Female's Labor Participation and Gender Wage Gaps in Hong Kong

Junsen Zhang, Department of Economics, Chinese University of Hong Kong

Yuhao Ge, School of Labor Relations and Human Resources, Renmin University

(Third Draft)

June 22, 2010

Abstract: Many countries have witnessed the negative relationship between female's labor participation and gender wage gap, for example, lower female's labor participation is often accompanied with narrower gender wage gap. The related explanation is that low-quality female workers quit from (or enter into) labor market. Hong Kong's story is different---higher female's labor participation is accompanied with narrower gender wage gap. After exploring the reasons for higher female's labor participation carefully, we argue that rapid improvement of female's education explains Hong Kong's different story.

Female's Labor Participation and Gender Wage Gaps in Hong Kong

1 Introduction

When economists talk about the gender disparities in the labor market, the most mentioned topic is the gender wage gap---female workers are usually paid lower wages compared with male workers(for example, Oaxaca 1973; Blinder 1973, Blau and Kahn 1997, 2000, 2006). However, gender wage gap itself is not the only major disparity in the labor market between male and female. From the experience of many countries, female workers also have lower labor force participation rates than male workers (for example, Hunt 2002, Fitzenberger *et.al* 2004). Furthermore, gender wage gap and gender labor participation gap is often connected with each other. According to a European project entitled 'towards a closing of the gender wage gap'[1], female labor participation is one of important mechanism to explain the trend of gender wage gap. A higher rate of female labor market participation tends to increase the gender wage gap, because the additional participants are made up mainly of women with low labor market 'attachment' (low education and low work experience). Similarly, a lower rate of female labor market participation tends to reduce the gender wage gap. This kind of mechanism presents a dilemma for government to choose between policies to encourage female labor market participation and policies to narrow gender wage gap.

Existing literature seems to support the above-mentioned mechanism. Hunt (2002) found that the gender wage gap in East Germany has narrowed by 10 percentage points in the process of transition, but almost half of the relative wage gain is due to exits from employment of the low skilled, who are disproportionately women. Ge (2007) found similar results in China mainland. The narrowing gender wage gaps after 1997 in China is also greatly caused by the exits from employment of low skill female workers. Besides, it can also be seen that exits of employment of females are not voluntary from these two studies. In East Germany, exits of employment of females are caused by a general fall in demand for low-skilled workers. In China

---

[1] The overall objective of the project has been to 'examine the gender pay gap in a broad perspective and to identify the most efficient tools with which to close the gap. Many findings of this project were reported on the conference held in Oslo of Norway On 17-19 November 2002.

mainland, exits of employment of females are caused by radical SOE reforms. In both cases, it is the low-skilled female workers who become victims.

A very different story was found in Hong Kong. Contrary to East Germany and China mainland, female labor participation rate in Hong Kong is increasing rather than decreasing[2]. If the argument of the European project is true, the gender wage gap in Hong Kong should increase. However, the case is that gender wage gap narrows in Hong Kong. The example of Hong Kong has important policy implications because it shows that government need not worry too much about the contradiction of policies to encourage female labor market participation and policies to narrow the gender wage gap. The positive relationship of narrowing gender wage gap and increasing female's labor participation in Hong Kong was first noticed by Lui and Suen (1993). In this study, the authors found that a remarkable progress in the earnings of women relative to men happened during the period of 1976-1986 and argued that the rise in schooling and the rise in labor participation of women were the main driving forces behind this progress. Our paper will focus on the period of 1991-2006 and will explore the reasons why labor participation rates of women rise and assess their effects on gender wage gap.

We find four main reasons to explain higher female's labor participation in 2006 than in 1991. First, marriage status has less negative effect on female's labor participation. We argue that this is because hiring a domestic helper can help household wives to take care of household work. Second, higher age females tend to have higher labor participation in 2006. Third, the positive effect of education to help female workers to find a job is larger in 2006. Fourth, female workers have higher education in 2006. The above mentioned four reasons all help to increase female's labor participation. However, they have different effects on gender wage gap. The former two reasons influence gender wage gap like what is found in East Germany and China Mainland--- they help women to take participation in labor market but enlarge the gender wage gap. The latter two effects are totally different with finding in East Germany and China Mainland---they help women to take participation in labor market and narrow the gender wage gap.

---

[2] The detailed information is presented in section 2.

We outline the rest of the paper as follows. Section 2 describes the data we use and presents some basic stylized facts relating to the gender wage gap and female's labor participation in Hong Kong. Section 3 explores the underlying reasons for the increasing of female's labor participation. Section 4 connects the trend of the gender wage gap and the trend of female's labor participation. Section 5 concludes the paper.

2 Data and Some Stylized Facts

The data used in this paper are from the 1991, 1996, 2001, and 2006 censuses (or by-censuses) of Hong Kong. All these datasets consist of 5% random sample from the whole population. These datasets include rich information on the household level and individual level. As can be seen in the following sections, in order to examine the relationship of female's labor participation and gender wage gap, we need to analyze the female's labor participation function and wage function. In the analysis of the labor participation function, we use information on age, number of elder people in the family (age 60+), number of younger children (age 15-), marriage status, and education. Number of elder people and number of younger children are provided by original data. Marriage status is also provided in the original data, but it is divided into four categories---never married, currently married, widowed and divorced (or separated). In this paper, we integrate marriage information into two categories---married and not married. Never married, widowed, divorced (or separated) are all included in the unmarried group. The reason to do this is that unmarried women can not get the support of husbands regardless the reasons they are not married. In the analysis of wage function, we include information on education and potential experience[3]. There are four variables to describe workers' earnings — monthly income from main employment, monthly income from other employment, other cash income, and total personal income from all employment. We choose the first variable because it gives a more precise description of a person's wage. Because of a lack in information regarding working hours, we cannot transform the monthly earnings into

---

[3] In other studies, many variables are included in the wage function, such as occupation and industry. In our study, we will predict wages of females who are not in the labor market for the time being. Occupation and industry information for these females are not available.

hourly wages and cannot distinguish part-time workers from full-time workers. The original information on education is categorical information about educational level. We transformed the information into years of education according to Hong Kong's educational system. The potential experience is calculated as age-education years-6.

We perform the following data treatments. First, we set the lowest age threshold to 15. This management is to calculate the workers' labor participation. Second, we just consider the residents whose birth places are Hong Kong or China mainland. This is based on two kinds of reasons. The first is to avoid the complicity of cultural difference. Residents whose birth places are Hong Kong or China share the same culture and are greatly affected by Confucian thoughts. Women are mainly engaged in household work in Confucian thoughts and their labor participation rate is generally low. Immigrants from other countries are not constrained by Confucian thoughts and usually have higher labor participation rate. The second is to avoid the complicity of selection bias problem. Residents from other countries immigrated into Hong Kong are mostly because of job reasons and their labor participation is very high. In fact, according to Hong Kong immigration regulations, these persons are permitted to enter into Hong Kong mostly after they successfully applied employment visa. However, immigrants from China Mainland are permitted into Hong Kong greatly because of family union. Immigrant policy requires us to deal with immigrants from China mainland and from other countries differently.

Table 1 presents the female-male wage ratios at different positions of wage distribution (mean, 10th percentile, 25th percentile, 50th percentile, 75th percentile and 90th percentile) for these four years. We can see that, from 1991 to 2006, the wage ratio at the mean increases from 0.73 to 0.81. And this narrowing gender wage gap phenomenon is persistent across all above-mentioned positions of wage distribution. It is particularly clear at the 90 percentiles. Measuring the wage gap in terms of log wage points tells the same story. From 1991 to 2006, the mean log wage difference between female and male drops from 0.315 points to 0.210 points. We also can under the narrowing gender wage gap from the perspective of the position of female's mean wage in the wage distribution of male. In 1991, female mean wage is at about the 48th percentile; in 2006, it is at about the 52nd percentile of the wage distribution of male.

Based on these facts, we can get a clear view that gender wage gaps narrow during the period from 1991 to 2006.

In economic textbooks and government statistical data, the labor participation rate is calculated as (the employed + the unemployed)/ (the whole sample of age 15+). In this paper, we alter the calculation of labor participation to (employed)/ (the whole sample of age 15+). We make this alternation because the latter is fit to examine the relationship of labor participation rate and gender wage gap[4]. The female labor participation rate given by the statistical department of Hong Kong is listed in the first column of Table 2. We present female's labor participation rate for the interested sample (whose birth places are Hong Kong and China Mainland) in the second column and for the whole sample in the third column according to the calculation method of this paper. From all the columns of Table 2, we can clearly see that female's labor particiaptin is increasing. For example, for the interested group, it increases from 43.57% in 1991 to 46.59% in 2006[5]. It also can be seen that the labor participation rate for the whole sample is larger than that for the interested group. This is consistent with our above-mentioned argument that Chinese people are greatly affected by the Confucian tradition and Chinese female's labor participation is lower.

Many factors are responsible for the increasing female's labor participation. We argue that one of important factors is the decreasing female's marriage rate. Women are often supported by their husbands after they married and many of them choose not to take participation in the labor market. On the contrary, if a woman is not supported by a husband, she would be more likely to take participation in the labor market and support herself. Table 3 gives female's marriage rate and labor participation. We can see that female's marriage rate is decreasing from 1991 to 2006. We can also see that

[4] It is hard to distinguish between the unemployed and inactive labor participants because both of them have no information on wage. This will have two consequences. First, if a person changes employment status from inactive to unemployed, the classical labor participation rate is increased, however, his or her wage remains missing. Second, if a person changes employment status from unemployed to employed, the classical labor participation rate remains unchanged, however, his or her wage switches from missing to a positive number. These consequences are not desirable for the analysis of the relationship of female's labor participation and gender wage gap.

[5] Our calculation method tends to get a smaller female's labor participation rate. This may explain why we get a relatively small increment (roughly 3%) of female's labor participation. In fact, compared with other countries, the increment of female's labor participation in Hong Kong is more obvious. For example, according to World Bank, female's labor participation rates are 53.9% in 1991 and 62.6% in 2006 in Hong Kong, increased by 9.7percentage points. For U.S., these numbers are 67.4% in 1991 and 70.1% in 2006, increased by only 2.7 percentage points.

labor participation for married females is lower than for unmarried females. Combining these two facts, it is not hard to understand the trend of increasing female's labor participation in Hong Kong. Surprisingly, we also find that married females witnessed more rapid labor participation than unmarried females. This finding is closely related to the feature of Hong Kong's labor market. There are many domestic helpers from abroad in Hong Kong. Hiring a domestic helper will relieve married females from household work and increase their labor participation.

Combining table 1 and table 2, we can see the interesting story in Hong Kong which we mentioned in section 1--- female labor participation is increasing and gender wage gaps are narrowing. The underlying reasons may be that high quality female changes their statuses from non-employment to employment. We can get a simple glimpse of this judgment by analyzing the education of female workers. Table 4 gives the average education years for the employed female and for the unemployed female. From Table 4, we can see that average education years for employed female are higher than unemployed female. It also can be seen that the difference between the employed female and unemployed female is enlarging over years. These two facts show clear evidence that high quality female workers take participation in the labor market.

In the next section, we will explore further the reasons why female's labor participation is increasing. In section 4, we will examine the meanings of these reasons on gender wage gap.

3 Explanations for Increasing Female's Labor Participation

In the study of the gender wage gap, a wage decomposition method is often used. The Oaxaca-Blinder decomposition is such a method. Using this decomposition method, raw gender wage gap is decomposed into "characteristics effects" and "coefficient effects". Similar method can be used to study the difference of female's labor participation between 1991 and 2006. Here, we apply the method proposed by BFL (2000)[6] .The method includes the following steps.

---

[6] The original method is used after mlogit. In this paper, it is altered to be used after logit.

(1) Randomly draw a female sample of size 8000 from 1991 census data and 2006 census data respectively[7].

(2)Run logit labor participation function for 1991 and 2006 respectively:

$$U_i = \gamma q_i + \eta_i \tag{1}$$

where η_i is the random term of a logistic distribution. q_i includes some household variables and individual variables. In our paper, we use number of 60+ elder persons, number of 15- children, individual education, age and marriage status.

When $\gamma q_i + \eta_i > 0$, worker i takes participation in labor market; when $\gamma q_i + \eta_i \leq 0$, worker i does not take participation in the labor market. Using a statistical software, we can get the estimation of $\hat{\gamma}$.

(3)For a specific worker, we can know the information whether she takes participation in the labor market or not. When the participation is observed, η_i will take the following conditional distribution:

$$F(\eta_i \mid C_i = 1) = \frac{e^{\eta_i} - e^{-g_i}}{1 + e^{\eta_i}} \tag{2}$$

$$F(\eta_i \mid C_i = 0) = \frac{1 - e^{\eta_i} e^{g_i}}{1 + e^{\eta_i}} \tag{3}$$

(4)Given q_i, $\hat{\gamma}$ and η_i, we can predict whether she take participation in the labor market or not. For all the persons of 1991 and 2006, we can write labor participation using function $p_r(\hat{\gamma}^r, q_i^r, \eta_i^r; i = 1 \ldots N_r)$ and $p_b(\hat{\gamma}^b, q_i^b, \eta_i^b; i = 1 \ldots N_b)$, simplied as $p_r(\hat{\gamma}^r, q^r, \eta^r)$ and $p_b(\hat{\gamma}^b, q^b, \eta^b)$, where subscript r means the year of 2006 and subscript b means the year of 1991.

(5) Decomposition of the difference of labor participation rates between years.

$$\begin{aligned}
&p_r(\hat{\gamma}^r, q^r, \eta^r) - p_b(\hat{\gamma}^b, q^b, \eta^b) \\
&= \underbrace{p_r(\hat{\gamma}^r, q^r, \eta^r) - p_b(\hat{\gamma}^r, q^b, \eta^b)}_{1} \\
&+ \underbrace{p_b(\hat{\gamma}^r, q^b, \eta^b) - p_b(\hat{\gamma}^b, q^b, \eta^b)}_{2}
\end{aligned} \tag{4}$$

The first part can be explained as "characteristic effects" on the change of labor participation rate. The second part can be explained as "coefficient effects" on the

---

[7] The same sample size is convenient to do the following counterfactual analysis especially for specific characteristic effect. The cost is that the predicted labor participation rate is changed slightly with the original labor participation rate.

change of labor participation rate. We can further decompose the first part and second part into specific characteristic and specific coefficient.

Table 5 gives the results of logit labor participation model. We can get some interesting results from Table 5. First, education has larger positive effect for female to take participation in labor market in 2006 than in1991. Second, married female have lower labor participation rate but the difference gets smaller in 2006. Third, the existence of elderly in the family is helpful for female to take part in labor market. Elderly people help to look after younger children or take chare of household work[8]. This effect is smaller in 2006. Fourth, the existence of younger children tends to reduce female's labor participation. The effect is also smaller in 2006. The latter three have something to do with the influx of foreign domestic helpers. Domestic helpers take care of household work and thus household females are released to labor market.

Table 6 shows the final decomposition results. The fist row of Table 6 is the original female's labor participation rate of 1991 and 2006. The second row of Table 6 is predicted female's labor participation rate based on the above-mentioned logit model. Second panel shows the specific characteristic effect and specific coefficient effect which are derived from equation (4). From Table 6, we can see that the coefficient effect of education, the characteristic effect of education, the coefficient effect of age, the coefficient of marriage account for a lot of the change of labor participation rates[9]. It is easy to understand the characteristic effect and the coefficient effect of education. Female average education increases considerably from 1991 to 2006. And the positive effect of education on labor participation is higher in 2006 than in 1991, which we have already seen in Table 5. It is somewhat strange about the coefficient effect of age. This may be because younger female workers are in the school to continue their education and old female workers have already worked in the labor market. For the coefficient effect of marriage, as above-mentioned, our explanation is that hiring a domestic helper to do household work will release the house wife to engage in highly paid job. In Hong Kong, there are many domestic helpers from the Philippines.

---

[8] If we define the elder people of age 85+, this result may change because these elder people need to be taken care of.
[9] Residual distribution explains much of the difference of female's labor participation between 1991 and 2006. However, what it captures is the effect of unobserved factors. It is very hard to get some useful policy implications from the analysis of residual distribution.

In this section, we are mainly talking about the reasons that may explain the increasing of female's labor participation. In next section, we will connect these reasons to gender wage gaps.

4 Female's Labor Participation and Gender Wage Gap

Our method presented in section 3 can predict whether a specific person takes participation in the labor market or not. For example, for an unemployed person in 2006, will he/she be employed if selection mechanism is the same as 1991? Comparing the working status in the base year (1991) and predicted working status in the report year (2006), we will get four situations. First, present working status is employed, and the predicted is employed too; second, present working status is employed, but the predicted is unemployed; third, present working status is unemployed, but the predicted is employed; fourth, present working status is unemployed, and the predicted is unemployed too. For the second and the fourth situations, we do not incorporate them into analysis because of lack of wage information. The first situation is easy and we just set the predicted wage the same as his/her present wage. The third situation is the focus of the analysis and needs to be predicted.

To predict the wage of those who are unemployed, we need to estimate the wage function. Because unemployed persons do not have information on industry and occupation, we only use the information on education and potential experience in the wage function. The regression results are shown in Table 7. We can see that education returns in Hong Kong have increased from 1991 to 2006.

In section 3, we find that four factors are important to explain the increasing female's labor participation--- the coefficient effect of education, the characteristic effect of education, the coefficient effect of age, and the coefficient effect of marriage. How do we analyze their effects on gender wage gaps? We illustrate this problem using the coefficient effect of education. First, we will predict whether a female worker in 2006 is employed if her labor participation is decided according to education coefficient of

1991 and other coefficients of 2006. We may get four situations mentioned in the beginning of this section. Second, we predict the wage of the female worker if she changes her employment status from unemployed to employed. Third, we apply the same procedures for all female workers in 2006. Then it is easy to get the mean wage for these female workers. Four, comparing original mean wage of female workers in 2006 and the mean wage what is got from third step, we will get the effect of education coefficient on the change of mean wage of female workers. It is also the effect of education coefficient on gender wage gap because male's mean wage remains unchanged. We can get other effects on gender wage gap using similar procedures, namely the characteristic effect of education, the coefficient effect of age, and the coefficient effect of marriage.

In order to connect female's labor participation with gender wage gap, we present not only effects on gender wage gap but effects on female's labor participation in Table 8. The first row of Table 8 shows the original female's labor participation rate and original gender wage gap in 2006. The second row of Table 8 shows the predicted female's labor participation rate and predicted gender wage gap if females of 2006 take participation in labor market according to 1991 education coefficient. The effect of education coefficient is given by comparing the first row and the second row. Similarly, we present the characteristic effect of education in the third row, the coefficient effect of age in the fourth row and the coefficient effect of marriage in the fifth row.

From Table 8, we can get the following results. The coefficient effect of age and the coefficient of marriage reduce the female's labor participation and narrow the gender wage gap. The coefficient effect of education reduces the female's labor participation and affects gender wage gap slightly. The characteristic effect of education reduces the female's labor participation and enlarge gender wage gap considerably. The above analysis is based on the counterfactual analysis that the employment of female workers in 2006 is decided by the labor participation function of 1991. We can see this problem from another aspect---what female's labor participation rate and gender wage gap will be if the employment of female workers in 1991 is decided by the labor participation function of 2006. Then, all the above-mentioned results will reverse. The coefficient effect of age and the coefficient of marriage **increase** the female's labor

participation and **enlarge** the gender wage gap. The coefficient effect of education **increases** the female's labor participation and affects gender wage gap slightly. The characteristic effect of education **increases** the female's labor participation and **reduces** gender wage gap considerably.

As mentioned in Section 3, we have the following four reasons to account for higher female's labor participation in 2006 than in 1991. First, married house wife is more released to labor market in 2006 than in 1991 because of the influx of Philippine domestic helpers. Second, old female workers are easier to find a job in 2006 than in 1991. Third, education has more positive effect on employment in 2006 than in 1991. Fourth, female average education is higher in 2006 than in 1991. Our results show that the former two reasons will enlarge the gender wage gap. These two effects seem to be consistent with the situation of East Germany and China mainland---low quality female workers enter into labor market. The third reason changes gender wage gap slightly. The fourth reason reduces gender wage gap greatly. This effect is different from the situation of East Germany and China---higher quality female workers enter into labor market. We also can see that the positive effect of fourth reason is much larger than the negative effects of the first and the second reason. In other words, negative effects are overwhelmed by positive effect. Thus, increasing female's labor participation and narrowing gender wage gap are both observed in Hong Kong. There is a positive relationship between them.

In sum, our study reveals that Hong Kong's story is not totally different with existing literature that low quality female workers take part in or quit labor market. In Hong Kong, there do have some channels that low quality female workers take part in the labor market. But this effect is overwhelmed by the effect of rapidly increasing female's education. Hong Kong's example tells us that government need not to worry about the contradiction of policies to encourage female labor market participation and policies to narrow gender wage gap if it can help female to gain higher education.

5 Conclusion

In this paper, we use 1991 and 2006 census data to examine the relationship of female's labor participation and gender wage gaps. In Hong Kong, female's labor participation is increasing and gender wage gap narrows. At first glance, this is contradictory to low quality females quitting or taking participation in labor market. Our study shows these kinds of channels do exist in Hong Kong, such as the coefficient effects of age and marriage. However, the overwhelming effect of increasing female's education dwarfs the traditional channels.

Table 1 Gender Wage Ratios at Different Positions

	mean	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
1991	0.73	0.70	0.76	0.75	0.76	0.74
1996	0.80	0.80	0.81	0.85	0.83	0.80
2001	0.79	0.72	0.81	0.83	0.80	0.84
2006	0.81	0.73	0.80	0.86	0.82	0.86

Table 2 Labor Participation Ratios from Different Sources

	LPR1	LPR2	LPR3
1991	47.90%	43.57%	44.87%
1996	47.80%	44.04%	46.53%
2001	50.80%	45.37%	48.31%
2006	52.60%	46.59%	49.34%

Note: LPR1 denotes the female labor participation ratio published by Statistical department of Hong Kong.

LPR2 denotes the female labor participation ratio calculated by the method proposed in this paper using the subsample of persons whose birth place is Hong Kong or Mainland.

LPR3 denotes the female labor participation ratio calculated by the method proposed in this paper using the whole sample.

Table 3 Female's Marriage Rate and Labor Participation

	Female marriage rate	Labor participation (married female)	Labor participation (unmarried female)
1991	59.24%	39.37%	49.69%
1996	59.13%	41.93%	47.10%
2001	56.74%	44.42%	46.61%
2006	55.44%	44.72%	48.87%

Note: Female's marriage rate is decreasing. Married female's labor participation rate is lower than unmarried labor participation rate.

Table 4 Female's Education years

	education years (employed sample)	education years (unemployed sample)
1991	9.24	5.76
1996	10.41	6.53
2001	10.76	6.60
2006	11.43	7.26

Note: Average education years for employed sample are higher than unemployed sample. The difference between the employed sample and unemployed sample is enlarging.

Table 5 Logit model of Female's labor Participation

	1991	2006
eduyears	0.085	0.112
	(23.24)**	(27.82)**
age	0.304	0.339
	(44.77)**	(45.67)**
age square	-0.004	-0.004
	(48.58)**	(47.00)**
marriage	-1.173	-0.699
	(30.96)**	(18.32)**
elder_60	0.313	0.197
	(14.15)**	(3.60)**
child15	-0.473	-0.317
	(20.98)**	(7.24)**
constant	-5.076	-6.468
	(40.67)**	(47.78)**

Table 6 Decomposition of the Change of Female's Labor Participation

	2006	1991
raw gap	0.466	0.436
sample gap	0.464	0.436
		0.028
	coefficient	characteristic
education	0.041	0.035
age	0.118	-0.025
marriage	0.038	0.005
elder60	-0.001	-0.015
child15	0.002	0.018
constant	-0.209	
residual distribtion		0.022

Table 7 Wage Regressions: 1991 and 2006

	1991	2006
education	0.101	0.124
	(116.27)**	(155.61)**
experience	0.024	0.052
	(38.23)**	(79.93)**
experience square	0	-0.001
	(26.83)**	(55.34)**
Constant	7.258	7.195
	(570.22)**	(549.73)**

Table 8 Effects on Female's Labor Participation and Gender Wage Gap

	Female's labor participation	Gender wage gap
2006original	46.46%	0.198
coefficient effect of education	43.77%	0.196
characteristic effect of education	42.11%	0.271
coefficient effect of age	43.24%	0.186
coefficient effect of marriage	40.68%	0.187

Note:

coefficient effect of education denotes the situation if females take participation in labor market according to 1991 education coefficient.

characteristic effect of education denotes the situation if female's education is distributed as in 2006.

coefficient effect of age denotes the situation if females take participation in labor market according to 1991 age coefficient.

coefficient effect of marriage denotes the situation if females take participation in labor market according to 1991 marriage coefficient.

References:

Blau, F. and L. Kahn, "Swimming Upstream: Trends in the Gender Wage Differential in the 1980s", *Journal of Labor Economics*, 1997, 15 (1), 1-42.

Blau, F. and L. Kahn, "Gender Differences in Pay", *Journal of Economic Perspectives*, 2000, 14(4), 75-99.

Blau, F. and L. Kahn, "The US Gender Pay Gap in the 1990s: Slowing Convergence", *Industrial & Labor Relations Review*, 2006, 60(1), 45-66.

Blinder, A., Wage Discrimination: Reduced Form and Structural Estimates", *The Journal of Human Resources*, 1973, 8 (4), 436-455.

Bourguignon, F., F. Ferreira and P. Leite, "Beyond Oaxaca-Blinder: Accounting for Differences in Household Income Distributions across Countries", 2002, working paper.

Fitzenberger B., R. Schnabel and G. Wunderlich, "The gender gap in labor market participation and employment: A cohort analysis for West Germany", *Journal of Population Economics*, 17(1), 83-116.

Ge Y.H., "Gender Wage Gaps in Urban China", 2007, dissertation.

Hunt J., "The Transition in East Germany: When Is a Ten-Point Fall in the Gender Wage Gap Bad News?", 2002, *Journal of Labor Economics*, 20(1): 148-169.

Lui, H.K. and W. Suen, "The Narrowing Gender Gap in Hong Kong 1976- 1986", 1993, *Asian Economic Journal*, 7 (2): 167-80.

Oaxaca, R., "Male-Female Wage Differentials in Urban Labor Markets", *International Economic Review*, 1973, 14(3), 693-709.