# Housework and Male-Female Wage Differential

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Abstract

The issue of gender wage differential in labor market has been studied extensively from the angle of human capital and discrimination. The empirical works along this line of research rarely control for the working conditions, other workplace related information variables and household work due to lacking of survey data, consequently the unexplained part of gender wage gap cannot be measured precisely. Hence, this study tries to analyze and investigate the important role of housework in explaining the male-female wage differential by employing the Panel Study of Family Dynamics (PSFD) data. In this research, using the time allocation and family utility models, we empirically test the endogeneity of housework and examine the impact of housework hours on the hourly wage of working wife within a simultaneous equations system.

The empirical results indicate that the more hours allocated to housework of working wife significantly reduce their labor market productivity and thus negatively affect their wages significantly. In addition, controlling for the hours distributed to housework can reduced the unexplained part of wage differential between male and female significantly. Finally, this study explores and provides a crucial role of household production, namely, housework in explaining the male-female wage differential and therefore, it complements the line of research of wage gap and discrimination.

*Key word:* Housework, household production, PSFD, male-female wage differential, discrimination.

**本論文爲初稿階段，請不吝指正並請勿引述。

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# 1. Introduction and Background

The issue of gender wage differential in labor market has been studied extensively from the angle of human capital theory and measurement of discrimination. Meanwhile, the empirical works accounting for the male-female wage differential rarely control for the working conditions, other workplace related information and household work due to lacking of survey data. Consequently, by controlling only for the human capital variables, the remained unexplained part of gender wage gap cannot be measured precisely and thus overstates the magnitude of discrimination against women. More time spent engaged in housework, women with less time spent in human capital investments and accumulations would have shorter employment spells and are more likely to have discontinuous working lives. Therefore, we observe that women on average tend to be overrepresented in the low paid jobs.

Recently we observe that Taiwanese females are more educated as compared to their male counterparts and thus are more likely to be engaged in higher paid jobs and industries. In Table 1, the female educational attainment is lower than their male counterpart by the year of 1993; however this female educational disadvantage is reversed since 1994. Correspondently, the male-female wage gap stays steady before 1992 and is convergent rapidly after 1996. The female to male wage ratio is 67% in 1996 and is increasing up to 75.43% in 2003 as indicated in Figure 1. Therefore, the market work productivities of Taiwan women are enhanced relatively to their male counterparts as a result of higher educational attainments on average in the past years.

Meanwhile, as shown in Figure 2, the difference between male and female workers' weekly hours of work is converged in the past decades due to the speed of

reductions in males' market worked hours is relatively faster than that of females' (Figure 2), on the one hand. On the other hand, the hours allocated to the household service by Taiwanese women are decreased over time. According to the surveys conducted by the DGBAS, Executive Yuan, 「Women's Marriage, Fertility and employment」report daily time spent on housework is 6.22 hours in 1993 and 5.35 hour in 2000 for women with age 15 to 64, on average. In sum, changes in the social norm along with raises in females' average educational attainment and enhancement of female labor market productivity bring up the observed reductions in hours of housework as a result of released Taiwanese women from the family responsibilities.

Therefore, should we still account for the unexplained gender wage gap as a large percentage as before or should we reevaluate the unexplained gap by controlling for the housework in the estimation. To answer this question, there are two propositions to be proposed in this respect. The first proposition in this study is「The wife's time contributed to market work is an increasing function of her marginal product in market if substitution effect dominants income effect」, and the second one is that 「The housework hours of wife and husband are substitute in the process of home production. Husband's housework time is an increasing function of wife' comparative advantage in market work」. Accordingly, the purpose of this study is three folds. First, the simultaneous relationships between hours of work, time allocated to the market activities are considered as we estimate wages functions for both employed couples. In addition, decisions of time allocation for husband and wife would be analyzed by examining the two propositions empirically. Finally, decomposition analyses will be applied to further elucidate the unexplained gender wage gap and emphasize the importance of housework.

This section is introduction of motivations and backgrounds of this study. Section 2 reviews the existing literature. The theoretical models, and comparative

static analyses are stated in Section 3. Section 4 provides the explanations on the econometric issue, source of data and variables in use. Finally, the last section briefly ties the threads together and concludes this study.

## 2. Existing Literature

Hersch (1991) points out that an unexplained wage gap remains because the data sets in use do not contain adequate information on all productivity-related characteristics. To account for these productivity-related properties, Hersch (1991) focuses on the simultaneous relationships between human capital, working condition, and household responsibilities, as well as relevant individual characteristics as estimating the wage equations. By using a data set containing detailed working conditions in wage function estimation and analyzing the decomposition results, Hersch (1991) finds that including working conditions variables decreases that proportion unexplained by both human capital and individual characteristics. However, the marital status and household responsibilities explain a relatively minor proportion of the wage gap.

Hersch and Stratton (1994) study on the time allocation decisions for employed spouses. Their research work evidence that time spend on housework has a negative effect on wages, an effect which is most pronounced for women. In addition, they find that husband do less housework than their wife as their relative earnings and hours spent in the labor market increase. With the Panel Study of Income Dynamics (PSID) data set in use, Hersch and Stratton (1997) consider the possible endogeneity of housework time; however, the result of Hausman test indicates that housework is exogenous. Hersch and Stratton (1997) documents that inclusion of housework time to the wage equation increase the explained component of the gender wage gap from

27-30 percent to 38 percent. Unlike Hersch (1991), the main findings in Hersch and Stratton (1994, 1997) suggest that time spent on housework in the wage equation reduces the unexplained portion of the gap considerably and the importance of differential household responsibilities extends far beyond their impact on observed human capital investment.

In addition, in Hersch and Stratton (2002) utilizes the National Survey of Families and Household (NSFH) data set to document that inclusion of housework time in the wage equation increases the explained component of the gender wage gap by about 14 percentage points. In sum, as it evidences from Hersch and Stratton (1997, 2002) that the time spent on housework service by husband and wife has significant negative effects on husband's and wife's wages and thus it plays an important role in explaining the gender wage differential with substantial portion. Therefore, it still left a large room for an expansion in the research of gender wage differential in the future.

# 3. Model Methodology and Data

## 3.1 Theoretical Model

In the standard microeconomic model of the time allocation, we assume that both husband and wife derive utility from composite consumption goods (CC) purposed from the market with price of $\mathbf{p}_{cc}$, and goods produced within the household (G) via housework contributed by husband and wife. Meanwhile, husband and wife can get utility from allocating their time on leisure ($L_M$, $L_W$), respectively. Thus the household utility can be constructed in the following：

$$U = U\left(\mathbf{CC}, \mathbf{G}, \mathbf{L}_M, L_W\right),$$

the subscript M and W in the household utility indicating husband and wife, respectively.

According to Becker (1965) framework, the home production function can be expressed as：

$$\mathbf{G} = \mathbf{G}\left(\mathrm{X}_{\mathbf{G}}, \mathbf{H}_{\mathbf{M}}, \mathbf{H}_{\mathrm{W}}\right),$$

where $\mathrm{X}_{\mathbf{G}}$ is the input of the home production and purchased in the market with price of $\mathrm{P}_{\mathrm{x}_{\mathrm{G}}}$. $\mathbf{H}_{\mathbf{M}}$ is the hours of housework contributed by husband, similarly, $\mathbf{H}_{\mathrm{W}}$ is hours input by wife for the purpose of household service. The time constraints for husband and wife can be expressed as follows:

$$\mathrm{T}_{\mathbf{i}} = \mathbf{L}_{\mathrm{i}} + \mathbf{H}_{\mathbf{i}} + \mathbf{M}_{\mathbf{i}}, \qquad \mathrm{i} = \mathrm{M}, \mathrm{W}.$$

The total time, $\mathrm{T}_{\mathbf{i}}$, is a fixed resource and is allocated among three uses: leisure ($\mathbf{L}_{\mathbf{i}}$), housework service ($\mathrm{H}_{\mathrm{i}}$), and market activities ($\mathrm{M}_{\mathrm{i}}$) which is rewarded as $\mathrm{W}_{\mathrm{i}}$. Since we focus on the employed couples, wife's hours of work are greater than zero. Meanwhile, the budget constraint of the family is as follows:

$$\mathrm{P}_{\mathbf{CC}}\mathbf{CC} + \mathrm{P}_{\mathbf{X}_{\mathbf{G}}}\mathbf{X}_{\mathbf{G}} \le \mathrm{W}_{\mathrm{M}}\mathbf{M}_{\mathrm{M}} + \mathrm{W}_{\mathrm{W}}\mathbf{M}_{\mathrm{W}} + \mathrm{V} = \mathrm{I}, \quad \mathbf{M}_{\mathrm{W}} \ge 0$$

where V is the nonlabor income and the I is the total family income.

Therefore, the maximization of family utility can be formed as:

$$\max \mathrm{U} = \mathrm{U}\left(\mathbf{CC}, \mathbf{G}, \mathbf{L}_{\mathrm{M}}, \mathrm{L}_{\mathrm{W}}\right) \qquad (1)$$

$$\textbf{s.t.} \quad \mathbf{G} = \mathbf{G}\left(\mathrm{X}_{\mathbf{G}}, \mathbf{H}_{\mathbf{M}}, \mathbf{H}_{\mathrm{W}}\right) \qquad (2)$$

$$\mathrm{T}_{\mathbf{i}} = \mathbf{L}_{\mathrm{i}} + \mathbf{H}_{\mathbf{i}} + \mathbf{M}_{\mathbf{i}}, \ \mathrm{i} = \mathrm{M}, \ \mathrm{W}. \qquad (3)$$

$$\mathrm{P}_{\mathbf{CC}}\mathbf{CC} + \mathrm{P}_{\mathbf{X}_{\mathbf{G}}}\mathbf{X}_{\mathbf{G}} \le \mathrm{W}_{\mathrm{M}}\mathbf{M}_{\mathrm{M}} + \mathrm{W}_{\mathrm{W}}\mathbf{M}_{\mathrm{W}} + \mathrm{V} = \mathrm{I}, \quad \mathbf{M}_{\mathrm{W}} \ge 0, \qquad (4)$$

After some rearrangements and manipulations, we can derive the utility maximization as in the following:

$$\max \mathrm{U} = \mathrm{U}\left(\mathbf{CC}, \mathbf{G}, \mathbf{L}_{\mathrm{M}}, \mathrm{L}_{\mathrm{W}}\right)$$

$$\text{s.t. } \mathrm{P}_{\mathbf{cc}}\mathrm{CC} + \mathrm{P}_{\mathrm{G}}^{*}\mathrm{G} + \mathrm{W}_{\mathrm{M}}\mathrm{L}_{\mathrm{M}} + \mathrm{W}_{\mathrm{W}}\mathrm{L}_{\mathrm{W}} \le \mathrm{W}_{\mathrm{M}}\mathrm{H}_{\mathrm{M}} + \mathrm{W}_{\mathrm{W}}\mathrm{H}_{\mathrm{W}} + \mathrm{V} = \mathrm{I}_{\mathbf{F}},$$

$$\mathbf{M}_{\mathrm{W}} \ge 0,$$

where $I_F$ is full income and $\mathbf{p}_{\mathbf{G}}^{*}$ is the shadow price of home production goods. Then we can solve the constrained utility maximization problem by deriving the first order conditions and by applying the Kuhn-Tucker condition. The optimal time allocation in terms of reduced from presentation for housework, market activity, and leisure of a married couple can be expressed as follows:

$$H_i^* = H_i\left(W_i, W_i, V, P_{CC}, P_{X_G}\right), \qquad (5)$$

$$M^*_i = M_i\left(W_i, W_i, V, P_{CC}, P_{X_G}\right), \qquad (6)$$

$$L^*_i = L_i\left(L_i, L_i, V, P_{CC}, P_{X_G}\right), \quad \text{i =M, W.} \qquad (7)$$

## 3.2 Comparative Statics

This section focuses on the comparative statiscs analysis for the changes in husband's and wife's time allocation decisions within a household due to an increase in the wife's wage, as the optimal solution to the maximization problem is given by equations (5) to (7).

**Proposition 1**: The wife's time contributed to market work is an increasing function of her marginal product in market if substitution effect dominants income effect such that

$$\frac{\partial M_w}{\partial W_W} > 0.$$

$W_W$ is assumed to be the wife's marginal product of market activities, correspondently the marginal product of wife's housework is defined as $\partial G/\partial H_W = MP_W^H = G_W$. Under the assumption that leisure is normal, an increase in the marginal product of market activities of wife rises the time allocating to the market work if substitution effect dominants income effect due to an improvement in wife's wage rate and thus reduces the hours contributed to the household work. Therefore, a change in wife's time allocation decision as a result of a change in wage rate mainly via substituting market worked hours for housework time if we observe a significant raise in wife's market working hours. Wife's comparative advantage in labor market work can be defined as the ratio of marginal product of market activity to marginal product of housework, $(W_W/G_W)$, accordingly we propose the following proposition 2.

**Proposition 2**: The housework hours of wife and husband are substitute in the process of home production. Husband's housework time is an increasing function of wife' comparative advantage in market work such that

$$\frac{\partial H_m}{\partial (W_W/G_W)} > 0 .$$

Hence, given marginal product of wife's housework, the model predicts that an increase in wife's comparative advantage in market work induces wife allocates more time to market activity and less time to housework hours. In turn, that will substitute husband's hours contributed to the household work for leisure if we observe there is no significant changes in husband's market worked hours.

# 4. Econometric Issues and Data

## 4.1 Econometric Issues

***Estimation on Joint Time Allocation Decisions for Husband and Wife***

To estimate the hours spent on housework and market activities simultaneously and consider the joint time allocation decisions made by employed couples are very different than those of employed husband with nonworking wife, we utilize the seemly unrelated regressions (SUR) estimation with switching mechanism to distinguish two different regimes describing joint allocation decisions for husband with working and nonworking wife.[1]

***Endogeneity of Housework and Heckit Two-Stage Estimation on Wage Functions***

As inferences from the human capital theory that an individual spent more time in housework, less time input in human capital investments and accumulations would lessen the employment spells and is more likely to have discontinuous working lives and a lower wage rate, on the one hand. On the other hand, an individual with a lower wage profile tend to have lesser opportunity costs spent on nonmarket activities. Therefore, to disentangle and identify the direct effect of housework on wage functions for employed husband and wife, the Hausman tests are implemented in wage regressions in this respect to examine the exogeneity of housework. If the result of Hausman test indicates that hours spent on housework for husband and wife are endogenous, then the predicted values instead of true values of housework would be imputed into wages regressions.

Since all husband participate in the labor market activities in our sample, we can just apply the OLS estimation on husband's wage functions. However, the labor force participation rate of wife in pooling, short panel I and short panel II data sets ranges from 50% to 72%, applying OLS estimation to wife's wage functions directly

[1] The relation between hours spent on housework, market work and leisure is constructed by the time constraint.

would result in inconsistent estimation results due to regress wages functions with non-random sample. By applying Heckit two-stage estimation (Heckman, 1979) method, we estimate the wife's labor force participation decision at the first stage and derive the Heckman's lambda and correct the sample selection bias in the augmented wage regressions with working sub-sample in use at the second stage. If the selection bias is not a serious problem in the estimation as we note that the estimated coefficients on Heckman's lambda in wage regressions are not significant, then we apply the OLS estimation directly on the wife's wage regressions.

***Decomposition of Wage Equations and Remained Unexplained Wage Gap***

According to the framework of wage differential decomposition analysis proposed by Blinder (1973) and Oaxaca (1973), the gender wage gap mainly can be decomposed and characterized by two parts. The differences in average characteristics of male-female workers account for the explained difference in wage gap. The second part of the gap is the unexplained part of the wage gap and become a measure for the discrimination. Accordingly, this formula can be expressed in the following,

$$\ln \hat{W}_m - \ln \hat{W}_w = \hat{\beta}_m(\bar{X}_m - \bar{X}_w) + \bar{X}_w(\hat{\beta}_m - \hat{\beta}_w), \quad (8)$$

or

$$\ln \hat{W}_m - \ln \hat{W}_w = \hat{\beta}_w(\bar{X}_m - \bar{X}_w) + \bar{X}_m(\hat{\beta}_m - \hat{\beta}_w). \quad (9)$$

The difference between equation (8) and (9) is the weights used for decomposition. Instead of using the husband's coefficient and husbands' average characteristics as the weight in equation (8), equation (9) employs the wife's coefficient and their average characteristics. The regression estimations and calculations would apply on equation (8) and (9) with and without controlling for time allocated to the household

responsibilities, which is described by own housework, and spouse's housework time in our regressions. Therefore, we can derive the difference between the results of wage gap decomposition with and without controlling for the time allocated to housework. Meanwhile, the remained unexplained wage gap (discrimination) with controlling for the housework time would be compared to that of without controlling for housework time.

## 4.2 Source of Data and Sample Characteristics

The data sets employed in this study are 1999 and 2000 Panel Study of Family Study (PSFD) conducted by the Research Center of Humanities and Social Science and its research program named as「Program for the Study of Family Dynamics in Chinese Societies」. The main respondents' birth year for the 1999 Survey and 2000 Survey range from 1953 to 1964 and 1935 to 1954, respectively. These two data sets, therefore, are named as RI1999 and RI2000. Due to the core respondents in RI1999 and RI2000 are interviewed every year, the follow-up survey of the first wave RI1999 conducted in 2000 is named as RII2000. Similarly, the follow-up survey for RI2000 is called as RII2001.

These data sets contain the basic information regarding education and work experience, marital status and spouse's information, attitude and traditional values of filial piety, information of relatives, decision of living arrangements and household expenditures, family relationships and accordance, and parenting practices. For more detail information, please refer to Chang and Chu（2001）.

According to the natures of the Survey data, we can construct a pooling data set (pooling data) containing two cross sectional data sets RI1999 and RI2000 with birth cohort range from 1935-1964. Meanwhile, we construct two short panel data sets by

taking an advantage of connection between major and follow-up Surveys. The first short panel data set (short panel I) contains RI1999 and RII2000 and the main respondents' birth cohort ranged from 1935-1954, the second short panel data set (short panel II) connects RI2000 and RII2001 with birth cohort ranged 1935-1964. Before applying the selection rules, RI1999 and RI2000 contain 994 and 1959 observations, respectively. A several sample selection criterions are available. We select married couples and delete the nonworking males from the samples, and restrict population with age under 65 years old.[2] After deleting missing values, the sample size is 1644 for the pooling data set, 508 and 769 for the short panel I and short panel II, respectively.

As shown by the description statistics in Table 2, the average age of married couples in the short panel II is older and both husband and wife are aged above 50 years old. Husband and wife in short panel I are 10 years younger than those in short panel II on average. The short panel II contains older birth cohort and therefore, husband and wife are less educated, with lower wage rates, less market worked hours, and with larger number of children as compared to their counterparts in pooling data set and short panel I. Meanwhile, the percentage of wife participating in the labor market activities is higher in short panel I (72%) than those in short panel II (50%) and in pooling data set (59%).

Given the short panel II data set containing older birth cohort with lower working hours than those younger cohort contained in short panel I and pooling data sets, the hours spent on housework by husband and wife do not change substantially as the data sets vary. In these data sets, wife's housework hours are about 3.65 to 3.87

[2] Before applying the selection rule, the percentage of nonworking males in RI1999 and RI2000 is only 0.1% and 0.6%, respectively.

times as many as those of husband, on average. Therefore, we might infer that the younger cohorts may have less time spent on leisure as compared to their older counterparts. Potentially, they might substitute hours spent on market activities for leisure as wage rate increases.

The statistics in Table 3 describe the characteristics of employed married couples. The average characteristics for the husband and wife in Table 2 and Table 3 do not vary too much except for the job-related characteristics and time allocation results. Basically, the distributions of and differences in characteristics for husband and wife among three data sets in Table 3 are similar to those in Table 2. However, employed husband and wife are more educated, working longer hours in labor market, with higher wage rates, tend to work in city and with less number of children. Most of all, hours spent on housework for husband and wife vary little between different data sets but they change substantially within a data set as compared the housework time in Table 2 to those in Table 3. The ratios of hours spent on housework of wife to that of husband vary slightly from 2.95 to 3.24 in Table 3 and these ratios are smaller than those in Table 2. It implies that employed wife with higher wage rates spend less time on housework on average, on one hand. On the other, husband with the working wife spend more hours on housework than those with nonworking wife's counterparts.

# 5. Empirical Results

***Endogeneity of Housework time within Wage Function***

As shown in Table 4, there are five out of six estimated coefficients on the predicated value of housework are significant.[3] Therefore, the results of Hausman test indicate

[3] To test the endogeneity of a variable *X*, for example, one way of implementing Hausman test is to

that, except for the wife's pooling data set, time spent on housework are endogenous in wife's short panel I and II data sets and in all the husband's data sets as well. Hence, the predicted values of housework time instead of true values are plugged into these wage regressions.

The results of SUR estimation for time allocation of wife and husband are shown in Table 5. Basically, age and spouse age do not have significant effect on wife's or husband's allocation decisions. Education influence wife's housework in an insignificant way, except for the estimation in short panel II. On the contrary, education has a significantly negative effect on wife's market work, and this implies that wife with a higher educational attainment tend to be more productive and more likely to have a job in an occupation or an industry with highly flexible working hours. Therefore, in a regression with controlling for the same variables, that we observe a high-educated wife has less working hours than those low-educated counterparts. Number of children has no significant effect on both wife's and husband's hours of work, except for the husband's market work in the regression estimation with pooling data. In this pooling estimation, husband has to work harder in order to afford to raise greater number of children. Moreover, we find that the number of children have an asymmetric effect on wife's and husband's housework. As shown in Table 5, a greater number of children increases wife's household work significantly but it is has no effect on husband's housework at all. In addition, within household the children age 13 to 18 have divergent effect on wife's and husband's household work time. Within a household, children who least 18 years old might help their parents to do the housework, therefore, it affects mothers' and fathers' housework in a negative

include both true and predicated values of variable *X* in the same regression, and examine the significance of predicated value of variable *X*, please refer to Spencer and Berk (1981), Berndt (1991), and Pindyck and Rubinfel (1997).

way and lessen their housework time.

***An increase in Marginal Product in Market Reduce Wife's Hours of Housework and Lifts up her Time spent in Market Work***

Most of all, we find that an increase in wife's wages rise their time allocated to the market work significantly, and this improvement in wife's productivity in market work thus reduce time spent on housework significantly. Under normality assumption of leisure, a significant raise in wife's market hours of work in the empirical work implies that a change in wife's time allocation decision as a result of an increase in wage rate mainly via substituting her market working hours for housework time. Therefore, it supports the proposition 1 proposed in this research. Meanwhile, this empirical result evidence Hersch and Stratton (1993, 1994) finding that a negative relation between own labor-market hours and own housework time.

***Housework Hours of Wife and Husband are Substitute in Home Production***

While changes in wife's wages have no significant effect on husband's market work, an increase in wife's wages does bring up husband's housework time significantly in the estimation of short panel I but has no significant effect in the pooling data and short panel II in Table 5. Therefore, we find that increases in wife's wages improve wife's comparative advantage in market work, thus lift up the economic independence and bargaining power of wife, in turn, that induces husband spends more time on housework significantly within household in a young-cohort data set.[4] However, an increase in wife's wage on husband's housework time is mixed in the old-cohort data set, such as the estimation results in pooling data and short panel II

[4] The married couples in short panel I are younger as discussed in section 4.2.

data sets. It might be possible that the younger cohort is less bound by Chinese traditional family responsibilities as compared to their older cohort counterparts, therefore, husband's bargaining position is relatively weaken by an improvement in wife's marginal product in market and as a result we observe a significant raise in husband's housework hours.

Meanwhile, wife's wage raised have no significant effect on husband's time spent in market work empirically, and this might imply that husband substitutes his hours contributed to the household work for leisure, given that we observe there is no significant changes in husband's market worked hours. Empirically, housework hours of wife and husband are substitute in the process of home production and it evidences that husband's housework time is an increasing function of wife's comparative advantage in market work. Hence, the empirical result partially supports the proposition 2.

In sum, two propositions proposed in this research are supported by the empirical results and fit into the suggestions by the theories of bargaining and human-capital models. These empirical evidences documented from Taiwanese family data show that, within the bargaining and the human capital frameworks, the changes in the time allocation decisions of younger-cohort couples are different than those of older counterparts as they face the spouse' wage change

***The Negative Impact of Housework Time on Wife's and Husband's Wages***

The reported wage regressions in Table 6 are the results of OLS estimation due to the insignificant of Heckit lambda's in the wife's wage function regressions in three data sets[5]. The variables, such age, age squared, education, affect the wage as

[5] The labor force participation and wage regressions results for wife are available from author under

predicted by the human capital theory. Spouse's education has a positive effect on wage and it will have a positive effect on her (his) wage if she (he) works in the city. Meanwhile, we find that the housework has negative impact on wages as suggested by the research work of Hersch and Stratton (1993, 1994). Asymmetrically, husband's housework time has a significant but mixed effect on wife's wage; wife's housework has no significant effect on husband's wage at all in the pooling data.

***Results of the Wage Decomposition and the Role of Time Allocated to Housework***

The wage decomposition results with and without controlling for time allocated to housework are listed in Table 7.[6] With controlling for the housework time, the wage gap explained by the difference in the average characteristics between males and females is over 83% in the pooling data. Whereas, without consideration of the time allocated to housework, the gap contributed to the difference in the average characteristics between males and females is 29.855%, and the unexplained portion of the gender wage gap is about 70% in the pooling data. The difference in the average characteristics for human capital component between males and females can explain 5%~7% of the wage gap (in equation a and c) in the pooling data. However, the explained portion of human capital components are raised in the short panel 1 data set (equation. b and d) and they are 35.130% and 14.178% for with controlling and without controlling for the time allocated to housework, respectively. This estimation results are similar to the suggestion in Hersch(1991). However, the difference in average individual characteristics between males and females makes a higher contribution to wage difference between males and females in our study than

request.

[6] The computations are very time consuming and costly, only the results for pooling data and short panel 1 are reported in the stage. A completed report which contains pooling data and two short panel is available from author after conference under request.

those in Hersch(1991). Job characteristics take a relative small portion of explanation to the wage gap in pooling data than those in short panel.

Most of all, the difference in average housework time between husbands and wives explain the wage gap up to about 50% in pooling data and 26% in the short panel data set. As a consequence, with controlling for the time allocated to household work, the remained unexplained wage gap is reduced largely both in pooling data and short panel data sets. This empirical results evidence the importance of household responsibilities in the estimation of males and females wage functions.

# 6. Conclusions

Under a utility maximization scheme and with the a simultaneous framework estimation for time allocated to housework, market work, and wage functions both for husband and wife, we capture the important role of household responsibilities as we estimate and decompose the gender wage gap. Unlike previous works, we find that housework time is endogenous in the wage function, and SUR estimation technique is applied for the joint estimation on housework time and time allocated to market work.

Within this study, we find that an increase in wife's wages rise their time allocated to the market work significantly, and this improvement in wife's productivity in market work thus reduce time spent on housework significantly. Under normality assumption of leisure, a significant raise in wife's market hours of work in the empirical work implies that a change in wife's time allocation decision as a result of an increase in wage rate mainly via substituting market working hours for housework time. Therefore, it supports the proposition 1 proposed in this research. Meanwhile, this empirical result evidence Hersch and Stratton (1993, 1994) finding

that a negative relation between own labor-market hours and own housework time. In addition, housework hours of wife and husband are substitute in the process of home production and it evidences that husband's housework time is an increasing function of wife's comparative advantage in market work.

As documented by the research works along this line, this empirical work evidences that the negative impact of housework time of wife's and husband's wages. Essentially, household responsibilities play an important role in explaining the gender wage differential and reduce the unexplained portion of wage gap and the "discrimination" as well.

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## Table 1 Employee's Average Educational Attainments in Taiwan by Gender

| year | Male | Female |
|---|---|---|
| 1978 | 8.40 | 8.23 |
| 1979 | 8.54 | 8.42 |
| 1980 | 8.55 | 8.53 |
| 1981 | 8.72 | 8.73 |
| 1982 | 8.80 | 8.85 |
| 1983 | 9.00 | 8.85 |
| 1984 | 9.12 | 9.00 |
| 1985 | 9.10 | 8.97 |
| 1986 | 9.20 | 9.02 |
| 1987 | 9.40 | 9.29 |
| 1988 | 9.57 | 9.47 |
| 1989 | 9.69 | 9.58 |
| 1990 | 9.79 | 9.74 |
| 1991 | 9.83 | 9.78 |
| 1992 | 10.01 | 9.94 |
| 1993 | 10.12 | 10.08 |
| 1994 | 10.20 | 10.22 |
| 1995 | 10.36 | 10.39 |
| 1996 | 10.54 | 10.55 |
| 1997 | 10.67 | 10.74 |
| 1998 | 10.79 | 10.92 |
| 1999 | 10.96 | 11.04 |
| 2000 | 11.03 | 11.21 |
| 2001 | 11.14 | 11.36 |
| 2002 | 11.42 | 11.46 |
| 2003 | 11.42 | 11.59 |

Source: Calculations from the DGBAS, Manpower Survey Report.

Note: year of education = (number of people with primary school diploma*6+ number of people with junior high school diploma*9 + number of people with senior high school diploma*12 + number of people with college diploma*14 + number of people with bachelor degree*16) / total number of employees.

**Table 2 Means and Standard Deviations for Variables**

| Variable | Pooling | | Short Panel I | | Short Panel II | |
|---|---|---|---|---|---|---|
| | husband | wife | husband | wife | husband | wife |
| Age | 48.76 | 45.31 | 43.73 | 40.48 | 54.82 | 51.05 |
| | (7.65) | (7.45) | (4.72) | (4.39) | (5.47) | (5.97) |
| Education | 10.35 | 9.10 | 11.74 | 11.03 | 8.94 | 7.27 |
| | (4.44) | (4.50) | (3.83) | (3.68) | (4.51) | (4.56) |
| Labor force | 1.00 | 0.59 | 1.00 | 0.72 | 1.00 | 0.50 |
| participation rate | (0.00) | (0.490 | (0.00) | (0.45) | (0.00) | (0.50) |
| Weekly working hours | 48.13 | 26.92 | 49.41 | 34.16 | 41.76 | 21.08 |
| | (17.87) | (26.01) | (16.88) | (25.58) | (39.59) | (31.75) |
| Weekly wage rate | 2.19 | 0.99 | 2.38 | 1.30 | 1.77 | 0.70 |
| | (0.94) | (1.08) | (0.73) | (1.08) | (1.13) | (1.01) |
| Work in City | 0.30 | 0.21 | 0.28 | 0.26 | 0.10 | 0.11 |
| | (0.46) | (0.41) | (0.45) | (0.44) | (0.30) | (0.31) |
| Housework | 5.29 | 20.47 | 5.49 | 20.03 | 5.85 | 21.65 |
| | (8.37) | (14.99) | (7.98) | (14.19) | (8.26) | (14.85) |
| 1999 housework time | --- | | 5.22 | 18.90 | --- | --- |
| | | | (7.27) | (13.47) | | |
| 2000 housework time | --- | | --- | | 5.89 | 21.40 |
| | | | | | (10.16) | (15.75) |
| Home owner | 0.80 | | 0.74 | | 0.01 | |
| | (0.40) | | (0.44) | | (0.10) | |
| Number of children | 2.80 | | 2.45 | | 3.08 | |
| | (1.09) | | (0.91) | | (1.10) | |
| Kid' age is less than 6 | 0.12 | | 0.22 | | 0.01 | |
| | (0.33) | | (0.42) | | (0.09) | |
| Kid's age is 7-13 | 0.28 | | 0.48 | | 0.06 | |
| | (0.45) | | (0.50) | | (0.23) | |
| Kid's age is 13-18 | 0.38 | | 0.52 | | 0.21 | |
| | (0.49) | | (0.50) | | (0.41) | |
| Kid's age is above 18 | 0.60 | | 0.33 | | 0.91 | |
| | (0.49) | | (0.47) | | (0.29) | |
| Sample size | 1466 | | 508 | | 769 | |

**Table 3 Descriptions Statistics for Variable of Employed Couples**

| Variable | Pooling | | Short Panel I | | Short Panel II | |
|---|---|---|---|---|---|---|
| | husband | wife | husband | wife | husband | wife |
| Age | 47.74 | 44.18 | 43.77 | 40.50 | 54.04 | 50.12 |
| | (7.24) | (6.80) | (4.70) | (4.33) | (5.48) | (5.79) |
| Education | 10.95 | 9.89 | 12.19 | 11.42 | 9.01 | 7.72 |
| | (4.50) | (4.50) | (3.79) | (3.63) | (4.64) | (4.78) |
| Weekly working hours | 48.56 | 45.49 | 49.60 | 46.46 | 43.48 | 34.11 |
| | (17.58) | (17.19) | (16.50) | (16.34) | (44.09) | (36.25) |
| Weekly wage rate | 2.23 | 1.67 | 2.42 | 1.79 | 1.80 | 1.22 |
| | (0.93) | (0.90) | (0.72) | (0.86) | (1.14) | (1.11) |
| Work in City | 0.32 | 0.35 | 0.30 | 0.33 | 0.11 | 0.19 |
| | (0.47) | (0.48) | (0.46) | (0.47) | (0.31) | (0.39) |
| Housework | 5.48 | 16.47 | 5.54 | 16.37 | 5.84 | 18.95 |
| | (7.24) | (11.39) | (6.86) | (11.30) | (8.39) | (13.10) |
| 1999 housework time | --- | | 5.59 | 16.35 | --- | |
| | | | (7.47) | (10.39) | | |
| 2000 housework time | --- | | --- | | 5.83 | 17.17 |
| | | | | | (8.79) | (12.51) |
| Home owner | 0.80 | | 0.75 | | 0.01 | |
| | (0.40) | | (0.43) | | (0.11) | |
| Number of children | 2.66 | | 2.43 | | 2.95 | |
| | (1.04) | | (0.92) | | (1.06) | |
| Kid' age is less than 6 | 0.14 | | 0.21 | | 0.01 | |
| | (0.35) | | (0.41) | | (0.07) | |
| Kid's age is 7-13 | 0.31 | | 0.47 | | 0.07 | |
| | (0.46) | | (0.50) | | (0.26) | |
| Kid's age is 13-18 | 0.44 | | 0.53 | | 0.26 | |
| | (0.50) | | (0.50) | | (0.44) | |
| Kid's age is above 18 | 0.55 | | 0.33 | | 0.88 | |
| | (0.50) | | (0.47) | | (0.33) | |
| Sample size | 859 | | 368 | | 387 | |

**Table 4 Hausman Tests on the Household Work[a,b,c]**

| variable | Wife | | | Husband | | |
|---|---|---|---|---|---|---|
| | Pooling | Short Panel I | Short Panel II | Pooling | Short Panel I | Short Panel II |
| Constant | -0.534 | -1.077 | -3.584 | -1.789** | 1.490 | -21.180*** |
| | (0.421) | (0.675) | (0.197) | (0.023) | (0.575) | (0.000) |
| Age | 0.046 | -0.017 | 0.275*** | 0.088** | 0.034 | 0.878*** |
| | (0.144) | (0.857) | (0.000) [7] | (0.045) | (0.716) | (0.000) |
| Age squared | -0.037 | 0.044 | -0.288*** | -0.088** | -0.035* | -0.754*** |
| | (0.273) | (0.721) | (0.000) | (0.047) | (0.733) | (0.000) |
| Spouse age | 0.011 | 0.084 | -0.095 | 0.069* | -0.047 | 0.007 |
| | (0.773) | (0.356) | (0.395) | (0.064) | (0.645) | (0.901) |
| Spouse age squared | -0.014 | -0.078 | 0.101 | -0.082** | 0.065 | -0.053 |
| | (0.705) | (0.442) | (0.325) | (0.042) | (0.614) | (0.374) |
| Education | 0.057*** | 0.041*** | 0.090*** | 0.044*** | 0.033*** | 0.049*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.000) |
| Spouse education | 0.038*** | 0.047*** | 0.023*** | 0.050*** | 0.054*** | 0.072*** |
| | (0.000) | (0.000) | (0.002) | (0.042) | (0.000) | (0.000) |
| Home owner | 0.096** | 0.018 | -0.523** | 0.182*** | 0.012 | 0.315 |
| | (0.035) | (0.793) | (0.040) | (0.001) | (0.863) | (0.202) |
| Work in City | -0.196*** | 0.154** | 0.209*** | 0.129*** | 0.029 | 0.159** |
| | (0.000) | (0.030) | (0.009) | (0.005) | (0.666) | (0.046) |
| Housework | -0.001 | 0.8E-04 | -0.001 | -0.3E-03 | 0.8E-04 | 0.9E-04 |
| | (0.442) | (0.973) | (0.653) | (0.881) | (0.983) | (0.975) |
| Predicated value for Housework | -0.003 | -0.025*** | -0.031*** | -0.122*** | -0.021** | -0.390*** |
| | (0.196) | (0.000) | (0.000) | (0.000) | (0.022) | (0.000) |
| R-squared | 0.256 | 0.310 | 0.562 | 0.322 | 0.180 | 0.673 |
| [adj R-squared] | [0.251] | [0.296] | [0.557] | [0.317] | [0.164] | [0.669] |
| Sample size | 1466 | 508 | 769 | 1466 | 508 | 769 |

a. Dependent variable is the log of hourly wage.
b. P-values are reported in parentheses.
c. The pooling data indicates the RI1999 and RI2000 data sets. The short panel I indicates the RI1999and RII2000 data set and the short panel II represents the RI2000and RII2001.

*, **, and *** indicate significance at the 1 percent, 5 percent, and 10 percent level, respectively.

**Table 5 SUR Estimation for Time Utilization of Wife and Husband**

| Variables | Wife | | | | | | Husband | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Market Work | | | Housework | | | Market Work | | | Housework | | |
| | Pooling | Short Panel I | Short Panel II | Pooling | Short Panel I | Short Panel II | Pooling | Short Panel I | Short Panel II | Pooling | Short Panel I | Short Panel II |
| Constant | 38.369 | -19.633 | 57.544 | 24.105 | -75.775 | 1.982 | 42.629 | 48.188 | 142.726 | 3.924 | 3.451 | -45.205 |
| | (0.157) | (0.802) | (0.744) | (0.176) | (0.173) | (0.978) | (0.131) | (0.537) | (0.489) | (0.735) | (0.917) | (0.359) |
| Age | 1.938* | 3.372 | -3.571 | -0.878 | 1.128 | 4.148** | 1.533 | 1.020 | -3.263 | 0.051 | 1.502 | 0.353 |
| | (0.094) | (0.264) | (0.384) | (0.249) | (0.599) | (0.014) | (0.246) | (0.690) | (0.695) | (0.924) | (0.167) | (0.859) |
| Age squared | -2.358* | -4.582 | 3.577 | 1.054 | -1.131 | -4.172** | -1.700 | -1.568 | 2.852 | 0.031 | -1.729 | -0.190 |
| | (0.065) | (0.239) | (0.382) | (0.210) | (0.682) | (0.014) | (0.207) | (0.581) | (0.710) | (0.955) | (0.153) | (0.918) |
| Spouse age | -1.186 | 0.573 | 2.145 | 0.342 | 2.888 | -3.663 | -1.448 | 0.420 | -2.714 | -0.092 | -1.497 | 1.744 |
| | (0.349) | (0.824) | (0.763) | (0.682) | (0.113) | (0.212) | (0.230) | (0.889) | (0.572) | (0.853) | (0.241) | (0.128) |
| Spouse age squared | 1.163 | -1.080 | -2.692 | -0.345 | -3.183 | 3.745 | 1.729 | -0.793 | 3.738 | 0.060 | 2.292 | -1.877 |
| | (0.369) | (0.706) | (0.681) | (0.685) | (0.117) | (0.167) | (0.195) | (0.838) | (0.435) | (0.913) | (0.164) | (0.101) |
| Education | -0.647*** | -1.034*** | 0.108 | -0.115 | -0.171 | 0.392* | 0.870 | -0.366 | 0.743 | 0.060 | -0.344** | -0.009 |
| | (0.003) | (0.004) | (0.842) | (0.431) | (0.501) | (0.079) | (0.254) | (0.267) | (0.221) | (0.497) | (0.014) | (0.950) |
| Spouse education | -0.222 | -0.013 | -0.114 | 0.031 | 0.219 | -0.224 | -0.154 | -1.512*** | -1.437** | 0.116 | 0.043 | 0.212 |
| | (0.285) | (0.969) | (0.825) | (0.819) | (0.353) | (0.294) | (0.505) | (0.000) | (0.023) | (0.219) | (0.774) | (0.161) |
| Weekly wage | 3.991*** | 3.202*** | 17.463*** | -1.418*** | -1.483** | -3.138*** | 0.870 | 5.451*** | 24.248*** | -1.047*** | -1.332** | **-1.129**** |
| | (0.000) | (0.002) | (0.000) | (0.003) | (0.048) | (0.000) | (0.254) | (0.000) | (0.000) | (0.001) | (0.011) | **(0.011)** |
| Spouse weekly wage | 0.019 | 1.075 | 2.463 | 0.105 | 0.429 | 0.362 | 0.560 | -0.713 | 2.727 | 0.320 | 0.920** | **-0.063** |
| | (0.979) | (0.388) | (0.121) | (0.828) | (0.627) | (0.581) | (0.459) | (0.497) | (0.157) | (0.301) | (0.039) | **(0.891)** |
| Number of children | 0.007 | -0.059 | 1.919 | 1.127*** | 1.578** | 1.757** | 1.173* | -1.308 | 0.743 | 0.137 | 0.350 | -0.390 |
| | (0.991) | (0.957) | (0.256) | (0.010) | (0.041) | (0.012) | (0.091) | (0.226) | (0.708) | (0.629) | (0.446) | (0.409) |
| Kid age 13-18 | -0.134 | 1.027 | -5.740 | 2.325*** | -3.037** | 1.495 | -1.821 | 1.416 | 6.556 | 0.823 | -1.054 | -0.508 |
| | (0.921) | (0.587) | (0.186) | (0.009) | (0.024) | (0.405) | (0.193) | (0.451) | (0.198) | (0.152) | (0.187) | (0.676) |
| Kid age is above 18 | 0.168 | 2.902 | 1.931 | 1.156 | -0.440 | -5.467** | -2.814 | -2.033 | 1.083 | 0.877 | -2.047* | -0.919 |
| | (0.925) | (0.263) | (0.730) | (0.325) | (0.811) | (0.018) | (0.130) | (0.430) | (0.869) | (0.251) | (0.062) | (0.557) |
| Lambda for regime switching | 0.373 | 8.853* | -4.651 | 0.167 | -1.635 | 5.717** | -1.862 | -9.220** | -18.695*** | 0.041 | -4.652** | 0.763 |
| | (0.828) | (0.061) | (0.454) | (0.882) | (0.626) | (0.026) | (0.296) | (0.050) | (0.010) | (0.956) | (0.020) | (0.660) |
| R-squared | 0.051 | 0.093 | 0.340 | 0.063 | 0.044 | 0.137 | 0.014 | 0.120 | 0.388 | 0.023 | 0.080 | 0.038 |
| [adj R-squared] | [0.038] | [0.062] | [0.319] | [0.050] | [0.012] | [0.109] | [0.000] | [0.091] | [0.368] | [0.009] | [0.049] | [0.007] |
| Sample size | 859 | 368 | 387 | 859 | 368 | 387 | 859 | 368 | 387 | 859 | 368 | 387 |

Note: P-values are reported in parentheses. The pooling data indicates the RI1999 and RI2000 data sets. The short panel I indicates the RI1999and RII2000 data set and the short panel II represents the RI2000and RII2001. *, **, and *** indicate significance at the 1 percent, 5 percent, and 10 percent level, respectively.

**Table 6 Wage Regression Results of Employed Married Couples**

| Variables | Wife | | | | | | Husband | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pooling | | Short Panel I | | Short Panel II | | Pooling | | Short Panel I | | Short Panel II | |
| Constant | 0.133 | -1.168 | -1.939 | -2.808 | 5.652 | 4.585 | -1.681** | -1.909** | 1.130 | 0.421 | -21.307*** | -6.177 |
| | (0.1999) | (0.277) | (0.532) | (0.476) | (0.139) | (0.240) | (0.032) | (0.019) | (0.668) | (0.872) | (0.000) | (0.123) |
| Age | 0.089* | 0.095** | -0.008 | 0.062 | 0.170** | 0.112 | 0.052 | 0.065 | 0.018 | 0.006 | 0.878*** | 0.083 |
| | (0.044) | (0.038) | (0.946) | (0.670) | (0.050) | (0.214) | (0.231) | (0.149) | (0.851) | (0.953) | (0.000) | (0.611) |
| Age squared | -0.110** | -0.112** | 0.026 | -0.068 | -0.168** | -0.111 | -0.053 | -0.064 | -0.014 | 0.003 | -0.756*** | -0.094 |
| | (0.021) | (0.023) | (0.861) | (0.711) | (0.048) | (0.207) | (0.225) | (0.161) | (0.896) | (0.980) | (0.000) | (0.526) |
| Spouse age | -0.003 | -0.018 | 0.162 | 0.047 | -0.335** | -0.251 | 0.113** | 0.085** | -0.010 | 0.040 | 0.019 | 0.241*** |
| | (0.959) | (0.728) | (0.134) | (0.733) | (0.032) | (0.112) | (0.003) | (0.030) | (0.921) | (0.696) | (0.750) | (0.006) |
| Spouse age squared | 0.002 | 0.018 | -0.161 | -0.027 | 0.287** | 0.214 | -0.122** | -0.107** | 0.022 | -0.046 | -0.059 | -0.252*** |
| | (0.969) | (0.730) | (0.181) | (0.860) | (0.043) | (0.139) | (0.003) | (0.011) | (0.866) | (0.722) | (0.323) | (0.003) |
| Education | 0.030*** | 0.040*** | 0.027** | 0.039** | 0.060*** | 0.071*** | 0.042*** | 0.057*** | 0.033*** | 0.035 | 0.047*** | 0.078*** |
| | (0.001) | (0.000) | (0.042) | (0.019) | (0.000) | (0.000) | (0.000) | (0.000) | (0.003) | (0.001) | (0.000) | (0.000) |
| Spouse education | 0.027*** | 0.021** | 0.039*** | 0.054*** | 0.002 | -0.003 | 0.056*** | 0.037*** | 0.053*** | 0.050 | 0.069*** | 0.026 |
| | (0.001) | (0.011) | (0.002) | (0.001) | (0.810) | (0.739) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.024) |
| Number of children | 0.001 | -0.038 | 0.144*** | -0.017 | 0.045 | 0.020 | 0.031 | -0.020 | -0.045 | -0.046 | -0.055** | -0.062* |
| | (0.186) | (0.145) | (0.001) | (0.750) | (0.151) | (0.543) | (0.161) | (0.382) | (0.237) | (0.213) | (0.019) | (0.068) |
| Kid's age is less than 6 | -0.016 | -0.035 | 0.163 | 0.006 | -0.034 | 0.102 | 0.008*** | 0.001 | 5.96E-05 | 7.50E-05 | 8.35E-05 | 0.000*** |
| | (0.864) | (0.710) | (0.096) | (0.964) | (0.932) | (0.803) | (0.000) | (0.143) | (0.391) | (0.280) | (0.146) | (0.002) |
| Work in City | 0.786*** | 0.863*** | 0.425*** | 0.630*** | 0.576*** | 0.695*** | 0.154*** | 0.155*** | 0.021 | -0.004 | 0.197** | 0.127 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.757) | (0.958) | (0.022) | (0.307) |
| **Housework** | **-0.012*** ** | --- | **-0.090*** ** | --- | **-0.022*** ** | --- | **-0.152*** ** | --- | **-0.018** ** | --- | **-0.388*** ** | --- |
| | **(0.000)** | | **(0.000)** | | **(0.000)** | | **(0.000)** | | **(0.058)** | | **(0.000)** | |
| **Spouse housework** | **0.056*** ** | --- | **-0.056*** ** | --- | **0.045** ** | --- | **-0.008*** ** | --- | **0.002** | --- | **-8.56E-05** | --- |
| | **(0.001)** | | **(0.000)** | | **(0.014)** | | **(0.000)** | | **(0.581)** | | **(0.968)** | |
| R-square | 0.307 | 0.257 | 0.520 | 0.206 | 0.278 | 0.213 | 0.333 | 0.275 | 0.184 | 0.174 | 0.676 | 0.325 |
| [adj-R-square] | [0.302] | [0.253] | [0.509] | [0.192] | [0.267] | [0.204] | [0.328] | [0.270] | [0.165] | [0.159] | [0.671] | [0.317] |

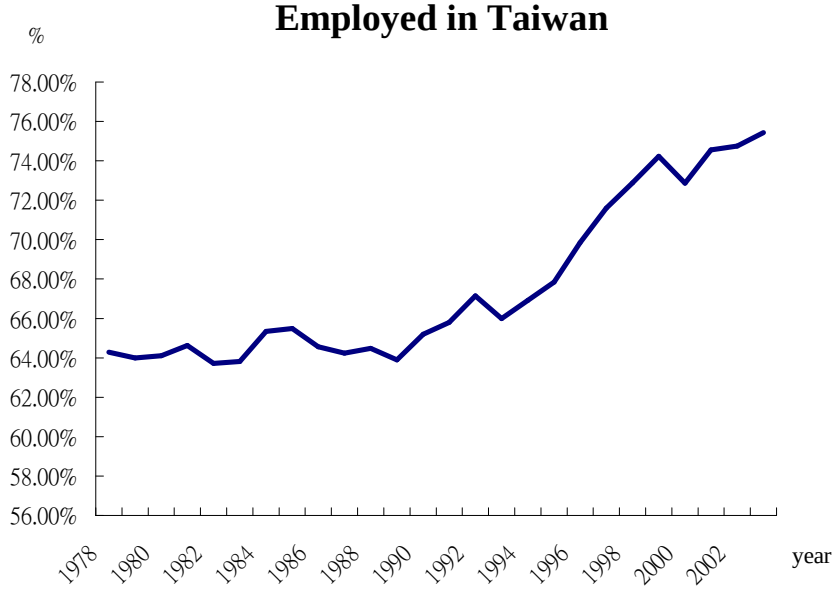
Note: P-values are reported in parentheses. *, **, and *** indicate significance at the 1 percent, 5 percent, and 10 percent level, respectively.
Except for the wife's pooling data set, the predicted values of housework time are used in the estimation.

## Table 7 Wage Decomposition Results

| Source of Data / Due to the differences in the average characteristics | With Controlling for the Housework | | Without Controlling for the Housework | |
|---|---|---|---|---|
| | Pooling data (a) | Short Panel 1 (b) | Pooling data (c) | Short Panel 1 (d) |
| Human capital *(education)* | 6.660% | 35.130% | 5.437% | 14.178% |
| Individual Characteristics (*age and age squared*) | 31.771% | 5.600% | 27.345% | 23.137% |
| Number of children and preschool children | -2.436% | -7.200% | 0.415% | -10.688% |
| Time allocated to housework (*housework time*) | 49.603% | 25.800% | --- | --- |
| Job characteristics (*city)* | -2.162% | 20.04% | -3.341% | 31.279% |
| Total | 83.435% | 79.365% | 29.855% | 57.906% |
| Unexplained | 16.565% | 20.635% | 70.145% | 42.094% |

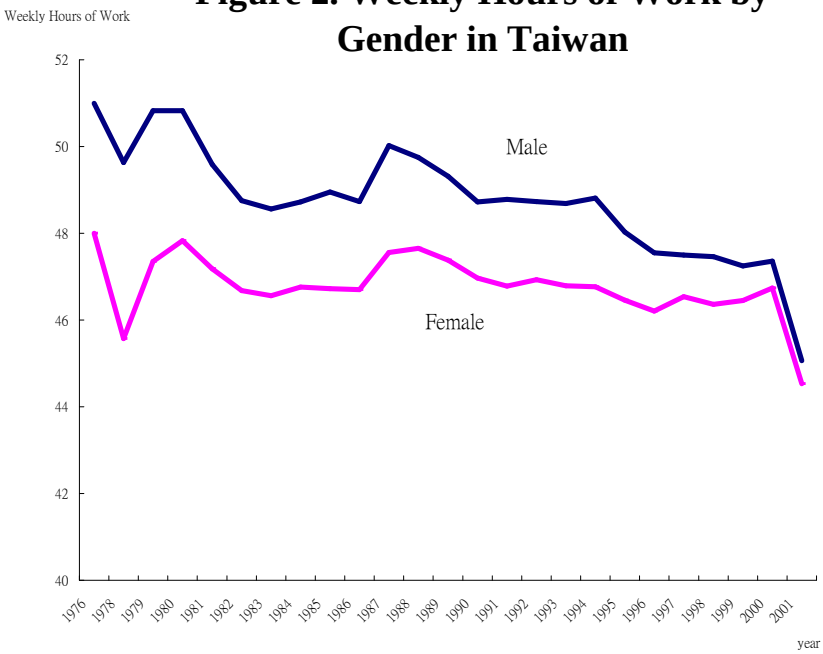
Note: The weight using in this calculation is male coefficient.

## Figure 1. Female to Male Wage Ratio for Employed in Taiwan




source: Manpower Survey Report, DGBAS

## Figure 2. Weekly Hours of Work by Gender in Taiwan




Source: Yearly Manpower Suvey Report, DGBAS.