

**Proposal: The employment sector and gender wage gap in Taiwan:**

**1978-1995**

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## **I. Specific objectives**

This paper attempts to measure the gender wage gap in Taiwan, in order to examine whether the change in sector of employment can help explain the stable female-male earning ratio and wage discrimination against woman in Taiwan from 1979 to 1995. The *Hypothesis* in this paper is that the change in structures of employment between employer, self-employed, government worker, private worker and unpaid family worker declines the male-female wage gap.

## **II. Background and significance:**

### **1. Background:**

In the past thirty years, Taiwan has experienced one of the highest economic growth rate periods in the world, and became the world's 14th largest trading area. On average, real GDP grew at an annual rate of over 6% in dollar term. The rate is higher than that in Singapore and Hong Kong during the same period. With the economic development, the female employee's sector has been changing as well. During the period between 1978 and 1995, the percentage of female in agriculture declined from 26% to 12%, but the ones in industry and service increased, respectively, from 39% to 43% and 35% to 46%.\*

Moreover, women labor force participation has been on the rise. From 1975 to 1996, female labor force participation in Taiwan increased from 38% to 45%, while the

rate of men declined from 78% to 71% <sup>a</sup>. During the same period, the percentage of working-aged women with vocational or university-level training jumped from 16% to 37%, but the number for men only increased from 25% to 44%. Furthermore, in recent years, the numbers of female who enroll in universities are almost same as that of male.

From the above surveys, all these shifts seem to be favorable for the women. It is understandable that more and more of Taiwan's economy were built with labor of women, and women should be in a better situation today than before. However, the fact is that the ratio of earning between female and male in Taiwan has been relatively constant, and, even now, the earning of female is only two of thirds of that of male, which is of great interests and significance and has been studied extensively by many researchers.

## **2. Reviews**

Those researchers measured and analyzed the gender wage gap in Taiwan using Blinder-Oaxaca (1973) decomposition. They pointed out that the male-female wage gap has remained stable in Taiwan during the past two decades and the portions of the gender wage gap, which can be explained using gender-specific factors, decline, while the unexplainable ones (unmeasured endowment and discrimination) increase. Those literatures examined the gender wage gap from the following aspects:

(1) Education and experience. Education and experience are the two of the most important factors that affect the earnings. The change in education makes more and more people receive higher education. Moreover, women's labor force participation is

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<sup>a</sup> Statistics, *The Report on Women's Status in Taiwan, 1998*

increased and intermittence in women job period is reduced. Female got gains in education and experience more than men did, which will help decline the gender wage gap. But the women suffered a large loss in unmeasured gender-specific factors, which reflected an increase in wage discrimination against women. Since the loss offset the woman's gain, the gender wage gap remained at its previous level (JOSEPH E 1997, Jessica L. Baraka 1999a).

(2) Degree type. Generally, degree type may be of the same importance to the earnings as the education level. Degree type, to some extent, is linked to the occupation. Jessica L. Baraka (1999b) used a standard human capital framework to examine the effects of degree type on the earnings. She generalized all majors into two categories: technical and non-technical. The change in Taiwan's education and science & technology policies increases the return of the technology (Paul Helms 1999, T.H. Gindling and Way Sun 2000, James 2001). However, the analysis found that the impact of the degree type on the earnings varies by gender, having a more substantial impact on men than women. The degree type can successfully explain a substantial portion of the gap in a university graduates, but it does little to explain the overall gender gap in earnings in Taiwan.

The above papers show that the education and degree type do not contribute to the gender wage gap in Taiwan. However, the explanation to the reasons of the gender wage gap can average out the earning across gender as well as be useful to take advantages of human capital resource to improve economic efficiency if the gap comes from discrimination against women. So it is worthy to investigate other factors that might

affect gender wage gap. Since the previous papers did not mention employment sector or only limited to the private sector, the paper will focus on the impact of employment sector on the gender wage gap in Taiwan.

### III. Research Methods

#### 1. Methodology:

A common method of measuring labor market discrimination against women is the model of decomposition of gender earnings gap [Blinder-Oaxaca (1973)]. The standard Blinder-Oaxaca decomposition explains wage differentials in terms of differences in individual characteristics (characteristic effects) and differences in the coefficients of the earnings equations (coefficients effect).

$$Y_m = \beta_m X_m \quad \dots\dots(1)$$

$$Y_f = \beta_f X_f \quad \dots\dots(2)$$

where  $Y$  is the natural logarithm of real monthly earnings,  $X$  is a vector of the gender-related characteristics used to explain the wage rate for each individual, while  $\beta$ s are coefficient to be estimated.

$$Y_m - Y_f = (X_m - X_f)\beta_m + (\beta_m - \beta_f)X_f \quad \dots\dots(3)$$

The first term on the right side of equation (3) is the explained share of wage earning difference that can be explained using individual characteristics, while the second term is unexplained share of the wage earning difference, which can not be explained using individual characteristics.

Then, based on the model, the analysis will follow three steps:

**First step:** Blinder-Oaxaca decomposition. This step will repeat the results in the relevant literature, and show that the female-male ratio is relatively stable in three different years (1978, 1987 and 1995). The independent variables would include sex, marriage, education, experience, working hour, major, salary, and years worked.

**Second step:** Dummy variable for sectors will be added and examined whether the sectors can help to explain the stable gender gap and wage discrimination in Taiwan will be examined. The numbers of 1 to 5 are used to represent, respectively, the five kinds of employments: employer, self-employed, government worker, private worker and unpaid family worker.

**Third steps:** if the second step shows that employment sector has important impact on gender wage gap, the technique created by R. Brwon, M. Monn, and B.Zolith (1980) and used by T. H. Gindling (1993) will be used to decomposition difference between mean wages of male and female.

Let  $j$  indicates employment sector in which men and women work.  $P_j$  is the probability that man or woman is found working in a given the sector ( $j$ ).

$$Y_M - Y_F = \sum_j Y_{Mj} P_{Mj} - \sum_j Y_{Fj} P_{Fj} = \sum_j Y_{Mj} P_{Mj} - \sum_j Y_{Fj} P_{Fj} + \sum_j Y_{Mj} P_{Fj} - \sum_h Y_{Mj} P_{Fj}$$

$$Y_M - Y_F = \sum_j P_{Fj} (Y_M - Y_F) + \sum_j Y_M (P_{Mj} - P_{Fj}) \quad (\text{T. H. Gindling 1993})$$

The first term on the right of equation is the gap that due to differences in the pay that male and female earn within the same sectors. The second term is the mean wages gap that comes from different access to that male and female have to.

#### **IV. Data**

The data for this research come from the 1979, 1987 and 1995 annual Taiwan Manpower Utilization Surveys. This is a household survey covering age above 15 population of Taiwan. The household samples were used by a two-stage randomization procedure. First, about 500 counties were selected from the over 7000 counties in Taiwan. Second, households were selected within these counties. Among these data, those for education are a series of levels from no education through university level (16 years) and data for status are a set of sectors from 1 to 5.

#### **VI. Future work**

So far, the literature reviews, model decomposition and preliminary data analysis have been completed for this paper. The following task is to do the quantified analysis in order to examine if the hypothesis would be accepted or not.

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