E C O N O M I C S B U L L E T I N

Marital Wage Premium or Ability Selection? The Case of Taiwan 1979-2003

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Abstract

The study of factors determining wages has been an important topic in the field of labor and family economics in the past few decades. Among different factors that account for individual wage differentials, marital status has received special attention. There are at least two competing hypotheses that explain the male marriage premium: the specialization hypothesis and the selection hypothesis. Using the Taiwan Quasi Longitudinal Data Archive (1979-2003), my estimation results support the selection hypothesis; most of the marital premium can be explained by pre-existing productivity differentials between married and unmarried men. In addition, I found that the male marital premium varies among different age groups and it also varies among different geographical areas.

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I. Introduction

Considerable effort has been devoted to exploration of determinants of wage earnings in the past few decades. Prior studies have found that the wage differential among individuals can be explained by several factors, including gender (Blau and Kahn, 2004), race (Bertrand and Mullainathan, 2004), education (Ashenfelter and Krueger, 1994; 1998; Card, 1999), marital status (Dougherty, 2006; Gray, 1997; Korenman and Neumark, 1991; Nakosteen and Zimmer, 1987; Krashinsky, 2004), work experience and job tenure (Arbache, 2001), skill (Lin and Orazem, 2003), union membership (Card, 1996), and even computer use (Autor et al., 1998; DiNardo and Pischke, 1997; Krueger, 1993). Among these factors, the role that marital status plays in wage determination has sparked special interest since whether or not marital status can be treated as an exogenous control variable in a wage or earnings equation is a controversial issue.

It has long been noted that married men earn more than men who are not married; the male marriage premium ranges from 10% to 20% (Krashinsky, 2004). At least two major competing hypotheses explain the existence of the male marriage premium. One hypothesis is that married men have higher productivity than their unmarried counterparts due to specialization after marriage. Married men have their spouses to take care of the family and home and, therefore, they can devote more time to their work related responsibilities, thereby increasing their productivity and receiving higher wages. This line of research originates from Becker's economic theory on division of labor within households (Becker, 1973).

The other is the selection hypothesis. The selection hypothesis suggests that individual qualities which enhance higher productivity and wages also contribute to a person being married. For instance, a more reliable or responsible man is not only more likely to succeed in his career but is also more likely to get married. Other hypotheses accounting for the marriage premium include statistical discrimination and employer bias.

Several econometric models have been used to test the validity of the above competing hypotheses. Some support the specialization hypothesis and argue that marriage increases productivity even after controlling for selection (Ginther and Zavodny, 2001; Greenhalgh, 1980; Kenny, 1983; Korenman and Neumark, 1991). However, some favor the selection hypothesis (Keeley, 1997; Krashinsky, 2004; Nakosteem and Zimmer, 1987). In addition, some argue that married men receiving higher wages is a result of employer preference for married employees (Hill, 1979; Bartlett and Callahan, 1984).

This paper uses the Taiwan Quasi Longitudinal Data Archive from 1979 to 2003 to investigate the male marital premium, taking into account the possibility of ability bias. I use an identification strategy similar to the one in Krashinsky (2004) to conduct my statistical analysis. Also, whether the male marital premium varies among different age groups, and whether it varies among different geographical areas, are examined.

Details of the statistical model are discussed in the next section. In Section III, data used for this study are examined. Estimation results are reported in Section IV, and the conclusion is summarized in Section V.

II. Methodology

In order to estimate the male marital premium, I first consider the impact of current marital status on current male wages. Equation (1) explores the wage determinants for males.

$$lnW_t = \alpha + \beta X_t + \gamma M_t + \varepsilon_t \quad (1)$$

W_t represents monthly earnings, α represents a constant term, X_t represents a vector of control variables including years of education, years of potential working experience (defined as age – years of education – 6) and its square, job seniority, occupational dummies, industrial dummies,

and year dummies. M_t is a binary variable indicating marital status in period t. ε_t represents a random disturbance. The coefficient of M_t (i.e. the γ) is of particular interest here; it represents the magnitude of the marital premium in a cross sectional sample.

To further consider the role of ability bias in wage determination, as discussed in Krashinsky (2004), Equation (2) will be estimated. In Equation (2), I restrict my sample to working men who are single in period t.

$$lnW_t = \alpha' + \beta' X_t + \gamma' M_{t+1} + \varepsilon_t \quad (2)$$

M_{t+1} is a binary variable indicating whether or not an individual will get married in period $t+1$. The coefficient on M_{t+1} (i.e. the γ') represents the impact of getting married in period $t+1$ on wages in period t for single men. If the magnitude of γ' in Equation (2) is the same as that of γ in Equation (1), then most of the marital premium can be accounted for by pre-existing productivity differentials, rather than specialization after marriage, as pointed out by Krashinsky (2004). This implies that unobserved attributes associated with getting married are also valued by employers, and these unobserved attributes lead to higher wages before marriage[1].

Next, Equation (3) tests the hypothesis that after getting married, men earn higher wages than men who remain single, since they have the advantage of division of labor (at home).

$$(lnW_{t+1} - lnW_t) = \alpha'' + \beta'' X_{t+1} + \gamma'' M_{t+1} + \varepsilon_{t+1} \quad (3)$$

The dependent variable in Equation (3) is the wage growth of males who are single in period t. M_{t+1} is a binary variable indicating whether or not the individual will get married in period $t+1$. If wage growth of married men, after getting married, is statistically not different from wage growth of those who remain single (i.e. the γ'), then there are no immediate advantages from specialization after marriage.

When estimating equations (1), (2) and (3), I also study the relationship between the marital premium and age. An interesting question would be whether or not the marital premium increases as men grow older. Does the pattern between the marital premium and age change if I control for pre-existing productivity? In addition, I investigate whether the male wage premium varies among different geographical areas. For example, the cost of living is much greater in a big city than that in the rest of Taiwan. Consequently, I assume that to get married in a big city, men might need to earn much more than those living in the rest of the country.

III. Data

The data used in this paper are from the Taiwan Quasi Longitudinal Data Archive. Taiwan Quasi Longitudinal Data Archive is the longitudinal version of the Taiwan Manpower Survey. Similar to the Current Population Survey (CPS) in the U.S., the Taiwan Manpower Survey is a monthly survey of about 20,000 households, conducted by the Forth Bureau, under the Directorate-General of Budget, Accounting, and Statistics, Executive Yuan, Taiwan. The Taiwan Manpower Survey is the most complete labor statistics survey and has been available since 1978. It contains valuable information on labor force characteristics of the Taiwanese population. A vast array of labor force variables, including employment, unemployment, earnings and hours of work are collected. In addition, details of demographic variables, including age, sex, race, marital status, and schooling are also provided in this data set. Moreover, information regarding occupation, industry and class of workers is included.

Like the CPS, the Taiwan Manpower Survey is a repeated cross-sectional survey with a sample rotation scheme. In order to make better use of the rotation scheme, individuals

[1] Since these two regressions are run on two different samples (the second one excludes currently married individuals) and the sample exclusion might be non-random, the coefficient of future marriage might not measure the correct size of ability bias in the coefficient of current marriage.

interviewed across years are linked to construct a two year panel, the Taiwan Quasi Longitudinal Data Archive. This panel data set has been released publicly by the Center of Survey Research at Academia Sinica in Taiwan for facilitating empirical research.

The 1979-2003 data are used to examine the male marital premium. The sample size is 512,112; 330,952 are married and 181,160 are single. Table 1 reports the means of various variables by marital status in the sample. I find that, on average, married men are older, have fewer years of education, and are more likely to participate in labor market than their single counterparts. In addition, married men stay longer in the same job and earn a little more than single men.

IV. Estimation Results

In this section, I present empirical estimation results. Columns 1, 2 and 3 in Table 2 report estimation results for Equation (1), (2) and (3), respectively. The sample in Column 1 includes all men whose age is between 18 and 65, who work 35 or more hours per week and earn monthly wages between 2,000 NT and 500,000 NT dollars. From Column 1, I find that married men receive 9.6 percent higher wages than their single counterparts. This result is comparable to male marital premium found in prior literature.

Taking into account the fact that ability bias might affect the precision of the marital premium estimate, I further restrict my sample to those who are single in the first period. Among 153,754 men in the two-year panel, 76,962 are single in the first period. The estimation result in Column 2 demonstrates that among these single men, those who get married in the next year receive 9.4 percent higher wages than those who choose to remain single in the next year, and this is almost the same as the 9.6 percent wage premium for married men shown in Column 1. This pre-existing wage difference implies that men who get married the next year are already more productive than their 'remain-single' counterparts. Therefore, the pre-existing productivity differences between single men who intend to get married and those who intend to remain single account for most of the marital premium for married males in the cross sectional wage estimation.

The estimation result in Column 3 reports the impact of getting married in period 2 on wage growth of males who are single in period 1. Due to the short length of the period I observe in the Taiwan Quasi Longitudinal Data Archive, I do not know whether or not marriage will produce a positive long term effect on wages. Fortunately, I could still test the immediate impact of marriage on wages. The hypothesis that getting married will immediately enhance productivity and, therefore, produces positive effects on wage growth for single males, is rejected[2]. Thus, I find that getting married next year does not affect wage growth for single males.

In sum, the results in columns 1-3 have shown that pre-existing productivity differences, rather than specialization after marriage, explains why men earn higher wages immediately after marriage.

Next, I investigate the relationship between marital premium and age; the results are in Table 3 and Graph 1. Table 3 reports estimation results by age group. Columns 1-3 represent the empirical results for equations 1-3, respectively. From the first column in Table 3, I find that men aged from 18 to 23 receive 11.4% marital wage premium. Then marital wage premium declines to 8% for men aged from 23 to 33. Later, marital premium increases, as men grow older. However, for men aged above 58, the marital premium drops to only 5.6%.

After taking into account the ability bias, married men aged from 18 to 28 receive only 1

[2] The coefficient is significantly different from zero but it is a very small number (about -0.6%). In Table 3 and Table 4, I also found that this immediately wage growth effects are also close to zero.

percent wage premium. Married men aged over 28 do not receive any wage premium over unmarried men. Moreover, older married men even receive wages lower than unmarried men, after taking into account the ability factor. This is shown in the third column in Table 3. Figure 1 depicts the pattern of marital premium by age group. It clearly shows that after controlling for ability bias, there is no marital premium for most married men. The third column reports wage growth estimation by age group. I also find that there is no immediate wage growth resulting from marriage.

Table 4 presents wage premium estimation results for Taipei City (Taiwan's capital and the largest city) and non-Taipei City samples. Columns 1-3 in the Taipei City sample represent the empirical results for equations 1-3, respectively; columns 1-3 in the non-Taipei City sample represent the empirical results for equations 1-3, respectively. Estimation results show that pre-existing productivity differences account for most of the wage differentials between married and unmarried males, as found from Tables 2 and 3. Interestingly, observed wage differential between Taipei City and the rest of Taiwan is fairly large. Wage difference between married and unmarried males is 13% in Taipei City, while the difference is only 9% for the rest of Taiwan.

The fact that the marital wage premium is 45% (13% against 9%) higher in Taipei City, compared with the rest of Taiwan, is consistent with both the selection hypothesis and specialization hypothesis. As discussed before, the selection hypothesis suggests that individual qualities that enhance higher productivity and wages also contribute to getting married. In Taipei City, the cost of living is much higher than in the rest of Taiwan. Consequently, I assume that to get married in Taipei City, men need to earn much more than those living in the rest of the country. On the other hand, this result might be consistent with the specialization hypothesis also. It is possible that in a large city like Taipei City, there is more labor diversification, which can make productivity gains from specialization larger.

V. Conclusion

The study of factors determining wages has been an important topic in the field of labor economics in the past few decades. Among all factors accounting for individual wage differentials, marital status has received special attention because marital status cannot be predetermined. In prior literature, two competing hypotheses explain the male marriage premium: the specialization hypothesis and the selection hypothesis. Using the Taiwan Quasi Longitudinal Data Archive, my estimation results support the selection hypothesis; most of the male marital premium can be explained by pre-existing productivity differentials between married and unmarried men.

I further investigate the relationship between the marital premium and age, and the relationship between the marital premium and the city of residence/domicile. After controlling for ability bias, married men aged from 18 to 28 receive only 1 percent marital wage premium. Generally, married men aged over 28 do not receive any wage premium over unmarried men. Moreover, older married men even receive wages lower than unmarried men, after taking into account the ability factor.

Lastly, I investigate the relationship between the male marriage premium in large cities and other geographical areas. My estimation results demonstrate that marital wage premium is 45% higher in Taipei City, compared to the rest of Taiwan. This significant marital wage premium differential supports both the selection and specialization hypothesis.

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Table 1: Sample Means By Marriage

	Married	Single
Age	43.532	25.561
	(11.146)	(8.176)
Years of Education	9.0182	11.4754
	(4.008)	(3.217)
Labor Force Participation (work = 1, else =	0.8761	0.5348
	(0.330)	(0.499)
Work Hours (if work = 1)	47.913	48.024
	(9.835)	(7.780)
Log Monthly Earnings (if work = 1)	9.9401	9.788
	(0.866)	(0.663)
Sample Size	330,952	181,160

Notes: Taiwan Quasi Longitudinal Data Achieve (1979-2003). Standard deviations are listed in parentheses. The respondents between the ages of 18 and 65 are included in the sample.

Table 2: Cross-Sectional and Wage Growth Regressions

	(1)	(2)	(3)
Dependent Variable	Current Log Wage	First Period Log Wage	Difference Between First and Second Period Log Wages
Married	0.0959**		
	(0.0020)		
Will Become Married Next Year		0.0935**	-0.0060**
		(0.0028)	(0.0030)
R-squares	0.7827	0.7909	0.0443
Sample Size	153,754	76,962	72,904

Notes: Taiwan Quasi Longitudinal Data Achieve (1979-2003). "**" is at 5% significant level. White (1980) robust standard errors are in parentheses. The respondents between the ages of 18 and 65, who work 35 or more hours, and earn monthly wages of at least 2,000 NT dollars and no more than 500,000 NT dollars are included in the sample. In addition to the marriage dummy variable, the following variables are also included as control variables: years of education, years of potential working experience and its square, job seniority, 89 occupational dummies, 96 industrial dummies, and year dummies.

Table3 : Cross-Sectional and Wage Growth Regressions by Age

	(1)	(2)	(3)
Dependent Variable	Current Log Wage	First Period Log Wage	Difference Between First and Second Period Log Wages
Married			
18 to 23 years old	0.0723**		
	(0.0095)		
23+ to 28 years old	0.0696**		
	(0.0032)		
28+ to 33 years old	0.0770**		
	(0.0036)		
33+ to 38 years old	0.0947**		
	(0.0053)		
38+ to 43 years old	0.1227**		
	(0.0088)		
43+ to 48 years old	0.1120**		
	(0.0135)		
48+ to 53 years old	0.1230**		
	(0.0161)		
53+ to 58 years old	0.1398**		
	(0.0156)		
58+ years old or older	0.0530**		
	(0.0177)		
Will Become Married Next Year			
18 to 23 years old		0.0630**	0.0039
		(0.0110)	(0.0141)
23+ to 28 years old		0.0576**	0.0190**
		(0.0044)	(0.0054)
28+ to 33 years old		0.0761**	0.0148**
		(0.0053)	(0.0064)
33+ to 38 years old		0.0901**	0.0140
		(0.0078)	(0.0099)
38+ to 43 years old		0.1308**	0.0192
		(0.0129)	(0.0131)
43+ to 48 years old		0.1316**	0.0217
		(0.0198)	(0.0218)
48+ to 53 years old		0.1293**	-0.0126
		(0.0219)	(0.0284)
53+ to 58 years old		0.1400**	-0.0257
		(0.0226)	(0.0242)
58+ years old or older		0.0589**	-0.0138
		(0.0245)	(0.0259)

Notes: Taiwan Quasi Longitudinal Data Achieve (1979-2003). "**" is at 5% significant level. White (1980) robust standard errors are in parentheses. The respondents between the ages of 18 and 65, who work 35 or more hours, and earn monthly wages of at least 2,000 NT dollars and no more than 500,000 NT dollars are included in the sample. In addition to the marriage dummy variable, the following variables are also included as control variables: years of education, years of potential working experience and its square, job seniority, 89 occupational dummies, 96 industrial dummies, and year dummies.

Figure 1: Marital Wage Premium (by age)

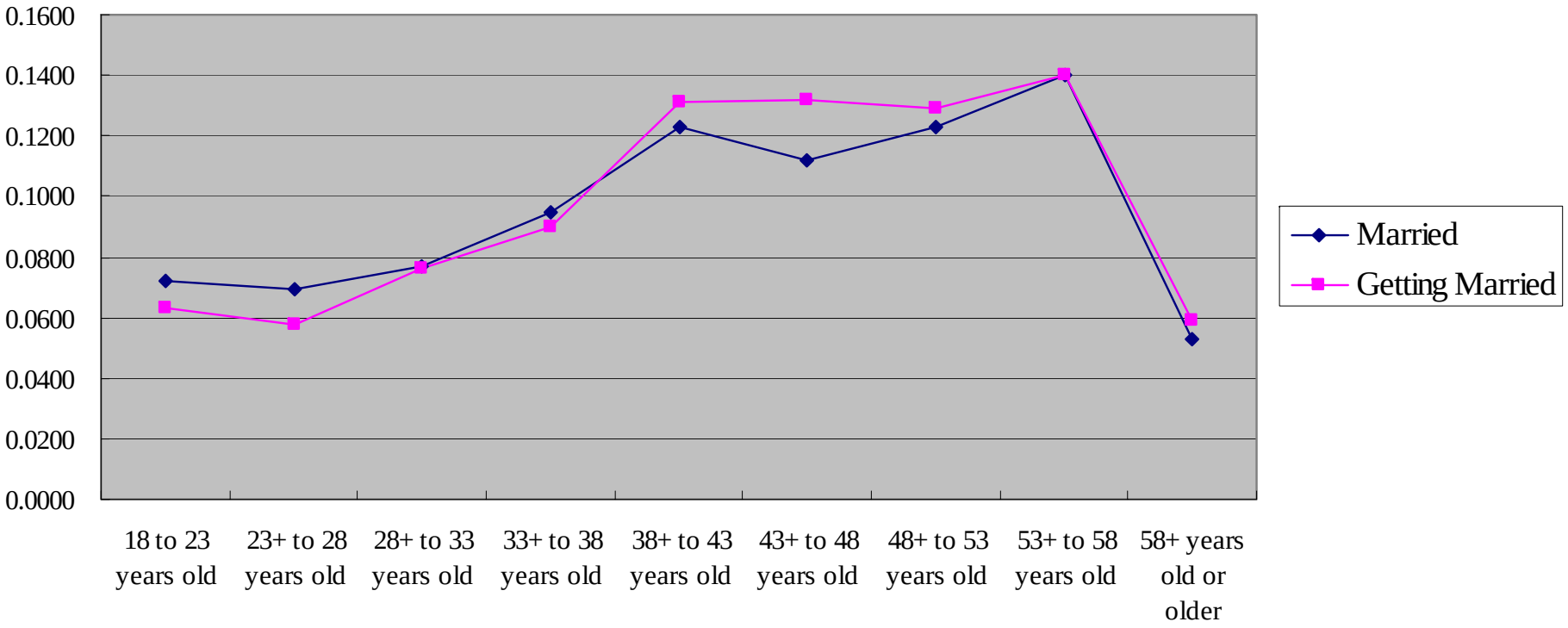

Table 4: Cross-Sectional and Wage Growth Regressions by City

	Taipei City			Not Taipei City		
	(1)	(2)	(3)	(1)	(2)	(3)
Dependent Variable	Current Log Wage	First Period Log Wage	Difference Between First and Second Period Log Wages	Current Log Wage	First Period Log Wage	Difference Between First and Second Period Log Wages
Married	0.1328**			0.0941**		
	(0.0072)			(0.0020)		
Will Become Married Next Year		0.1355**	0.0232**		0.0919**	0.0060*
		(0.0101)	(0.0097)		(0.0029)	(0.0034)
R-squares	0.7832	0.7883	0.0549	0.7848	0.7962	0.0435
Sample Size	14,338	7,297	6,847	139,416	71,445	66,056

Notes: Taiwan Quasi Longitudinal Data Achieve (1979-2003). "**" is at 5% significant level and "*" is at 10% significant level. White (1980) robust standard errors are in parentheses. The respondents between the ages of 18 and 65, who work 35 or more hours, and earn monthly wages of at least 2,000 NT dollars and no more than 500,000 NT dollars are included in the sample. In addition to the marriage dummy variable, the following variables are also included as control variables: years of education, years of potential working experience and its square, job seniority, 89 occupational dummies, 96 industrial dummies, and year dummies.