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The evolution of the marriage premium in the Swedish labor market 1968-1991

by

Katarina Richardson*

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Abstract

Married, cohabiting, and divorced men in Sweden earn more than single men. The wage premium earned by married men has declined since 1968, mainly due to decreasing productivity differences between married and single men. During this period, reforms have been undertaken to induce spouses to share labor market and housework more equally. If this wage differential reflects specialization within households, we would expect it to decline. Using longitudinal data, the results indicate that the wage premiums mainly reflect gains from partnership. Selection based on unobserved productivity into partnership can only partly explain the wage differentials by marital status. However, I do not find that the marriage premium increases with time married as also implied by the specialization hypothesis.

* Mail: Office of Labour Market Policy Evaluation, Box 513, SE – 75120 Uppsala, Sweden. Phone: +46 (0)18 471 7074, Fax: +460)18 471 7071, E-mail: katarina.richardson@ifau.uu.se. I have benefited from discussions with Anders Björklund and Johan Stennek. I am grateful to Per-Anders Edin, Anders Forslund, Alan Manning, Jan Selén, Marianne Sundström, Eskil Wadensjö, and Yoram Weiss for their comments. I would also like to thank participants at the International Conference of Applied Econometrics, Aix-en-Provence 1994, the European Association of Labor Economics 6th Conference, Warsaw 1994, Workshop in Empirical Labor Economics, Oslo 1994, and participants at the seminar at the Swedish Institute for Social Research. Much of this research was done during my time at the Swedish Institute for Social Research at Stockholm University.

1 Introduction

Married men earn more than unmarried men, but married women do not earn more than unmarried women. A substantial part of the wage differential between married and single men, or *marriage premium*, persists even if one compares men of the same age, and with the same level of education and work experience. As an example, Korenman and Neumark (1991) report marriage premiums in the United States in the range of 10-40 per cent, roughly as large as race and union wage differentials. For detailed surveys, see Korenman and Neumark (1991 and 1992) and Daniel (1991). Even though the marriage premium is a very robust empirical finding, there seems to be little agreement on the mechanisms that generate it. In particular, the marriage premium is not predicted in traditional wage theories.

Efforts to understand the marriage premium could therefore provide insights into how wages are determined. Further, some empirical work, see for example Hersch (1991), indicates that spouses' decisions on how to share market and household work do affect earnings from market work. A comprehension of the marriage premium may therefore help us to understand the outcome of family decision making. Consequently, the marriage premium is also of interest for understanding a part of the gender wage gap: the marriage premium accounts for about one third of the estimated gender-based wage discrimination in the United States, Neumark (1988).

This study focuses on two possible explanations of the marriage premium, namely specialization and selection, both based on productivity differences between married and single men. First, Becker (1991) argues that it is profitable for a household if the husband works and specializes in human capital accumulation that enhances his productivity in the labor market. The wife should then work at home and specialize in human capital accumulation that enhances her productivity there. Single persons cannot readily take advantage of this division of labor and investments. We should therefore expect single men to earn less than married men, and single women to earn more than married women. Another implication of Becker's hypothesis is that the marriage premium should increase with time married, since the accumulation of (specialized) investments in human capital takes time. Korenman and Neumark (1991), using U.S. data, find that the marriage premium for men rises with time married. Daniel (1991) finds

a significant negative relation between the husbands' wages and their wives working hours in U.S. data

Sweden makes an interesting case for testing Becker's hypothesis of division of labor. Since the mid-1960s, several political reforms have been undertaken in order to induce spouses to allocate their time more equally between work in the home and work in the labor market. Sweden changed from joint taxation to individual taxation in 1971. Combined with a progressive income tax-rate, individual taxation makes it profitable for spouses to share the labor market work more equally. Another reform is the provision of public child care which started on a small scale in the mid-sixties and has continually expanded since then. Public child care is available, at a heavily subsidized fee, to all households in which both the husband and the wife work or study, or to single parents who either work or study.

One indication that these reforms really have encouraged spouses to allocate their time more equally is the large increase in the female labor force participation rate. In 1965, 54 per cent of Swedish women aged 16-64 were participating in the labor force, while 82 per cent were participating in 1989. By that time, Swedish women had the highest participation rate in any OECD-country, Sundström (1992). Swedish men were close to a 100 per cent labor force participation rate during this time period. A second indication is that since 1974, married men have more than doubled the time they spend on housework. Married women have reduced the time they spend on housework by half, Nermo (1994). Nonetheless, considerable gender differences remain. According to Becker's hypothesis, when a man spends more time on housework we would expect him to invest less in human capital that enhances his productivity in the labor market. Also, his investment in household human capital should increase. A more equal allocation of men's working time between labor market and housework may therefore result in a diminishing marriage premium.

The second explanation for the marriage premium is that it reflects productivity differences due to selection for marriage, on the basis of productivity. Married men may have some (for an econometrician) unobserved characteristics that make them successful in both the labor market and in the "marriage market." These characteristics will therefore turn up as a marriage premium in wage equations, even though there is no effect of marital status *per se*. Korenman and Neumark (1991) use a fixed effect model and find that 20 per cent of the marriage

premium they receive using cross-sectional data on U.S. men may be explained by unobserved characteristics of this kind.

In this study, I discuss four questions. First, do married, cohabiting, and divorced Swedish men earn more than unmarried men? To the best of my knowledge, there are only two previous studies on the wage differential between cohabiting and single men, see Daniel (1991) and Loh (1997). Both studies use the U.S. data set NLSY (The National Longitudinal Survey of Youth). Second, how has the marriage premium[1] evolved over time in Sweden since 1968? Third, is the marriage premium in part explained by the selection of men for partnership on the basis of unobserved productivity? Fourth, does marriage premium of married men rise with time married?

The paper is organized as follows. In the next section, I describe the data and estimate wage level equations in order to establish "reference" marriage premiums for married, cohabiting and divorced men. I investigate whether the marriage premiums have declined since 1968. I also examine whether the decline in the marriage premium for married men can be explained by reduced productivity differences between married and single men or by declining returns on these skills. In this analysis, I use a method suggested by Juhn, Murphy, and Pierce in 1991. In the third section, I investigate the possibility that the marriage premium in part reflects selection for partnership on the basis of unobserved productivity. I also investigate whether the marriage premium of married men increases with time married. The last section sums up and discusses the results.

[1] In order to simplify the reading I denote the wage differentials between married, cohabiting and divorced men and never married men a *marriage premium.* When the distinction between the wage premium for married, cohabiting and divorced men is important, I indicate this.

2 Is there a Swedish marriage premium ?

The data are taken from the Swedish Level of Living Survey, see Erikson and Åberg (1987). In 1968 detailed information on wages, work experience, working conditions, education, housework and marital status was collected for a representative sample of Swedish men and women, aged between 15 and 75. In 1974, 1981 and 1991 the same individuals were interviewed again and complementary samples of young individuals and immigrants were added in order to keep the sample representative of the Swedish population in these years too. Hence, approximately 35 per cent of the samples in 1974, 1981 and 1991 consist of new individuals. Sample statistics of the key variables appear in Table 1. A full summary description of the data is given in Richardson (1997).

In Table 1, *married men* are men that are married to their spouses, *cohabiting men* are men living in an informal relationship with their partner. The category *divorced and widowed men* includes divorced men, widowers and men who live alone but are not formally divorced.[2] *Never married men* are men that do not live with a partner at the time of the interview but may be separated from a consensual union.

The wage gap between married and never married men has declined over the investigated period. In 1968, married men earned, on average, nearly 45 per cent more ($e^{(7.13-6.76)}$) per hour than never-married men. This wage differential drops to 26 per cent in 1974, and increases to 30 per cent to 1991. Cohabiting and divorced men earn 32 per cent more than single men in 1968. By 1991, these wage differentials have declined to 12 per cent and 26 per cent respectively.

Another change during this period is the large increase in the share of men who choose to live in a consensual union with their partner instead of getting married. In the 1968 sample, only 3 per cent of the men were living in consensual unions. By 1991, this number has

[2] In the interview, the individual states whether he is *living with a partner*, divorced (or widowed) or single. By matching this answer with information from national registration records, where married, divorced, widowed and single are specified I have separated married and cohabiting men. Unfortunately it is not possible to identify men have separated from a consensual unions.

increased to 16 per cent. [3] The propensity to cohabit is much larger in Sweden that in the U.S. Loh (1997)

Table 1. Summary statistics for employed men aged 18-65.

	1968	1974	1981	1991
	Mean log hourly wage			
Married men	7.13	7.64	8.35	9.13
	(0.37)	(0.31)	(0.30)	(0.32)
Cohabiting men	7.04	7.53	8.23	8.98
	(0.28)	(0.25)	(0.25)	(0.25)
Divorced or widowed men	7.03	7.60	8.29	9.10
	(0.29)	(0.25)	(0.26)	(0.31)
Never married men	6.76	7.39	8.12	8.87
	(0.46)	(0.34)	(0.27)	(0.25)
	Per cent in sample			
Married men	69.7	64.1	57.0	52.7
Cohabiting men	2.6	11.0	14.8	16.1
Divorced or widowed men	5.3	5.4	6.8	6.1
Never-married men	22.0	19.8	22.0	25.2
	Per cent within group			
Years of marriage (married men only)	16.1	16.8	16.9	17.3
# observations	1 761	1 700	1 701	1 566

Data Source: Swedish Level of Living Survey.

reports that in 1990 approximately 8 per cent of employed U.S. men, aged between 25 and 33, were cohabiting with their partner. Corresponding Swedish figure (using the 1991 sample) is 32 per cent.

The increased propensity to cohabit is almost fully counterbalanced by a decline in the propensity to marry. The share of married men has declined from 70 per cent in 1968 to 53 per cent in 1991. There is also an increase in the share of divorced and widowed men. In

[3] Today, consensual unions are widely accepted in Sweden. One indication of this is that approximately 40 percent of the parents of babies born in 1990 were living in consensual unions, Statistic Sweden (1993). This figure is not available for the sixties. However, in 1966 approximately 15 per cent of all new born babies had an unmarried mother (includes single mothers), Statistic Sweden (1992).

1968, approximately 5 per cent of the men were divorced or widowed. This figure is 7 per cent in the 1991.

A substantial part of the wage gaps by marital status can be attributed to differences in labor market related characteristics between the groups. Table 2 presents wage level equation estimates of the marriage premiums. Since the samples are partly overlapping, the coefficients are estimated in a seemingly unrelated equations model with unequal number of observations in each (cross-section) wage equation, see Schmidt (1977). This model accounts for the possibility that men with an "unexpectedly" high wage in 1968 may be likely to have an "unexpectedly" high wage in subsequent sample years as well[4].

In 1968, married men earn almost 23 per cent more that never married men controlling for age and its square, years of education, labor market experience and its square, working conditions (5 dummy variables) and number of children under 20 years old in the household.[5] By 1991, this wage differential has declined to 8 per cent: a decline by almost 62 per cent. Cohabiting and divorced men earn nearly 16 per cent more than never married men do in 1968. By 1991, these wage premiums have declined to 4 and 5 per cent respectively.

Testing hypotheses concerning the decline in the marriage premium indicates that the marriage premium of married men has significantly declined between 1968 and 1974. However, the decline in the marriage premium of married men between 1974 and 1981, and

[4] It is necessary to consider such possible correlation in order to do correct inference on between years comparisons. However, possible unobserved heterogeneity bias is not accounted for in this estimation model. The point estimates in Table 2 are similar to the estimates received using ordinary least squares.

[5] I have also run regressions controlling only for age, education and work experience which produces premiums for married men that are approximately 3 percentage points higher, the results are reported in Richardson (1997). The premium earned by *cohabiting men* and *divorced and separated men* are only slightly affected by changing control variables. These men are not, in a systematic way, sorted into jobs with different job characteristics than never married men. It is not obvious whether working condition variables should be included or not in the regressions. As the results indicate, married men are distributed differently than single men among jobs with different characteristics. One possibility is that this stems from sorting, i.e. married men may have some characteristic that makes them married and also makes them better at some jobs with certain characteristics than single men. Another possibility is that the distribution over jobs with different working conditions stems from specialization between spouses. Married men may choose jobs with higher pecuniary compensation because they have a family to support. If the marriage premium reflects specialization, this type of specialization will not be captured by the marriage premium in this specification; see also Reed and Harford (1989). I include these variables in order to reduce the possibility that the marriage premium reflects compensating wage differentials and not productivity differences. The number of children variable is included because it is possible to argue that marital status and children are positively correlated, and it may be children rather than marriage that induces married men to prefer cash to good working conditions. There was no effect on number of children on men's hourly wage.

between 1981 and 1991 are not significant. I have also tested similar hypotheses concerning the marriage premium of cohabiting and divorced men respectively. I find no significant changes in the marriage premium for these two groups.

Table 2 Wage premiums for married, cohabiting and divorced or separated men in 1968, 1974, 1981, and 1991. Seemingly unrelated regression coefficients (standard errors in parentheses).

	1968	1974	1981	1991
Married	0.209 (0.026)**	0.134 (0.023)**	0.082 (0.020)**	0.079 (0.021)**
Cohabiting	0.145 (0.050)**	0.107 (0.025)**	0.061 (0.019)**	0.035 (0.020)†
Divorced or widowed	0.143 (0.04)**	0.105 (0.034)**	0.053 (0.028)*	0.049 (0.028)†
R^2 adjusted	0.452	0.322	0.310	0.348
Number of obs.	1 761	1 700	1 701	1 565

NOTE.–Table contains employed men aged 18 to 65. Dependent variable is ln(hourly wage). Also included in the regressions are age and its square, years of education, work experience and its square, working condition variables (5 dummy variables) and number of children. Standard error in parenthesis.
† Significant at 10 % level, * significant at 5 % level, **significant at 1 % level, (two-tailed test).

Conclusion 1 *Swedish married, cohabiting and divorced men earn more than unmarried men. The premium of married men has declined since 1968, which provides support for Becker's hypothesis of specialization between spouses.*

It is important to note that the marriage premium follows a general trend for wage differentials during this period. From 1968 to at least 1981, wage differentials decreased in nearly all dimensions. This is a well-known fact, see Edin and Holmlund (1995) for more basic facts and analysis. For example, the returns on education and work experience decreased in this period. It might be that the wage premiums by marital status follow this general trend and do not reflect diminishing productivity differences between the groups. In order to analyze this hypothesis further, I utilize a method introduced by Juhn, Murphy and Pierce (1991) which is

an extension of the standard Oaxaca-Blinder decomposition, see Oaxaca (1973).[6] In the remainder part of this section I focus on married and single men only, due to space limitations.

The starting point for this analysis is that the dummy variable indicating marital status can be interpreted to catch the relative wages between married and single men due different averages in unobserved skills. A decline in the marriage premium could then either stem from lower returns on unobserved skills, or from a convergence in the average amounts of these skills possessed by married and single men. One hypothesis in this paper is that the marriage premium has declined because these groups are becoming more equal. Such a change may arise if married men do not specialize their investments to the same extent in 1991 as in 1968, or if unobserved labor market characteristics become less correlated with men's chances to marry.

The advantage of the JMP-method is that it enables us to decompose the change in the marriage premium into one part that is due to convergence in unobserved skills possessed by married and single men and one part due to changing returns on these unobserved skills. Since the JMP decomposition is not a standard technique, I start by briefly discussing the decomposition before I go into the results.

Assume that the log hourly wage y_{it} in time period *t* of a man *i*, is described by *(1):*

$$y_{it} = x_{it}\beta_t + \sigma_t \theta_{it} \qquad \text{where} \quad \theta_{it} \sim (\mu_{it}, 1) \qquad (1)$$

where x_{it} is a vector containing observed characteristics (except marital status variables). The returns of these characteristics are given by the vector β_t. θ_{it} is a "standardized" disturbance term with unit variance and with a mean depending on marital status; $\mu_{it} = 0$ if *i* is married and $\mu_{it} = \mu_{st} < 0$ if *i* is single. $\sigma_t \theta_{it}$ is the "usual" disturbance term, distributed with a mean depending on marital status and with variance σ_t^2. A difference in the mean value of θ_{it} between married and single men arises, for example, if married men specialize their human capital investments or because men are selected into marriage based on unobserved

[6] The JMP-decomposition was originally applied to the convergence in the U.S white-black wage differential, JMP (1991). Blau and Kahn (1992 and 1996) applied the method to international differences in gender wage gaps, and to the convergence in the U.S gender wage gap, Blau and Kahn (1997).

productivity. The standard deviation s_t can be thought of as the money value of these unobserved skills q_t.

The average log wage differential between married and single men may be expressed as:

$$D_t = \bar{y}_{mt} - \bar{y}_{st} = (\bar{x}_{mt} - \bar{x}_{st})\, b_t + s_t \bar{q}_{mt} - s_t \bar{q}_{st} = \Delta x_t\, b_t + s_t \Delta q_t \qquad (2)$$

where the subscripts *mt* and *st* denote the averages of married and single men respectively and Δ denotes the average difference between married and single men of the variable immediately following. In expectations, the last term, $s_t \Delta q_t = -s_t m_{st}$, describes the wage gap due to different averages of unobserved characteristics $-m_{st}$, multiplied by the returns from such skills, s_t, in other words the (expected value of the) marriage premium. Henceforth, I suppress differences in observed characteristics, $\Delta x_t b_t$, since the analysis focuses on the change in the marriage premium.

To compute how the marriage premium evolves from time *t* to time *t'* > *t*, subtract the wage gap in *t'*, $D_{t'} > 0$ from the wage gap in *t*, $D_t > 0$:

$$D_{t'} - D_t = s_t(\Delta q_{t'} - \Delta q_t) + \Delta q_{t'}(s_{t'} - s_t) \qquad (3)$$

The change in the marriage premium consists of two parts. First, married and single men may converge in unobserved skills, $(\Delta q_{t'} - \Delta q_t) < 0$. Second, the returns on unobserved skills may decline between *t* and *t'*, $(s_{t'} - s_t) < 0$.

To estimate the decomposition I follow JMP (1991)[7]. I start by estimating wage level equation for each year using the observations on married men only. Hence, I receive a consistent estimate of the b_t-vector.[8] Secondly, I predict what wage each single man would have had if he is paid according to estimated wage equation. The average difference between

[7] In Richardson (1997), I suggest an alternative estimator of this decomposition. In an comparison of the change in the Swedish gender wage gap, the two estimators produces qualitatively similar results.

[8] I assume that possible unobserved heterogeneity is correlated with marital status but not with other observed characteristics.

single men's actual wages and the average of the predicted wages is the (negative) of the marriage premium $\sigma_t \Delta\theta_t$. (Note that married men's average wage residual zero.)

The first term in (3) is found by, first assigning to each single man in each year, a percentile number that corresponds to his position in the married men's residual distribution in that year. I then impute the wage residual he would have had in time period t' given his percentile ranking in time period t. The difference between the average actual residual and the average imputed residual is a measure of the third term, $\sigma_t(\Delta\theta_{t'} - \Delta\theta_t)$. This term measures whether single men are moving up or down in the distribution of married men's residuals. Or to put it differently, it is the change in the marriage premium due to the change in the unobserved productivity difference between married and single men.[9] The second term is calculated as the difference between average imputed residual (residual in year t given percentile ranking in t') and the average actual residual in t'.

The JMP-decomposition presumes the distribution of unobserved skills to be constant over time among married men. In Table 1 we saw that fraction of men that are living, or have been living, with a partner is more or less constant during the investigated period. However, there are large changes in the fractions of married and cohabiting men. If the decline in the propensity to marry vary with unobserved skills then the distribution of θ_t conditional on marriage is likely to change over time.[10] Such changes can hence be detected as an alteration of the distribution of θ_t (the standardized residuals) within the group of married men. I test for changes in the distributions of θ_t between two subsequent sample years, using a Kolmogorov-Smirnov test, Conover (1999). I cannot reject the null hypotheses of identical distribution within the group of married men between two consecutive sample-years. I conclude that the decline in propensity to marry has changed by an equal fraction at all values of θ_t.

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[9] Suen (1997) argues that the decomposition of wage residuals into standard deviation and percentile ranking may lead to biased results. With a slightly different specification than equation (3), Suen shows that *declining* wage inequality will be accompanied by *declining* the percentile ranking of the low wage group although their relative level of unobserved skills has not changed. However, I find that single men's percentile ranking has *increased* although the residual wage inequality has *decreased*. To the extent that Suen's specification is correct, I may *underestimate* the convergence in unobserved skills between married and single men. My qualitative conclusions are therefore not affected.

[10] For example, if men above a certain threshold value of θ_t have a higher probability to marry then the distribution of θ_t, conditional on marriage, is skewed to the left. By changing this threshold value, the conditional distribution of θ_t will become more or less skewed.

Table 3 reports the marriage premium for married men using the JMP decomposition. These estimates differ slightly from the estimates reported in Table 2 since the b_t-vector is estimated using the observations on married men only. Over the investigated period, single men have advanced from the 35th to the 48th average percentile ranking which indicates that married and single men converge in unobserved skills. Between 1968 and 1974 the return on unobserved skills dropped from 0.275 to 0.253. However, towards the end of the investigated period the returns on unobserved skills increase. Despite this, the returns on these skills are smaller in 1991 compared to 1968.

Table 3 Estimates of the marriage premium of married men using the JMP-decomposition.

	1968	1974	1981	1991
Marriage premium	0.202	0.097	0.053	0.034
Mean percentile ranking of single men*	35	42	45	48
Unobserved prices**	0.275	0.253	0.257	0.262

* Computed by assigning each single men a percentile ranking in the indicated year's married men residual distribution and calculated the single men's mean of these percentiles.

** Estimated using data on married men only.

Table 4 reports the results from the JMP-decomposition. The largest reduction in the marriage premium occurred between 1968 and 1974. The decline in the marriage premium between these years is fully explained by reduced productivity differences between married and single men. Between 1974 and 1981, and between 1981 and 1991, convergence in unobserved skills is also the major contributor to the decline in the marriage premium.

Table 4 Results of estimation of the JMP-decomposition, see equation (3).

	1968-1974	1974-1981	1981-1991
Change in marriage premium	-0.105	-0.044	-0.019
Convergence in unobserved skills	-0.108	-0.0046	-0.020
Changes in unobserved prices	0.002	0.002	0.001

Conclusion 2 *The decline of the marriage premium is not an artifact of the general change in wage distribution. The decreasing marriage premium reflects declining productivity difference between married and single men.*

The U.S. marriage premium has declined during the eighties, as noted in two studies; Blackburn and Korenman (1994) and Gray (1997). Both studies conclude that the decline in the marriage premium seems to be due to diminishing productivity differences between married and single men. Blackburn and Korenman (1994) find that the decline in the U.S. marriage premium cannot be explained by a change in the nature of selection into marriage. They regress annual estimates of the marriage premium (controlling for age, education, region, industry, and white collar-status) on year (1967-1988), yearly information on per cent never married men and female labor force participation rate. With this specification, they find little support for the idea that the marriage premium has declined due to changing selection into marriage. However, as noted by the authors, changing selection with respect to unobservables could explain the marriage premium.

Gray (1997) analyses the decline in U.S marriage premium using two independent longitudinal data sets on young men. He finds that the drop in the marriage premium in U.S is largely due to a decline in the productivity effects associated with marriage and this in turn is explained by a reduction in the average degree of specialization across household. Gray also finds an increase in the wage penalty associated with wives' labor market hours.

3 Why is there a Marriage Premium ?

In this section, I first empirically explore whether the marriage premium is explained by selection into partnership. Second, I investigate the implication from Becker's specialization hypothesis that married men's wages should increase by time married. I also provide an explanation to why cohabiting men earn a lower marriage premium than married men do.

The selection hypothesis implies that men with certain labor market related characteristics have higher chances to marry. The idea is that married and cohabiting men may have some characteristics, that are not observed by the econometrician, but that make them successful in both the labor market and the "marriage market." Using the panel structure of the

Swedish Level of Living Survey, it is possible to take such unobserved characteristics into account, using a so-called fixed effect model. If the marriage premium persists, when the effect of unobserved characteristics is eliminated, it is more reasonable to argue that partnership as such *do affect* men's productivity.

Under the heading Model 1 in Table 5 estimates from a fixed effect model is reported.[11] Table 5a concerns men who were between 18 and 55 years old in 1968 and who were employed and reported wages in both the 1968 and the 1974 survey. Corresponding sub-samples for the 1974 - 1981 and 1981 - 1991 are reported in Table 5 b and 5 c. I use the same control variables as in the previous analysis, (age is not included). I also report the cross-sectional marriage premium for each sample in Table 5, since the selection of men is partly different from the previous analysis. It is the marital status changers that identify the marriage premium in the fixed effect model. The flow between different marital status is hence reported in Table A1.

A general result in Model 1 is that the marriage premium "survives" when the unobserved characteristics are netted out. This result implies that there is an effect of partnership on men's wages. The marriage premium of married men survives in all three sub-samples.

For cohabiting men, the fixed effect estimate of the marriage premium is substantially higher than the cross-sectional estimates in the 1968-1974 sub-sample. However, in the two subsequent sub-samples (1974-1981 and 1981-1991) the fixed effect estimates of the cohabiting premium are somewhat smaller than the cross-sectional estimate.

Married men who divorce (or become a widower) earn approximately 6 per cent (0.043-0.100) lower wage increase than single men in the 1968-1974 sub sample. However, divorced men's relative wage improves over the period. In the 1981-1991 sub sample divorcing men, earn a 4 per cent higher wage increase than single men. The cross sectional

[11] Apart from the return on education, the coefficients are assumed to be constant between two subsequent sample years in the fixed effect model. This may be a restrictive assumption, at least concerning the returns on work experience variable as discussed by Edin and Holmlund (1995). The results presented in Table 5 still hold if I allow the coefficient of the work experience variable (but not its square) to change within the two first sub-samples (Table 5a and 5b). I have also tried a specification where marriage premium is allowed to change between the years in each sub-sample. The standard errors of the estimates increase and some point estimates change too. One reason is that the variables indicating marital status will be highly collinear in such a specification.

estimate of the marriage premium of divorced men in 1991 is large (almost 14 per cent). This large premium arises in this restricted sample only. The cross

Table 4. Estimates of the marriage premium from wage-level equations (cross-sectional) and wage change (longitudinal) equations. Dependent variable is ln(hourly wage), or change in ln(hourly wage). Standard errors in parenthesis.

Table 4a Employed men aged 18-55 in 1968 and employed in both 1968 and 1974. Number of observation: 1 128.

	Cross-section		Longitudinal	
	1968	1974	Model 1	Model 2
Married	0.126 (0.026)**	0.071 (0.026)**	0.100 (0.031)**	0.106 (0.031)**
Cohabiting	0.096 (0.054)†	0.059 (0.031)†	0.169 (0.033)**	0.139 (0.035)**
Divorced or widowed	0.082 (0.044)†	0.028 (0.036)	0.043 (0.043)	0.002 (0.047)
Years married/1000				-9.887 (4.657)**
Years married Squared/1000				0.223 (0.143)
R^2 adjusted	0.479	0.354	0.109	0.120

Table 4b Employed men aged 18-55 in 1974 and employed in both 1974 and 1981. Number of observation: 1 136.

	Cross-section		Longitudinal	
	1974	1981	Model 1	Model 2
Married	0.115 (0.026)**	0.098 (0.026)**	0.114 (0.031)**	0.120 (0.031)**
Cohabiting	0.087 (0.027)**	0.071 (0.030)*	0.048 (0.026) †	0.032 (0.027)
Divorced or widowed	0.071 (0.041) †	0.044 (0.034)	0.109 (0.042)**	0.065 (0.045)
Years married/1000				-6.907 (3.587)†
Years married Squared/1000				0.102 (0.011)
R^2 adjusted	0.357	0.293	0.058	0.058

Table 4c Employed men aged 18-55 in 1981 and employed in both 1981 and 1991.

Number of observation: 972.

	Cross-section		Longitudinal	
	1981	1991	Model 1	Model 2
Married	0.083 (0.030)**	0.121 (0.031)**	0.091 (0.030)**	0.085 (0.030)*
Cohabiting	0.050 (0.027) †	0.069 (0.034)*	0.043 (0.025)†	0.048 (0.025)†
Divorced or widowed	0.064 (0.045)	0.131 (0.039)**	0.130 (0.040)**	0.142 (0.042)**
Years married/1000				3.073 (2.848)
Years married Squared/1000				-0.063 (0.078)
R^2 adjusted	0.301	0.315	0.056	0.083

NOTE:- Also included as independent variables are years of education, work experience, work experience squared, working condition variables and number of children
† Significant at 10 % level), * significant at 5 % level, **significant at 1 % level, (two-tailed test).

sectional estimates of the marriage premium of divorced men aged 28 to 65 years, unconditional on being interview in 1981, produces a marriage premium of 6 per cent.

This increasing trend in divorced men's relative wage is not found in U.S data. Gray (1997) finds that divorced men's marriage premium has declined since the mid-seventies. Korenmann and Neumark (1991) and Loh (1997) do not find a significant marriage premium of divorced U.S. men. However, Korenman and Neumark finds that the wage premium earned by divorced men appears to be explained by advantages gained from time spent married; there is a negative and significant effect on wages of years divorced. Unfortunately, I do not have data on when the couple divorced.

Conclusion 3 *The results indicate that partnership affect men's wages, though this effect has declined since 1968.*

A comparison between the results presented in Table 2 and Table 5 may provide some further insights. Note that Table 2 concerns men aged between 18 and 65. Table 5 column 1

concerns men 18 to 55 years old. First, we see that the decline in the cross sectional marriage premium of married men is not as huge in Table 5 column 1 as in Table 2: a decline by 35 per cent instead of 62 per cent. Hence, the huge decline in the marriage premium in Table 2 seems to be driven by the older age groups. The difference in the estimated marriage premiums in Table 2 and Table 5 column is particularly huge in 1968 and much smaller in 1974 and 1981. This pattern may indicate that the relationship between time married and wages has weakened over the investigated period.

In Table 5 model 2 I include the variables *years married* and *years married squared*. Note that these variables concern married men only.[12] In the 1968-1974 sub-sample the coefficient of the variable *years married* are significantly different from zero at a 10 per cent level while the coefficient of the quadratic term is not significantly different from zero. The relation between the duration of marriage and wages seems to be approximately similar in the 1974-1981 sub-sample as in the 1968-1974 sub-sample. However, in the 1981-1991 sub-sample the sign of the variable *years married* is insignificantly positive and the quadratic term is insignificantly negative. The null hypothesis that the coefficients of the variables *years married* and *years married squared* are simultaneously equal to zero is not rejected in any of the three sub-samples.

My conclusion of this analysis is that data is unable to reveal a clear effect of the duration of marriage. Further, including variables for duration of marriage has not succeeded in reducing the coefficient of the marital status dummy variable. This result may indicate that there is an instant effect of marriage on men's wages.

Conclusion 4 *The marriage premium does not increase with the duration of marriage. Data is not able to reveal a clear effect of the duration of marriage on men's wages.*

[12] The information on the duration of legal marriages is collected from register data in 1974, 1981 and in 1991. In 1968, I use information from the interview survey. The respondent was asked when he married for *the first* time. I use this answer as a proxy for the duration of his marriage in 1968, which therefore is over estimated. Since cohabiting men live in informal relationships, equivalent information on them is not found in official registers.

Korenman and Neumark (1991) found that the marriage premium for U.S. men arises gradually, increasing wages by approximately 2 per cent per year in the early year of marriage. They used a specification that included years married, years married squared, and a dummy variable for marital status. In their specification, the marital status dummy variable was not significantly different from zero, which is contrary to my results.

The results in Table 5 also indicate that cohabiting men earn a smaller marriage premium that married men, at least in the two latest sub samples, see Table 5b and 5c. Daniel (1991) and Loh (1997) find that cohabiting men earn approximately half the marriage premium of married men using U.S. data. How should this result be understood? One explanation is that married men are on average, more specialized than cohabiting men. The extra security that a legal marriage provides[13] is valuable to women who specialize on household work. The value of her investments is, to a greater extent than her husband's, dependent on an intact relationship. Further, her potential labor market income may decline as the partnership proceeds. A married woman has greater possibilities to lay claim on part of her husband's resources in case of divorce. Women's willingness to specialize on household human capital may hence be larger in a marriage than in a consensual union, all else being constant. However, marriage also leads to higher costs in case of separation than a consensual union.[14] If the expected gains (from specialization) are not big enough to overweigh expected costs of marriage, some couples may choose to live in consensual unions.

Married men may therefore earn a higher premium partly because the *"marriage contract"* induce couples to specialize more. Partly because couples that want to specialize their investments, tend to marry. Henz and Sundström (1999) compare married and cohabiting couples with one child. They find that married couples have a more specialized division of labor than cohabiting couples.

[13] Married couples inherit each other and at divorce, they share gathered property equally unless they have a written contract that states differently. Married couples have maintenance obligation towards each other both within the marriage and (to some extent) after divorce. Cohabiting couples do not inherit each other, share only the joint home equally at the event of separation, and do not have maintenance obligation toward each other.

[14] For example, married couples with children must have 6 months of considerations before they are allowed to formally divorce.

Another possibility is that married men have been living with their partners for a longer time and are therefore more specialized. This explanation implies that the coefficients of dummy variables for married men and cohabiting men respectively, should converge when I include the variables *years married* and its square. However, the results in Table 5 do not support this explanation. Unfortunately, I lack information on how long the couples have been cohabiting and if married men were cohabiting with their wives before marriage. This information would be helpful in order to understand the regularity that cohabiting men earn a lower marriage premium than married men.

4 Concluding Remarks

My conclusions are as follows. First, Swedish married men earn more than unmarried men do. This empirical fact is known in several other countries, see Schoeni (1995). The Swedish marriage premium for married men is smaller than the U.S marriage premium, Korenman and Neumark (1991). Second, I find that cohabiting men earn more that single men do. To the best of my knowledge, there are only two previous studies on the wage differential between cohabiting and single men, see Daniel (1991) and Loh (1997). Both this study and the two U.S. studies find that the cohabiting men's wage premium is smaller that married men's. Third, I also find that partnership affect men's wages. Fourth, Becker's hypothesis of specialization between partners receives no clear-cut support. On the one hand, I find the marriage premium has declined since 1968. The marriage premium for married men was reduced by nearly 62 per cent. This result is reinforced for married men when I decompose the change in the marriage premium into two terms: first, a change in the productivity difference between married and single men and second, a change in returns on these skills. The decline in marriage premium of is fully explained by diminishing productivity differences between married and single men. On the other hand I do not find that men's wages increase with time married as also implied by Becker's hypothesis of specialization.

I have concentrated on two productivity-based explanations of the marriage premium; selection into marriage and specialization between spouses. Of course, there may be other

explanations. For example, marriage may make men more productive simply because spouses encourage each other in a way that make them more productive. Another possibility is that high earnings directly affect the chances of getting and remaining married. These relationships between earnings, marriage and divorce are predicted theoretically by Becker, Landes and Michael (1977), who also find empirical support for their existence.

Hill (1979) suggests that the marriage premium for men may reflect employers' "paternalistic attitudes which lead them to feel that workers with greater financial responsibility to their families deserve higher wages." Hill finds that U.S. white married men earn about 25 per cent more than unmarried white men, although she controls for a large number of productivity-related factors. She also finds that white men's wages depend positively on the number of children they have. However, Hill's finding is not replicated by the data set used in this paper, since the number of children does not affect wages and the marriage premium is not affected when number of children is included as a control variable.

Reed and Harford (1989) suggest that married men usually have a greater financial responsibility and therefore choose jobs that offer higher wages, and lesser non-pecuniary compensation than single men. They find support for the hypothesis for white American men. However, Duncan and Holmlund (1983) and Hill (1979) using Swedish and U.S. data respectively, find that the marriage premium for men persists when they control for working conditions. In this study too, the marriage premium persists when controlling for working conditions.

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Table A1: Distribution of marital changers between two subsequent sample years.

1968		1974			
	Total	Married	Cohab.	Divorced	Never married
Married	761	716	9	36	0
Cohab.	31	4	17	6	4
Divorced	52	20	7	25	0
Never married	284	86	70	2	126
Total	1 128	826	103	68	131

1974		1981			
	Total	Married	Cohab.	Divorced	Never married
Married	708	656	12	40	0
Cohab.	144	80	47	6	11
Divorced	53	8	12	33	0
Never married	231	57	57	1	116
Total	1 136	801	128	80	127

1981		1991			
	Total	Married	Cohab.	Divorced	Never married
Married	538	493	13	32	0
Cohab.	153	91	44	9	9
Divorced	43	12	4	27	0
Never married	238	65	55	5	113
Total	972	661	116	73	122