

## Marital status and earnings in developed countries

**Robert F. Schoeni**

RAND, Labor and Population Program, 1700 Main Street, Santa Monica, CA 90407, USA

Received October 7, 1994 / Accepted May 26, 1995

**Abstract.** When estimating earnings equations for men in the United States, a dichotomous variable for whether or not the man is currently married is often included as a regressor. The coefficient estimate for this variable is most usually large and significant. However, there is rarely much discussion of the marriage effect. This effect is central to this study, which contributes to the understanding of this statistical association in two ways. First, it shows that the relationship exists in almost all of the fourteen developed countries examined and across several different time periods. Controlling for age, and, when available, education, race/ethnicity, hours worked, and location, marriage differences in annual earnings in favor of currently married males range from 0% to 30%. Second, it finds that there are important differences between those who are separated, divorced, widowed, and never married.

### 1. Introduction

In the United States it has been noted for some time that currently married men earn substantially more than unmarried men. This difference arises whether one measures earnings as annual earnings or hourly wages. It also persists when education, age or experience, race, and other detailed controls are included in an earnings equation (see, for example, Griliches 1976; Hill 1979; Bartlett and Callahan 1984).

Although studies have found large differences in the earnings of men by marital status in the United States, the reason for the observed differences has not

---

I am grateful for comments by John Bound, David Lam, Tom Maloney, Tim Waidmann, participants in the Economic Demography Seminar at the University of Michigan, an anonymous referee, and the editor. I also thank the staff of the Luxembourg Income Study for facilitating my use of their data base. Supplemental tables are available from the author upon request.

been well established. There are several hypotheses that have been put forth attempting to explain these differences. Four of the most commonly proposed hypotheses are: (1) productivity differences (Korenman and Neumark 1991), (2) selection into marriage, (3) discrimination by employers, and (4) omitted unobservables (Cohen and Yitchak 1991). The first hypothesis suggests that marriage per se makes workers more productive. This may occur through specialization by spouses (Becker 1981), or perhaps that a married man feels a stronger sense of responsibility because he is contributing not only to his own well-being but also to that of his wife and family. The second hypothesis proposes that individuals who are financially successful are more attractive marriage partners and, therefore, are more likely to be selected into marriage. The third hypothesis suggests that employers have some preference for married men and thus discriminate in their favor. The fourth hypothesis is that marriage is simply correlated with unobservable characteristics that are rewarded in the labor market. (See Korenman and Neumark (1991) for a more complete discussion of the potential causes of the relationship between marital status and earnings). In addition, institutional factors specific to each country may explain differences in the relationship between marital status and earnings across countries.

This research note contributes to the understanding of this statistical association in two ways. First, it demonstrates that this relationship persists across almost all fourteen countries considered and across several time periods. The coefficients on marital status are found to be statistically significant and quite large in most countries. Controlling for age, and, when available, education, race/ethnicity, hours worked, and location/region, marriage premiums in annual earnings in favor of currently married males range from 0% to 30%. Second, it finds that there are important differences for marital categories other than currently married; a simple dichotomous variable for currently married loses some of the information that is to be learned about this relationship. After a discussion of the data and the specification of the earnings equations which are estimated, the relationship between earnings and marital status is examined. A final section summarizes the results.

## **2. The data, and specification of earnings equations**

In April of 1983 the government of Luxembourg began sponsorship of the Luxembourg Income Study (LIS). The LIS was established to "... gather in one central location, the Center for Population, Poverty and Policy Studies in Walferdange, Luxembourg, sophisticated microdata sets which contain comprehensive measures of income and economic well-being for a set of modern industrialized welfare states" (Smeeding et al. 1988). As a result of their efforts, the LIS data bank permits analyses of the fourteen countries examined in this study: Australia, Canada, France, West Germany, Israel, Italy, Luxembourg, Netherlands, Norway, Poland, Sweden, Switzerland, United Kingdom, and the United States. Data are available for two years for Australia and the United States. Thus, sixteen different data sets are analyzed. Table 1 contains the original source for each data set. The earliest data are from 1979 and the latest are from 1986. Each data set represents a national sample for the population in the given country and year. Details of the data are given in Smeeding et al. (1988).

**Table 1.** Description of the Luxembourg Income Data Sets including control variables available in each data set

Country/ Year	Original Data Set	Age	Education	Hours	Race/ Ethnicity	Location	Farm residence
Australia 1981 – 1982	Income and housing survey	×	×	×	×	×	×
Australia 1985 – 1986	Survey of consumer finances	×	×	×	×	×	
Canada 1981	Survey of consumer finances	×	×	×	×	×	×
France 1979	Survey of individual income tax returns	×				×	
Germany 1981	Transfer survey	×	×	×		×	×
Israel 1979	Family expenditure survey	×	×	×	×	×	
Italy 1986	Bank of Italy income survey	×	×			×	
Luxembourg 1985	Lux. household income survey	×	×		×		
Netherlands 1983	Survey of income and program users	×	×	×		×	
Norway 1979	Norwegian tax files	×		×		×	×
Poland 1986	Polish household budget survey	×	×			×	×
Sweden 1981	Swedish income distribution survey	×		×		×	×
Switzerland 1982	Income and wealth survey	×		×	×	×	×
UK 1979	Family expenditure survey	×		×		×	×
US 1979	March current population survey	×	×	×	×	×	×
US 1986	March current population survey	×	×	×	×	×	

“×” indicates that the variable is available for that country and year and that it is controlled for in the regression analysis.

The empirical analysis consists of estimating log earnings equations for each country and year. The sample is restricted to those men who are heads of households and 25–55 years old. The dependent variable investigated is (log) annual earnings. In three countries (Italy, Luxembourg, Poland) the earnings data which are available are net of taxes; gross earnings is available for the remaining countries. Because the log earnings equation excludes those without positive earnings, it is possible that sample selection may bias the coefficient estimates. Using

**Table 2.** Coefficient estimates on marital status variables from log earnings equation with all country-specific control variables included. Male heads of households 25–55. Dependent variable: Log of annual earnings

Country/Year	Cohabit	Married <sup>a</sup>	Separated	Divorced	Widowed	Never married	Not married	R-Square	N
Australia 1981–1982		0.208 (5.97) [0.149/6.05]	0.153 (2.66)	0.148 (2.66)	0.065 (0.45)	omitted		0.253	5970
Australia 1985–1986		0.107 (2.74) [0.105/3.11]		0.0006 (0.09)		omitted		0.162	3191
Canada 1981		0.161 (6.12)					omitted	0.310	5664
France 1979		0.226 (4.69) [0.211/5.57]		0.065 (0.89)	-0.071 (0.38)	omitted		0.063	4401
Germany 1981	0.056 (0.57)	0.251 (3.33) [0.139/3.15]	0.247 (1.69)	0.242 (2.70)	0.390 (2.99)	omitted		0.212	1341
Israel 1979		0.223 (1.52) [0.186/1.68]		0.025 (0.12)	0.484 (3.11)	omitted		0.306	1143
Italy 1986		0.099 (2.87)					omitted	0.245	3128
Luxembourg 1985		0.242 (5.10) [0.176/5.18]	0.136 (1.95)	0.282 (2.25)	0.172 (2.27)	omitted		0.433	906
Netherlands 1983		0.134 (5.03) [0.105/4.80]		0.105 (2.43)	0.127 (1.89)	omitted		0.297	2003
Norway		0.169 (3.00) [0.208/4.37]		-0.118 (1.25)	-0.036 (0.19)	omitted		0.295	3802

Poland 1986	0.012 (1.04)				omitted	0.167	4493
Sweden 1981	0.056 (1.10)				omitted	0.387	4065
Switzerland 1982		0.284 (7.70) [0.296/9.41]		0.065 (1.00)	omitted	0.259	3509
UK 1979	0.136 (4.57)				omitted	0.048	2698
US 1979 <sup>b</sup>	0.207 (8.24)				omitted	0.250	5872
US 1986	0.299 (7.14) [0.218/7.66]	-0.051 (0.50)		0.210 (3.92)	omitted	0.231	4939

Absolute value of *t*-statistics based on White (1980) standard errors are reported in the parentheses. <sup>a</sup>In brackets under the "married" category is the coefficient estimate and *t*-statistics based on White (1980) standard errors for the married indicator variable for the specification which collapses all states other than "married" into one "non-married" state. <sup>b</sup>For the United States 1979, "married" refers to those who are married and have their spouse present. Estimates which straddle columns indicate that the two marital states could not be separately identified in the data. See Table 1 for the variables which are controlled for each country and year. Full regression estimates are available from the author upon request.

data from Germany which are different from the data used here, Merkle and Zimmermann (1992) find some evidence that those who are married are less likely to be unemployed, although the relationship does not persist when various subsamples of their data are examined. However, there is very little difference in the proportion with positive earnings between those who are married and those who are not for most of the cases examined here. In only three of the sixteen cases (Italy, Netherlands, Norway) is the difference in the percent with positive earnings between those who are married and those who are not greater than six percentage points. This suggests that sample selection is not likely to be a problem, at least within thirteen of the sixteen countries/years. In each of three remaining countries – Italy, Netherlands, and Norway – married men are more likely to have positive earnings. However, the coefficient estimates on marital status for these countries are of similar magnitude to most other countries examined. (See Table 2, which is discussed below). Although sample selection is still a potential confounding factor in these countries, the weight of the evidence across the sixteen countries and years, as is demonstrated in Table 2, suggests that the variation in earnings across marital states is not an artifact of differential sample selection.

The covariate of central focus, marital status, is coded differently in each data set. For some, several different marital states are identified and coded. For others, there is simply a dichotomous coding of whether or not the respondent is currently married. Table 2 lists the marital states identified in each country.

The control variables available for each country are also given in Table 1. The controls include age, education, hours worked, race/ethnicity, location of residence, and farm residence. Age is represented by 5 indicator variables corresponding to 6 age categories: 25–29, 30–34, 35–39, 40–44, 45–49, 50–55. Sensitivity analysis included specifying a quadratic in age; however, estimated coefficients on the marital status variables did not change substantively when this was done. The education specification varies significantly across countries, partly because the education systems are quite different. In the United States and Israel, information on single years of completed education is available. In these cases, a quadratic in education is specified. Various levels of education are indicated for all other countries for which data on education are available. For these countries, indicator variables representing each level of education are used in the specification, with the omitted reference group being the education level containing the largest share of individuals.

Hours worked consists of a control variable for whether the respondent works full time. This varies slightly across countries and years; in some instances the control is for “full time/full year”, for others it is for “full time”, and for still others it is “at least 35 hours of work per week”. Race/ethnicity also varies among countries. In the United States, it is an indicator variable for whether the respondent is white. For Australia, Luxembourg, and Switzerland it is an indicator for whether the respondent is a national of that country. For Canada, the control is for whether the person was born within Canada. For Israel, it is a set of 4 indicator variables representing 5 categories: not Jewish, Jewish born in Europe or America, Jewish born in Asia/Africa, Jewish born in Israel, or missing data. Farm residence is an indicator variable for whether the respondent resides on a farm. Finally, the controls for location of residence also vary across countries. In general, the controls are for specific cities or regions, or, in some cases, the population of the region in which the individual resides.

### 3. Empirical relationship

Log earnings equations are estimated for each country and year. The variables in the model include indicator variables for each of the marital states (with never married/not married as the reference category) as well as all of the available controls listed in Table 1 and discussed in the preceding paragraphs. The parameter estimates for the marital status variables are reported in Table 2. The full regression estimates are available from the author upon request. The *R*-Squared and the number of observations are also given in Table 2. The absolute value of the *t*-statistics are reported in parentheses, and they are based on White (1980) standard errors. The *t*-statistics based on conventional standard errors (not reported) are very similar, and they lead to the same qualitative conclusions. This is consistent with Wagner and Lorenz (1988), who also use the LIS data. They find that the estimated variances of the coefficient estimates in log earnings equations are very similar when calculated with the conventional method and with White's (1980) method.

Statistically significant differences are found across marital states in all but two of the sixteen cases. In general, those men who are currently married have the highest earnings. In seven of the cases the difference between married men and not or never married men is over 20%. The difference is between 10 and 20% in another five cases. The differences by marital status are large, especially when viewed in relationship to the effects of other important covariates such as education. In the United States, the returns to an additional year of schooling is about 7%. Therefore, the marital status difference is equivalent in magnitude to a difference in schooling of about two to four years.

In four cases a comparison between divorced and separated men can be made. In only one case, the United States in 1986, is a statistically significant difference found, and the estimates imply that those who are divorced have higher earnings than those who are separated. In addition, in this case those who are separated earn no more than those who have never been married. However, in the three other cases in which those who are separated can be identified, the separated men earn significantly more than those who have never married. The amount of the differential is large, with separated men earning 15–25% more than those who have never married. But in each case those who are currently married earn at least as much or more than those who are separated.

In four of the nine cases in which widowers are identified they do not earn a significantly different amount than those who have never married. However, in three of the cases (Germany, Israel, and United States 1986) the widowed earn significantly more than the never married, with a difference of as much as 48 log-points. However, only a very small fraction of the sample are in fact widowed. In the sample for each of the three countries, Germany, Israel, and the United States 1986, the percent who are widowed is 0.61%, 0.22%, and 0.34%, respectively.

In many cases, previous studies of earnings have distinguished between only those who are currently married and those who are not. The results from Table 2 imply that aggregating marital states is often not appropriate, with substantively important and statistically significant differences between those who are separated, divorced, widowed, and never married. Moreover, by aggregating these groups, the differences between the married and the non-married is not as clearly defined. To demonstrate, the models reported in Table 2 were re-estimated with all "non-married" states collapsed into one reference category. The coefficient es-

timate on the indicator for whether the man is currently married, along with the *t*-statistic, are reported in brackets for each country in Table 2. In several cases the coefficient estimate on the indicator for whether the man is currently married is substantially different when the reference group is altered. Of course, this is expected, given the fact that differences in earnings were found among those who are separated, divorced, widowed, and never married. These estimates highlight the fact that information is often lost when these groups are not disaggregated.

There are two countries for which data is available at two time points, and the differences in earnings across marital states varies over time in both. For the United States, the difference between the married and *not* married is 20.7 log points in 1979. The difference between those who are married and those who are *never* married is 29.9 log points in 1986. The difference in these two estimates is due to the fact that the separated, divorced, and widowed are grouped in the "not married" category in 1979 but are separately identified in 1986. For Australia, the differences by marital status are lower in the 1985/86 data relative to the 1981/82 data. Moreover, if the control for farm residence is excluded from the 1981/82 analyses, which is not available in the 1985/86 data, the estimates of the differences by marital status are not altered substantially. Although both years contain controls for education, the information on education varies between years with more categories distinguished in 1981/82, and those categories which are identified in 1981/82 cannot be cleanly collapsed into those identified in 1985/86. This difference in education may account for the differences in the coefficient estimates for marital status between the two years.

#### 4. Summary

This study finds that there are large and statistically significantly different earnings between men of different marital states. Controlling for age, and when available, education, region/location, hours worked, and race/ethnicity, those men who are currently married earn, on average, 0–30 percent more than those who are not married. In addition, there are important differences among those who are not currently married. In most cases, both separated and divorced men earn more than men who are never married but less than those who are currently married. These findings imply that models of earnings in previous studies which have not distinguished between those who are separated, divorced, widowed, and never married are mis-specified. The behavioral models relating marriage and earnings should be broadened to examine the implications of being never married versus separated versus divorced versus widowed. Finally, given that this research note has found substantial variation in the relationship among countries, the natural next step would be to attempt to explain the differences across countries by, for example, institutional and cultural factors. These last two considerations are left for future research.

#### References

- Bartlett RL, Callahan C (1984) Wage determination and marital status: Another look. *Industrial Relations* 23 (Winter):90–96
- Becker GS (1981) *A treatise on the family*. Harvard University Press, Cambridge



- Cohen Y, Yitchak H (1991) Why do married men earn more than unmarried men? *Soc Sci Res* 20:29–44
- Griliches Z (1976) Wages of very young men. *J Polit Econ* 84(2):S69–S85
- Hill MS (1979) The wage effects of marital status and children. *J Human Resources* 14(Fall):579–594
- Korenman SD, Neumark D (1991) Does marriage really make men more productive? *J Human Resources* 26(2):282–307
- Merkle L, Zimmermann KF (1992) The demographics of labor turnover: A comparison of ordinal probit and censored count data models. *Recherches Economiques de Louvain* 58:283–307
- Smeeding T et al. (1988) Luxembourg Income Study Information Guide. Luxembourg Income Study Working Paper Series Number 7
- Wagner J, Lorenz W (1988) An international comparison of the rates of return to human capital: Evidence from five countries. Luxembourg Income Study Working Paper Series Number 23
- White H (1980) A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48(4):817–831