Do Working Wives Make Married Men Earn More?

Evidence from Korea*

Jin Seok Park† Myungkyu Shim‡ Hee-Seung Yang§

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Abstract

This paper examines whether the labour market status of a wife increases or lowers her husband's wage, which has not yet been comprehensively considered in the previous literature. Using Korean panel data from 1998 to 2019, we first unveil the fact that a spouse's labour income, an indicator for labour market status, has a non-monotonic effect on the marriage premium. The premium is high for married men with non-working wives and men with working wives earning high incomes. To understand the marriage wage premium, we utilise two well-known hypotheses—specialisation hypothesis and joint-search hypothesis.

JEL classification: J12, J22, J31

Keywords: Marriage wage premium, Joint search, Specialisation, South Korea

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†Department of Economics, University of Southern California. Email: jinseok@usc.edu

‡School of Economics, Yonsei University. Email: myungkyushim@yonsei.ac.kr

§School of Economics, Yonsei University. Email: heeseung.yang@yonsei.ac.kr

1 Introduction

The male marriage wage premium,[1] a phenomenon that married men earn higher wages, on average, than otherwise similar unmarried men, has been widely documented in the literature. Particularly, two hypotheses have been tested by previous studies. The first hypothesis explains the observed marriage wage premium on the basis of an 'unobserved productivity difference' between married and unmarried workers (or selection hypothesis). The competing hypothesis, a 'household specialisation' theory, argues that the wage premium is driven by wives' contribution to unpaid domestic work and thus husbands' focus on paid market work. Chun and Lee (2001) and Korenman and Neumark (1991), for instance, supported the specialisation hypothesis, whereas Dougherty (2006) supported the selection hypothesis.[2]

This paper deviates from the previous studies by focusing on the relationship between the marriage premium and spouses' labour market status, which has not yet been extensively studied. Particularly, we interpret total labour income as an indicator for labour market status since higher (resp. lower) labour income implies that a worker is more valued (resp. less valued) in the labour market.[3] In this study, we use panel data from South Korea to examine the extent to which a spouse's labour income, a proxy for her labour market status, affects the husband's marriage premium. South Korea is a good test bed as the labour market status of female workers is lower than that of male workers when compared with other advanced economies. For instance, the female labour force participation rate is low; in 2016, it was approximately 52%, which was lower than that of Sweden (70%) and that of the United States (56%).[4] The situation is even worse for married female workers. According to Kwon (2020), the proportion of women in full-time jobs substantially decreases from the age of 26 from 65% to 45%; it continues to decrease until retirement (Figure 6 of her paper). Moreover, the gender wage gap, a wage difference between male and female workers, is very high. According to the Organisation for Economic Cooperation and Development (OECD), South Korea exhibits the greatest gender wage gap (median male workers earn 30% more than median female workers) among the OECD countries in 2019.

Most importantly, we find that there is a non-monotonic or U-shape relationship between the mar-

[1] We use marriage wage premium, marriage premium, and wage premium interchangeably throughout this paper.

[2] There is a large body of literature that analyses the sources of the marriage premium. We name a few here. Ginther and Zavodny (2001) showed the empirical evidence against the selection hypothesis; Antonovics and Town (2004) showed that both hypotheses cannot explain the premium by utilizing the data with identical twins; and Pilossoph and Wee (2021) argued that household joint search can account for 30%-70% of the marriage premium.

[3] Even when there exists a discrimination against female workers, this argument still holds if such a discrimination evenly affects the female workers with different income levels.

[4] Source: https://ourworldindata.org/

riage wage premium and spouses labour income. Using the Mincer-type wage equation with an individual fixed effect to mitigate the concern of self-selection into marriage, the average marriage wage premium is estimated to be approximately 10% during the sample period. We then estimate the wage equation by controlling for a wife's monthly labour income, which is the product of an hourly wage rate and hours worked per month, and find that the premium is high for men with working wives with high earnings and men with non-working wives (11.5% for both groups), whereas it is comparatively low for men with working wives who have relatively low earnings.

To understand our finding, we focus on the fact that the labour income consists of the hourly wage rate and hours worked (or labour market participation). Each of them has been independently recognised as an important source of the marriage premium. If we adopt the 'specialisation' hypothesis, for instance, it is natural to expect a negative relationship between the wife's labour market participation and the marriage premium. We can narrowly define the specialisation hypothesis on the basis of time spent on home production: working wives will spend less time on home production than non-working wives, resulting in a smaller effect of the specialisation channel on the premium. Consistent with this idea, we find that the average time spent for home production is approximately 15 min/day for a non-married male worker, 11 min/day for a married male worker with non-working wives and 18 min/day for a married male worker with working wives in Korea.[5] One can also broadly define the specialisation hypothesis, which yields the same prediction; it may not be just time spent for home production that makes married male workers more productive. For instance, married men can put more effort, a non-observed input, into market work to earn higher wages (Pollmann-Schult (2011)). Given that the labour market participation of female workers, especially married women, has substantially increased, understanding how such structural changes affect men's wage income is an important subject.

Conversely, the 'joint-search' hypothesis (Guler, Guvenen, and Violante (2012)) suggests that a wife's high wage rate could increase the outside option of her husband, resulting in a high wage for married men. Given that female workers' wage rate has increased during the last several decades, this aspect is also important to understand the dynamics of marriage premium over time. Interestingly, no study considers both hypotheses in a unified empirical framework; thus, we aim to fill this gap in the literature.

First, we examine the specialisation hypothesis by controlling for a wife's hours contributed to

[5] Authors' calculation with the 2014 KLIPS supplementary survey.

market work in the wage equation. Interestingly, the marriage wage premium is estimated to be the highest (resp. lowest) for husbands with non-working wives (resp. long hours working), which supports the specialisation hypothesis but is not consistent with the U-shape pattern. We then re-estimate the wage equation by controlling for wives' hourly wage rates instead of market hours to capture the idea of the joint-search hypothesis. Thus, we divide the sample into male workers with non-working wives, working wives with low hourly wage rates, working wives with middle hourly wage rates and working wives with high hourly wage rates.[6] The result shows that the joint-search channel exists but only for a subset of married men; the estimated marriage wage premium is the highest for husbands with wives earning high hourly wages, whereas it is the lowest for those with low hourly wage rates.

These observations altogether indicate the co-existence of both channels in the Korean labour market; the joint-search channel works for husbands with wives earning high hourly wages, whereas the specialisation channel works for husbands with non-working wives. There are several important implications of our findings. First, theories to understand the marriage wage premium should incorporate both channels, specialisation and joint-search channels, to generate realistic patterns observed in data. Second, the structural change that has favoured married female workers in the labour market might have sophisticated effects on the wage rate of married male workers: the change can have both positive and negative effects on wages; hence, isolating the channels from each other is important for understanding the labour market more deeply.

The structure of our paper is as follows. Section 2 introduces the data and empirical strategy. Section 3 discusses results from the empirical analysis, and Section 4 concludes the paper.

2 Data and Empirical Methodology

2.1 Data and Variables

In this paper, we use the Korean Labour and Income Panel Study (hereinafter KLIPS) data from 1998 to 2019. The KLIPS conducts an annual survey of 5,000 households living in non-rural areas of Korea.[7] All household members aged 15 years or older have been surveyed since 1998. Recently, the 22nd survey (for 2019) was completed and released.

The KLIPS is the only labour-related household panel survey in Korea, which has both advan-

[6] Using different thresholds hardly changes the result. Results are available upon request.

[7] During the survey period, an additional 1,415 households in 2009 and 5,044 households in 2018 were added to the sample to complement the representativeness.

tages of cross-sectional data and time-series data. It includes household-level and individual-level data. Household-level data include family relations, economic interaction between inter-household generations, child education and child care, households' income and consumption and asset and debt. Individual-level data, which is related to household members who are 15 years and older, covers a wide range of information such as earnings, consumption, economic status, vocational training, working hours and labour market movements. It also contains personal details such as education level and marital status. Hence, the KLIPS collects detailed information both on family characteristics and labour market careers, which makes it a good basis for analysing sources of the marriage wage premium. Moreover, we can examine how the heterogeneous employment status of wives has an impact on the male marriage wage premium because it allows us to use the spouse's information.

Based on the individual-level data,[8] our estimation sample includes employed male workers aged 25–54 years, following the literature. Self-employed and unpaid family workers are not included in the sample. Individuals with other marital statuses such as separated, divorced and widowed are also excluded because it is impossible to match past family information in the KLIPS data. In other words, in the sample, marital status is either never-married or first married. To remove extreme values in hourly wages, observations with the upper 1% and lower 1% of the variable are excluded.

Table 2.1 summarises the statistics of the sample by marital status. The respondents' hourly wages in their primary workplaces are the main dependent variable in most previous research on the marriage wage premium. However, the KLIPS does not have a questionnaire on hourly wages. Instead, it surveys the gross monthly wage of respondents. Thus, the hourly wage variable is calculated by dividing the gross monthly wage by monthly working hours.[9] The nominal variables are converted into real variables using the Consumer Price Index (CPI), which has the base year of 2015 (i.e., the value of CPI for 2015 is 100). Weekly hours worked reflect regular working hours per week together with overtime hours by regular workers. This variable also includes average weekly hours worked by part-time workers. A metropolitan area variable stands for a household that is living in Seoul or other metropolitan cities.

As clearly captured in Table 2.1, it is remarkable that married male workers earn more than never-married male workers in terms of hourly wage.[10] This might be related to the fact that employed married men are working slightly more hours per week and they have more years of job experience on

[8]The data set corresponds with the economic activities from 1998 (the 1st wave) to 2019 (the 22nd wave).
[9]Monthly working hours are calculated by multiplying weekly working hours by 4.3.
[10]The unit for an hourly wage is 10,000 Korean won, which is about 8 US dollars.

Table 2.1: Summary statistics

	Whole sample			Never-married men			Married men		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Hourly wage (KRW)									
Men	1.41	0.79	50918	1.05	0.52	8882	1.49	0.82	42036
Women	1.03	0.68	16484	-	-	-	1.03	0.68	16484
Hours weekly worked									
Men	49.05	12.05	51116	47.83	12.1	8940	49.31	12.02	42176
Women	43.6	14.31	16786	-	-	-	43.6	14.31	16786
Years of education									
Men	13.75	2.76	51158	13.62	2.48	8946	13.78	2.82	42212
Women	12.96	2.69	36759	-	-	-	12.96	2.69	36759
Age									
Men	38.83	7.81	51160	33.21	6.64	8946	40.03	7.51	42214
Women	38.48	7.03	36775	-	-	-	38.48	7.03	36775
Marriage duration									
Year	8.56	8.9	46050	0	0	8946	10.62	8.74	37104
Month	103.77	107.33	45019	0	0	3221	129.51	105.09	36073
Job experience (year)	9.9	7.21	50966	6.05	5.58	8924	10.72	7.25	42042
Family size	3.47	1.19	51160	2.63	1.44	8946	3.65	1.05	42214
Number of children									
Preschool	0.33	0.61	51034	0	0	8865	0.4	0.65	42169
School	0.58	0.84	51034	0	0	8865	0.7	0.88	42169
Own home	0.56	0.5	51015	0.52	0.5	8864	0.57	0.5	42151
Metropolitan area	0.5	0.5	51034	0.54	0.5	8865	0.49	0.5	42169

Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: Statistics shown are mean values and standard deviation for unweighted data. Hourly wages and weekly hours worked for both men and women are calculated by using only employed individuals. Additionally, the hourly wage variable is adjusted using the CPI, which has the base year of 2015 (i.e., the value of CPI for 2015 is 100). The metropolitan area consists of Seoul and six metropolitan cities in South Korea

average. Additionally, married men are older than single men, whereas there is no big difference in years of education between the two groups. Furthermore, the rate of homeownership and the rate of living in the metropolitan areas are similar. For married male workers, the average marriage duration is approximately 129.5 months.

2.2 Empirical Methodology

Our empirical model is based on the standard Mincer-type earnings equation and a dummy variable for marital status to calculate the marriage wage premium in Korea. We estimate the following equation to obtain the 'average' marriage premium:

$$\ln w_{i,t} = \beta_0 + \beta_1 d_{i,t} + \beta_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}, \tag{2.1}$$

where $\ln w_{i,t}$ is the log hourly wage in a respondent's primary job, $d_{i,t}$ is a dummy variable that indicates the marital status of individual i at time t and $X_{i,t}$ denotes a vector of control variables other than marital status including age, job experience, a square of job experience, number of preschool children, number of school children, years of education, a dummy variable for residential area, and a dummy variable indicating homeownership. δ_t and α_i capture both a time fixed effect and an individual fixed effect. Dummy variables indicating employment status,[11] regular workers,[12] a two-digit industrial code and a one-digit occupational code are also considered as control variables in the extended model.

From equation (2.1), it is clear that we use a fixed-effects model for our main empirical analysis. The fixed-effects model alleviates possible endogeneity issues caused by the selection process into marriage since it controls for individual characteristics captured by α_i, which are unobserved and fixed over time. We also estimate a pooled ordinary least squares model where α_i is dropped to check the severity of such an endogeneity problem.

To evaluate our main empirical question, the effect of a wife's labour market status on the marriage premium, we further estimate the premium on the basis of subgroups identified by (1) a wife's monthly income, (2) a wife's working hours or (3) a wife's hourly wage. Specifically, controlling for working hours tests the relevance of the specialisation hypothesis since greater market work by the wife would make the husband specialise less in market work and more in-home production; controlling for hourly wages tests the joint-search hypothesis, based on Guler, Guvenen, and Violante (2012), that the premium would be positively related to a spouse's wage as the reservation wage increases. Hence, equation (2.2) is the main empirical specification:

$$\ln w_{i,t} = \gamma_0 + \Gamma_1 D_{i,t} + \gamma_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}, \tag{2.2}$$

where Γ_1 is a set of the estimated marriage wage premiums and $D_{i,t}$ is the set of dummy variables indicating subgroups identified by (1) a wife's monthly income, (2) a wife's working hours or (3) a wife's hourly wage. Specifically, when estimating the wage premium based on the spouse's labour income, $D_{i,t}$ is $[d^1_{i,t},\ d^2_{i,t},\ d^3_{i,t},\ d^4_{i,t}]$ where $d^1_{i,t}$ has a value of one when the spouse's labour income is relatively high (top 33% of the income distribution for married female workers), $d^2_{i,t}$ has a value of one when the spouse has a middle labour income (between top 33% and bottom 33%), $d^3_{i,t}$ has a value of one

[11] We divide employment status into three categories: permanent employment, temporary employment, and daily work.
[12] This dummy variable indicates whether a respondent is a regular or irregular worker.

when the spouse's labour income is low (bottom 33%) and $d^4_{i,t}$ has a value of one when the spouse is not-working. The base group is non-married men. Hence, $\Gamma_1 \equiv [\gamma^1_{i,t},\ \gamma^2_{i,t},\ \gamma^3_{i,t},\ \gamma^4_{i,t}]$ is the vector of the estimated coefficient corresponding to each dummy variable indicating the marriage wage premium for each subgroup. Dummy variables are similarly defined for the estimation of a wife's working hours and a wife's hourly wage.

3 Empirical Findings

In this section, we present results from the pooled ordinary least squares model (henceforth pooled OLS model) and the fixed-effect model (henceforth FE model) on the male marriage wage premium in Korea. After showing that the marriage wage premium exists in Korea, we present the main empirical findings to understand the effects of wives' labour market status on the premium.

3.1 Average Marriage Wage Premium

We first estimate the average marriage wage premium for the entire sample period by estimating equation (2.1). Here, we consider four specifications: the pooled OLS model, the pooled OLS model with additional control variables, the FE model and the FE model with additional control variables. Table 3.1 presents detailed regression results.

Although not presented in the table, the signs of coefficients for explanatory variables are in line with the literature. The number of children (both preschool and school), age and years of education are positively related to the hourly wage of a household. The coefficient for the job experience is significantly positive, whereas the coefficient for the squared job experience is negative. The coefficient for the homeownership variable is positive. All the coefficients for additionally controlled variables are positive, which implies that those who are permanent and regular workers have higher hourly wages.[13]

The first row of Table 3.1 presents the estimated coefficients of our main variable of interest, β_1 in equation (2.1), which is interpreted as the marriage wage premium. Positive values, which are economically and statistically significant at the 1% level, imply that married men earn more than unmarried men in Korea. Specifically, the estimated marriage premiums are 20% and 16% in the pooled OLS models, respectively (columns 1 and 2). The estimated premiums from the FE model, 11% and 10% (columns 3 and 4), are substantially lower, suggesting that estimates from the pooled OLS model should be taken with caution because selection into marriage is not controlled for. More specifically, it

[13] Results are available upon request.

Table 3.1: Average marriage wage premium

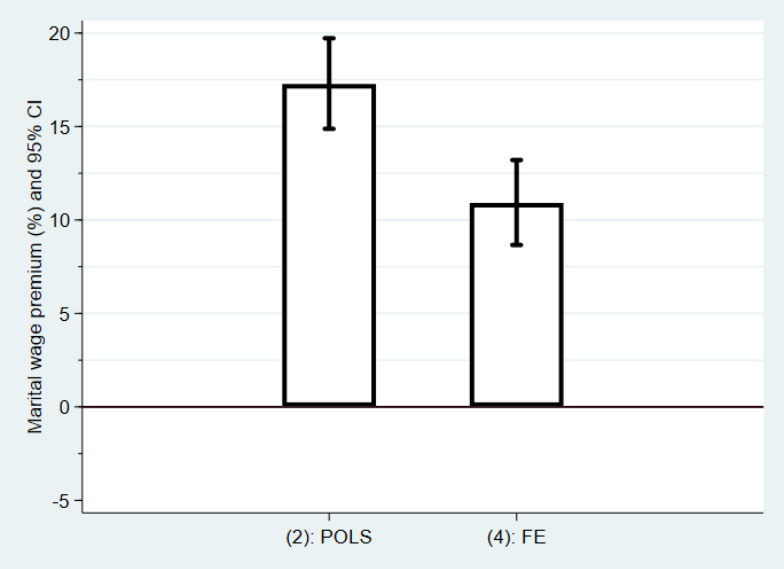
	Pooled OLS model		Fixed-effect model	
	(1)	(2)	(3)	(4)
Marriage wage premium	0.20***	0.16***	0.11***	0.10***
	(0.01)	(0.01)	(0.01)	(0.01)
Household characteristics	o	o	o	o
Work-related characteristics	x	o	x	o
Constant	-1.43***	-1.06***	-1.94***	-1.92***
	(0.02)	(0.08)	(0.10)	(0.13)
Observations	50,781	48,348	50,781	48,348
R-squared	0.43	0.51	0.35	0.35
Adjusted R-squared	0.354	0.354	0.354	0.354

The clustered standard errors at the household level are presented in the parentheses.
$^{*}\ p < 0.10, \quad ^{**}\ p < 0.05, \quad ^{***}\ p < 0.01.$
Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The table shows the marriage wage premium estimated by POLS models and FE models. The household characteristic variables include age, job experience, a square of job experience, number of preschool children, number of school children, years of education, a dummy variable for residential area and a dummy variable indicating homeownership. Employment status, whether the subjects are regular workers or not, a two-digit industrial code and a one-digit occupational code are considered as work-related characteristics in the regression. Year dummies are included in all model specifications. The estimation results for control variables are suppressed.

is a well-established fact that men with higher wages are more likely to get married because they are attractive marriage candidates and financially stable men are willing to marry due to the anticipation of the financial needs of family life. Moreover, there might be unobservable characteristics that are favourable in the labour market, such as personality (self-esteem, extraversion, neuroticism, antagonism and well-roundedness), physical attributes (height, beauty and health) or social skills (communication and conflict resolution). Besides high wages, these traits tend to be rewarded in the labour market and make it easy for financially successful men to be selected for marriage (Ludwig and Brüderl (2018)). Thus, the effect of marriage on the households' hourly wages might be overestimated because of such a selection process.

By contrast, the endogeneity problem in the FE model specification would be alleviated since the individual fixed effect, α_i in equation (2.1), is further controlled for. In other words, unobservable traits and selection of high earners into marriage are considered when FE models are used. According to

Figure 3.1: Average marriage wage premium



Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The estimated coefficients of the average marriage wage premium are calculated by POLS and FE models, which correspond to columns 2 and 4 in Table 3.1, respectively. The results are statistically significant at 1%.

the FE model result with control variables of household characteristics and work-related characteristics (column 4 of Table 3.1), married men earn approximately 10% more than unmarried men.

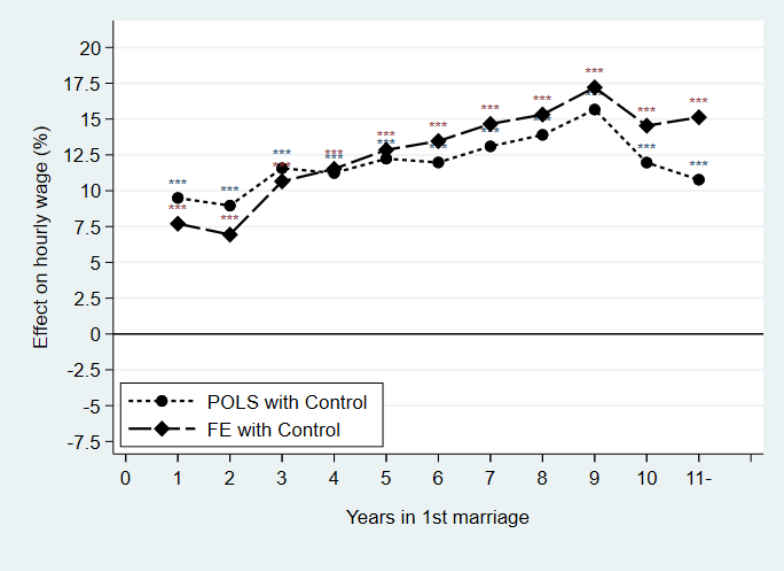
Figure 3.1 plots the marriage wage premium estimated with the pooled OLS model (column 2 of Table 3.1) and that estimated with the FE model (column 4 of Table 3.1), which clearly shows that there is a marriage wage premium in Korea.

Effect of Marriage Duration. We then analyse if the marriage wage premium varies over marriage duration as it can be used to check the extent to which the labour market status of a spouse affects the premium, which will be discussed in detail below. To check if the marriage wage premium increases for the duration of the marriage, we first measure duration in the first marriage by the difference between the month of being interviewed and the month of getting married.[14] Then, we include dummy variables indicating each marriage duration in the basic model to analyse the time-path of the marriage wage premium. Table A.1 shows detailed regression results. The estimated coefficients at each period are significant at the 1% significance level in all model specifications.

In Figure 3.2, we plot the time path of the marriage wage premium. Based on the FE model with

[14]We also measure marriage duration in terms of years.

Figure 3.2: Time-path of the marriage wage premium



Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The figure above presents plots of the estimated marriage wage premium for each year in the first marriage. These plots represent the distributed marriage wage premium over the marriage duration in different model specifications, POLS model and FE model in Table A.1. All coefficients are significant at the 1% level.

additional control variables, results show that in the first year of marriage, married men earn 7.42% more than unmarried men. The premium increases over the marriage duration to 15.88% in the 9th year of marriage. These results imply that hourly wage grows faster for married men. The gradual increase of the marriage wage premium over the marriage duration is usually used as evidence supporting the gender role specialisation hypothesis. The proponents of this hypothesis assume that husbands focus on breadwinning and wives are mainly responsible for housework and childcare. In other words, married men can invest more time in human capital accumulation with the help of their wives. Thus, married men experience higher wage growth after entry into marriage as they become more productive in their workplace due to gender role specialisation.

The finding that the wage benefits of marriage increase over the duration of marriage can also be served as evidence for the joint-search hypothesis. The wage premium rises as the marriage duration increases because husbands and wives, affecting each other, can climb up the wage ladder at a faster pace. Married couples are willing to wait longer for higher-paying jobs compared with singles when unemployed because husbands and wives can pool their incomes (Guler, Guvenen, and Violante (2012)).

As a result, it is not surprising from the perspective of the joint-search hypothesis that the marriage premium is increasing in marriage duration.

Thus, both hypotheses are plausible tools in explaining the pattern of the marriage wage premium. Hence, the analysis on the relationship between the marriage premium and marriage duration is not sufficient to identify which hypothesis is more prevalent in determining the association of the spouse's labour market status with the marriage premium. This finding suggests that additional analyses are required to verify the sources of the marriage premium as well as the role of the spouse's labour market status.

3.2 Main Results: the Role of Wives' Labour Market Status In this subsection, we provide our main empirical findings. Particularly, we present results from estimating equation (2.2) by controlling for a wife's total monthly labour income, which is the product of an hourly wage rate and market hours. This is to capture the idea that the labour income is a good proxy for labour market status; a wife's high labour income implies that she actively participates and spends more time in the labour market.

First, we divide the sample of married men into four subgroups: men with non-working wives, men with working wives who earn low incomes (whose earnings are bottom 33% of all working wives), men with working wives who have middle incomes (between bottom 33% and 66% of all working wives) and men with working wives who have high incomes (top 33% of earnings distribution for all working wives). We then estimate the marriage premium for each subgroup over unmarried men. Results are reported in Figure 3.3 and Table 3.2. Most interestingly, there is a clear U-shape, or non-monotonic, pattern in the wage premium: the premium is high for men with wives who have high labour incomes and those with non-working wives, whereas it is low for men with working wives who are earning low incomes. Specifically, the estimated wage premium is 11.5% for the former group, whereas the premium is approximately 6.7% for the latter group (see column (2) of Table 3.2).

This finding on the marriage premium is important because the two theories on the marriage premium, specialisation hypothesis and joint-search theory, provide different implications on the impacts of a wife's labour market status on the marriage premium. According to the specialisation hypothesis, the higher a wife's working hours (h_t^f), the weaker the specialisation channel. Thus, it predicts a negative relationship between a wife's working hours and the marriage premium. If we view the wife's

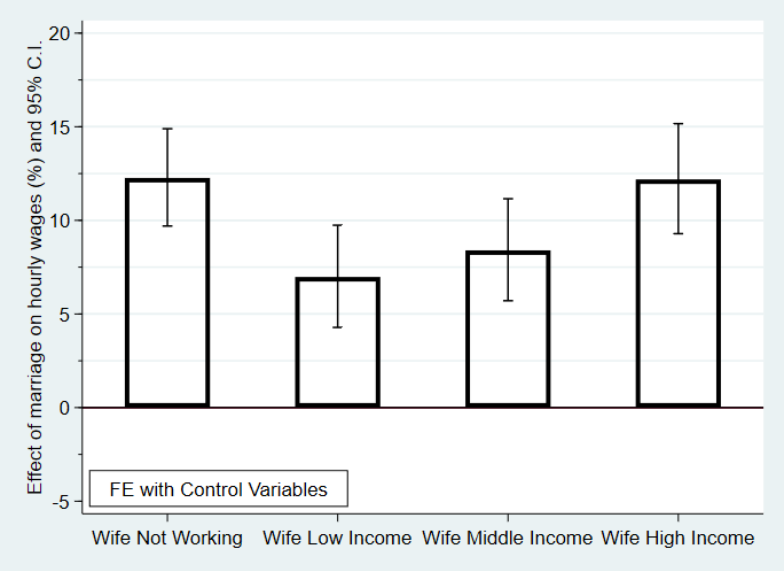
Table 3.2: Marriage wage premium across wives' monthly income

	Fixed-effect model	
	(1)	(2)
Not-working wife	0.12***	0.12***
	(0.01)	(0.01)
Low-income working wife	0.07***	0.07***
	(0.01)	(0.01)
Middle-income working wife	0.08***	0.08***
	(0.01)	(0.01)
High-income working wife	0.12***	0.12***
	(0.01)	(0.01)
Household characteristics	o	o
Work-related characteristics	x	o
Constant	-1.93***	-1.95***
	(0.11)	(0.13)
Observations	48,885	46,500
R-squared	0.35	0.35
Adjusted R-squared	0.352	0.352

The clustered standard errors at the household level are presented in the parentheses.
$^{*}\ p < 0.10, \quad ^{**}\ p < 0.05, \quad ^{***}\ p < 0.01.$
Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The table shows the estimated results of the marriage wage premium across wives' monthly income from the FE model. The household characteristic variables include age, job experience, a square of job experience, number of preschool children, number of school children, years of education, a dummy variable for residential area and a dummy variable indicating whether the subjects are homeowners or not. Work-related characteristics are employment status, whether the subjects are regular workers or not, a two-digit industrial code and a one-digit occupational code in the regressions. Year dummies are included in all model specifications. The estimation results for control variables are suppressed.

labour market participation as an indicator for her labour market status, this hypothesis implies that the premium would decrease as the wife's labour market status increases. The joint-search hypothesis, by contrast, provides a different prediction: the higher the wife's wage rate (w_t^f), the stronger the joint-search channel; this is because the outside option for married men is an increasing function of their spouses' wage rate. Thus, the view that the wage rate reflects the labour market status implies that the marriage premium would increase as a wife's labour market status increases. Our finding, which was obtained after controlling for a wife's labour income ($h_t^f \times w_t^f$), indicates that both channels might jointly work in the Korean labour market.

Figure 3.3: Marriage wage premium across wives' monthly income



Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The figure shows the estimated marriage wage premium for each subgroup categorised by wives' monthly income within column 2 in Table 3.2.

Testing Specialisation Hypothesis. To formally evaluate the above argument, we test the two competing hypotheses by controlling for two different variables. The first variable that we additionally control for is hours worked by working wives. As time endowment is restricted, a married male worker whose wife's working hours are high (resp. low) would spend more (resp. less) time on home production, which would lower the effect of specialisation. Similar to the main analysis, we divide the married workers into four groups: men with non-working wives, men with working wives who spend relatively lower time on market work (whose market hours are bottom 33% of all working wives), men with working wives who have average working hours (between bottom 33% and 66% of all working wives) and men with working wives whose market hours are high (top 33% of hours distribution for all working wives). Table 3.3 reports detailed results. For brevity, we did not indicate household characteristic variables and work-related characteristics.

The estimates within the first three rows in Table 3.3 correspond to Γ_1 in equation (2.2). All the values are significant at the 1% level. Notably, the wage benefits of marriage decrease as the wives' working hours rise in all model specifications. For example, in column (2), married men with unemployed wives earn approximately 12% more than singles. This premium decreases to 5% for married men with

Table 3.3: Marriage wage premium across hours worked by wives

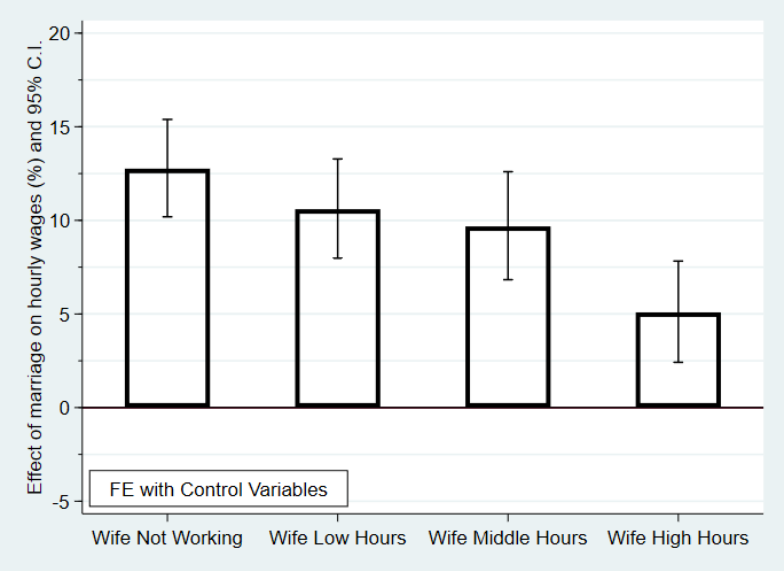
	Fixed-effect model	
	(1)	(2)
Not-working wife	0.12***	0.12***
	(0.01)	(0.01)
Low-working-hour wife	0.10***	0.10***
	(0.01)	(0.01)
Middle-working-hour wife	0.09***	0.09***
	(0.01)	(0.01)
High-working-hours wife	0.05***	0.05***
	(0.01)	(0.01)
Household characteristics	o	o
Work-related characteristics	x	o
Constant	-1.95***	-1.95***
	(0.11)	(0.13)
Observations	49,169	46,765
R-squared	0.35	0.35
Adjusted R-squared	0.353	0.353

The clustered standard errors at the household level are presented in the parentheses.
$^{*}\ p < 0.10, \quad ^{**}\ p < 0.05, \quad ^{***}\ p < 0.01.$
Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The table shows the estimated results of the marriage wage premium across wives' working hours from the FE model. The household characteristic variables include age, job experience, a square of job experience, number of preschool children, number of school children, years of education, a dummy variable for residential area and a dummy variable indicating whether the subjects are homeowners or not. Work-related characteristics are employment status, whether they are regular workers or not, two-digit industrial code and one-digit occupational code in the regressions. Year dummies are included in all model specifications. The estimation results for control variables are suppressed.

working wives whose market hours are at the top 33% of the hour's distribution. These estimation results do not change significantly when we use different criteria: (1) full-time or part-time work or (2) 30 or 35 hours per week as threshold hours.

Figure 3.4 provides a clearer picture of the pattern. From the specialisation hypothesis, the marriage wage premium strictly decreases as time devoted by wives to market work increases. This result partly supports the fact that the gender role specialisation channel works. However, the linear relationship between spouses' working hours and the marriage premium is inconsistent with our previous finding that there is a U-shape relationship between wives' labour income and the marriage premium. This

Figure 3.4: Marriage wage premium across hours worked by wives



Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The figure shows the estimated marriage wage premium for each subgroup categorised by wives' working hours of column 2 Table 3.3.

suggests that there is a channel(s) behind the marriage premium that we should further examine.

Testing the joint-search hypothesis. We now turn our focus to the other variable that determines labour income, which we additionally but independently control for. According to the joint-search hypothesis, the higher a wife's wage rate, the greater the married male worker's outside option. Thus, the joint-search channel yields a higher premium for married male (and female) workers. Again, we consider four subgroups in the analysis: men with non-working wives, men with working wives who have low hourly wage rates (whose wage rates are bottom 33% of all working wives), men with working wives who have middle hourly wage rates (between bottom 33% and 66% of all working wives) and men with working wives who have high hourly wage rates (top 33% of wage distribution for the whole working wives). Table 3.4 reports detailed results. The variables for household characteristics and work-related characteristics are not reflected for brevity as in the previous table.

The estimated marriage premium is presented in the first four rows of each column. It is easy to observe that the results are clearly significant at the 1% level and there is a pattern: the wage premium is high for the worker with a wife who has a relatively high wage rate and for the worker with a non-working wife. By contrast, the marriage wage premium of the married male worker over the single

Table 3.4: Marriage wage premium across wives' hourly wage

	Fixed-effect model	
	(1)	(2)
Not-working wife	0.12***	0.12***
	(0.01)	(0.01)
Low hourly wage wife	0.05***	0.05***
	(0.01)	(0.01)
Middle hourly wage wife	0.09***	0.09***
	(0.01)	(0.01)
High hourly wage wife	0.13***	0.12***
	(0.01)	(0.01)
Household characteristics	o	o
Work-related characteristics	x	o
Constant	-1.93***	-1.94***
	(0.11)	(0.13)
Observations	48,876	46,491
R-squared	0.35	0.35
Adjusted R-squared	0.353	0.353

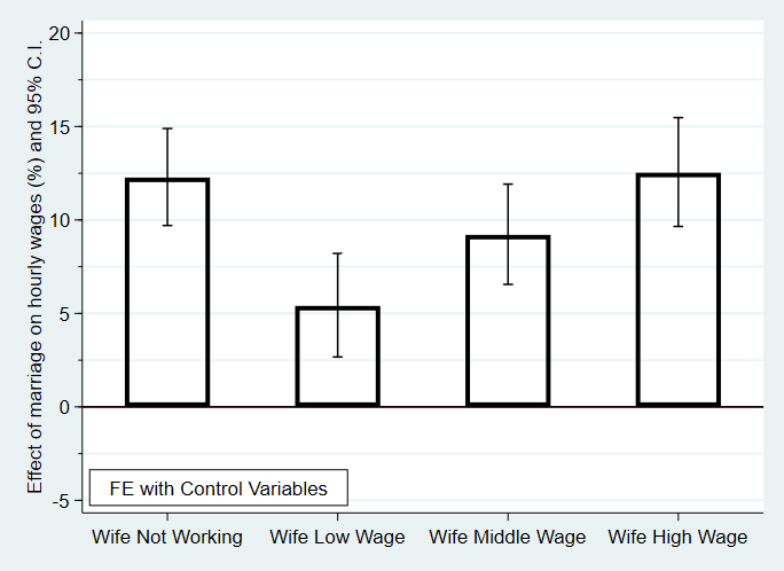
The clustered standard errors at the household level are presented in the parentheses.
$^{*}\ p < 0.10, \quad ^{**}\ p < 0.05, \quad ^{***}\ p < 0.01,$
Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The table shows the estimated results of the marriage wage premium across wives' hourly wages from the FE model. The households' characteristic variables include age, job experience, a square of job experience, number of preschool children, number of school children, years of education, a dummy variable for residential areas and a dummy variable indicating whether they are homeowners or not. Work-related characteristics are employment status, i.e., whether they are regular workers or not, two-digit industrial code and one-digit occupational code in the regressions. Year dummies are included in all model specifications. The estimation results for control variables are suppressed.

male worker is smaller for the groups with wives who have low or middle hourly wage rates.[15] This pattern is clearer when we visualise the coefficients in Figure 3.5. An interesting U-shape pattern is distinctly observed. For example, the estimated marriage wage premium for a man with a non-working wife is approximately 12%. This premium diminishes to 5% if his wife's wage rate is at the bottom of the wage distribution. Nevertheless, the premium for a married man with a wife who has a relatively high hourly wage appears to be approximately 12%. Our finding indicates that the joint-search channel

[15]This result still holds if we consider two subgroups by using one threshold for the hourly wage rate; if we set 10,000 won (approximately 8 US dollars) as a threshold to divide working wives, the result we obtain in the main analysis still holds.

works when the working wife's hourly wage rate is sufficiently high. This finding, together with our previous analyses, implies that both channels for the marriage premium coexist in the Korean labour market. Based on our analysis, one hypothesis alone cannot explain the non-monotonic relationship between the marriage premium and a wife's labour market status.

Figure 3.5: Marriage wage premium across wives' hourly wages



Sample: Original households from1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.
Note: The figure shows the estimated marriage wage premium for each subgroup categorised by wives' hourly wage within column 2 in Table 3.4.

4 Conclusion

This paper examines the sources of the marriage wage premium by testing two hypotheses: the specialisation hypothesis and the joint-search hypothesis. The former argues that the wage premium is driven by a wife's contribution to unpaid domestic work, and thus, the husband's focus on paid market work, whereas the latter claims that a wife's high wage rate could increase the outside option of her husband. An examination of the relationship between the marriage premium and spouses' labour market status, which has not been extensively studied in the previous literature, is considered.

Utilising longitudinal Korean data, we find a U-shaped relationship between the marriage wage premium and a spouse's labour income. We specifically estimate the wage equation by controlling for

a wife's monthly labour income, which is the product of the hourly wage rate and hours worked per month and find that the premium is high for men with working wives who have high earnings and men with non-working wives, whereas it is halved for men with working wives who have low earnings.

To understand the U-shaped relationship, we also estimate the wage equation using dummies indicating a wife's working hours. We find that the marriage wage premium is estimated to be the highest for husbands with non-working wives, which supports the specialisation hypothesis. We subsequently re-estimate the wage equation by controlling for a wife's hourly wage rate to test the joint-search hypothesis. The estimated marriage wage premium is the highest for the husband of a wife with a high hourly wage rate, whereas it is the lowest for the husband of a wife with a low hourly wage rate. This study provides clarity on the co-existence of both channels through which a spouse's labour market status affects the marriage wage premium in Korea.

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A Appendix: Additional Table

Table A.1: Distributed marriage wage premium

	Pooled OLS model		Fixed-effect model	
	(1)	(2)	(3)	(4)
1st year	0.13***	0.09***	0.08***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)
2nd year	0.13***	0.09***	0.08***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)
3rd year	0.15***	0.11***	0.11***	0.10***
	(0.01)	(0.01)	(0.01)	(0.01)
4th year	0.14***	0.11***	0.12***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)
5th year	0.14***	0.12***	0.13***	0.12***
	(0.01)	(0.01)	(0.02)	(0.02)
6th year	0.14***	0.11***	0.14***	0.13***
	(0.01)	(0.01)	(0.02)	(0.02)
7th year	0.15***	0.12***	0.14***	0.14***
	(0.01)	(0.01)	(0.02)	(0.02)
8th year	0.16***	0.13***	0.15***	0.14***
	(0.01)	(0.01)	(0.02)	(0.02)
9th year	0.17***	0.15***	0.16***	0.16***
	(0.01)	(0.01)	(0.02)	(0.02)
10th year	0.14***	0.11***	0.14***	0.14***
	(0.01)	(0.01)	(0.02)	(0.02)
Over 11th year	0.14***	0.10***	0.15***	0.14***
	(0.02)	(0.01)	(0.02)	(0.02)
Household characteristics	o	o	o	o
Work-related characteristics	x	o	x	o
Constant	-1.50***	-1.10***	-1.88***	-1.86***
	(0.04)	(0.08)	(0.10)	(0.13)
Observations	50,781	48,348	50,781	48,348
R-squared	0.42	0.50	0.35	0.36
Adjusted R-squared	0.354	0.354	0.354	0.354

The clustered standard errors at the household level are presented in the parentheses.

$^{*}\ p < 0.10, \quad ^{**}\ p < 0.05, \quad ^{***}\ p < 0.01.$

Sample: Original households from 1998 and additional samples from 2009 and 2018 covered by the KLIPS waves from 1st to 22nd.

Note: The table shows the estimated results of the distributed marriage wage premium over the marriage duration in different model specifications, POLS model and FE model. The households' characteristic variables and work-related characteristic variables are similarly defined with those in Table 3.1. Year dummies are included in all model specifications. The estimation results for control variables are suppressed.