The Impact of Marital Status on Work Hours: A Quantitative Study of European Labor Market from Gender Perspective

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ABSTRACT: *This article examines the effects of marital status to the gender gap in employment hours. This article uses linear regression analysis with data from the European Social Survey Round 8. Stata/SE 16 is used to analyze the data collected from 18 European countries to explore the research questions. Previous literatures identify some determinants of work hours such as demographic characteristics, the division of household labor, job characteristics, and country-level determinants (e.g., welfare state, work-hour regulations, family policies, part-time labor force participation etc.), but there are few studies on marital status as determinant of work hours. This article finds that there is an interaction among marital status and work hours to the different levels of gender. This article shows that there is a gender inequality in the European labor market, where men's work hours are more than women's work hours. Unmarried women work less hours than any other studied categories of marital status (e.g., married, divorced).*

Key words: Marital status, Gender inequality, Work hours, European labor marker, Gender, Europe.
JEL Classification: A12 Relation of Economics to Other Disciplines

1. Introduction

A considerable number of previous literatures imply that marital status can influence employees' work hours. The impact of marital status on work hours can be different for men and women. For instance, a study found in Bangladesh that husbands' response to their wives' employment is a negative behaviour, including the reduction of husband's work hours by the decision of husbands (Banks, 2013). In addition, marriage makes the separation between two spheres- home and work. Traditionally, married women and mothers are expected to select family work over market, while men earn money to support the family (Vuong & Sid, 2020).

Some of the studies found differences in work hours for married men and women. For example, Olivetti (2006) in a study to examine changes in work hours in the US between 1970 and 1990, found that adult married female's work hours increased by 43 percent between these times, while married male's work hours remained approximately unchanged. Over these years, some of the aspects of the female population largely changed such as marital status or childbearing out of matrimonial relationships (e.g., Blau (1998)). Olivetti (2006) refers to a "life-cycle model" with human capital accumulation and home production to explain the reason for changes in married women's work hours. Olivetti (2006) illustrates that women's tendency to return to experience was enhanced by 25 percent, while men's return to experience was enhanced by 6 percent over these years.

Marital status could affect work hours not only between gender but also within gender. For instance, some studies found that unmarried men worked less hours than married men (Dariotis, Pleck, Astone, & Sonenstein, 2011).

Interaction of marital status and having children give disadvantages. For example, a study found that 54 percent of married mothers worked full-time, while 60 percent of unmarried mothers worked full time (Flood, King, Ruggles, & Warren, 2015).

Earlier studies showed that perception about single mothers was changed. That is, married mothers have more time for housework and childrearing than single mothers since single mothers have more time for housework is no longer plausible (Pepin, Sayer, & Casper, 2018). The reason is that married mothers' full-time employment becomes regular (Stevenson & Wolfers, 2007).

Age at first marriage also affects work hours from a gender perspective. Delayed marriage, on the other hand, tends to be associated with more similar life experiences for men and women, which can lead to more equal resources and marital power (Coltrane, 1996).

Becker (1985) identified that an important cause of women's higher level of labor force participation is women's expanded earning power. This earning opportunity was facilitated by the fast-growing service sector. However, married women confront discrimination by the structural factors in their workplace. For example, large organizations and some occupational bodies promote men or unmarried women in the recruitment. This phenomenon has been examined for different countries such as for the case of Japan (Sasaki, 2002) for South Korea (Lee, Jang, & Sarkar, 2008) for Taiwan (Francis, 2011) for the Arab world (Verme, Barry, & Guennouni, 2016) for Hong Kong (Tong & Chiu, 2017) and for India (Mehrotra & Parida, 2017).

Some of the studies identified that social and technological changes facilitated married women's labor force participation. Increasing facilities in childcare centers and technological tools for household chores helped married women to participate in the labor market (Greenwood, Seshadri, & Yorukoglu, 2005). These facilities leave women available for paid work in the labor market which is known as the supply side of the market (e.g., (Juhn & Potter, 2006; Tong & Chiu, 2017)). In addition, risk of divorce encouraged married women to participate in the labor market (Becker, 1991; Johnson & Skinner, 1986).

Some other studies found that women's behavior in the labor market is influenced by marital status (e.g., (Ntuli, 2007; Yakubu, 2010)). For instance, Wong, Siu, and Tsang (1999) suggest that unmarried employees are more motivated to participate in the work and for career development, while married employees prefer a balance between work and family life. Crowley-Henry (2007) found that married employees who have children are probably not willing to move geographically for their work.

In the above discussion, we find that there are different views to explain the gender gap in employment hours. However, there is little discussion about the effects of marital status to the gender gap taking marital status as moderator, although there are some of the studies (e.g., (Boeckmann, Misra, & Budig, 2014; Janse van Rensburg, Claassen, & Fourie, 2019; Olivetti, 2006; Tumsarp & Pholphirul, 2020; Vijayakumar & Cunningham, 2019)) that focused on marital status. But these studies do not show the interaction between marital status, gender gap and employment hours. For instance, Boeckmann et al. (2014) examined women's working hours gap. This study discussed cultural and institutional factors of mothers' employment and work hours in postindustrial countries. But we cannot understand how marital status moderates the association of gender gap and work hours from these study results, since they selected only mothers and childless women as samples. On the other hand, since Olivetti (2006) took married couples with children as a unit of analysis, we cannot generalize the results of the study to the people with other marital status such as divorced/separated. In the context, this study investigates the research questions: (1) What is the impact of marital status on work hours in view of gender difference? (2) How does marital status moderate the association between gender gap and employment hours?

2. Data and Methods

This article uses data of European Social Survey Round 8, data file edition 2.1. This study includes the data of Austria, Belgium, Switzerland, Czechia, Germany, Estonia, Finland, France, United Kingdom, Ireland, Israel, Iceland, Netherlands, Norway, Poland, Russian Federation, Sweden, and Slovenia. This article applies weights since it combined data from 18 countries. The survey applies random probability sampling and ensures a minimum target response rate of 70% and rigorous translation protocols. 'Total hours worked per week' is the outcome variable and gender as well as the dummies of 'legal marital status' are independent

variables of the study. This article controls for seven variables, which are related to perception to immigration (i.e., imbgeco; imueclt; imwbcnt), parents' occupation (i.e., occf14b; occm14b), happiness and satisfaction in life (i.e., happy; stflife), as potential confounders. This article analyzes data using Stata/SE 16 software and linear regression analysis technique. Total number of observations is 12,801. The model is specified based on both theoretical knowledge and statistical analysis. During model specification, this article diagnoses multicollinearity and heteroskedasticity. The Robust HC3 standard errors of maritalb and female have very few changes from regular model's standard errors. Variance Inflation Factors (VIF) is well below the cutoff value 4-10, thus this article argues that included predictor variables are not highly correlated, and the current model does not need to be worried for multicollinearity. This article also examines multicollinearity in the model using other two approaches, i.e., 'significant model F but no significant coefficients' as well as 'rising standard errors in models with controls', and that also resulted in no worry for multicollinearity. In addition, this article assessed outliers (e.g., Figure 1) and compared excluding the outliers with the model that included the outliers. Outliers have little influence.
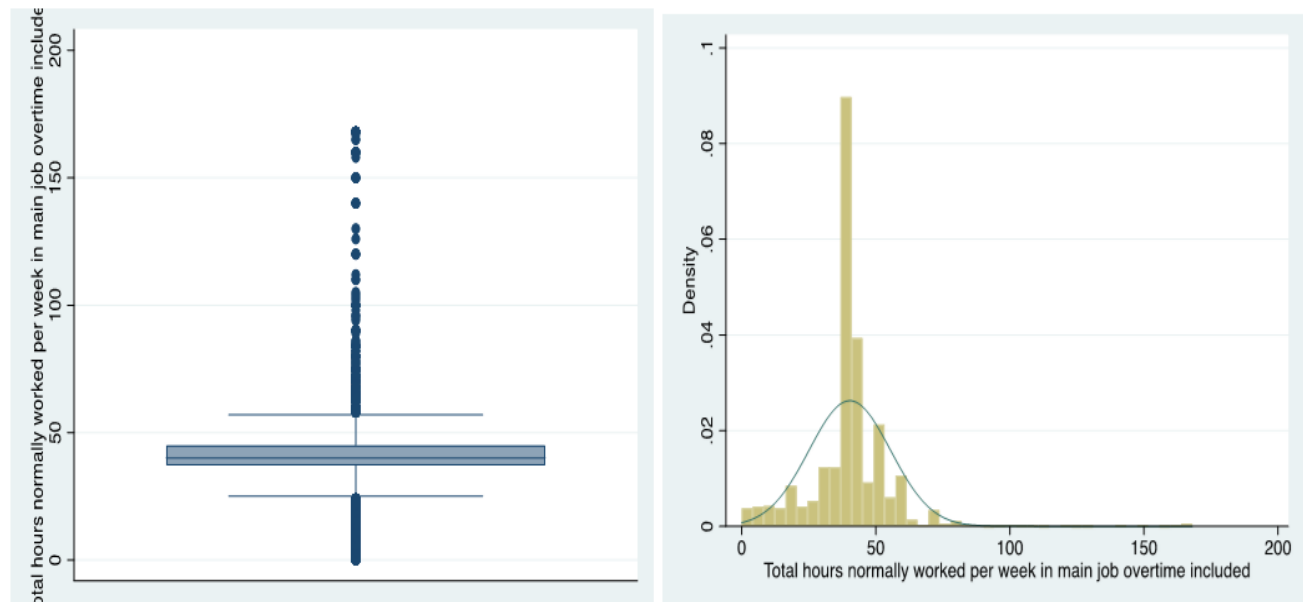

Figure-1. Assessing outliers/extreme values.

This article also checks the association between marital status and working hours. After regressing wkhtot, maritab, and maritab2, it is found that the coefficient of the squared term (i.e., maritab2) is negative (-.45), thus the relationship between legal marital status and hours worked is not linear. Furthermore, this article calculates the total effect (-.79), direct effect (-.77) and indirect effect (-.02) (=-5.76*.003) among wkhtot, maritab, and female. Since the signs of direct and indirect effects are the same, there could be a mediation by gender. This study dropped all missing values.

3. Results

3.1. Results of Ordinary Least Square (OLS)

In the following Table 1, this study compared four models to examine if the association between outcome variable "total hours worked per week" and covariates 'female' as well as dummy variables of legal marital status are confounded by other predictor variables controlling for different predictor variables. In model 1, this study controlled gender and found that all the dummy variables of legal marital status are statistically significant at $P<.001$ (except 'In a legally registered civil union' which is significant at $P<.01$). In model 2, the article controlled for gender and perception to immigration related variables. In this model, all the dummy variables of legal marital status and female variable are statistically significant, although the significance level of 'Widowed/civil partner died' have decreased and significance level of 'In a legally registered civil union' have increased. In model 3, this article added control variables related to parents' occupation and found that all the dummy variables of legal marital status and female variable are still statistically significant. Finally, in

model 4, the article added control variables related to happiness and satisfaction in life, which found that, like all three previous models, all the dummy variables of legal marital status and female variable are statistically significant. Thus, the seven predictor variables might not be confounded. In addition, R-squared is used to assess model fit: explaining variance. That means it assesses how close prediction line is to observed values? For example, R-squared in model 4 shows that predictor variables explain 8% of the variance in the hours worked weekly by the respondents. If we interpret the coefficient of legally married according to model 1, we can say that, holding constant all other variables, legally married respondents worked weekly 4.59 hours more on average than respondents who never married, and when we added covariates in the model, for example in model 4, the effect size slightly changed, which means legally married respondent worked 4.37 hours more on average than respondents who never married. Moreover, if we interpret the coefficient of female, we can say that females worked weekly 6.13 hours less on average than males, holding constant all other variables; and when we added control variables in the model 4 we see that the effect size has slightly decreased to 6.10, meaning females worked weekly 6.10 hours less on average than males, holding constant all other variables.

Table-1. Multivariate regression model predicting "total hours worked per week" (used weight).

	Model 1	Model 2	Model 3	Model 4
	B	B	B	B
Predictor Variables				
Intercept	40.08***	42.63***	41.47***	42.40***
Legal marital status (reference group=never married)				
Legally married	4.59***	4.38****	4.34***	4.37***
In a legally registered civil union	3.12**	3.24***	3.26**	3.35**
Legally separated	9.73***	9.01***	9.04***	8.98***
Legally divorced/civil union dissolved	5.31***	4.91***	4.84***	4.77***
Widowed/civil partner died	5.25***	4.62*	4.45*	4.34*
Gender (reference group=male)				
Female	-6.13***	-6.14***	-6.12***	-6.10***
Perception to immigration				
Immigration bad or good for country's economy		-0.23	-0.21	-0.21
Country's cultural life undermined or enriched by immigrants		-0.29*	-0.27**	-0.26*
Immigrants make country worse or better place to live		0.07	0.08	0.09
Parents' occupation				
Father's occupation when respondent 14			0.25	0.23
Mother's occupation when respondent 14			-0.08	-0.08
Happiness & satisfaction in life				
How happy are you				-0.17
How satisfied with life as a whole				0.02
R-squared	0.07	0.08	0.07	0.08
F statistic	73.08***	34.79***	52.28***	34.79***

Note: *P<.05, **P<.01, ***P<.001.

In the above Table 1, we see that females work less than the males, meaning there is a gender gap in employment hours. In addition, we see that those who are in other categories of legal marital status except 'never married' worked more hours than those who never married. We also see different weekly working hours on average for respondents who have different legal marital status. However, the above table cannot show the interaction among gender, legal marital status and employment, so this article examines the interaction among work hours, marital status, and gender in the next section.

3.2. Interaction among Work Hours, Marital Status, and Gender
In the following Figure 2, we see that there is an interaction between gender, legal marital status and employment hours. The article finds that males (i.e., female=o) worked more hours weekly on average than

females in all categories of legal marital status. We can also see that work hours are changing with the change of each category of legal marital status for both male and female.
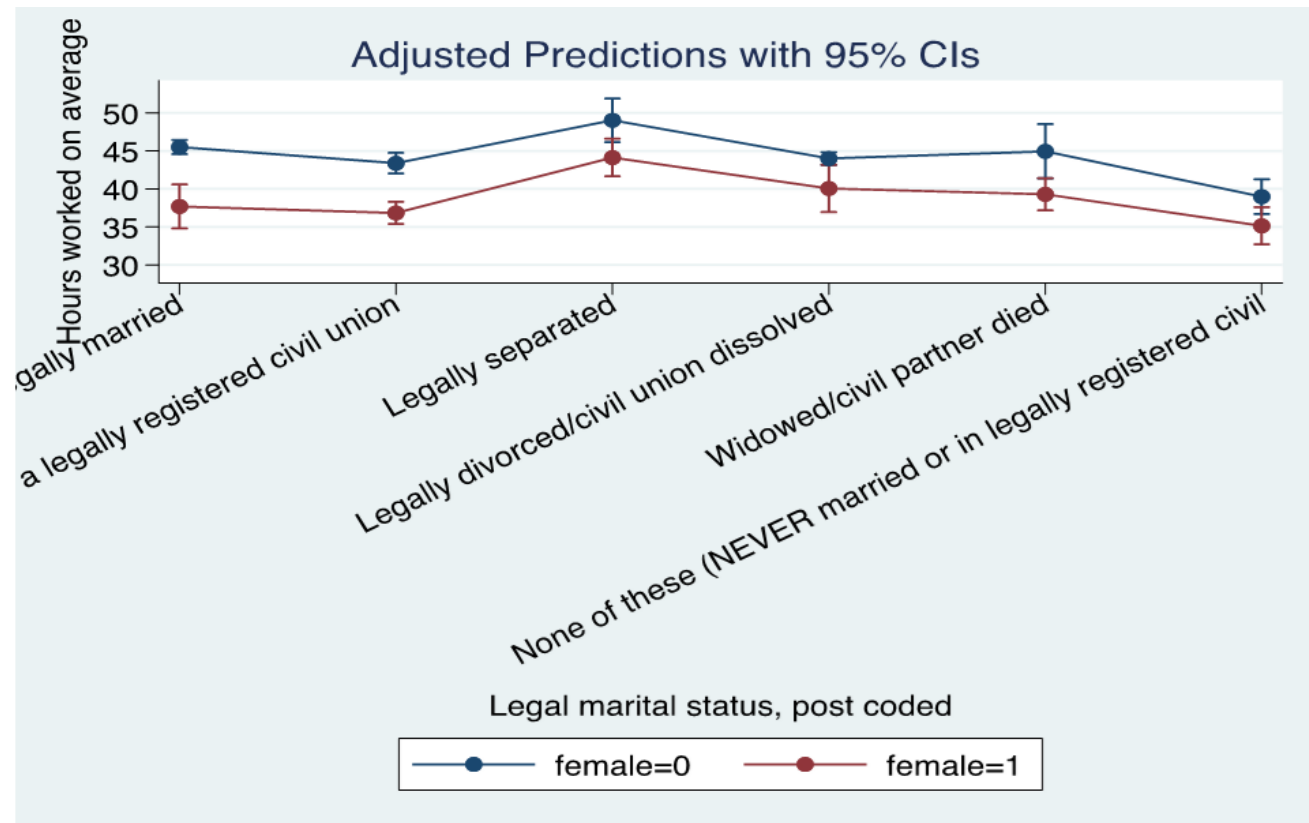

Figure-2. Graphical presentation of interactions between legal marital status and hours worked to the level of gender.

Table-2. OLS regression of hours worked on average on interaction of gender and marital status (Unmarried male is a reference group).

	Coef.	Linearized Std. Err.	t	p>|t|	[95% Conf. Interval]	
Legally married male	6.526178	1.067491	6.11	0.000	4.273969-	8.778386
Legally married female	-1.289429	0.538848	-2.39	0.029	-2.426299-	-.1525592
Legally registered civil union male	4.391578	1.234115	3.56	0.002	1.787824-	6.995332
Legally registered civil union female	-2.142223	1.261926	-1.70	0.108	-4.804655-	0.5202083
Legally separated male	10.04741	1.53325	6.55	0.000	6.812534-	13.28228
Legally separated female	5.141475	1.489671	3.45	0.003	1.998545-	8.284406
Legally divorced male	5.019844	.9089828	5.52	0.000	3.102058-	6.93763
Legally divorced female	1.081781	1.330064	0.81	0.427	-1.724408-	3.887969
Widowed or civil partner died male	5.960862	2.575325	2.31	0.033	.5274012-	11.39432
Widowed or civil partner died female	0.3064487	1.282036	0.24	0.814	-2.398411-	3.011309
Unmarried female	-3.839683	.5307813	-7.23	0.000	-4.959534-	-2.719832
_cons	38.98658	1.085941	35.90	0.000	36.69545-	41.27772
N			12,801			

Like the Figure 2, the following Table 2, also describes exactly how many hours are differing with the change of each category of legal marital status to the level of gender. In the Table 2, intercept shows that never married/in legal relation males are the reference group. This group works around 39 hours per week on average in main jobs including overtime. But females who are never married/in legal relation work around 4 hours (since the coefficient of nmarried_femal=-3.84) less on average than the reference group. Legally married males work around 46 hours (i.e., _cons+Lmar_mal=38.99+6.53) per week on average. But legally married females work around 38 hours (i.e., _cons+Lmar_femal=38.99-1.29) per week on average. Similarly, legally registered civil union males work around 43 hours per week on average. But legally registered civil

union females work around 37 hours per week on average. Legally separated males work around 49 hours per week on average. But legally separated females work around 44 hours per week on average. Legally divorced/civil union dissolved males work around 44 hours per week on average. But legally divorced/civil union dissolved females work around 40 hours per week on average. Widowed/civil partners died males working around 45 hours per week on average. But widowed/civil partners died females work around 39 hours per week on average. Except legally registered civil union females, legally divorced/civil union dissolved females, widowed/civil partner died females, all other groups have significant association with the dependent variable.

4. Discussion and Conclusion

This article finds that among the respondents who never married/in legal relation, males work around 4 hours more on average than females. Legally married males work around 8 hours more on average than legally married females. Among the respondents who are legally registered civil union, males work around 6 hours more on average than legally married females. Legally separated males work around 5 hours more per week on average than legally separated females. Legally divorced/civil union dissolved males work around 4 hours more per week on average than legally divorced/civil union dissolved females. Among respondents who are widowed/civil partner died, males work around 6 hours more on average than females. It is also found that never married/in legal relation males work around 7 hours less on average than legally married males, but never married/in legal relation females work around 3 hours less on average than legally married females. It means that difference in working hours of being legally married versus never married/in legal relation is different for male and female, which is higher for male than female.

Legally registered civil union males work 6 hours more on average than legally registered civil union females. In addition, legally registered civil union males work 4 hours (i.e., 43-39=4) more on average than males who never married. Legally separated males work 5 hours (i.e., 49-44=5) more on average than legally separated females. Legally separated males work 10 hours (i.e., 49-39=10) more than males who never married. Legally divorced/civil union dissolved males work 4 hours more (i.e., 44-40=4) on average than legally divorced/civil union dissolved females. Legally divorced/civil union dissolved males work 5 hours more (i.e., 44-39=5) on average than males who never married. Males whose widowed/civil partner died work 6 hours (i.e., 45-39=6) more on average than their female counterparts. Males whose widowed/civil partner died work 6 hours (i.e., 45-39=6) more on average than males who never married.

This article finds that the differences in working hours not only exist between males and females but also within males of two legal marital status.

This article shows that there is a gender inequality in European labor market, where men's work hours are more than women's work hours which reflect the findings of some previous studies (e.g., (Bailyn, 1993; Coltrane, 1996; Janse van Rensburg et al., 2019; Kanji, 2013; Kitterød & Rønsen, 2012; Townsend, 2002; Vuong & Sid, 2020)) although some studies show that women's labor force participation is increasing in modern society (e.g., (Becker, 1985; Goldin, 1989; Mammen & Paxson, 2000; Olivetti, 2006; Tong & Chiu, 2017)). This article also finds that unmarried women work less hours than married women, although some of the previous studies argue marriage and maternity reduce the possibility of participating in the labor market (e.g., (Francis, 2011; Lee et al., 2008; Sasaki, 2002; Tong & Chiu, 2017)). Unmarried women work less hours than any other studied categories of marital status (i.e., divorce, separated etc.), although some studies show unmarried women work more hours than married women. Moreover, like Dariotis et al. (2011) study, this study also finds that married men work more hours than unmarried men.

This article observes that differences in working hours between males and females are different for different categories of legal marital status. Marital status deserves importance in future research in understanding gender gap in employment hours in other than the studied countries. Moreover, this article does not explain the reason for marital status' effects in gender gap in work hours which can be investigated in future research.

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