Identifying Factors Determining the Value of Housework of Working and Non-working Female in Korea

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ABSTRACT

This paper attempts to directly find out the role of the reservation wage related to the married women's decision on whether they participate in the labor market. Using the unique Korean data set which contains information on the value of housework, we are able to examine how individual characteristics of working and non-working female affect the reservation wages and empirically identifying factors determining the reservation wage of Korean married women. The results of Oaxaca decomposition of the reservation wages of working and non-working female suggest that the higher levels of education and age increases the gap of the reservation wages between working and non-working female in Korea, and the women's burden caring for young kids emerges as an important factor for determining whether women enter into the labor market. On the contrary, the age reduces the shadow price gap between and non-working female indicating that the preference gap toward working and non-working decreases with age.

JEL classification: J13, J24

Keywords: value of housework, working and non-working female, burden caring for young kids, female labor market participation

1. Introduction

The concept of reservation wage has played an important role in the study of labor market participation, particularly in the case of married females. The reservation wage is traditionally defined as the lowest wage at which an individual is willing to work. People who have high reservation wage are less likely to enter into the labor market unless the offered market wage is higher than reservation wage (Mortensen, 2003, 1970; Devine and Kiefer, 1990; Bhaskar, Manning and To, 2002; Machin and Manning, 2004). The high level of reservation wage might discourage individuals to enter into the labor market. Therefore, it is essential to examine what determines the level of reservation wage in order to analyze the labor market theory, particularly in the areas of female labor supply (Neumark and Andrew Postlewaite, 1998).

The women's low labor force participation is emerging as a central issue in the Korean labor market. As the Korean society is facing very low fertility rate (1.19 in 2008), the possible policy for solving future lacking manpower in the labor market is to encourage more women to participate in the labor force as much as possible. Based on the Economically Active Population Survey (EAPS), the labor force participation rate (hereafter LFPR) for aged 15 to 64 in 2008 was 54.7% for Korean female compared to the 77.3% of Korean male for the same period. The Korean women's labor force participation rate is the third level from the lowest among OECD countries and is much lower compared to the 61.3% of OECD average rate (OECD, Employment Outlook, 2008). In addition, the employment rate of Korean women is just 53.2% compared to the 57.5% of OECD average rate. If we calculate LFPR for the whole age, the trend of women's labor force participation rate has been around 50% but not more than 50% in the annual rate.

This paper attempts to directly find out the role of the reservation wage related to the married women's decision on whether they participate in the labor market. The labor force participation decision is based on a comparison of the market wage with the reservation wage. While there was much increase in the market wages for female workers in the Korean labor market during the past decades, we cannot find the same pattern of increases in the LFPR of female. Therefore, one of the main reasons for relatively lower women's LFPR in Korea might be due to the high level of reservation wage for married women particularly having burden for caring children.

In the paper, we consider determinants of reservation wage both at an individual level and family level as well. Despite this theoretical importance, there is not much empirical research which directly explores on how the level of reservation wages is formulated and it affects women's decision on the labor market. Using the unique Korean data set which contains information on the value of housework, we are able to examine how individual characteristics of working and non-working female affect the reservation wages and empirically identifying factors determining the reservation wage of Korean married women. Furthermore, it is possible to directly examine the relationship between reservation wage and women's participation into the labor market. While most of the previous empirical studies on the effect of reservation wage on the female's labor force participation are based on indirect method of using two-stage estimation (Heckman, 1974; Cahuc and Zylberberg, 2004), we can directly estimate the role of women's reservation wage.

There seems to exist much variation in the reservation wages of married women in terms of education, number of children, family formation, and household assets. In this

paper, utilizing the Oaxaca decomposition method, we identify factors affecting the gap of reservation wage between the working and non-working female in Korea. These factors include the preference (shadow price) factors of working and non-working females as well as their observed characteristics.

2. Previous Literatures

Even if there are numerous studies on the determinants of labor force participation, only a few studies exist to directly analyze the determinants the reservation wage. The most pioneering work on the reservation wage is the study by Bloemen and Stancanelli (2001). Their works suggest that the financial wealth is an important determinant of reservation wage and has a positive impact on the reservation wage. Their studies suggest that higher levels of wealth result in higher reservation wages, and higher reservation wages are associated with a lower employment probability.

An empirical study on the determinants of female reservation wage is much more scarce. Among few studies, the analysis by Matthew Gray and Jennifer Renda (2006) is noticeable. Using the Australian data set, they suggest that the reservation wages were below what we estimated that the mother would earn in the labor market if she were able to find employment. Approximately 71 per cent of lone and 74 per cent couple mothers' reservation wage were equal to or less than the wage we estimated they would command in the labor market, given their education level and other characteristics which influence earnings. They conclude that overall these results suggest that unreasonable wage expectations are not a major reason for mothers failing to find employment.

Instead of directly analyzing the reservation wage, there are many studies identifying the determinants of labor supply. For example, Ribar (1992) suggests that higher wages increase the likelihood of labor force participation and that higher costs decrease the likelihood of child care utilization, implying that the cost of market child care has a strong negative effect on the labor supply of married women. On the contrary to Ribar's study, Joesch (1994) obtained the result that child care price and availability have little effect on labor supply. He explained that many of women have either very high value of nonmarket time due to their other sources of income or strong tastes for home production. Others face very low market wage offers. Given this situation, he suggests that child care price and availability have little effect on labor supply.

3. Data and Measured Characteristics

We use the data set of Korean Longitudinal Survey of Women and Families (KLSWF) which was conducted by Korea Women's Developments Institute. This survey began with 9,000 household samples selected from 2005 Korean Census and continues through 4th waves in 2009. This survey was designed for examining several issues such as change in women's life cycle labor force participation, family formation process, work-family life transition, etc. The samples include females aged from 19 to 65 in the survey period and Computer Assisted Personal Interviewing (CAPI) method was employed. The data contains three types of questionnaires related to personal, household, and work. In the personal questionnaires, the female respondents are asked to answer set of questions such as age, educational background, family background, marriage life, child caring, etc. The respondents are asked to answer several questions related to the household such as

household incomes, assets, and financial status. The data also contains the information on the job history so that we can examine the pattern of job transition of females due to marriage and/or child birth.

In the survey, there is a question which can be used as a proxy for measures of reservation wage. In the KLSWF, the survey asks the respondent “How much do you evaluate your values of the household work in the monetary values?” We assume that there is a strong correlation between the respondents’ subjective values of household work and reservation wage. The higher values the respondents put for the work within household, the less likely the respondents participate in the labor market given the offered market wage. With the information of house work values, we are able to find out the determinants of reservation wage and its relationship to labor market participation decision. Eventually, we are able to draw some insight on why Korean females are less likely to participate in the labor force compared to other OECD countries. Remember that the house work value question only applies to women who are now in the marriage life or had one during her life time.

Table 1 shows the summary statistics of the whole samples studied in the paper. Since the proxy measures for reservation wage is related to the house work value, the samples include only individuals who have experienced marriage life. The average age of respondents is about 45 years old ranged from 20 to 65 years old. If we look at the age distribution, the proportions of aged 50-65 is about 35% showing the largest number and the next is a group of aged 30-39. The young group of aged 20-29 shows the lowest proportions of the sample. The educational attainment of respondents in the survey shows 11years on the average and the main reason on the lower level of education than expected

is probably due to the relatively lower proportions of younger cohorts. Among samples, while the proportions of 4-year college graduates is only about 17%, more than 70% of samples do not have college education at all. Next, the average value of house work is about 110 in ten-thousand Korean Won (KWN). Due to the low fertility rate in the Korean society and possibly low proportions of young cohorts, the number of kids under age 6 is only about 0.4 per household. And about 41% of female have their own jobs and this number shows relatively lower than the national statistics. On average, 65.8% of the people occupy their own housing regardless of types and the proportions of the respondents' living with their parents and/or law-parents (defined as extended family) are about 10%.

Next, we also present the summary statistics separately each for the samples of non-workers and workers in the Table 1. First of all, the average age of workers sample is higher than non-worker samples by 4 years. In the detailed distributions of age between non-worker and worker samples, the proportions of aged samples (e.g., age more than 40 years) are substantially higher in the sample of workers than in the sample of non-workers. For the educational attainment, we observe very interesting phenomenon showing that the level of education for non-workers are relatively higher than one for the sample of workers. For example, while the proportions of females having college diploma (including 2-yr College) are more than 30% in the sample of non-workers, the proportions are less than 20% in the sample of workers. Having combined with the relatively higher values of housework found in the sample of non-workers compared to the sample of workers, it might be case that the highly educated women are tend to less

participate in the labor market and this fact might be due to the relatively housework values compared to the female having low educational background.

In addition to the difference in terms of educational attainment between non-workers and workers, the women having more young kids particularly under age of 6 are shown to be less likely to participate in the labor market.

Table 1: Descriptive Statistics

Variable	Whole Samples	Non-workers	Workers
Age (in average years)	44.9	43.3	47.2
	(10.5)	(10.6)	(9.6)
Aged 20-29	0.049	0.067	0.024
	(0.216)	(0.251)	(0.153)
Aged 30-39	0.316	0.383	0.223
	(0.465)	(0.486)	(0.416)
Aged 40-49	0.286	0.252	0.334
	(0.452)	(0.434)	(0.471)
Aged 50-65	0.346	0.296	0.417
	(0.476)	(0.456)	(0.493)
Years of education	11.2	11.4	10.5
	(3.8)	(3.5)	(4.0)
High School Incomplete	0.321	0.240	0.433
	(0.469)	(0.427)	(0.495)
High School Graduate	0.400	0.442	0.341
	(0.489)	(0.496)	(0.474)
Some College	0.109	0.135	0.072
	(0.317)	(0.342)	(0.259)
4-Yr College Graduate	0.169	0.181	0.153
	(0.375)	(0.385)	(0.360)
House work value (in 10,000 KWN)	110.2	115.9	102.1
	(67.8)	(67.9)	(67.9)

Number of kids under age 6	0.407 (0.700)	0.547 (0.775)	0.212 (0.519)
Work	0.417 (0.493)		
Owns housing	0.658 (0.474)	0.629 (0.483)	0.698 (0.459)
Extended family	0.097 (0.296)	0.079 (0.271)	0.121 (0.327)
Sample size	8,858	5,044	3,584

Notes: The standard deviations are in the parentheses.

For the sample of non-workers, the average number of kids under age 6 is about 0.55 but the number is only 0.21 for the sample of workers. Table 2 represents the distributions of house work values by educational attainment, and age for the whole samples, non-workers samples, and workers samples. First of all, the value of house work for the samples of workers is lower than non-workers by about 10%. This seems to be consistent with the labor market theory where the higher reservation wage discourages individuals from participating in the labor market. As the educational attainment rises, value of house work by the respondents increases as well. The pattern of house work values is not monotonically changing depending on the age groups. The groups whose ages are 30 to 39 years old have the highest value of house work and the values decrease as we get older groups. We expect the highest level of house work found in the age of 30s to stem from the fact that women tend to have burden for caring young children in their ages. Having examined the pattern of house work values from observed characteristics for each sample of non-workers and workers, we found out the similar results compared to the whole samples. In other words, the values of house work for both groups are

increasing as the level of education goes up. The value of house work reaches the peak at the group of ages 30 to 39 and then the level decreases as the people are getting old.

In a similar way, we present the distributions of being in labor market from the Table 3. We can find out monotonically decreasing pattern of labor market participation by the level of educational attainment through some college level. For the groups who do not have high school diploma, the proportion of individuals having jobs in the survey period is the 56.3%. The proportion of having jobs decrease for the next educational attainment but the number increases for the groups who have 4yr-college diploma. However, the difference in terms of labor market participation between high school graduate and college graduate seems to be very small.

Table 2: Distributions of House Work Values by Characteristics

Variable	Whole Sample	Non-Workers	Workers
Average of value	110.2	115.9	102.1
	(67.8)	(67.9)	(66.9)
Educational attainment			
High School Incomplete	85.8	82.5	88.5
	(59.9)	(56.6)	(62.3)
High School Graduate	112.5	115.6	106.9
	(57.5)	(55.7)	(60.2)
Some College	125.9	130.5	114.3
	(71.0)	(71.5)	(68.6)
4-Yr College Graduate	140.6	150.5	124.1
	(83.9)	(83.2)	(82.6)
Age groups			
Aged 20-29	108.8	112.8	93.4
	(59.1)	(60.1)	(52.6)
Aged 30-39	128.3	134.4	113.5
	(66.6)	(64.4)	(69.5)

Aged 40-49	116.6	121.7	111.3
	(70.9)	(75.0)	(65.8)
Aged 50-65	88.5	88.0	89.1
	(61.3)	(57.5)	(64.8)
Sample size	8,858	5,004	3,854

Notes: The standard deviations are in the parentheses. The values of house work are denoted by ten-thousand Korean Won.

Table 3: Distributions of Participation in the Work by Characteristics

Variable	Percentage
Educational attainment	
High School Incomplete	56.3
High School Graduate	35.5
Some College	27.8
4-Yr College Graduate	37.8
Age groups	
Aged 20-29	20.5
Aged 30-39	29.5
Aged 40-49	48.7
Aged 50-65	50.2
Number of kids under age 6	
0	49.4

1	25.5
2	20.0
3 or more	7.0
Sample size	8,858

Notes: The numbers are percentage of people who have jobs in the survey period.

For the aspect of age groups, we observe monotonically increasing pattern of labor market participation as individuals get older. While only 20% of the individuals whose ages are 20 to 29 years old have jobs, about 50% of the oldest groups have jobs in the survey period. Having considered the importance of women's child caring in the household, we break down the number of kids under age into 0, 1, 2, and 3 or more. As we expected, the number of young kids increases the probability of women's having jobs decreases. Compared to the household having no kids under age 6, the likelihood of being in the labor market for women having at lease one kid is less than half.

4. Labor Force Participation, Housework Values, and Wages

Before we analyze the determinants of housework values, it is informative to examine what determines married women's labor market participation. As can be seen from Table 4 and %, we conduct four different specifications. The model 1 and 2 are distinct from model 3 and 4 in the way of constructing the number of kids under age 6. While we

simply construct a variable measuring the number of kids under age 6 in the model 1 and 2, the dummy variable measuring the number of kids are employed. Other explanatory variable are included in the same way. The difference in the model 1 and 2 exists on the specification of spouse income and work. In model 1 we simply consider (continuous) spouse income as one explanatory variable but in model 2 variable measuring whether spouse participate in the labor market is controlled for. The same rules apply to the difference between model 3 and 4.

In the probit regression of labor market participation on several characteristics, we consider many possible factors which are assumed to be affecting women's decision on the participation in the labor market. The higher education women achieved the less women participate in the labor market. In order to find out the reason, it is useful to look at the positive relationship between age and labor force participation found in the regression results. The most of the old cohort (e.g., aged 50 to 65) in the sample achieved relatively much lower education than the young cohort (e.g., aged 20 to 29).[1] Having considered the effect of age and education, these two factors influence the women's labor market decision in the same direction. Again, while the level of spouse income itself does not hugely affect women's labor market participation, whether spouse have job seem to play an important role (see model 2 and 4).

Next, we focus on the effect of child caring and family formation on the married women's labor market participation. Most importantly, women having one kid under age 6 are less likely to participate in the labor market about 14% than women having no kid under age 6. In order to consider the possible non-monotonic effect of having young kids,

[1] While the average education is only 8 years for the group of age 50 to 65 years old, the number is about 13.4 years for the youngest cohort (aged 20 to 29).

we break down the number of kids under age 6 into 0, 1, and 2 or more as can be seen in the model 3 and 4. Having compared to the women having no young kids, the probability of being in the labor market for women having one young kid decreases by 17 to 18% and the probability for women having two young kids decreases by 23 to 24%. Thus, adding one more young kid to the existing one young kid decreases the probability of women's participating in the labor market by 6 to 7 %.

Table 4: Determinants of Participation in the Labor Market (Probit)

Variable	Model 1	Model 2
Years of education	-0.009** (0.003)	-0.010** (0.002)
Aged 30-39	0.109** (0.032)	0.115** (0.031)
Aged 40-49	0.175** (0.033)	0.188** (0.032)
Aged 50-65	0.190** (0.036)	0.200** (0.034)
Value of house work*10	-0.005** (0.000)	-0.004** (0.000)
Number of kids under age 6	-0.144** (0.012)	-0.136** (0.011)
Spouse income	0.000* (0.000)	No
Whether spouse work	No	0.275** (0.021)
Owns housing	-0.003 (0.015)	-0.006 (0.013)

Extended family	0.123** (0.021)	0.122** (0.013)
Location of residence	Yes	Yes
Log-likelihood	-3868.71	-4623.52
Pseudo R^2	0.1051	0.1146
Sample size	6,355	6,355

Notes: Robust standard errors are in parentheses. All of the estimated coefficients are marginal effects. The reference group of age dummy variables is less than 30 years old. The 16 dummy variables for location of residence are included as explanatory variables.

* significant at 5% level ** significant at 1% level

Table 5: Determinants of Participation in the Labor Market (Probit)

Variable	Model 3	Model 4
Years of education	-0.009** (0.003)	-0.010** (0.002)
Aged 30-39	0.108** (0.031)	0.115** (0.031)
Aged 40-49	0.165** (0.033)	0.179** (0.032)
Aged 50-65	0.177** (0.036)	0.189** (0.034)
Value of house work	-0.005** (0.000)	-0.004** (0.000)
Number of kids under age 6		
1	-0.182** (0.017)	-0.168** (0.016)
2 or more	-0.247** (0.018)	-0.229** (0.017)
Spouse income	0.000* (0.000)	No

Whether spouse work	No	0.274** (0.013)
Owns housing	-0.004 (0.015)	-0.007 (0.013)
Extended family	0.123** (0.021)	0.121** (0.020)
Location of residence	Yes	Yes
Log-likelihood	-3867.19	-4622.72
Adjusted R^2	0.1054	0.1147
Sample size	6,355	6,355

Notes: Robust standard errors are in parentheses. All of the estimated coefficients are marginal effects. The reference group of age dummy variables is less than 30 years old. The 16 dummy variables for location of residence are included as explanatory variables.

* significant at 5% level ** significant at 1% level

We examine whether living with parents enables married mothers to enter the labor market. If married women live with their own parents or law-parents, the probability of entering the labor market hugely increases. The size of effect increasing labor force participation appears to be almost same compared to the effect of caring one young kid. Our findings suggest that women who have to raise young kids are able to enter into the labor market as long as they can safely put their kids in the custody.

Following the same specification use as in the determinants of values of house work (model 1 to 4) we employed four different specifications in order to examine the determinants of housework vales. In the regression analysis, we try to incorporate many meaningful variables both in the person and household-specific aspects. For the person-specific variables, we include educational attainment, age, and location of residence. Related to the household-specific variables, we control for various factors such as

number of kids under age 6, spouse income, whether household owns housing, and whether females live in their parents and/or law-parents.

Table 6 and 7 present empirical results from the regression of value of house work (natural logarithm of monetary values) on the several observed characteristics in a variety of specifications. The educational attainment is shown to be increasing the level of house work value in the model 1 of Table 4. In the remaining models, we can find out very similar effects of educational background. For the detailed age groups, as people get older they put more high value for the house work in comparison of reference group which is aged 20 to 29 years old. However, the pattern is not monotonically increasing showing the highest values for the group of aged 40 to 49. Most importantly, the burden of caring young kids seems to play the biggest role in determining the value of house work. Compared to the females having no kids under age 6, the females with one kid tend to highly evaluate the value of their own house work by about 13 percent. From the results of model 3 and 4, the effect of the first kid is shown to be slightly higher than the effect of the second kid itself. In other words, adding one more young kid to the situation of one young kid in the household almost doubles the value of women's house work. The conceivable increased reservation wages due to child caring are expected to discourage married women from entering in the labor market.

Next, while the continuous measures of spouse income do not seem to affect the value of house work, whether spouse work in the labor market seem to affect the values of house work. If spouse has a job, it will increase the value of women's house work by 7.5 percent than spouse has no job (see model 1). This spouse work effect appears to be more severe in the model 2. For the effect of family formation, women who co-reside

their parents or law-parents tend to put less value for their own house work (see model 2 and 4). This fact suggests that if women having young kids live in the extended family they are more likely to participate in the labor market. This aspect will be examined in the following empirical analysis of determinants of participation in the labor market. One of interesting factors is that whether household owns affects the value of house work. If women live in the household owning their housing, they tend to highly evaluate their own house work. In the Korean society, it is main issue for married couples to buy their own housing and this will ultimately affect women's decision on the labor market participation.

Table 6: Determinants of House Work Values

Variable	Model 1	Model 2
Years of education	0.032** (0.003)	0.039** (0.003)
Work	-0.077** (0.018)	-0.072** (0.018)
Aged 30-39	0.224** (0.046)	0.221** (0.046)
Aged 40-49	0.266** (0.049)	0.282** (0.049)
Aged 50-65	0.192** (0.051)	0.196** (0.052)
Number of kids under age 6	0.123** (0.014)	0.125** (0.014)
Spouse income	0.002** (0.000)	No

Whether spouse work	No	0.272** (0.037)
Owns housing	0.061** (0.020)	0.075** (0.020)
Extended family	-0.034 (0.035)	-0.066* (0.035)
Location of residence	Yes	Yes
Adjusted R^2	0.1150	0.1144
Sample size	6,355	6,355

Notes: Robust standard errors are in parentheses. The reference group of age dummy variables is less than 30 years old. The 16 dummy variables for location of residence are included as explanatory variables.

* significant at 5% level ** significant at 1% level

Table 7: Determinants of House Work Values

Variable	Model 3	Model 4
Years of education	0.032** (0.003)	0.039** (0.003)
Work	-0.077** (0.018)	-0.072** (0.018)
Aged 30-39	0.225** (0.046)	0.222** (0.046)
Aged 40-49	0.272** (0.049)	0.285** (0.049)
Aged 50-65	0.198** (0.052)	0.198** (0.052)
Number of kids under age 6		
1	0.142** (0.027)	0.133** (0.028)

2 or more	0.251** (0.031)	0.256** (0.030)
Spouse income	0.002** (0.000)	No
Whether spouse work	No	0.272** (0.037)
Owns housing	0.062** (0.020)	0.076** (0.021)
Extended family	-0.034 (0.035)	-0.066* (0.035)
Location of residence	Yes	Yes
Adjusted R^2	0.1147	0.1141
Sample size	6,355	6,355

Notes: Robust standard errors are in parentheses. The reference group of age dummy variables is less than 30 years old. The 16 dummy variables for location of residence are included as explanatory variables.

* significant at 5% level ** significant at 1% level

5. Decomposition of Differences in the Value of House Work

Having controlled for the possible individuals' characteristics, it is observed that the level of house work values for workers are lower than the level of non-workers by about 7% across specifications. Even though the magnitude of difference in terms of house work values between non-workers and workers decreased, there still exists a substantial gap in terms of the evaluation of house work depending on whether females have jobs.

In this aspect, it is worthwhile to examine the pattern of determinants of house work value for each group of non-workers and workers. The empirical results are shown in the Table 8. First of all, the effect of educational level on the evaluation of house work value is shown to be relatively higher among group of non-workers. While one additional year of education tends to increase the value of house work by 4.1% for the sample of non-workers, the size of effect is about 2.7% for the sample of workers. The size of positive relationship between aged females and their evaluation of house work is shown to be higher for the sample of workers. The difference in terms of effect of having young kids between non-workers and workers does not seem to be substantial. It is interesting to observe that non-workers tend to highly evaluate their own house work if they own their housing even though this effect is not statistically significant among the sample of workers. The difference in the effects of remaining variables is shown to be minor.

Having considered the effect of observed individuals' characteristics on the house work value, we want to decompose the difference of housework values between non-workers and workers in terms of the amount of observed characteristics and their effect on the individuals' evaluation decision. We use traditional Oaxaca (1973) decomposition method in order to conduct this decomposition. Using the distributions of observed

characteristics (see Table 1) and the estimated coefficients (see Table 8), we are able to make an analysis of differences in the value of house work between non-workers and workers. The decomposition results are shown in the Table 9.

Table 8: Determinants of House Work Values between Non-Workers and Workers

Variable	Non-Workers	Workers
Years of education	0.041**	0.027**
	(0.005)	(0.004)
Aged 30-39	0.223**	0.253**
	(0.053)	(0.086)
Aged 40-49	0.200**	0.398**
	(0.061)	(0.085)
Aged 50-65	0.149**	0.298**
	(0.063)	(0.089)
Number of kids under age 6	0.117**	0.104**
	(0.016)	(0.027)
Spouse income	0.001**	0.002**
	(0.000)	(0.000)
Owns housing	0.083**	0.014
	(0.026)	(0.031)
Extended family	-0.010	-0.050
	(0.050)	(0.047)
Location of residence	Yes	Yes
Adjusted R^2	0.1328	0.0842
Sample size	3,687	2,668

Notes: Robust standard errors are in parentheses. The reference group of age dummy variables is less than 30 years old.

* significant at 5% level ** significant at 1% level

In the Oaxaca decomposition, we traditionally decompose the difference of interested variable into two components such as observed characteristics so called explained part and observed prices so called unexplained part. On the contrary to the price effect in the wage determination that is reflecting the way how labor market evaluates the workers' observed characteristics, the observed price in our estimation reflects the shadow (hedonic) price attached to housework. Therefore, the component of observed price represents the differences in the preferences of each individual towards his or her own evaluation on the house work given the same characteristics. The difference in term of observed characteristics can explain the difference of value of housework between non-workers and workers by about 56.4%. As a result, the remaining portion of 43.6% can be explained by the difference in the coefficients estimated from the determinants of the value of housework between groups.

For the category of observed characteristics, two variables such as education and number of kids under age 6 seem to play important roles in making difference in the reservation wage (i.e. housework value) between non-workers and workers. The relatively higher educational accumulation of non-workers tends to increase the values of housework. As indicated before, women having relatively higher educational attainment tend to care more about child-raising and as results they are shown to be spending much more time in the housework. In the similar reasoning, women having more young kids tend to highly evaluate for their own housework and as a result, they tend to stay in the home rather than participate in the labor market.

Table 9: Analysis of Differences in the Housework Values between Non-Workers and Workers

Component	Distribution
(1) Observed characteristics:	**0.101 (56.4%)**
Education	0.066
Age	0.003
Number of kids under age	0.048
Spouse income	0.007
Own housing	-0.008
Extended family	0.000
Location of residence	-0.015
(2) Observed prices:	**0.078 (43.6%)**
Education	0.153
Age	-0.132
Number of kids under age	0.003
Spouse income	-0.022
Own housing	0.050
Extended family	0.005
Location of residence	0.021
Difference in the housework values between non-workers and workers	**0.179 (100%)**

Notes: Estimated coefficients shown in the Table 6are used for decomposition analysis of housework values between non-workers and workers.

Next, for the category of observed prices, the education and age variables seem to play significant roles in producing the different pattern in the value of housework. However, the direction is shown to be different between those two variables. As we observed in the determinant of house work value, the effect of education on the value of housework is relatively higher among the sample of non-workers. Given the same level of education, this will lead to relatively increasing the value of house work among the sample of non-workers. In the similar way but the opposite direction, given the same level of age, the relatively higher age effect found in the sample of workers will lead to relatively decreasing the value of house work among the sample of non-workers.

Finally, we want to examine how each determinant of the housework value and wages affect the married women's decision on whether they participate in the labor market. Appendix shows the empirical results of wage regression by using the same explanatory variable used in the determinant of housework values. By combining the signs of estimated coefficients from the determinants of housework values and wages with those from the determinants of labor force participation of married women, we are able to expect what really matters for married women's decision on the labor market participation. Table 10 summarizes the signs of housework values, wages and labor market participation given each explanatory variable.

As the level of education increases, both the level of wages and housework values increase but the women's labor force participation tend to decrease. Even though as women accumulate more educational attainment their offered market wages increase as well, their reservation wages (i.e. housework value) also (more) increase resulting in lowering highly educated women's labor force participation. As women have more

young kids, their evaluation of housework increases and as results they are less likely to join in the labor market. Having considered the possibility that the formulation of reservation wages is likely to be influenced by the fact whether females have young kids in the family, it is still observed that females who have child-caring burden are less likely to participate in the labor market. This finding indicates that the child-caring is a main consideration for women's decision on whether they enter into the labor market.

For remaining explanatory variables, as spouse incomes increase, the offsetting effect is found between wages and the value of housework indicating no effect on the labor market participation. The similar pattern is also found in the variable of whether one owns housing. If married women live in the extended family, their values of housework tend to decrease and they are more likely to join in the labor market.

Table 10: Determinants of Housework Values, Wages and Labor Force Participation

Variable	Wages	Housework Values	Labor Force Participation
Education	+	+	_
Number of kids	0	+	_
Spouse income	+	+	0
House owns	+	+	0
Extended family	0	_	+

Note: If the estimated coefficients are no statistically different from zero, those are indicated as zeroes in the table.

6. Concluding Remarks

This paper attempts to find out the role of the housework values related to the married women's decision on whether they participate in the labor market. Using the unique Korean data set which contains information on the value of housework, we are able to examine how individual characteristics of working and non-working female affect the value of housework and empirically identifying factors determining the housework values of Korean married women. The study of housework value is important by itself since it plays an important role in shaping the women's reservation wage that should ultimately affect women's labor force participation.

Having controlled for the possible individuals' characteristics, it is observed that the level of house work values for workers are lower than the level of non-workers by about 7% across specifications. By using traditional Oaxaca decomposition method, we found out that the difference in terms of observed characteristics can explain the difference of housework values between non-workers and workers by about 56%. As a result, the remaining portion of 44% can be explained by the difference in the coefficients estimated from the determinants of housework values between groups which are the factors of marginal shadow pricing of housework.

The results of Oaxaca decomposition of the housework values between working and non-working female suggest that the higher levels of education increases the gap of the housework values between working and non-working female in Korea. Women having relatively higher educational attainment tend to care more about child-raising and as results they are shown to be spending much more time in the housework. In the similar reasoning, women having more young kids tend to highly evaluate for their own house

work and as a result, they tend to stay in the home. Women's burden caring for young kids emerges as an important factor for determining whether women enter into the labor market. On the contrary, the age reduces the shadow price gap between and non-working female indicating that the preference gap toward working and non-working decreases with age.

Even though as women accumulate more educational attainment their offered market wages increase as well, their reservation wages also (more) increase resulting in lowering highly educated women's labor force participation. As women have more young kids, their evaluation of housework increases and as results they are less likely to join in the labor market. Having considered the possibility that the formulation of reservation wages is likely to be influenced by the fact whether females have young kids in the family, it is still observed that females who have child-caring burden are less likely to participate in the labor market. This finding indicates that the child-caring is a main consideration for women's decision on whether they enter into the labor market.

Given that women living with parents are more likely to participate in the labor market, it is suggested that Korean society should provide more and better child caring programs so that many highly educated married women can participate in the labor market.

Appendix: Determinants of Wages among the Sample of Workers

Variable	Workers' Wages
Years of education	0.138**
	(0.012)
Aged 30-39	-0.006
	(0.125)
Aged 40-49	-0.022
	(0.125)
Aged 50-65	0.045
	(0.145)
Number of kids under age 6	0.073
	(0.049)
Spouse income	0.001**
	(0.000)
Owns housing	0.123**
	(0.059)
Extended family	0.146
	(0.093)
Location of residence	Yes
Adjusted R^2	0.2775
Sample size	1,051

Notes: Robust standard errors are in parentheses. The reference group of age dummy variables is less than 30 years old.

* significant at 5% level ** significant at 1% level

References

Bhaskar V., Manning A. and To T. (2002), Oligopoly and Monopsonistic Competition in Labor Markets, *Journal of Economic Perspectives* 16, 155-174

Bloemen and G. Stancanelli (2001), Individual Wealth, Reservation Wages, and Transitions into Employment, *Journal of Labor Economics*

Cahuc P. and Zylberberg A. (2004), Labor Economics, MA: MIT Press

Devine T. and Kiefer N. (1990), *Empirical Labor Economics: The Search Approach*, New York: Oxford Economic Press

Gray M. and Renda J. (2006), Reservation wages and the earnings capacity of lone and couple mothers, Are wage expectations too high? *Australian Institute of Family Studies* 37

Heckman, J. (1974), Shadow Prices, Market Wages and Labor Supply, *Econometrica* 42, 679-694

Jutta M. Joesch (1994), Children and the Timing of Women's Paid Work after Childbirth: A Further Specification of the Relationship, *Journal of Marriage and Family* 56, 2 429-440

Machin S. and Manning A. (2004), A Test of Competitive Labor Market Theory: The Wage Structure among Care Assistants in the South of England, *Industrial and Labor Relations Review*. 57, 371-385

Mincer J. (1962), Labor Force Participation of Married Women, In Lewis, G. (ed), *Aspects of Labor Economics,* Princeton, NJ: Princeton University Press. 63-97

Mortensen D. (2003), Wage Dispersion: Why is Similar Worker Paid Differently? MA. MIT Press

Mortensen D. (1970), Job Search, the Duration of Unemployment and the Phillips Curve, *American Economic review* 60, 846-862

Neumark D. and Postlewaite A. (1998), Relative Income Concerns and the Rise in Married Women's Employment, *Journal of Public Economics* 70, 157-183

Oaxaca R. (1973), Male-Female Wage Differentials in Urban Labor Market. *International Economic Review* 14, 693-709

OECD (2008), Employment Outlook, Paris: OECD

Ribar C. (1992), Child Care and the Labor Supply of Married Women, Reduced Form Evidence, *The Journal of Human Resources* 27, 1, 134-165

Rosenbaum E. and Gilbertson, G. (1995), Mothers' Labor Force Participation in New York City: A Reappraisal of the Influence of Household Extension, *Journal of Marriage and the Family* 57, 243-249