The male marital wage premium in Germany: selection versus specialization

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Abstract

Empirical research for the US, Australia and many European countries consistently shows that married men receive higher gross wages on average than single men. This marital wage premium is usually explained by a selection effect, with high-earning men being more attractive on the marriage market, or a specialization effect, according to which husbands are more productive on the labour market because of their wives taking over household and child rearing tasks. In this first empirical study on the MWP men in Germany, we assess the wage premium two years after marriage using a shifting panel design for marriages between 1993 and 2002 in the German Socio-Economic Panel (GSOEP). The second novelty is the application of econometric evaluation methodology. The matching of a treatment group (married men) and a control group (non-married men) allows us to disentangle how much of the observed total MWP of about 9 percent may be attributed to selection into marriage. The results show that husbands' higher wage rates in Germany are for the most part due to selection. In terms of wage-related characteristics, there is positive selection into marriage versus staying single but negative selection versus cohabitation. If any, specialization seems to be involved only with regard to the conditional MWP between married men and cohabiters.

JEL Classification: J12, J31

Keywords: marriage wage premium, cohabiting, matching approach

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 percent 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 9 percent lower wages than men who got married two years before.[1]

Regarding the sources of the MWP, we can distinguish two main hypotheses in the literature: the specialisation or productivity hypothesis and the selection hypothesis. The specialisation hypothesis postulates that married men tend to 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 and gives their spouses the chance to be more productive in the labour market (Becker 1985). Empirical evidence for this hypothesis is provided e.g. by Kenny (1983) who concludes that married men accumulate human capital more rapidly, as well as Korenman and Neumark (1991), whose results based on a US company personnel file show a faster wage growth after marriage. By integrating the wife's labour market hours in the analysis, Chun and Lee's study (2001) reveals marriage wage gains to be explained by the degree of specialization within the household. Antonovics and Town (2004) uncover a MWP even for monozygotic twins. Kermit (1992) finds evidence that marriage may makes men more productive as the input of the spouse's time enhances productivity augmentation. A recent study by Mamun (2005) provides empirical support for intra-household spillover effects of partner's education.

The second explanation of the MWP proceeds on the assumption that men with higher wages are more likely to get married than men with lower wages. 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 labour market (Becker1981). Empirical evidence for selection to drive the wage premium can be found in Nakosteen and Zimmer (1997) according to which US men with higher earnings are more likely to marry and less likely to divorce. Using

[1] This average is based on data from the interview years 1995 to 2004. For a detailed description of the sampling procedure see Section 3.

Australian data Breusch and Gray (2004) find similar wage levels for married and cohabiting men but higher earnings for ex-married in comparison to never-married men. According to Datta Gupta, Smith and Stratton (2005) the marital or cohabiting premium diminishes after controlling for individual fixed effects – another support for the selection hypothesis. However, Stratton's (2002) and Cohen's (2002) results point out that marital and cohabitation differentials are quite distinct and, by focussing on shotgun weddings which they assume to be uncorrelated with earnings ability, Ginther and Zavodny (2001) find very little evidence for selection. Alternative explanations of the MWP include employer favouritism for married employees (Hill 1979) and compensating wage differentials where married men have higher wages because they take jobs with fewer amenities and nonpecuniary rewards (Reed / Harford 1989).

While there is a wide range of research on this topic for the United States, Australia, and several European countries,[2] there is no evidence for the MWP in Germany to our knowledge. By use of the German Socio Economic Panel we would like to fill this gap and investigate whether there is a wage premium for married men in Germany, too. Apart from presenting the first estimates of a MWP in Germany, the second novelty of this paper is the application of a non-parametric estimation method (matching) within the context of marriage and wages.

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 help ourselves with an approximation of this counterfactual situation by looking at wages of non-married, but otherwise similar men. 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 2002, men who marry in the reference year (t) and are still married in t+2 are matched with single men who stay unmarried all through from year (t-1) to year (t+2). By holding constant characteristics that might have an impact on both, a man's hourly wage rate as well as his chance to get married, we take account of the 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.

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

To have an assessment of the specialization effect, we also compare wages of married men with wages of men who live together with a partner. Assuming that household specialization takes place in married as well as cohabiting couples, we expect the wage difference between married men and cohabiters to be of much smaller size than the wage difference between married and single men. We therefore set up an alternative matching model, where men who marry in the reference year (t) and are still married in t+2 are matched with men who are unmarried but live together with a partner all through from year (t-1) to year (t+2).

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 Sections 4 and 5. In the last two Sections of the paper we discuss sensitivity analyses and extensions of our research approach.

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. Thus, a selection bias may emerge if the likelihood of marriage is related to the wage rate. For instance, if men with more favourable labour market characteristics (i.e. who are more likely to experience wage growth) are also more attractive to women on the marriage market, 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. In our setting, the counterfactual outcome is that wage rate that would have been realized, had a married man stayed unmarried.

The goal of this paper is thus to determine the average treatment-on-the-treated effect (ATT) on the wage rate, that is, the average expected effect of marriage for all men who are marrying. We follow Rubin (1974) and identify the causal effect of the "treatment" by comparing the wage rate

of a married man two years after marriage with the hypothetical situation of the same man if he had not entered the marriage status.

To produce a credible estimate of this hypothetical or counterfactual outcome, we apply the method of matching, which accounts for selection in terms of observable characteristics (Rubin 1974). Every person in the treatment group (married) is matched to a comparable individual from the non-treated group (non-married), by conditioning on observable characteristics. The mean effect of treatment is then the average difference in wage rates between matched married and single men, respectively matched married and cohabiting men.

Let Y_{1i} denote the wage rate of a man two years 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.

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

That is, 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. Given the choice of X, we can select the appropriate control group of non-treated, i.e. non-married, by means of propensity score matching.

To conclude, the first step in selecting comparable individuals is to estimate a Probit model of getting married and derive the according 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, that is, of getting married, given the

distance metric $PS = P(X)$ (Rosenbaum / Rubin 1983). The vector X hence includes all variables available that presumably affect the event of marriage. To select appropriate controls we apply nearest neighbour matching with replacement, where for each married man that one non-married man with the closest $P(X)$ is selected.[3]

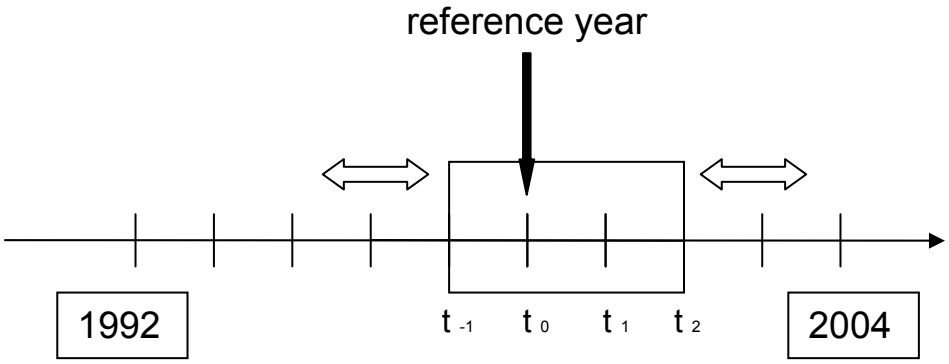
Data sampling

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 microdata panel which has been conducted in annual interviews of individuals and households since 1984 in West Germany and since 1990 in East Germany. 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 labour 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 2002 (as displayed in Figure 1). A panel window of 3 years ensures that we only consider respondents who are observed 1 year before marriage (t-1) and up to 2 years thereafter (t+2). Men who report to have changed their family status from unmarried to married in one of the years 1993 to 2002 are labelled as belonging to the treatment group of that specific sample year. Likewise, all men who remained unmarried during the according 3-year window (that is, from t-1 to t+2 around the sample year) qualify for the control groups. There is a control group of singles who report not to live with a partner in either of the years t-1, t or t+2 and another control group of cohabiters who live with a spouse during that same time period. So in total, by focussing on marriages between 1993 and 2001, we make use of GSOEP data from the years 1992 to 2004. The total number of men marrying over the nine year observation period and matching our sampling criteria is 163.

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

Figure 1: Sampling procedure



First of all, we restrict our sample to men with reliable information on their market wages, hence, we focus on dependent employees and ignore all self-employed, unemployed, students, apprentices and individuals in special training programs or national services (military and civil) at the time of the wage comparison (t+2). Second, we consider only employees with positive wage income and a positive number of contractual working hours per week. A third restriction 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.[4] Our data consists of observations from 1,647 men who provide reliable information on monthly gross earnings and contractual working hours, 163 of whom are married and 1,484 either cohabiting or living as singles.

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.[5] We use the stipulated total number of contractual weekly hours (multiplied by 4.3). As our sample covers wages from 13 years in total (from 1992 to 2001 for the before-marriage comparison and from 1995 to 2004 for the after-marriage comparison), we convert them 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 rather limited. We are restricted to variables gathered every single year over the whole period from 1992 to 2001

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

(time of matching). 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.

Results of the Propensity Score Estimation

Two Probit models are estimated, one for married and single men and one including married and cohabiting, where variables on characteristics 1 year before marriage (t-1) that are assumed to have an influence on both, the propensity to marry as well as the wage level, are incorporated. We distinguish two sets of variables:[6]

- *Socio-economic characteristics* such as age, education, occupational status, region, information on children and the wage level at t-1.

- *Satisfaction and concern variables* such as satisfaction with several aspects of life (health, leisure etc.) as well as life in general and concerns about the own and the general economic situation.

The means and standard deviations of all variables included in the PS estimation are given separately for the treated men (married) and the control groups (single and cohabiting) in Table A1 in the Appendix.

The estimation results of the Probit models for both sub-samples are presented in Table 1. Most of the estimated coefficients have the expected signs and sizes. Income (at t-1) is positively related to the likelihood of getting married versus staying single. This finding might be interpreted as first evidence for the selection hypothesis that a man's attractiveness on the marriage market rises with his income level. Years of education and the presence of a child in the household are also positively correlated with the chances to get married in the following year for both sub-samples The older a man the less likely he is to marry. Whether he lives in the Western or Eastern part of Germany proves statistically relevant only for the alternative of cohabiting but not for staying single: cohabiting is more common in East Germany than in West Germany.

[5] As the wage income variable we use the generated variable labgro$$ provided in the GSOEP.

[6] More information, e.g. on the health status or individual attitudes, would be appreciated but is not available over the whole observation period. The choice of relevant variables is viciously restricted by the common pool of those who are available in each year and for which item non-response is not too severe.

Having a high skill white collar occupation is negatively and being satisfied with one's housing situation is positively related to the likelihood of marriage with respect to cohabitation. Concerns about the own economic situation seem to have a negative impact on changing the family status from single to married in the subsequent year.

Table 1: Probit estimation results of marrying at time t_0

	Marriage vs. staying single		Marriage vs. cohabiting	
Characteristics in t-1	Coeff. estimate	Std. error	Coeff. estimate	Std. error
Wage rate	**.0452**	.0099	.0089	.0090
Age	**-.0273**	.0081	**-.0380**	.0143
Years of schooling	**.0887**	.0284	**.0956**	.0387
Occupational status: no degree, low skill (reference group skilled blue collar workers)	-.0644	.1501	-.0810	.2124
Occupational status: white collar, medium skill	-.1390	.1349	-.1963	.1736
Occupational status: white collar, high skill	-.3124	.2000	**-.6644**	.2498
Satisfaction with health status (10 point scale)	-.0441	.0308	.0428	.0417
Satisfaction with leisure (10 point scale)	.0028	.0270	.0018	.0337
Satisfaction with housing situation (10 point scale)	-.0078	.0255	**.0721**	.0328
Satisfaction with life today (10 point scale)	.0683	.0473	.0543	.0671
Satisfaction with life in 5 years, expected (10 point scale)	.0395	.0384	.0149	.0528
Worried about own economic situation (3 point scale)	**-.1659**	.0801	.0614	.1100
Worried about general econ. situation (3 point scale)	-.0726	.0819	.0077	.1150
Presence of Child in the household	**.3646**	.1173	**.3730**	.1586
Living in East Germany	.0960	.1403	**-.4861**	.1782
Constant	**-2.0906**	.5280	-1.3032	.7870
Pseudo R squared		.0690		.0775
$\chi^2(15)$		68.87		45.44
No. of observations		1363		447

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%.

Matching Results

The results of the first matching procedure, where based on the predicted PS for each married man an adequate control person is selected among the singles, are presented in Table 2.

Table 2: Wage differentials between married and single men

	Married (#163)	Singles (#1200)	Absolute difference (in €)	Relative difference (in %)
Unmatched hourly gross wage in t+2	16.46	14.63	1.83	11.12
(T-stat.)			(3.25)	
Matched hourly gross wage, ATT	16. 46	17.18	-0.72	4.37
(T-stat.)			(-0.83)	

Source: Own calculations based on the Probit estimation results of Table 1 and Stata matching algorithm psmatch2 by Leuven and Bianesi (2003). GSOEP waves 1992 to 2004.

The average wage rate of a married man is 16.46 € whereas the unmatched wage of a single amounts to 14.63 € on average. This yields a significant unmatched wage gap of about 1.80 € or 11 percent. After controlling for differences in observed characteristics the matched wage rate of singles even outrages that of the married. The wage differential falls below -70 cents and is not statistically significantly different from zero any more.[7] When interpreting the ATT of 4 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 higher paid socio-economic characteristics are more likely to marry. Hence, when comparing married to single men, the MWP can be fully attributed to selection into marriage.

The matching of married and cohabiting men, on the contrary, yields very different results (see Table 3). Without controlling for differences in observed covariates, cohabiters slightly out-earn married on average. The unmatched MWP is not statistically different from zero. But after balancing the samples with respect to observable characteristics the differential increases to 1.64 €, that is, an ATT of 10 percent which is statistically significant at the margin of the 10 percent

[7] Since standard errors provided by the Stata procedure psmatch2 do not take into account that the propensity score has been estimated, we used bootstrapping (with 200 replications) for a comparison. The resulting standard error of the ATT is 0.85 which confirms the ATT not to be significantly different from zero.

significance level only.[8] The matched wage rate of cohabiters falls to 14.82 € indicating that within the sample of married and cohabiting men rather those with lower paying socio-economic characteristics get married. A randomly chosen man from the sample of married would have received a significantly lower wage if he had not married. So here we may conclude that selection based on observed characteristics even produces a MWP which cannot be noticed in the raw data.

Table 3: Wage differentials between married and cohabiting men

	Married (#163)	Cohabiters (#284)	Absolute difference (in €)	Relative difference (in %)
Unmatched hourly gross wage in t+2	16.46	16.52	-0.06	0.36
(T-stat.)			(-0.08)	
Matched hourly gross wage, ATT	16. 46	14.82	1.64	9.96
(T-stat.)			(1.67)	

Source: Own calculations based on the Probit estimation results of Table 1 and Stata matching algorithm psmatch2 by Leuven and Bianesi (2003). GSOEP waves 1992 to 2004.

The marginally 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 among married and unmarried men but all living with their partners, we might have expected specialization effects to be of minor importance. On the other hand, institutions in Germany such as joint taxation of married couples or the coverage of a non-employed spouse within the wage earner's health insurance contributions provide incentives for specialization only for married couples. In fact, the percentage of men whose spouses are not gainfully employed and look after a child at home is significantly higher among married than among cohabiting men. Likewise, the number of weekly working hours of married spouses is much smaller (17 compared to 27). 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

[8] Bootstrapping with 200 replications yields an even larger standard error of 1.04.

market hours or any other variable related to the specialization question, the sample reduces to only 70 percent of the original size.

Sensitivity analyses

The matching results presented are based on Probit estimations set up to keep the maximum number of observations. As soon as we introduce additional variables that may be theoretically related to marriage and the wage level - such as information on whether the job contract is permanent or fixed-term, or a measure of occupation prestige - the number of observations in the married sample diminishes from 163 to 124 (in the control group it falls from 1200 to 918). However, including these variables does not alter the matching results significantly. Although varying between positive and negative values, the ATT never proves statistically different from zero. Hence, we find strong and robust evidence for selection to explain the MWP between married and single men.

With regard to the married-cohabiting sub-sample the results are not quite as robust. Starting from practically no wage differential in the raw data, the MWP increases for the specification of the Probit model presented. Once we consider the additional set of variables the MWP hardly changes in size but different specifications with smaller numbers of explanatory variables yield ATTs that sometimes are and sometimes are not statistically different from zero. To conclude, there is rather weak evidence for a specialization effect to explain the MWP between married and cohabiting men.

Discussion

Married men in Germany receive on average 9 percent (or 1.47 €) higher wages than non-married. The MWP differs between 1.83 € when comparing married to single men and -6 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 some statistically not significant 4 percent. In other words, married men have higher wages because they have higher paid socio-economic characteristics, even before marriage, and high-income men with higher wage ability are more likely to get married. This result strongly confirms the selection hypothesis

proposed in the introduction. The evidence is particularly convincing in light of the virtually non-existing differential between married and cohabiters. 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.

This paper's aim is to bring forward research on the MWP in Germany and, in this sense, it should be seen as a first step in analysing German men's wages in relation to family status. Though being the first application of a non-parametric estimation method within the context of marriage and wages, there are still a few shortcomings to overcome and extensions to be made: In the first part of this paper we discussed the possible sorting of men into marriage or cohabitation based on observable and unobservable characteristics. As regards the effect of observable characteristics we hope to have taken up most of it by applying the matching procedure with matching of married and non-married men conditional on these 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 labour market outcome. With regard to selection based on unobservables we still have some way to go. The obvious next step will be to apply a switching regression model of the wage rate, following Chun and Lee (2001), with endogenous marital selection that incorporates a covariance structure between unobserved earnings capabilities and unobserved traits valued by potential mates. A comparison of the results based on a consideration of selection on observables (the matching model presented) with the results of a switching regression model that takes into account selection on unobservables will provide full insight into the marriage-wage subject.

Another obvious extension would be to investigate 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 analyze the possible sources of the productivity effect. This would be particularly interesting in order to shed light on the revealed positive ATT for married versus cohabiting men. We have undertaken first steps of research in this direction. But as already mentioned, the sample sizes do not allow clear-cut conclusions from these analyses, since information on the spouses is quite rare. Because of missing values, the sample reduces to 70 percent of the original size as soon as we investigate e.g. the labour market attachment of the spouse. Relative time inputs (for household tasks or child rearing) of wife and

husband are even more difficult to account for as the exact definition of the interview items keep changing over the time period under study.[9]

Furthermore, with more interview years of the GSOEP to come, we might extend the analysis to studying the "cohabiting wage premium" between men who live together with a partner and singles. With our shifting 3-year panel window and the sampling criteria applied we are only able to gather a sample of 44 men who move together with a spouse in one of the reference years 1993 to 2002 (and still live together after two years). For this reason, further analyses have to await further data.

References

Antonovics, K. and R. Town (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, Part2), 33-58.

Breusch, T. and E. Gray (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. and I. Lee (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., N. Smith and L. Stratton (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).

[9] For instance, comparable information on individual time use is not available for every year due to changes in the questionnaire over time. Whereas in some waves hours spent on various activities have to be reported for weekdays, Saturdays and Sundays separately, the remaining years provide information for weekdays only.

Ginther, D. and M. Zavodny (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. and D. Neumark (1991), Does Marriage Really Make Men More Productive?, Journal of Human Ressources 31 (3), 282-307.

Leuven, E. and B. Sianesi. (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.

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

Nakosteen, R. and M. Zimmer (1987), Marital Status and Earnings of Young Men: A Model with Endogenous Selection, Journal of Human Resources 22, 248-269.

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

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

Rosen, S. (1986) The Theory of Equalizing Differences, O. Ashenfelter and R. Layard (eds.), Handbook of Labor Economics, Vol. 1, Amsterdam.

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

Rosenbaum, P. and D. Rubin (1985), Construction a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score, American Statistician 39(1), 33-38.

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.

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

Appendix

Table A1: Means and standard deviations for all individuals entering the Probit estimations

	Marriage in t		Staying single (from t-1 to t+2)		Cohabiting (from t-1 to t+2)	
	Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
Wage rate in t+2	16.4600	6.2792	14.6311	6.799	16.5206	8.3217
Characteristics in t-1						
Wage rate	15.4555	6.1999	13.0982	6.4518	15.5656	9.4567
Age	29.2761	4.4794	30.31	8.9015	30.9613	6.431
Years of schooling	12.1534	2.5418	11.3608	2.2291	12.2166	2.3459
Occupational status: no degree, low skill	.1043	.3066	.1483	.3556	.1197	.3252
Occupational status: skilled blue collar workers	.2086	.4076	.2108	.4081	.2254	.4186
Occupational status: white collar, medium skill	.1595	.3673	.1067	.3088	.2394	.4275
Occupational status: white collar, high skill	.5337	.5004	.535	.4990	.4120	.4931
Satisfaction with health status (10 point scale)	7.8466	1.5658	7.8075	1.8138	7.3275	1.992
Satisfaction with leisure (10ps)	7.3190	1.8583	7.3642	1.8994	7.1373	2.0623
Satisfaction with housing situation (10ps)	7.0675	2.0522	7.145	2.0209	6.299	2.1870
Satisfaction with life today (10ps)	7.6503	1.3031	7.4158	1.4977	7.2711	1.3161
Satisfaction with life in 5 years, expected (10ps)	7.7914	1.5294	7.5467	1.6248	7.4894	1.6548
Worried about own economic situation (3 point scale)	2.1472	.6405	2.2067	.6603	2.0563	.6754
Worried about general economic situation (3ps)	1.7914	.5606	1.8733	.6345	1.7852	.6232
Presence of child in the household	.2638	.4421	.1767	.3815	.2042	.4038
Living in East Germany	.1595	.3673	.1742	.3794	.2394	.4275
No. of observations		163		1200		284

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