for men compared to the never married. Schmidt and Sevak (2006) and Yamokoski and Keister (2006) found larger household-level marriage wealth premiums for women than for men compared to the never married ignoring the within-household distribution of wealth. Ruel and

¹ Schmidt and Sevak (2006) finds evidence that the marriage wealth premium compared to single women may vanish among young couples (aged 25 to 39 in 2001) once controlling for observable differences, but it is unclear whether this is an age or cohort effect.

Hauser (2013) found married women who are their households' best financial survey respondents to have less household wealth than their male counterparts, but the marriage premium compared to the never married seems slightly larger for women than for men. The study conflated selectivity in being a household's best respondent and gender and ignored the within-household distribution of wealth. Finally, a few studies examined pension wealth, the only wealth component for which data are often available at the individual level. These studies mostly found marriage penalties in pension wealth for women (e.g. Fasang et al. 2013; Ginn 2003). These attempts provide only an incomplete picture of the consequences of marriage for both spouses' wealth.

Recently, studies have begun to examine gender inequalities in personal wealth in Germany using the SOEP, which is also analyzed in the current study. Sierminska et al. (2010) found an unadjusted marriage premium in personal wealth of 385% for married compared to never married men (346% for women). At the same time, married women have about EUR 47,000 less personal wealth compared to married men (Sierminska et al. 2010). Within German couples, Grabka et al. (2015) found married women to have less wealth than their spouses. Similar gender disparities in personal wealth in married couples have also been found in France (Fremaux and Leturcq 2013). From these studies, it remains unclear how marriage has potentially contributed to the gender disparities in personal wealth, for instance, because men are likely to enter marriage with more wealth than women (Sierminska et al. 2010).

Explanations for a Household-Level Marriage Wealth Premium

Previous literature has repeatedly found a (temporary) marriage *wage* premium for both genders (Cheng 2015; Killewald and Gough 2013; Light 2004). The wage premium may increase savings and, thereby, may explain the marriage *wealth* premium (Hao 1996; Wilmoth and Koso 2002), but wealth is not a direct function of wages and needs separate analyses. The prevailing explanation for wage premiums builds on economic models of marriage in which it

is argued that the legal protection of the marriage contract may facilitate specialization and increase productivity (Becker 1981). Evidence for marriage wage premiums for both genders is inconsistent with such a specialization explanation, however, and alternative explanations such as a higher motivation among the married to earn a higher pay await further empirical investigation (Killewald and Gough 2013; Pollmann-Schult 2011).

Independently from wage premiums, after-tax and -transfer incomes may also be higher for the married as they are often treated favorably in tax and welfare policies compared to the non-married (Addo and Lichter 2013). For example, in Germany, married couples have a tax advantage compared to cohabiting couples and singles, which increases after-tax incomes especially if spouses earn unequal incomes (Apps and Rees 2005). Married and cohabiting couples also enjoy economies of scale compared to singles, which allows couples to save more of their income at the same household income level compared to singles (Hao 1996). As married couples often pool at least part of their economic resources, more efficient investments during marriage may be possible (Lauer and Yodanis 2011).

Marriage may also be associated with investment behavior through psychological and social channels and, thereby, increase wealth. The legal security of marriage and the “normative expectations of permanence” (Vespa and Painter 2011: p. 958) may facilitate saving among spouses (Knoll et al. 2012).² The normative and legal obligations towards the spouse and potential children may also increase savings and particular investments such as life insurances (Hao 1996). The normative and legal obligations and the expectation of relationship stability associated with marriage are the main reason why the married are expected to accumulate more wealth than cohabitants (Painter and Vespa 2012).³ In addition, marriage is

² Theoretically, marriage also provides an insurance function which may reduce saving, but there is no empirical evidence to support this expectation (Lupton and Smith 2003).

³ Cohabiting unions may mimic some of the legal characteristics of marriage through private contracts, but few cohabitants do so (Wilmoth and Koso 2002).

culturally linked to investments in homeownership in many societies as an aspect of “nest building”. The long-term perspective and legal security of marriage make investments in homeownership more likely and homeownership has been found to be associated with more net wealth compared to remaining in the rental tenure (Dew and Eggebeen 2010; Painter and Vespa 2012).

The association between marriage and wealth found in previous research may not be causal, however. Previous studies indicate that wealthier and economically resourceful individuals select into stable marriage and that marital sorting is associated with parental wealth (Charles et al. 2013; Lersch and Vidal 2014; Schneider 2011; Xie et al. 2003). This selection and sorting may have led to an overestimation of the marriage wealth premium in previous research (Hao 1996; Wilmoth and Koso 2002). In addition, selection may also take place through unobservables related to marriage and wealth. Lupton and Smith (2003: p. 148) proposes that “prudent” individuals may be more likely to marry and save. Previous research has acknowledged these sources of selectivity (e.g., Painter et al. 2015; Wilmoth and Koso 2002), but little has been done to disentangle selection from causation.

Personal Wealth as a Complementary Measure of Financial Wellbeing

A further shortcoming of previous literature is the exclusive focus on household-level wealth. Analyzing household-level wealth as an accurate measure of individual financial wellbeing in couple households is only valid under the strong assumption of pooling and equal sharing within the household (Denton and Boos 2007). Pooling refers to a joint pot of resources, while sharing refers to equal access to this pot (Vogler & Pahl 1994).

Even during marriage, personal wealth matters. In marriage, integrated resources are an important aspect of the relationship and pooling of resources is more likely than during cohabitation (Vogler et al. 2006). Although resources are pooled, women often have less access to these resources than men, in particular if men manage the pool (Kenney 2006; Vogler and

Pahl 1994). Pooling of resources in marriage has also become less common in recent years (Vogler et al. 2006). During marriage spouses can legally retain individual assets in systems with separation of property, which is the legal default in most states in the United States and Germany (Deere and Doss 2006; Dutta 2012).

Empirical evidence from Germany shows that within the same couple women have less personal wealth during marriage than their spouses (Grabka et al. 2015). Without formally shared property rights, spouses may still informally share their wealth and participate in some benefits from their spouses' assets, but this may create potentially undesired dependencies within the relationship (Burgoyne et al. 2007). Only personal wealth provides autonomy and full financial security beyond the potentially precarious access to spouses' wealth during marriage (Deere and Doss 2006; Sierminska et al. 2010).

Even when accounting for the sharing of personal wealth in case marriages end at divorce or when a spouse dies, which is legally enforced in Germany as in many other countries (Dutta 2012), personal wealth remains relevant. For instance, from a bargaining perspective, if non-cooperation rather than divorce is the threat point during marriage, sharing of wealth at divorce is irrelevant for the well-being during marriage (Sierminska et al. 2010). In anticipation of a divorce, spouses may also consume wealth and, thereby, avoid later sharing (Wilmoth and Koso 2002; Zagorsky 2005). Thereby, personal wealth inequalities during marriage may lead to post-marriage inequalities. For instance, less personal wealth of married women may translate into higher poverty rates among divorced women. Thus, personal wealth is an important complementary measure of individual financial wellbeing next to household wealth. Methodologically, personal wealth is also relevant to examine as it is not confounded with household composition and can be more easily tracked over time when household composition changes (Lupton and Smith 2003).

Gender Disparities in the Personal-Level Marriage Wealth Premium

There are several reasons to anticipate an unequal marriage wealth premium for women and men once the assumption of equal sharing within households is relaxed and personal wealth is considered. First, men are older on average at entry into marriage than their spouses. Because of their age they may have accumulated more wealth prior to their marriages (Sierminska et al. 2010) and the higher wealth at entry may lead to increased accumulation rates within marriage, e.g. due to compounded interest.⁴ Second, marriage wage premiums are larger for men than for women (Cheng 2015; Killewald and Gough 2013; Light 2004). In addition, marriage is often associated with having children which leads to wage losses for women (Waldfogel 1997). If men have higher wages within marriage, these gains may not be equally shared within the household (Burgoyne 1990) leading to unequal personal wealth accumulation. The unequal wealth accumulation must not be a direct function of wage inequality, however, as men may compensate their spouses through within-household transfers of incomes (Brines 1994). Third, if children are present within marriage, increased expenditures for children may be firstly the responsibility of mothers (Lundberg et al. 1997), which reduces mothers' saving compared to their spouses. Fourth, due to higher labor market participation rates among married men than women, men may be more likely to receive additional work-related wealth benefits, e.g. occupational pension plans (Chang 2010). These – often personalized – benefits may be less likely shared than other types of assets.

Hypotheses

All of the above arguments point toward larger marriage premiums in personal wealth for men compared to women. However, at the household level women may experience a larger household-level marriage wealth premium compared to men as indicated in previous literature,

⁴ Intergenerational transfers to individual spouses may potentially contribute to unequal personal wealth, but empirical findings show gender equality in inheritances in Germany (Szydlik 2004).

because women benefit from higher personal wealth of their spouses (see Figure 1). Therefore, I hypothesize the following regarding the complementary outcomes of personal and household wealth:

- H1) Women have more personal wealth when married compared to being never married.
- H2) Men have more personal wealth when married compared to being never married.
- H3) The marriage premium in personal wealth is larger for men than for women.
- H4) Women have more household wealth when married compared to being never married.
- H5) Men have more household wealth when married compared to being never married.
- H6) The marriage premium in household wealth is larger for women than for men.

--Figure 1 about here--

Data and Analytical Strategy

Data

To test these hypotheses, I use longitudinal data from the SOEP (version 30) which is a large, nationally representative, multi-purpose household panel survey for Germany which commenced in 1984 (Wagner et al. 2007; <http://www.diw.de/en/soep>). Personal wealth is recorded in 2002, 2007 and 2012. While only three measurement points reduce the power of my longitudinal analyses, the SOEP is internationally unique in offering personal wealth measures. The wealth measures are multiply imputed with five sets of values by the SOEP survey team (Frick et al. 2010). There are few missing responses on other analytical variables, which I impute with multivariate multiple imputation using Stata's "mi" procedure (version

14.1) under the assumption of missing at random. Estimation results from each imputed set of data are combined using Rubin's rule (Rubin 1987).

Analytical Sample

The analytic sample is restricted to household heads and their heterosexual partners in couple households and household heads in single households aged 18 and older who do not live with their parents in a common household.⁵ I divide the sample into two subsamples. First, the prospective subsample includes all respondents aged 18-60 who are observed at least twice in 2002, 2007 or 2012. This subsample is used to examine the immediate marriage premium with fixed-effects regression (see below). The upper age limit for this subsample is chosen for the very few respondents who enter into marriage at later ages. My results are robust to alternative age ranges as I demonstrate below. This subsample includes 6,080 women with 15,014 individual-year observations and 5,113 men with 12,537 individual-year observations. I observe entries into first marriages for 436 women and 395 men. Second, the retrospective subsample includes all respondents aged 51-75 (the age range follows previous research based on the Health and Retirement Study [Addo and Lichter 2013; Wilmoth and Koso 2002]) who are observed at least once in 2002, 2007 or 2012. This is the subsample for the between-individual analyses of the long-term marriage premium. This subsample includes 7,309 women with 12,446 individual-year observations and 7,030 men with 11,907 individual-year observations.

Measurement of Wealth

I examine personal wealth and two measures of household wealth (see Table 1 for summary statistics of all analytical variables). *Personal net wealth* is the sum of all wealth personally

⁵ Respondents who live with their parents are excluded from the analysis so that changes in household wealth at the entry into marriage are not conflated with changes in household wealth after leaving the parental home (Killewald 2013).

belonging to an individual respondent including real and financial assets, life insurances and private pension plans, business assets and valuable assets such as jewelry. From these assets, personal debts and loans are subtracted, so that respondents may have negative net wealth. The value of each of these assets and liabilities is separately recorded in the SOEP in three steps: (1) a filter question is asked whether respondents hold this type of asset or liability; (2) the market value is recorded; and (3) the respondents are asked about the share of the asset or liability that they own. Personal net wealth is consumer price index-adjusted. I top- and bottom-code the extreme 0.1% of reported wealth values. Additionally, I apply an inverse hyperbolic sine (IHS) transformation to adjust the right-skewed wealth distribution which includes negative and 0 values. *Household net wealth* is the sum of all personal wealth in the household. This measure has conventionally be used in studies of the marriage wealth premium (e.g., Ruel and Hauser 2013). *Per capita net wealth* adjusts the household wealth for the household size by dividing the household wealth by the number of household members aged 18 and above (similarly at the couple level: Wilmoth and Koso 2002).

--Table 1 about here--

Explanatory Variable

I measure the current *marital status* at the time of interview with a categorical indicator amended with information from retrospective marital histories collected in the SOEP: never married (reference), married, divorced, widowed, and remarried. Married refers to the first marriage of respondents and is the main category of interest which is used to test the hypotheses. I also report results for an alternative marriage premium comparing the estimated effect of first marriage to cohabitation.

Control Variables

I include the following time-variant control variables: *age* (as a linear term in the prospective analysis and with an additional quadratic term in the retrospective analysis) to capture maturation effects; *cohabiting* (1=yes, 0=no) to account for non-marital partners in the household; *employed* (1=yes, 0=no) to capture any gainful employment. I also include the following time-invariant control variables: *highest education attained* (low [no formal education or level 1 and 2 in the International Standard Classification of Education (ISCED)], intermediate [ISCED-level 3 and 4; reference], and high [ISCED-level 5 and 6]); *number of siblings*; *lived in East Germany in 1989* (1=yes, 0=no); *immigration status* (1=yes, 0=no) indicates whether respondents or their parents have immigrated to Germany; *birth cohort* (born before 1936, 1936-1945 [reference], 1946-1955, and 1956-1961);⁶ *highest education of both parents* when respondents were aged 15 (low [no formal education or ISCED-level 1 and 2]), intermediate [ISCED-level 3 and 4; reference], and high [ISCED-level 5 and 6]); and I additionally control for the extension subsamples that have been added to the SOEP over time with a set of dummy variables (Wagner et al. 2007).

Analytical Strategy

I begin with the following model for repeated observations nested within individuals:

$$f(Y_{it}) = \alpha + \mathbf{M}_{it}\boldsymbol{\gamma} + \mathbf{X}_{it}\boldsymbol{\beta} + \mathbf{Z}_i\boldsymbol{\delta} + v_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is (personal, per capita or household) net wealth of person i in year t , which is transformed using an IHS function. α is the intercept. $\mathbf{M}_{it}$ contains dummy indicators of the marital status and $\boldsymbol{\gamma}$ are the related coefficients of main interest to test the hypotheses. $\mathbf{X}_{it}$ contains time-variant and $\mathbf{Z}_i$ contains time-invariant control variables and $\boldsymbol{\beta}$ and $\boldsymbol{\delta}$ are the related sets of coefficients. v_i captures individual-specific, time-invariant unobservables. ε_{it} is random

⁶ Because this variable is only used with the retrospective sample, younger cohorts are not included.

disturbance across i and t . To examine the long-term marriage premium in the retrospective subsample, I use random-effects generalized least square (GLS) regression to estimate Model 1 under the assumption that v_i and ε_{it} are not correlated with the right-hand side variables in the model. I correct standard errors for clustering of observations within individuals. Such an estimation strategy which is based on a between-individual research design has been exclusively used in previous research on the marriage premium, but is vulnerable to selection bias.

In the prospective subsample of younger respondents, I observe entries into first marriages. This allows me to investigate immediate within-individual changes in wealth related to changes in marital status. To this end, I estimate standard fixed-effects regression models such as

$$f(Y_{it}^*) = \mathbf{M}_{it}^* \boldsymbol{\gamma} + \mathbf{X}_{it}^* \boldsymbol{\beta} + \varepsilon_{it} \quad (2)$$

where Y_{it}^* , $\mathbf{M}_{it}^*$ and $\mathbf{X}_{it}^*$ are the time-variant deviations from the individual-specific means $\bar{Y}_i$, $\bar{\mathbf{M}}_i$ and $\bar{\mathbf{X}}_i$, respectively. Time-invariant unobservables are differenced out along with time-invariant variables. Thereby, Model 2 relaxes the strong assumption of uncorrelated disturbance inherent in Model 1 to the degree that ε_{it} is not correlated with the right-hand side variables. This eliminates selection bias due to time-invariant unobservables. This model is a substantial improvement over previous studies in the field, even though estimates potentially suffer from bias due to time-variant effects of unobservables. Again, standard errors are corrected for clustering within individuals.

The analysis proceeds in four stages and all results are presented separately by gender and for personal, per capita and household net wealth. First, I present descriptive evidence. Second, I present results from Model 1 for the long-run premium in the retrospective sample to initially test my hypotheses. Third, I present results from Model 2 for the immediate marriage premium in the prospective sample to additionally test my hypotheses and provide more robust evidence from within-individual comparisons. Note that these two sets of results are not based

on the same individuals. Potential differences in results may, for instance, reflect cohort differences. I return to this issue in the fourth stage of the analysis where I also discuss additional supplementary analyses and robustness checks informed by previous literature. In particular, I test alternative model specifications, whether the marriage premium holds across the wealth distribution and if only considering non-housing wealth.

Results

Descriptive Results

Table 2 shows preliminary evidence on the relationship between marriage and wealth. Compared to the never married, married women and men age 18 to 60 (prospective sample for the immediate marriage premium) have significantly more personal net wealth, per capita net wealth and household net wealth. Compared to the divorced and remarried, married women and men age 18 to 60 are also significantly wealthier according to all three measures. Widowed women and men do not differ significantly in their wealth from the married in this age group. Married women age 18 to 60 have significantly less personal net wealth (8.117) than married men (8.809). I do not find any other gender differences in the mean personal net wealth, per capita wealth or household wealth among women and men age 18 to 60.

--Table 2 about here--

I also find a positive association between marriage and wealth among women and men age 51 to 75 (retrospective sample for the long-term marriage premium). However, there are a number of noteworthy differences to the results for women and men age 18 to 60. First, married women age 51 to 75 do not differ significantly in their personal net wealth (9.399) compared to never married women (9.431). Second, widowed women age 51 to 75 have significantly less

per capita net wealth and household net wealth compared to married women. Third, next to the gender difference in married women's and men's personal net wealth, I also find significant gender differences in all three measures of wealth among never married women and men and in personal net wealth among remarried women and men age 51 to 75. In the first group, women have significantly more wealth. In the latter group, men have significantly more wealth.

Retrospective Analyses of the Long-Term Wealth Premium

Next, I formally test for a marriage wealth premium in later life (age 51 to 75) using a between-individual research design and random-effects regression (Table 3). As expected in H1 (for women) and H2 (for men), I find a positive association of being in a first marriage compared to having never married with personal net wealth for women and men. Women in their first marriage have 0.819 more IHS-transformed personal net wealth than never married women. Married men have 1.849 more personal net wealth compared to never married men. This gender difference to the advantage of men is substantially large and statistically significant at the 95% confidence level in accordance with H3. Compared to the married, divorced and remarried women and men have significantly less personal net wealth. Married and widowed women and men do not differ significantly in their personal net wealth. Cohabitation as an alternative partnership status to marriage is not associated with significantly more personal net wealth compared to singles (independently of whether they never married, are divorced or widowed) for women and men, but cohabiting men have significantly less personal net wealth compared to the married.

--Table 3 about here--

Considering per capita and household net wealth, I also find a positive association between marriage and wealth for women and men as expected in H4 and H5 (Table 3). Married

women have 1.352 more IHS-transformed per capita wealth (1.937 IHS-transformed household net wealth) than never married women. For men, the difference is 1.944 and 2.609, respectively. The gender differences are substantially small, statistically non-significant and not in the direction expected in H6 (women's wealth premium was expected to be larger than men's). All models in Table 3 also include linear and quadratic age terms and the time-invariant control variables which are not presented here. All control variables are associated with wealth in the expected directions.

Prospective Analyses of the Immediate Wealth Premium

As expected in H1 (for women) and H2 (for men), fixed-effects regression results show that the entry into first marriage is associated with significant within-person changes towards more personal net wealth for women and men age 18 to 60 in the short run (Table 4). Women gain 1.324 IHS-transformed personal net wealth when they marry and men gain 1.708. The gender difference in the estimated gain from marriage is substantially small and statistically non-significant, but in the direction expected in H3 (men were expected to gain more). The non-significance may be a consequence of low statistical power given the small number of observed entries into marriage. The estimated association of entering a first marriage compared to the never married with personal wealth is significantly larger than the estimated association of entering cohabitation as an alternative partnership status with personal net wealth for women (0.408) and men (0.522). The estimated effect of entering cohabitation is statistically non-significant for women and men.

The models also show that when entering marriage, women's increase in personal wealth compared to the never married is significantly higher than when they divorce compared to the never married. When women become widows or remarry their change in personal net wealth in reference to the never married is similar compared to women who marry in reference to the never married. When entering marriage, men increase their personal net wealth significantly

more compared to men who divorce or remarry in reference to the never married. These models are controlled for age and employment, which are both positively associated with personal net wealth (not shown in table).

--Table 4 about here--

When entering marriage, women and men significantly increase their per capita net wealth and their household net wealth as expected in H4 and H5. Women gain 2.119 in IHS-transformed per capita net wealth (2.458 in IHS-transformed household net wealth) and men gain 1.607 (1.972). Again, the gender differences in the estimated association of entering marriage with wealth are non-significant. They are in the expected direction (H6), however, with women gaining more per capita and household net wealth than men when entering marriage. Interestingly, cohabitation is associated with more household net wealth and per capita net wealth for women and men, probably due to adding a person to the household, while it is not associated with more personal net wealth. The estimated association of entering marriage with per capita and household net wealth is larger than the estimated association of entering cohabitation for women, but not for men.

Supplementary Analyses and Robustness of Findings

Cohort Differences in the Marriage Wealth Premium

I find a significant gender difference in the association between marriage and personal net wealth in the retrospective sample using random-effects regression, but not in the prospective sample using fixed-effects regression. Next to small statistical power in the fixed-effects regression or selection on time-invariant unobservables, cohort changes towards more gender equality in younger cohorts may be responsible for these differences (Schmidt and Sevak 2006). To examine potential cohort differences in the marriage premium, I rerun the random-

effects models separately for women and men with an interaction between marital status and birth cohort to estimate marginal effects of being married on personal net wealth by cohort, marital status and gender (Figure 2). I find evidence for cohort-specific marriage premiums. Being married is positively associated with personal wealth for women only in the youngest birth cohort. Women born before 1956 do not have more personal wealth if married compared to the never married. For men, I find more personal wealth among the married in all birth cohorts after 1935 compared to the never married, but not in the oldest cohort. Gender inequality in the marriage premium is largest in the birth cohort 1946 to 1955 and there is no gender inequality in the marriage premium in the youngest cohort born between 1956 and 1965. Thus, even though cohort change does not seem to be linear, I find some evidence that cohort change may contribute to the discrepancies in results from the prospective and retrospective analyses.

--Figure 2 about here--

Alternative Wealth Transformation and Sample Specifications

I test whether my main results are robust to alternative modelling choices. First, I re-estimate my models using a natural log transformation instead of an IHS transformation (see Figure 3). The disadvantage of using a log transformation is that 0s and negative values cannot be included without arbitrary adjustments such as adding a constant which may affect results (Killewald 2013). Here, I dropped observations with 0s or negative net wealth. Second, I used alternative age ranges to restrict the sample. In the interest of parsimony, I do not report findings for per capita wealth which are identical to findings for household wealth. My main conclusions about positive marriage premiums for women and men remain robust when using a log transformation of personal and household net wealth and various age ranges with random-

effects and fixed-effects regression. However, the findings regarding gender disparities in the marriage wealth premium are less robust. For instance, the gender difference in the association between marriage and personal net wealth in the random-effects regression is specific to the age group 51 to 75 and is also not reproduced when using a log transformation.

--Figure 3 about here--

Unconditional Quantile Regression

Previous literature has highlighted variance in the marriage premium across the household wealth distribution with higher premiums at the top of the distribution in the United States (Schmidt and Sevak 2006). I use a unconditional quantile regression (Firpo et al. 2009) to estimate the association between being married and wealth at different quantiles in the retrospective sample (age 51- 75) controlling for all time-variant and time-invariant covariates introduced above. With raw personal net wealth in EUR 10,000 as the outcome, I find the association between marriage and personal net wealth to be n-shaped. The marriage premium for women and men is highest (about EUR 30,000 to 40,000) around the median of the wealth distribution, while the marriage premium is not significantly different from 0 at the bottom and top of the distribution. In the lower half of the distribution, the marriage premium is significantly larger for men than for women.

--Figure 4 about here--

When considering raw household net wealth in EUR 10,000 as the outcome, the unconditional quantile regression model shows an increasing household-level marriage premium of up to EUR 220,000 for women across the distribution in line with previous

research, but the increase in the marriage premium above the median is non-significant. For men, the household-level marriage premium increases to about EUR 150,000 at the median of the wealth distribution and remains at this level throughout the upper half of the distribution. Again, the marriage premium is significantly larger for men than for women at the lower end of the household wealth distribution. Together, these results suggest that the marriage premium in the upper half of the wealth distribution is largely due to adding a wealthy household member and not due to an increase in spouses' own personal wealth.

Non-Housing wealth

Previous research has found the marriage wealth premium to be mostly concentrated in housing wealth (Addo and Lichter 2013). Because housing wealth is more likely shared in couples than other types of wealth (Joseph and Rowlingson 2012), it is relevant to test the association of marriage with wealth excluding housing wealth as inequalities between spouses may be larger in non-housing wealth. I find significant, positive associations of marriage with personal, per capita and household net non-housing wealth for men when estimating fixed-effects regression models for the prospective sample and random-effects regression models for the retrospective sample. For women, I find no significant association between marriage and personal net non-housing wealth in either model specification. Married women are found to have more per capita and household net non-housing wealth than the never married in the fixed-effects regression and in the random-effects regression.

--Figure 5 about here--

Discussion

I investigated the association between marriage and wealth using unique longitudinal panel data from the German SOEP, which records individual-level wealth. Consistent with prior research and my expectations, I found marriage premiums in per capita and household net wealth among women and men using a between-person research design. Going beyond previous research, I examined gender-specific marriage premiums in *personal* net wealth. As expected, I found higher personal net wealth among married women and men compared to the never married. These results were corroborated in a within-person research design using fixed-effects regression, which is less vulnerable to selection bias. Thereby, the results provide stronger evidence for a non-spurious association between marriage and wealth than available in prior literature. Under the assumption that individual time-variant unobservables are unrelated to marriage and wealth, marriage is found to cause an increase in wealth. This conclusion is also supported by the novel finding that marriage is positively associated with personal wealth, which is by definition independent from simple changes in household composition that come along with marriage, while cohabitation is not associated with more personal wealth.

I did not find consistent evidence for the expected, general gender disparities in the marriage premium. Still, several innovative findings indicate that women may benefit less from marriage than men regarding their wealth, which was obscured in prior studies of household-level wealth. First, among women and men aged 51 to 75, I found gender disparity in the association between marriage and personal wealth with women being less advantaged (but this finding depends on model specifications). Second, in the birth cohorts 1936 to 1955, married women do not have more personal wealth compared to the never married in contrast to men. Third, when excluding housing wealth, which is more often shared between spouses than other types of wealth within marriage, women's non-housing wealth is not positively associated with

marriage, while men's non-housing personal wealth is higher when married. Fourth, women in the bottom half of the wealth distribution seem to gain less from marriage than men.

Several limitations of this study are notable. First, the measurement of wealth, and in particular personal wealth, is likely affected by measurement error due to misreporting or rounding. Within couples, personal property rights may not always be clear to each spouse. In addition, the data do not allow identification of couples who have opted out of the legal default property regime and the prevalence of alternative marital agreements in Germany is not known. Second, a maximum of three points of observation limits the power of the within-person research design. Third, in the present study I only examined the time-constant association of marriage with wealth ignoring potential variation in the association over marriage duration. This would be an important avenue for future research. In this regard, it would also be relevant to examine how the within-union wealth gap evolves over marriage duration. Future research may also investigate the mechanisms linking marriage to personal wealth accumulation in more detail.

The findings of the present study suggest that marriage provides "institutionalized benefits" (Wilmoth and Koso 2002: p. 265), such as legal security and expected permanence which facilitates saving, for wealth accumulation that go beyond adding an additional person and her or his wealth to the household. These institutionalized benefits, at least in older cohorts, seem to be more advantageous for men than for women. This does not preclude that women participate in the personal wealth advantage of their spouses to some degree, but this comes with a lack of autonomy and financial independence. In light of previous research on limited sharing of resources within households, men do not seem to share their enhanced wealth accumulation during marriage fully with their spouses. Thus, the present study suggests that beyond wage premiums, men's economic attainment is more likely enhanced by marriage than women's attainment through wealth premiums.

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Tables

Table 1. Summary Statistics

[illegible]

born before 1936	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.000	1.000	0.118	0.000	1.000
1936-1945	0.000	0.000	0.000	0.000	0.000	0.000	0.399	0.000	1.000	0.418	0.000	1.000
1946-1955	0.231	0.000	1.000	0.251	0.000	1.000	0.372	0.000	1.000	0.366	0.000	1.000
1956-1965	0.214	0.000	1.000	0.224	0.000	1.000	0.109	0.000	1.000	0.098	0.000	1.000
Highest education of parents												
Low	0.185	0.000	1.000	0.182	0.000	1.000	0.248	0.000	1.000	0.234	0.000	1.000
Intermediate	0.663	0.000	1.000	0.664	0.000	1.000	0.655	0.000	1.000	0.669	0.000	1.000
High	0.152	0.000	1.000	0.154	0.000	1.000	0.097	0.000	1.000	0.097	0.000	1.000
N Observations	15,014				12,537			12,446			11,907	
N Individuals	6,080				5,113			7,309			7,030	

Data: Socio-Economic Panel Study v30 (2002, 2005, 2012), multiply imputed, unweighted

Notes: Summary statistics for extension sample dummy variables not shown

Table 2. Mean Net Wealth by Marital Status

Marital status	Prospective sample (age 18-60)			Retrospective sample (age 51-75)		
	Women	Men	Gender difference	Women	Men	Gender difference
Personal net wealth (mean)						
Never married	5.872 ***	6.569 ***		9.431	7.917 ***	**
Married (reference)	8.117	8.809	***	9.399	9.963	***
Divorced	4.478 ***	5.322 ***		7.080 ***	6.877 ***	
Widowed	7.846	9.287		9.006	9.980	
Remarried	5.653 ***	6.754 ***		7.169 ***	8.257 ***	*
Per capita net wealth (mean)						
Never married	6.260 ***	6.688 ***		9.521	8.071 ***	*
Married (reference)	8.967	8.908		10.138	10.135	
Divorced	4.810 ***	5.629 ***		7.355 ***	7.171 ***	
Widowed	8.207	9.053		9.171 ***	9.984	
Remarried	6.799 ***	6.946 ***		8.163 ***	8.704 ***	
Household net wealth (mean)						
Never married	6.425 ***	6.833 ***		9.628 **	8.155 ***	*
Married (reference)	9.595	9.535		10.790	10.813	
Divorced	4.972 ***	5.773 ***		7.609 ***	7.371 ***	
Widowed	8.554	9.444		9.319 ***	10.213	
Remarried	7.222 ***	7.376 ***		8.663 ***	9.258 ***	
N Observations	15,014	12,537		12,446	11,907	
N Individuals	6,080	5,113		7,309	7,030	

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), multiply imputed, weighted

Notes: Mean differences: * p<.05, ** p<.01, *** p<.001 (two-tailed tests).

Table 3. Random-Effects Regression of Net Wealth (Retrospective Sample, Age 51-75)

	Personal net wealth						Per capita net wealth					Household net wealth				
	Women		Men		Gender	Women		Men		Gender	Women		Men		Gender	
	b (SE)		b (SE)		diff.	b (SE)		b (SE)		diff.	b (SE)		b (SE)		diff.	
Marital Status																
Never married	reference						reference					reference				
Married	0.819	**	1.849	***	*	1.352	***	1.944	***	n.s.	1.937	***	2.609	***	n.s.	
	(0.27)		(0.34)			(0.26)		(0.32)			(0.27)		(0.33)			
Divorced	-1.516	***†	-0.704	†	n.s.	-1.517	***†	-0.666	†	n.s.	-1.428	***†	-0.610	†	n.s.	
	(0.28)		(0.38)			(0.28)		(0.36)			(0.28)		(0.37)			
Widowed	0.484		1.546	***	*	0.420	†	1.379	***†	*	0.435	†	1.479	***†	*	
	(0.28)		(0.41)			(0.27)		(0.38)			(0.28)		(0.39)			
Remarried	-0.940	**†	-0.046	†	n.s.	-0.355	†	0.446	†	n.s.	0.050	†	0.950	*†	n.s.	
	(0.36)		(0.40)			(0.34)		(0.38)			(0.35)		(0.39)			
Cohabiting	0.294		0.231	†	n.s.	1.035	**	1.286	***	n.s.	1.398	***	1.736	***†	n.s.	
	(0.35)		(0.35)			(0.36)		(0.32)			(0.38)		(0.34)			
N Observations	12,446		11,907			12,446		11,907			12,446		11,907			
N Individuals	7,309		7,030			7,309		7,030			7,309		7,030			

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), retrospective sample (age 51-75), multiply imputed, unweighted

Notes: Linear random-effects generalized least squares regression with outcomes personal net wealth, per capita net wealth and household net wealth (all inverse hyperbolic sine transformed); models include control variables age, age squared, employed, highest education attained, number of siblings, lived in East Germany in 1989, immigration status, birth cohort, highest education of both parents and extension subsamples; cluster-robust standard errors; † significantly different coefficient from married at $p < .05$ (two-tailed test); * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests).

Table 4. Fixed-Effects Regression of Net Wealth (Prospective Sample, Age 18-60)

	Personal net wealth			Per capita net wealth			Household net wealth		
	Women b (SE)	Men b (SE)	Gender diff.	Women b (SE)	Men b (SE)	Gender diff.	Women b (SE)	Men b (SE)	Gender diff.
Marital Status	reference			reference			reference		
Never married									
Married	1.324 ** (0.41)	1.708 *** (0.46)	n.s.	2.119 *** (0.45)	1.607 ** (0.48)	n.s.	2.458 *** (0.47)	1.972 *** (0.50)	n.s.
Divorced	-0.103 † (0.57)	-0.552 † (0.68)	n.s.	0.211 † (0.59)	-0.473 † (0.71)	n.s.	0.199 † (0.62)	-0.586 † (0.75)	n.s.
Widowed	0.737 (0.71)	2.083 (1.30)	n.s.	1.198 (0.78)	1.270 (0.90)	n.s.	1.187 (0.83)	1.211 (0.95)	n.s.
Remarried	0.334 (0.76)	0.267 † (0.86)	n.s.	1.476 * (0.74)	-0.000 † (0.89)	n.s.	1.686 * (0.78)	0.149 † (0.92)	n.s.
Cohabiting	0.408 † (0.32)	0.522 † (0.37)	n.s.	1.183 ***† (0.35)	1.092 ** (0.38)	n.s.	1.475 ***† (0.36)	1.468 *** (0.40)	n.s.
N Observations	15,014	12,537		15,014	12,537		15,014	12,537	
N Individuals	6,080	5,113		6,080	5,113		6,080	5,113	

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), prospective sample (age 18-60), multiply imputed, unweighted

Notes: Linear fixed-effects regression with outcomes personal net wealth, per capita net wealth and household net wealth (all inverse hyperbolic sine transformed); models include control variables age and employed; cluster-robust standard errors; † significantly different coefficient from married at $p < .05$ (two-tailed test); * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests).

Figures

Figure 1. Expected Marriage Premiums at the Personal and Household Level for Women and Men

Figure 2. Marginal Effects of Married on Personal Net Wealth by Cohort, Marital Status and Gender (Retrospective Sample, Age 51-75)

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), retrospective sample (age 51 to 75), multiply imputed, unweighted

Notes: Marginal effects of married on personal net wealth (inverse hyperbolic sine transformed) based on linear random-effects generalized least squares regressions separately estimated for women and men with all covariates included in Table 3 and additional interactions between birth cohort and marital status; spikes indicate 95% confidence interval.

Figure 3. Alternative Outcome and Sample Specifications

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), multiply imputed, unweighted

Notes: Based on linear fixed-effects regression and random-effects generalized least squares regressions separately estimated for women and men with all covariates included in Table 3 and Table 4, respectively; cluster-robust standard errors; spikes indicate 95% confidence interval; *: coefficients from main models for comparison.

Figure 4. Unconditional Quantile Regression Results for Retrospective Sample (Age 51-75)

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), retrospective sample (age 51 to 75), multiply imputed, unweighted

Notes: Based on unconditional quantile regression separately estimated for women and men with all covariates included in Table 4; estimated using the user-written Stata command `rifreg` (Firpo et al. 2009); shaded areas indicate 95% confidence interval based on cluster-robust bootstrapped standard errors (500 replications).

Figure 5. Regression Models with Non-Housing Wealth as an Alternative Outcome

Data: Socio-Economic Panel Survey v30 (2002, 2005, 2012), multiply imputed, unweighted

Notes: Based on linear fixed-effects regression and random-effects generalized least squares regressions separately estimated for women and men with all covariates included in Table 3 and Table 4, respectively; cluster-robust standard errors; spikes indicate 95% confidence interval.