Schmollers Jahrbuch 127 (2007), 59 – 73
Duncker & Humblot, Berlin

The Male Marital Wage Premium in Germany: Selection versus Specialization

By Katherin Barg and Miriam Beblo*

Abstract

Empirical research consistently confirms a marital wage premium (MWP) for men, which is explained by selection (high earnings potentials being more attractive on the marriage market) or specialization (husbands being more productive because their wives take over household chores). We investigate the MWP in Germany using a shifting panel design for marriages between 1993 and 2003 in the German Socio-Economic Panel. Non-parametric matching of marrying men (treatment group) with single or cohabiting men (control groups) reveals that husbands' higher wages are mostly due to positive selection. There is rather weak evidence for specialization to explain the conditional MWP between married and cohabiting men.

JEL Classification: J12, J31

1. Introduction

There is a marital wage premium (MWP) for men in basically every country. That is, married men receive higher gross wages on average than single men. The observed difference in wages varies from 30 to 50 percent in studies based on US data (Chun / Lee, 2001 and Nakosteen / Zimmer, 1997) to 13 percent for Denmark (Datta Gupta / Smith / Stratton, 2005). According to the German Socio-Economic Panel (GSOEP), non-married men receive about 10 percent lower wages than men who got married in the preceding year.[1]

Regarding the sources of the MWP, we can distinguish two main hypotheses in the literature: the specialization or productivity hypothesis and the selection hypothesis. The specialization hypothesis postulates that married men tend to

* Acknowledgments: The authors thank participants of the GSOEP 2006 conference, seminar participants at the Utrecht School of Economics and an anonymous referee for valuable comments which led to a significant improvement of the paper. All remaining errors are our own.

[1] This average is based on data from the interview years 1994 to 2004 and refers to dependently employed men (only private sector for the married). For a detailed description of the sampling procedure see Section 3.

have more time and energy to invest in their job than unmarried men because their wives can "back them up" on all remaining chores. Traditional division of household responsibilities between husbands and wives makes married women take over the main part of household production, including child rearing, and gives their spouses the chance to be more productive in the labor market (Becker, 1985). This reasoning includes a potentially higher sense of responsibility of married men to take care for their families financially. Empirical evidence for the specialization hypothesis is provided among others by Kenny (1983), Korenman and Neumark (1991), Chun and Lee (2001), Antonovics and Town (2004), Kermit (1992) and Mamun (2005).

The second explanation for the MWP proceeds on the assumption that men with higher (potential) wages are more likely to get married than men with lower income prospects. This selection can work either directly through women preferring men with higher wages or indirectly through characteristics that are valuable for both, the marriage market and the labor market (Becker, 1981). Empirical evidence for selection to explain at least part of the wage premium can be found in Nakosteen and Zimmer (1997), Breusch and Gray (2004), Datta Gupta, Smith and Stratton (2005), Ginther and Zavodny (2001). Alternative explanations for the MWP, yet more difficult to distinguish empirically from the specialization and selection hypotheses, include employer favoritism for married employees (Hill, 1979) and compensating wage differentials where married men have higher wages because they take jobs with fewer amenities and non-pecuniary rewards (Reed / Harford 1989).

A rising number of couples is cohabiting, either before entering marriage or instead of marrying at all. For this reason, recent studies have addressed the size of the wage premium (WP) of living together compared to the WP of being married. From the 1970s to date the fraction of men and women in Germany who remain unmarried during their entire life has increased from 10 to 30 percent (Meyer, 2006). The share of cohabiting couples among all couples increased from 8.4 percent in 1996 to 11.2 percent in 2004 (Statistisches Bundesamt, 2006). On one hand, it could be argued, that both selection and specialization should be prevalent at the time of moving in with somebody regardless of the legal status of the relationship. On the other hand, differences in the legal status of cohabitation and marriage still exist in most countries. Institutional settings such as joint income taxation for married couples, the entitlement for maintenance payments after split up, inheritance regulations and widows' or widowers' pensions may create differing incentives for married and cohabiting couples to engage in household specialization. As Ginther, Sundström and Björklund (2006) point out for Sweden, cohabiting couples may face a lower commitment level which translates into a shorter expected duration of the relationship. In addition, incentives to marry for different groups are also affected by the legal framework, so that, as a result, married and cohabiting couples might differ systematically. Accordingly, most comparative em-

pirical evidence confirms a larger WP for marriage than for cohabitation (see e.g. Stratton, 2002; Cohen, 2002, Datta Gupta / Smith / Stratton, 2005 as well as Ginther / Sundström / Björklund, 2006).

While there is a wide range of research on the MWP for the United States, Australia, and several European countries,[2] there is no evidence for Germany to our knowledge. By use of the German Socio-Economic Panel (GSOEP) we would like to fill this gap and investigate the wage premium for marriage with a non-parametric estimation approach (matching):[3] That is, to single out selection effects we would ideally like to compare the wage rate of a married man with the wage rate of this same man if he had not married (counterfactual situation). As this procedure is obviously not applicable, we have to approximate this counterfactual situation by looking at the wage of a non-married, but otherwise similar man. Similarity is achieved by conditioning on characteristics that are assumed to have an effect on the marriage status, also referred to as the treatment status in the matching methodology.

Using a shifting 3-year panel window on marriages in the GSOEP between 1993 and 2003, men who marry in the reference year (t) and are still married in $t+1$ are matched with single men who stay unmarried all through from year $(t-1)$ to year $(t+1)$. By holding constant characteristics that might have an impact on both, a man's hourly wage rate as well as his likelihood to get married, we take account of the possible selection of men with high wages into marriage. This way we hope to detect how much of the premium can be attributed to the selection hypothesis.

To have a comparative measure of the MWP between married and cohabiting men, we set up an alternative sampling and matching procedure, where men who marry in the reference year (t) and are still married in $t+1$ are matched with men who are unmarried but live together with a partner all through from year $(t-1)$ to year $(t+1)$. Assuming that potential selection into a relationship and household specialization should apply to married as well as cohabiting men and in light of the different legal treatment of marriage and cohabitation, we expect the wage difference between married men and cohabiters to be of much smaller, but still remarkable, size than the wage difference between married and single men.

Our econometric matching approach is laid out in the next section, followed by a description of our data sampling procedure in Section 3. Empirical results on the propensity score estimations and the matched wage differentials of married versus single men and married versus cohabiting men are presented in

[2] Apart from those already cited see e.g. the study by Schoeni (1995).

[3] To our knowledge, the only existing application of a matching approach within the context of marriage and wages is provided in a working paper by Maasoumi, Millimet and Sarkar (2005) who investigate the distribution of the MWP in the US.

Sections 4 and 5. In the last Sections of the paper we discuss caveats and possible extensions of our research approach.

2. A Matching Approach to Control for Selection into Marriage

The simplest way to assess the wage effect of being married would be to compare the wage rates of married and non-married. This would be a valid approach if married men formed a randomly selected subgroup of all men. However, in face of an observed MWP and according to the selection and specialization hypotheses, individuals neither sort randomly into marriage nor are they equally affected by marriage. Instead, a selection bias may emerge if the likelihood of marriage is related to the wage rate. If men with more favorable labor market characteristics (i.e. who are more likely to experience wage growth) are also more attractive to women as potential mates, the true wage differential between married and non-married will be overestimated. In this way, our research question may be interpreted as a classical evaluation problem, where counterfactual outcomes are to be estimated in order to assess the true wage premium of marriage.

To produce a credible estimate of this counterfactual or hypothetical outcome, we apply the method of matching which identifies the causal effect of a "treatment" by comparing the wage rate of a married man with the wage rate that would have been realized, had the same man stayed unmarried (Rubin, 1974). This yields the average treatment effect on the treated (ATT), an estimate of the average expected effect of marriage on the wage rate for all men who are marrying.

Let Y_{1i} denote the wage rate of a man one year after marriage and let Y_{0i} denote the wage rate of a man who stays unmarried. Then, the ATT is given by:

$$ATT \equiv E(Y_{1i} \mid D_i = 1) - E(Y_{0i} \mid D_i = 1)$$

where D_i is an indicator variable which equals one if person i is married and equals zero otherwise.

As the hypothetical wage outcome $E(Y_{0i} \mid D_i = 1)$ (i.e. of a married man not being married) cannot be observed, we have to refer to wages of unmarried but otherwise similar man. According to the Conditional Mean Independence Assumption (CMIA) (Rosenbaum / Rubin 1983), Y_0 is the same for treated and untreated individuals in expectation, if we control for differences in observable characteristics X.

$$E(Y_{0i} \mid D_i = 1, X) = E(Y_{0i} \mid D_i = 0, X)$$

Hence, if we assume that selection into marriage is taken up by this set of individual characteristics, any remaining difference between treated and non-

treated individuals can be attributed to the effect of marriage. By conditioning on X, we can select the appropriate control group of non-treated, i.e. non-married, men by means of propensity score matching where every person in the treatment group (married) is matched to a comparable control person from the non-treated group (non-married). The vector X includes all variables available that presumably affect the event of marriage while having an influence on the wage level as well.

The first step in selecting comparable individuals, therefore, is to estimate a Probit model of getting married and derive the corresponding propensity score (PS). The intuition behind the PS matching is that individuals with the same probability of "treatment" can be paired for purpose of comparison. In our setting, it describes the likelihood of getting married in the following year for every man in the sample. In the next step, married men are matched to unmarried based on their estimated probability of belonging to the treatment group, given by the distance metric $PS = P(X)$ (Rosenbaum / Rubin 1983). We apply nearest neighbor matching with replacement, where for each married man that one non-married man with the closest PS is selected.[4]

3. Data Sampling

The data used for our analysis are based on data from several waves of the German Socio-Economic Panel (GSOEP). The GSOEP is a yearly micro-data panel which has been conducted in annual interviews of individuals and households since 1984 in West Germany and since 1990 in East Germany.[5] It is best suited for our analysis as it contains information on wage income and various individual characteristics that are likely to affect marriage prospects and labor market outcome at the same time. Moreover, this information is available over a long period of time which enables us to gather a decent number of respondents who experience a marriage within the observation period.

We apply a shifting panel design for marriages between 1993 and 2003 (as displayed in Figure 1). A panel window of 3 years ensures that we only consider respondents who are observed at most one year before marriage ($t-1$) and one year thereafter ($t+1$). Men who have a change in their reported family status from unmarried to married in two subsequent years within the period 1993 to 2003 are labeled as belonging to the treatment group of that specific sample year t. Likewise, all men who remain unmarried during the corresponding 3-year window (that is, from $t-1$ to $t+1$ around the sample year) qualify for the control groups. There is one control group of singles who

[4] A detailed discussion of the advantages and disadvantages of different PS matching algorithms can be found in Imbens (2004).

[5] For a detailed description of the data set see SOEP Group (2001).

report not to live with a partner in either of the years $t-1$, t or $t+1$ and another control group of cohabiters who live with a spouse in the same household during that same time period. Divorcees and widowers are not considered in either of the groups. Thus, the treatment group consists of men who are married in t for the first time and the control groups are formed by men who have never been married in their lives, at least up to $t+1$.[6] In total, by focusing on marriages between 1993 and 2003, we make use of GSOEP data from the years 1992 to 2004. The total number of men marrying over the eleven year observation period and matching our sampling criteria is 346.

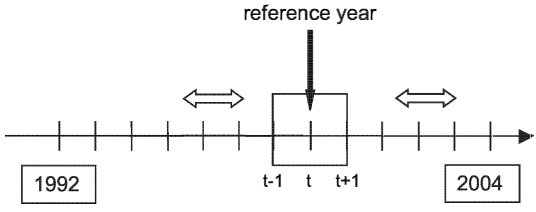

Figure 1: Sampling Procedure

The applied sampling criteria and the corresponding numbers of respondents matching them are listed in Table 1. Naturally, we consider only men who fall in one of the observation (treatment or control) groups. As our analysis relies on reliable information on individual market wages, we have to restrict our sample to dependent employees and ignore all self-employed, unemployed, students, trainees and individuals in special training programs or national services (military and civil) at the time of the wage comparison ($t+1$). A restriction for the married sub-sample regards private-sector employees since paying schemes in the public sector are set up with a build-in marriage premium already, which would bias our results substantially.[7] Finally, we consider only employees with a positive number of contractual working hours per week and positive monthly gross earnings before ($t-1$) and after ($t+1$) the reference year. After applying these criteria we are left with observations from 5,028 men, 346 of whom are married, 3,548 living as singles and 1,134 cohabiting.

As hourly wage rates are not observed directly, we construct this variable by dividing current monthly gross wage earnings by the contractual number of working hours.[8] We use the stipulated total number of contractual weekly

[6] Note, that the group of single men is solely defined by not living with a partner. Some of them might have a relationship outside their households, though.

[7] Although these family status-related wage components are being abolished now they still affect the wage data within our observation period.

[8] As the wage income variable we use the generated variable labgro§§ provided in the GSOEP.

hours (multiplied by 4.3). To ensure a meaningful comparison of wages from 13 years in total (from 1992 to 2002 for the before-marriage comparison and from 1994 to 2004 for the after-marriage comparison), we convert the nominal numbers into year 2000-prices using the consumer price index and taking account of nominal wage growth.

Due to the longitudinal perspective of our analysis, our choice of variables that might serve as conditioning characteristics for the matching of married and unmarried men is limited. We are restricted to variables gathered every single year over the whole period from 1992 to 2002 (time of matching, $t-1$). Given, that the number of men in our treatment group is already very limited, we choose that set of variables for the propensity score estimation that allows us to keep the maximum number of observations for the matching while leaving a large enough scope for the CMIA to hold (that selection into marriage is taken up by this set of individual characteristics and any remaining wage difference between treated and non-treated individuals can be attributed to the effect of marriage). Most importantly and as part of the socio-economic variables, described in more detail in the next section, the before-marriage wage rate in $t-1$ is used. It is meant to cover unobserved factors that may drive a man's earnings potential and, potentially, his attractiveness as a marriage partner at the same time.

Table 1

Sampling Procedure

Sampling criteria	Remaining numbers of observations		
	Marriage in t	Staying single (from $t-1$ to $t+1$)	Cohabiting (from $t-1$ to $t+1$)
All men (age 20 to 64) observed from $t-1$ to $t+1$	688	9459	2184
Dependent employees in $t+1$ (no self-employed, trainees etc.)	616	7058	1869
Among marrying: only private sector employees in $t+1$ (no public service)	500	7058	1869
With non-missing values on weekly working hours and monthly wage income in $t+1$	419	5153	1465
Dependent employees in $t-1$	388	4315	1376
With non-missing values on weekly working hours and monthly wage income in $t-1$	364	3814	1198
With non-missing values on explanatory variables	346	3548	1134

Source: Own calculations based on the GSOEP waves 1992 to 2004.

4. Results of the Propensity Score Estimation

Two Probit models are estimated, one for married and single men and one including married and cohabiting. According to the CMIA they include explanatory variables on characteristics one year before marriage ($t-1$) that are assumed to have an influence on both, the propensity to marry as well as the wage level. We distinguish two sets of variables:[9]

Table 2

Probit Estimation Results for Being Married at Time *t*

Characteristics in $t-1$	Marriage vs. staying single		Marriage vs. cohabiting	
	Coeff. estimate	Std. error	Coeff. estimate	Std. error
Wage rate	**.0227**	.0057	.0114	.0069
Age 20 to 25 (reference group: 46 to 64 years)	**.8525**	.3501	**1.4208**	.4730
Age 26 to 35	**1.382**	.3391	**1.5472**	.4593
Age 36 to 45	**.7467**	.3463	.8557	.4655
Schooling: medium level, 10 ys secondary schooling (reference group: no degree, 9 ys secondary schooling)	–.0067	.0832	–.0494	.1053
Schooling: high school, advanced technical college	.0944	.1006	.0734	.1230
Occupational status: no degree, low skill (reference group: skilled blue collar workers)	.0499	.0913	**.3109**	.1205
Occupational status: white collar, medium skill	–.0406	.0874	–.0352	.1088
Occupational status: white collar, high skill	.0304	.1137	–.0576	.1320
Tenure (in years)	**–.0279**	.0074	.0013	.0092
Temporary job contract	**–.4655**	.1321	**–.3660**	.1595
Presence of child in the household	**.4271**	.0784	**.1926**	.0956
Living in East Germany	.0184	.0893	**–.2448**	.1121
Immigrated to Germany	.2174	.1317	**.5507**	.1880
Foreign nationality	-.1824	.1238	–.1763	.1623

[9] More information, e.g. on the health status, would be appreciated but is not available over the whole observation period. The choice of relevant variables is restricted by the common pool of those who are available in each year and for which item non-response is not too severe. More information (means and standard deviations of all variables included in the PS estimation) is available from the authors on request.

Satisfaction with health status (10 point scale)	–.0044	.0209	**.0514**	.0257
Satisfaction with leisure (10 point scale)	.0350	.0189	.0018	.0215
Satisfaction with housing situation (10 point scale)	**–.0524**	.0171	.0061	.0197
Satisfaction with income (10 point scale)	–.0045	.0212	.0362	.0253
Satisfaction with life today (10 point scale)	**.1426**	.0337	**.1053**	.0416
Satisfaction with life in 5 years, expected (10 point scale)	–.0073	.0270	–.0306	.0332
Worried about own economic situation (3 point scale)	**–.1516**	.0602	–.0681	.0754
Worried about general econ. situation (3 point scale)	.0802	.0561	.1006	.0699
Worried about job security (3 point scale)	**–.1158**	.0531	–.0896	.0658
Constant	**–3.1137**	.4568	–3.1425	.5902
Pseudo R squared	.1192		.0782	
$\chi^2(15)$	278.28		125.84	
No. of observations	3,894		1,480	

Source: Own calculations based on the GSOEP waves 1992 to 2004. Bold coefficients indicate statistical relationships that are different from zero at a significance level of 5 %.

- *Socio-economic characteristics* such as age, education, occupational status, tenure, type of job contract, region, nationality, migration status, information on children and the wage level at $t-1$.
- *Satisfaction and concern variables* such as satisfaction with several aspects of life (health, income, housing situation, leisure etc.) as well as life in general and concerns about the own and the general economic situation.

The estimation results of the Probit models for both sub-samples are presented in Table 2. Most of the estimated coefficients have the expected signs and sizes. The hourly wage rate (at $t-1$) is positively related to the likelihood of getting married versus staying single but rather unrelated to marrying versus cohabiting. This finding might be interpreted as first evidence for the selection hypothesis that a man's attractiveness on the marriage respectively spousal market rises with his income level. The older a man the less likely he is to marry, with the prime age group being 26 to 35. Whereas education level and occupational status seem for the most part unrelated to changing the family status, marriage is significantly more likely than cohabiting among low-skilled men. Years of job tenure and having a fixed-term contract are negatively related to marriage. The presence of a child in the household is posi-

tively correlated with the chances to get married in the following year for both sub-samples. Whether a man lives in the Western or Eastern part of Germany and whether he has immigrated proves statistically significant only for the alternative of cohabiting but not for staying single: cohabiting is more common in East Germany than in West Germany. Satisfaction with the housing situation as well as concerns about the own economic situation and about job security seem to have a negative impact on changing the family status from single to married in the subsequent year. This goes in line with the finding for having a temporary job contract. A rather strong and positive relationship for both sub-samples, confirming recent research results on marriage and happiness by Stutzer and Frey (2006), is found between the individual satisfaction level with life and the propensity to get married.

5. Matching Results

In the first matching procedure, for each married man an adequate control person is selected among the singles based on the predicted *PS*. The results are presented in Table 3.

The average wage rate of a married man is 15.78 € whereas the unmatched wage of a single amounts to 14.01 € on average. This yields a significant unmatched wage gap of about 1.77 € or 11 percent.[10] After controlling for differences in observed characteristics the adjusted wage rate of singles rises towards that of the married. The wage differential falls by two thirds below 60 cents and is not statistically significantly different from zero any more.[11] Interpreting this ATT of 3.6 percent, a randomly chosen man from the sample of married would not receive a lower wage if he were not married. This result confirms that high-wage men with better paid socio-economic and attitudinal characteristics (particularly higher starting wages) are more likely to marry. Hence, when comparing married to single men, the MWP seems to be fully attributable to a selection process into marriage.

The matching of married and cohabiting men, on the contrary, yields very different results (see Table 4). Without controlling for differences in observed covariates, married out-earn cohabiters by 67 cents on average. However, this unmatched MWP is not statistically different from zero. After balancing the samples with respect to observable characteristics the differential increases slightly to 0.94 €, that is, an ATT of 6 percent which is statistically significant

[10] Note that the overall MWP in the sample amounts to 9.5 percent, that is, including wages of cohabiting men as well.

[11] Since standard errors provided by the Stata procedure psmatch2 do not take into account that the propensity score has been estimated, we use bootstrapping (with 200 replications) for a comparison. The resulting standard error of the ATT is 0.52 which confirms the ATT not to be significantly different from zero.

at the margin of a 10 percent significance level only.[12] The matched wage rate of cohabiters falls to 14.84 € indicating that within the sample of married and cohabiting men rather those with a lower paying mix of socio-economic and / or attitudinal characteristics get married. A randomly chosen man from the sample of married would have received a slightly lower wage if he had not married. Here we may conclude that, if any, selection based on observed characteristics brings to light a small MWP which cannot be noticed in the raw data.

Table 3

Wage Differentials Between Married and Single Men

	Married (#346)	Singles (#3548)	Absolute difference (in €)	Relative difference (in %)
Unmatched wage rate in $t+1$ (T-stat.)	15.78	14.01	1.77 (5.12)	11.22
Matched wage rate, ATT (T-stat.)	15.78	15.21	0.57 (1.00)	3.61

Source: Own calculations based on the Probit estimation results of Table 2 and Stata matching algorithm psmatch2 by Leuven and Sianesi (2003). GSOEP waves 1992 to 2004.

Table 4

Wage Differentials Between Married and Cohabiting Men

	Married (#346)	Cohabiters (#1134)	Absolute difference (in €)	Relative difference (in %)
Unmatched wage rate in $t+1$ (T-stat.)	15.78	15.12	0.67 (1.52)	4.25
Matched wage rate, ATT (T-stat.)	15.78	14.84	0.94 (1.80)	5.96

Source: Own calculations based on the Probit estimation results of Table 2 and Stata matching algorithm psmatch2 by Leuven and Sianesi (2003). GSOEP waves 1992 to 2004.

The positive ATT for married versus cohabiting men indicates that married are not observed to earn higher wages due to differences in observed characteristics. Instead, we have to look for alternative explanations. Specialization might be one. As we are drawing comparisons between married and unmarried men but all living in couples, we might have expected specialization effects to be of minor importance. However, institutions in Germany such as joint taxa-

[12] Bootstrapping with 200 replications yields an even larger standard error of 0.65 (compared to 0.52 produced by psmatch2).

tion of married couples or the coverage of a non-employed spouse within the wage earner's public health insurance provide incentives for intra-household specialization of time use for married couples only. In fact, the percentage of men whose spouses are not gainfully employed is significantly higher among married than among cohabiting men – 34 compared to 15 percent. Likewise, the earnings level of wives seems to be smaller than that of cohabiting spouses. However, these observations have to be interpreted with caution as the investigations suffer from a severe missing value problem on the spouses' side. As soon as we investigate their labour market participation status or any other variable related to the specialization question, the sample reduces to hardly 60 percent of the original size.

6. Discussion

Married men in Germany receive on average 9.5 percent (or 1.50 €) higher wages than non-married, single or cohabiting, men. The MWP differs between 1.77 € when comparing married to singles and 67 cents when comparing married to cohabiters. With PS matching we can show that the average treatment effect of marriage for those who actually get married amounts to statistically not significant 4 percent. In other words, married men have higher wages because they have a more favorable mix of characteristics, even before marriage, and high-income men with a higher wage potential are more likely to get married. This result seems to confirm the selection hypothesis proposed in the introduction. The evidence is particularly convincing in light of the virtually non-existing (observable) differential between married and cohabiting men. The fact that the differential – without controlling for differences in observed covariates – is much smaller between these two groups indicates a selection process into living together with somebody regardless of the legal status.

The paper is meant to bring forward research on the MWP in Germany and, in this respect, should be seen as a first step in analyzing German men's wages in relation to family status. Though we think the application of a non-parametric estimation method within the context of marriage and wages is a promising way to go, there are still a few caveats to overcome and possible extensions to be mentioned: First, our analysis focuses on men who are employed prior to marriage (respectively the reference year) and does not include marrying students, unemployed etc. which may give rise to additional selection. As marriage has been shown to be positively related to job security, we argue that this possible selection adds even further to the positive selection effect investigated in the paper. Employed men may be more likely to marry and not (yet) employed men to postpone marriage until their career has started. In this case, our results would even tend to underestimate the full selection effect.

Second, we discussed the possible sorting of men into marriage or cohabitation based on observable and unobservable characteristics in the first part of this paper. As regards the effect of observables we hope to have covered most of it by applying the matching procedure to married and non-married men conditional on a wide range of characteristics. However, men might be more likely to find a spouse not only because of their human capital endowments but because of other (unobserved) traits that affect both marriage and labor market outcome. As we argue above, at least part of this selection on unobservables might be taken care of, as long as it is related to earnings before marriage, by including the wage at $t - 1$ into the propensity score estimation.

An obvious extension will be to go beyond the ATT and investigate the heterogeneity in the wage effects of marriage or cohabitation, such as the relationship between the wage premium and actual specialization within the household (measured e.g. by individual time inputs for housework and child care by husband and wife) to get an idea of the possible sources of a productivity effect. It would be particularly interesting to shed light on the revealed but only slightly positive ATT for married versus cohabiting men. The fact that a rising number of couples (married or cohabiting) live together on weekends only and, thus, cannot possibly enjoy all the benefits of specialization, gives rise to further empirical discrimination between the relative importance of selection and specialization based on information about these living circumstances.[13]

References

Antonovics, K. / *Town,* R. (2004): Are All the Good Men Married? Uncovering the Sources of the Marital Wage Premium, American Economic Review 94 (2), 317 – 321.

Becker, G. (1981): A Treatise on the Family, Cambridge.

Becker, G. (1985): Human Capital, Effort and the Sexual Division of Labor, Journal of Labor Economics 3 (1, Part 2), 33 – 58.

Breusch, T. / *Gray,* E. (2004): Does Marriage Improve the Wage of Men and Women in Australia?, Paper presented to the Australian Population Association 12th Biennial Conference, Canberra.

Chun, H. / *Lee,* I. (2001): Why do Married Men Earn More: Productivity or Marriage Selection?, Economic Inquiry 39 (2), 307 – 319.

Cohen, P. (2002): Cohabitation and the Declining Marriage Premium for Men, Work and Occupations 29(3), 346 – 363.

Datta Gupta, N. / *Smith,* N. / *Stratton,* L. (2005): Is Marriage Poisonous? Are Relationships Taxing? An Analysis of the Male Marital Wage Differential in Denmark, IZA Discussion Papers 1591, Institute for the Study of Labor (IZA).

[13] This aspect is analyzed in Livingston (2006). We thank an anonymous referee for pointing it out.

Ginther, D. K. / *Sundström,* M. / *Björklund,* A. (2006): Selection or Specialization? The Impact of Legal Marriage on Adult Earnings in Sweden, Paper presented at the EALE conference 2006, Prague.

Ginther, D. K. / *Zavodny,* M. (2001): Is the Male Marriage Premium Due to Selection? The Effect of Shotgun Weddings on the Return to Marriage, Journal of Population Economics 14 (2), 313 – 328.

Hill, M. (1979): The Wage Effects of Marital Status and Children, Journal of Human Resources 14, 579 – 594.

Imbens, G. (2004): Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review, The Review of Economics and Statistics 86 (1), 4 – 29.

Kenny, L. (1983): The Accumulation of Human Capital during Marriage by Males, Economic Inquiry 21, 223 – 231.

Kermit, D. (1992): Does Marriage Make Men More Productive, Economics Research Center, NORC, Working Paper 92 – 2, University of Chicago.

Korenman, S. / *Neumark,* D. (1991): Does Marriage Really Make Men More Productive?, Journal of Human Resources 31 (3), 282 – 307.

Leuven, E. / *Sianesi,* B. (2003): PSMATCH2: Stata Module to Perform Full Mahalanobis and Propensity Score Matching, Common Support Graphing, and Covariate Imbalance Testing. Online: http: // ideas.repec.org / c / boc / bocode / s432001.html. Version 3.0.0.

Livingston, G. (2006): Do Married Men Who Live with their Wives Have Higher Wages Than Married Men Who Don't? Further Evidence Regarding the Causal Mechanisms Explaining Men's Wage Premium to Marriage, mimeo, Office of Population Research, Princeton University.

Maasoumi, E. / *Millimet,* D. / *Sarkar,* D. (2005): The Distribution of Returns to Marriage, Department of Economics, Departmental Working Paper 503, Southern Methodist University.

Mamun, A. (2005): Is there a Cohabitation Premium in Men's Earnings?, Center for Research on Families, Working Paper 2004 – 02, University of Washington.

Meyer, T. (2006): Private Lebensformen im Wandel, in: Geißler, R. (ed.): Die Sozialstruktur Deutschlands, Opladen.

Nakosteen, R. / *Zimmer,* M. (1997): Men, Money and Marriage: Are High Earners More Prone Than Low Earners To Marry, Social Science Quarterly 78 (1), 66 – 82.

Reed, R. / *Harford,* K. (1989): The Marriage Premium and Compensating Wage Differentials, Journal of Population Economics 2, 237 – 265.

Rosenbaum, P. / *Rubin,* D. (1983): The Central Role of the Propensity Score in Observational Studies for Causal Effects, Biometrika 70, 41 – 55.

Rubin, D. (1974): Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies, Journal of Educational Psychology 66, 688 – 701.

Schoeni, R. (1995): Marital Status and Earnings in Developed Countries, Journal of Population Economics 8, 351 – 359.

SOEP Group (2001): The German Socio-Economic Panel (GSOEP) after more than 15 years – Overview, in: E. Holst / D. R. Lillard / T. A. DiPrete (eds.): Proceedings of the 2000 Fourth International Conference of German Socio-Economic Panel Study Users (GSOEP2000), Vierteljahrshefte zur Wirtschaftsforschung 70 (1), 7 – 14.

Statistisches Bundesamt (2006): Leben und Arbeiten in Deutschland, Sonderheft 1: Familien und Lebensformen – Ergebnisse des Mikrozensus1996 bis 2004, Wiesbaden.

Stratton, L. (2002): Examining the Wage Differential for Married and Cohabiting Men, Economic Inquiry 40 (2), 199 – 212.

Stutzer, A. / *Frey,* B. S. (2006): Does Marriage Make People Happy, or do Happy People get Married?, The Journal of Socio-Economics 35, 326 – 357.