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SCHOOL OF GRADUATE STUDIES

**GENDER EARNINGS DIFFERENTIAL IN THE ETHIOPIAN
PUBLIC SECTOR**

**BY
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**A thesis submitted to the School of Graduate Studies of Addis Ababa University in
partial fulfillment of the requirements for the Degree of Master of Science in Economics
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ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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ETHIOPIAN PUBLIC SECTOR**

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Abbreviations and Acronyms

AIR:	Apparent Intake Rate
CEDAW:	Convention on the Elimination of all forms of Discrimination against Women.
CPA:	Central Personnel Agency
CSA:	Central Statistical Agency
FCSA:	Federal Civil Service Agency
FDRE:	Federal Democratic Republic of Ethiopia
GER:	Gross Enrollment Rate
GPI:	Gender Parity Index
HIV:	Human Immunodeficiency Virus
IFC:	International Finance Cooperation
ILO:	International Labor Organization
MDC:	Market Discrimination Coefficient
MoE:	Ministry of Education
MOLSA:	Ministry of Labor and Social Affaires
MRP:	Marginal Revenue Productivity
MOWA:	Ministry of Women's Affaire
NAP-GE:	National Action Plan for Gender Equality
TGE:	Transitional Government of Ethiopia

TVET:	Technical Vocational Education and Training
UEUS:	Urban Employment and Unemployment Survey
UNECA:	United Nations Economic Commission for Africa
UNRSID:	United Nations Research Institute for Social Development
WAO:	Women's Affaire Office

Abstract

This paper presents the analysis of the determinants of gender wage differential in the Ethiopian Public Sector using the 2006 Urban Employment and Unemployment Survey. The Oaxaca (1973) and Neumark (1988) techniques are used in decomposing the gender pay gap based on two specifications of wage equation. One of the specifications constitutes selectivity correction terms while the other does not. Results from both specifications show that 52 to 61 percent of the gender wage gap is explained by observable characteristics whereas the remaining proportion is the unexplained part of the differential. Differences in human capital endowment and occupation contribute nearly the same amount to the explained part of the earnings differential. The result of the analysis fails to support the hypothesis of no gender wage discrimination in the public sector. Based on this result, the study implied the need for allocating a substantial amount of resources on girls' education and the strengthening of the legal and institutional framework that penalizes wage discrimination against women.

Chapter 1: Introduction

1.1 Background

Discrimination in the labor market prevails in different forms and on various bases all over the world. It is characterized by unequal treatment of equally productive individuals in way that is related to observable characteristics such as sex, race or ethnicity. There are several forms of discrimination that can take place in the labor market. The commonly known forms include employer discrimination, employee discrimination, and customer discrimination. In case of employer discrimination, employers have a desire to hire a particular type of workers. On the other hand, employees may dislike working with some group of workers. Customers may also prefer to engage in transactions only with specific types of workers (see, for example, Reynolds *et al*, 1998; Ehrenberg and Smith, 1996; and Hatt, 1997).

Gender based labor market discrimination has been among the major concerns of the international community as it prevails in both developed and developing regions of the world (UNRISD, 2005). But its impact on the economy is more serious in developing countries. Understanding this fact, most of the governments in these regions cater to combat discrimination. They have incorporated gender equality in their legislation and targeted areas of their national policy priorities (Wirth, 2001). Following these measures, there have been some progresses over the last decade, (UN, 2000; ILO, 2003), particularly in terms of improvement in the participation of women in the labor force. However, labor force participation rate, average earnings and access to high paying jobs are still higher for men than

women. This implies that gender discrimination has persisted in the labor market as manifested by gender wage gaps and occupational segregation.

According to the United Nations (UN, 2002), Ethiopian women have benefited less in the labor market than their men counterparts. This is despite the existence of the legislative and institutional commitments along with the right policy instruments that would help in fighting such inequality. The persistence of this situation is traced to such factors as the perceived role of women; skewed distribution of income in favor of males and the division of labor in traditional societies; and the distribution of labor among industries and occupations etc. Discrepancies exist between the expectation of females and the actual practices in response to their needs. Even when legislations in line with the ILO conventions exist, implementation of these laws is lacking.

The World Bank (2007) and the Ministry of Women's Affair (MOWA, 2006) revealed that Ethiopian women, in the labor market, are marginalized. According to their estimation, females are under represented in the formal employment while they account for more than 60 percent of informal employment. Females in the formal sector are concentrated in the economic sectors and occupations that pay lower wages. As a result of these factors, the average earnings of women have fallen below that of men. At national level, the World Bank (2007) indicated about 22 percent of gender wage gap, while MOWA (2006) described that women's average earning is about 86 percent of what men earn.

The pre-market discrimination Ethiopian women and girls face is manifested in the lower average educational achievements and the lower labor force participation they have, as compared to that of men. Pre-market discrimination itself is conditioned by the value systems

and the female's economic and socio-cultural positions in society. The economic factors that constrain the involvement of girls in school include: poverty and inability of poor families to finance education of their female children and the high dropout rates of females in schools which are due to the girls having no spare time to study. The traditional division of labor in the homes, and parental unequal treatment of boys and girls in work assignment contribute also to hamper girls' success in education. Other factors like school distance, fear of harassment and abductions, and early marriages account also for the educational disengagement of females in the country (MOWA, 2006). The above considerations explain the relatively lower labor force participation rates of females than males in the labor market.

With regard to occupational choices of educated women, some studies show that female employees determine occupations by the way they choose their training programs that females train and occupy jobs that give them maximum freedom to absent themselves from the place of work (Hersch, 2006). The MOWA's study of 2006 shows that, Ethiopian female students in Technical and Vocational Education and Training (TVET) prefer field of studies that are perceived as females. For the academic year 2004/2005, Female accounted for 97 percent in secretarial science, 77 percent in dressmaking and 71.3 percent in food preparation, out of the total students enrolled in the respective training programs. These trainings empower women to stay close to home and at the same time greater flexibility in the choice of place of work. Many authors in other countries give more emphasis to the indirect effect of such choices on gender wage differential (see, for example, Hersch, 2006; Brown *et al*, 1980a, 1980b; and Blinder, 1973).

In analyzing gender pay differential, researchers give priority to differences in human capital endowment and choice based occupational segregation (Hersch, 2006). Women's lower attachment and lower participation in the labor force results in lower experience and skill levels. Accompanied by the lower average educational achievements of females, these conditions reduce the average human capital endowment of women (Mincer and Polachek, 1974). As a result of this, it is likely for the majority of women to earn lower wages than men. Moreover, the concentration of women in occupations that pay low returns, as partly derived by their choices, explains a substantial amount of the gender wage differential (Hersch, 2006; Brown *et al*, 1980b). Other factors such as marital status, terms of employment, sector of employment and location may also contribute to the gender pay gap. The remaining proportion of the earning differential, after controlling for all variables that determine earning, is the part attributed to post market discrimination, (Oaxaca, 1973; Blinder, 1973; Brown *et al*, 1980b) that comes from the demand side of the labor market. This type of market discrimination stems mainly from the attitudes of employer against females.

With regard to sector differences, earning gaps vary between unionized and non-unionized; formal and informal; and private and public sectors. Among these categories, Appleton *et al* (1999) emphasized the importance of analyzing the prevalence of gender wage differential between public and private sector, as far as Africa is concerned. Due to the fact that these two sectors are under different external and internal pressures, the gender earning gaps between these sectors are different. In Ethiopia's labor market, the gaps were found to be 0.56 and 0.179 log points in the private and public sector, respectively (Appleton *et al*, 1999).

In conclusion, it is plausible to undertake an in depth examination of the gender earning differences in the public sector. Two major reasons are worth mentioning as the reasons for concentrating on the public sector. Firstly, it is both easier to analyze and to implement the findings of this paper since public sector possesses a better legal and institutional framework as compared to private sector. Secondly, public sector constitutes the bulk of formal wage employment (World Bank, 2007) and accounts for the largest proportion of women in formal wage employment in urban Ethiopia (Appleton et al, 1999). Therefore, this study is intended to explore the male-female wage gaps in general, and the extent of gender discrimination, in particular, in the sector.

1.2 Statement of the problem

Evidences show that Ethiopian labor market is segmented by gender in terms of formal and informal sector of employment. Majority of women are involved in the home based informal sectors. Their engagement in formal wage employment is far behind their male counterparts in many of developing countries like Ethiopia. For instance, in the Ethiopian civil service, females account only for 32 percent of permanent employees where this proportion exhibits a wide variation across regions (MOWA, 2006).

Even, those who have got a formal wage employment are segregated into particular types of occupations that are perceived as women's jobs. In the Ethiopian public sector, women are engaged in clerical, fiscal, custodial and manual jobs while they account only for 10 percent in professional and sciences; and 23 percent in administrative positions (MOWA, 2006). This indicates that, women have a lower access to high paying jobs and positions, owing to factors

related to education and training; traditional attitudes; lack of role models; and limited access to information.

As a result of such occupational segregation and differences in human capital endowment, gender wage gap prevails in the public sector. For the whole sector, Ministry of Women's Affairs (MOWA, 2006) reported the gap to be 14 percent whereas World Bank's (2007) report indicates a 22 percent gender wage gap. In the public sector, Appleton *et al* (1999) has found this gap to be about 18 percent. The source of this gap is not clearly known as one would expect an equal treatment between male and female in the sector. According to the implied study; however, more than 50 percent of the gender wage difference was due to non observable characteristics. Many writers trace the sources of this portion to either wage or occupational or both types of discrimination.

In Ethiopia, research works targeted on such a problem is extremely lacking. Most of the existing empirical works simply provide information on the raw average gender wage gaps which do not convey good information on gender discrimination (Beblo *et al*, 2003). This implies the absence of a clear image on both the size and sources of the gender earning gap in the Ethiopian labor market in general and the public sector in particular.

Therefore, this paper tries to give answers to such questions as: what is the magnitude of the gender wage differential in the public sector? What portion of this differential is due to differences in individual characteristics and what portion is due to discrimination or unobservable factors? What are the potential sources of the unexplained portion of the wage gap? And what is the contribution of job characteristics to the pay differentials?

1.3 Objectives of the study

General objective:

The general objective of this study is to explore the gender earnings gaps in the Ethiopian public sector.

Specific objectives:

- To analyze the impacts of demographic and economic factors on the gender earning differentials in the public sector.
- To measure the effects of gender discrimination on the gender pay gap in the public sector.
- To identify the major areas of intervention in improving the position of women in the labor market.
- To draw policy implications and recommendations on the basis of the results.

1.4 Significance of the study

As one of the Millennium Development Goals, gender equality is at the heart of the overall objectives of the Ethiopian government. In order to achieve this objective some observable measures have been taken. But how much these measures met their target is not clearly known in some cases. One of these cases is the extent of gender earnings differences in the labor market.

Two studies are worth mentioning in this regard. The first one was done by Appleton *et al* (1999) on the three African countries including Ethiopia. This study covered both private and

public sectors without providing a complete story of the prevailed wage and occupational discrimination. The other study by Temesgen (2006) is the recent one but so specific that it covered only employees in urban manufacturing firms. Therefore, the time elapsed since the first study has been made and difference in the area of specialty indicates the existence of a knowledge gap concerning the issue.

Therefore, this study is intended to fill the knowledge gap on the gender wage differences in the public sector in general and the current level of gender based market discrimination in particular. In addition to this, the findings of this study will be useful in conveying some message to policy makers concerning the pace of the policy measures intended to bring about gender equality in employment. It can also pave ways in conducting further research on the area for those who are interested to get a more extensive knowledge.

1.5 Scope and limitation of the study

Ethiopian urban labor market is characterized by its segregation in terms of the sector of employment and occupations. With regard to the sector of employment, the largest portion of the urban wage employment is assumed by the public sector. Therefore; the analysis of gender wage differential is based on the subsample of the Urban Employment Unemployment Survey of 2006. This subsample is selected by including only wage employed individuals in the public sector with their ages ranging between 10 to 65 years. Consequently, the findings of this study will be confined to public sector employees in the urban areas.

Since this study, however; employs a cross-sectional data, it could not address the temporal effects of antidiscrimination legislations. As such, it does not address the dynamic nature of

the problem, where gender discrimination may persist over time even if corrective measures are taken.

1.6 Organization of the Paper

In addition to this part, the paper constitutes six chapters. Chapter two presents the review of literatures related to the economics of gender discrimination. Particularly, the theoretical basis of gender discrimination in the labor market and relevant empirical works are briefly discussed. Chapter three provides the overview of Ethiopia's situation. The main focus of this chapter is to set the legal and institutional framework that governs employee-employer relation in the public sector. The prevailing situation of gender inequality in education and employment is also presented in this chapter to lay ground for the subsequent parts. The fourth chapter is concerned with conveying some information about the data set and the methodology hired to achieve the above objectives. Chapter five presents the analyses of results and discussion based on the descriptive and analytical tools. The six and the final chapter of the paper is the winding part in which conclusion of the major findings is made and the corresponding recommendations are also forwarded.

Chapter 2: Gender Inequality in Labor Markets

2.1 Gender Inequality and Its impact

It is often argued that Women are understated in terms of their contribution to the wellbeing and poverty reduction, and the differential treatments they face, as compared to men. They have less access to productive resources, education and employment. These have both direct and indirect impacts on the economy of a country (Blacken, *et al*, 2006) in many spheres.

Gender inequality in education leads to a reduction in the society's average human capital endowment in a country (Klasen 1999, 2002; cited in Blackden *et al*, 2006). According to Becker (1993), low human capital is associated with low productivity and hence leads to a retarded growth of an economy. Besides, failing to educate female corresponds to the loss of opportunity in reducing fertility rate and child mortality rate, and of promoting the education of future generation (Sackey, 2000).

If there is a gender disparity in access to employment opportunity, employers face a limited pool of talent in the market place (Blackden *et al*, 2003). They added that sex based differential treatment in the labor market leads also to the underutilization of human resource by the economy. Besides, if females are denied equal access to employment, they will be equipped with a lesser bargaining power within their family. This in turn reinforces the deprivation of women's entitlement to productive resources.

The other consequence of gender inequality related to employment is the crowding of women into a limited range of occupation where there is less responsibility and low pay (UNRISD,

2005). According to the United Nations (2000) report, this type of occupational segregation has the undesirable effect of limiting economic efficiency in the labor market. It excludes the majority of workers from the majority of jobs, reduces the flexibility of the labor market and of the overall economy at large. Due to the fact that women are endowed with a lower average human capital and they are concentrated in low paying occupations, they often face lower wage premium in the labor market as compared to men.

Therefore, the gender inequality in education, employment, access to resources, and earnings has a consequence of welfare loss to a family and a distortion on the performance of the overall economy of a given nation. Though gender inequality is manifested in many respects, the forthcoming discussions will concentrate on the gender discrimination in the labor market as one of the sources of inequality.

2.2 Gender Discrimination

It is said that current labor market discrimination exists if individual workers having similar productive characteristics are treated differently due to the demographic group to which they belong (Hersch, 2006). Several conditions have been prevalent in the labor market, where employers exercise a deliberate discrimination on illegal grounds. Discriminations based on gender, race, nationality, ethnic group, caste, religion or belief, sexual orientation, disability or health, HIV status, union membership, political affiliation and marital status are legally unacceptable (IFC, 2006).

Among these, gender discrimination has been the common policy concern of governments in both developed and developing parts of the world. The introduction of the term ‘glass ceiling’

in the United States in 1970s, (Wirth, 2001), witnesses the existence of deep-rooted practices of gender discrimination in the developed world. According to this evidence, the term was coined to describe the invisible man made barriers that stem from the attitudinal and organizational prejudice against women. Glass ceiling detours women from senior executive positions. Hence, it is a clear reflection of social and economic inequality between male and female. It is apparent in most of the developing countries of the world that women and men have different access to resources, job opportunities and status, which has persisted even after the ratification of international instruments (UNRISD, 2005).

According to Hatt (1997), gender discrimination in the labor market can be traced to both supply and demand side sources. Some of the supply side factors include: time constraint as women spend much of their time in domestic chores, lack of access to labor market information and unequal access to national training and apprenticeship that affect the availability of women for employment. On the demand side, unequal hiring, unequal pay for similar jobs, occupational segregation, biased promotion, disparity in the vulnerability to retrenchment and difference in access to workers' organization account for the major constraints. In order to formalize our discussion, let us have a brief review on the theories of discrimination that commonly appear in economics literatures.

2.2.1 Theories of Discrimination

Theories of discrimination can be divided into two broad categories. The first category is based on the assumption of competitive labor market under which we found two sub-categories namely: Personal-Prejudice models (preference based discrimination) and statistical

discrimination. The second category is referred to as non-competitive models of discrimination. These two distinct categories make the topics of discussion that follows.

2.2.1.1 Discrimination in a Competitive Labor Market

Under competitive market setup, models of discrimination are categorized into personal prejudice model and statistical model of discrimination. According to these models, employers hire workers based on factors that are unrelated to their actual productivity characteristics. Let us have a look at these models one by one.

a) Personal-Prejudice models

Personal Prejudice model (also called preference based discrimination) is the theory that has been developed by Becker (1957). According to this theory, employers, workers, or customers avoid working with workers belonging to a specific race or gender. Following this, Raynolds *et al* (1997) identified four types of preference discrimination.

Employer Discrimination: In order to explain employer discrimination, Ehrenberg and Smith (1996) used two assumptions. First they assumed cases in which male employers are prejudicial against women and minorities where customers and fellow employees are not. Secondly, women and minorities are assumed to have the same productive characteristics as males. The implication of this later assumption leads to the focus put on market discrimination where pre-market factors are ignored. On the other hand, employers consider women's productivity characteristics to be lower than man which is a clear manifestation of personal prejudice. Employer discrimination can be demonstrated graphically or using a mathematical measurement.

The measure of employer discrimination was introduced by Becker (1957). He formulated a market discrimination coefficient (MDC) as the difference between the ratios of male's wage to female's, under discrimination and under no discrimination. Becker defined π_f and π_m as actual earnings of female and male respectively. He defined also the no discrimination version of these wages as π_f^0 and π_m^0 . Thus the discrimination coefficient is given by:

$$MDC = \frac{\pi_m}{\pi_f} - \frac{\pi_m^0}{\pi_f^0} \dots\dots\dots (1)$$

If males and females are equally productive $\pi_f^0 = \pi_m^0$, and

$$MDC = \frac{\pi_m}{\pi_f} - 1 \dots\dots\dots (2)$$

Following the same manner, Oaxaca (1973) developed the variant of Becker's formulation: the measure of discrimination (D) as:

$$D = \frac{W_m/W_f - (W_m/W_f)^0}{(W_m/W_f)^0} \dots\dots\dots (3)$$

Where (W_m/W_f) = the observed male – female ratio

And $(W_m/W_f)^0$ = the male – female ratio in the absence of discrimination.

According to Oaxaca (1973), $(W_m/W_f)^0$ is estimated by assuming the neo-classical case where employers in a non discriminating labor market pays wages based on the principles of cost minimization.

$$(W_m/W_f)^0 = MP_m/MP_f, \dots\dots\dots (4)$$

where, MP_m and MP_f are marginal products of male and female respectively.

Substituting (4) into (3) and taking the logarithm of both sides will produce:

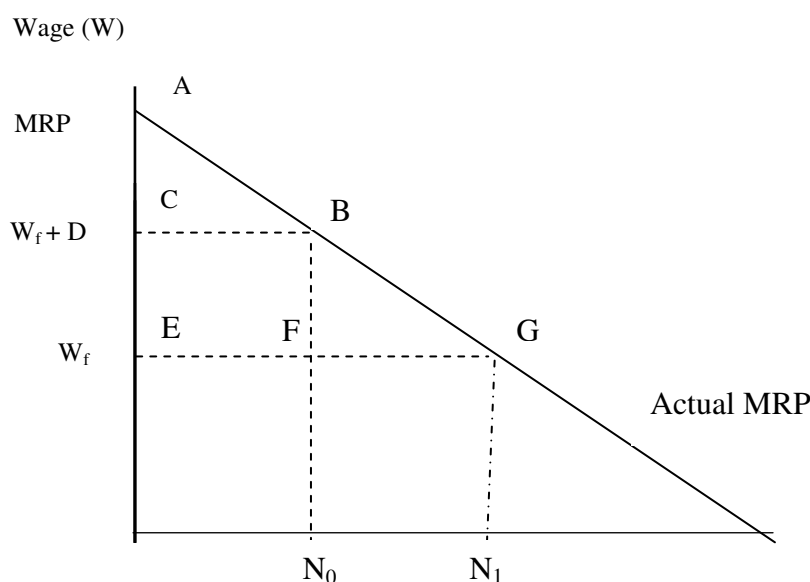
$$\ln \bar{W}_m - \ln \bar{W}_f = \ln MP_m - \ln MP_f + \ln(D+1), \dots\dots\dots (5)$$

Where $\bar{W}_m$ and $\bar{W}_f$ are the average hourly wages for males and females respectively.

In equation (5) $\ln MP_m - \ln MP_f$ is that part of the wage differential due to differences in male–female productivity, and $\ln(D+1)$ is the component of discrimination. In this equation, Becker (1957) defined the market discrimination coefficient as the percentage wage differential between two types of perfectly substitutable labor. But for those cases where the two factors were not necessarily perfect substitutes, he defined the coefficient as the simple difference between observed wage ratio and the wage ratio that would prevail in the absence of discrimination (cited in Oaxaca, 1973, Cotton, 1988). From this, we can see that the discrimination coefficient in equation (3) is the generalized measure of Becker’s definition for which it admit perfect substitutes as a special case and hence appeals for its empirical flexibility.

Employer discrimination can be shown also using diagram. To do this, let us suppose MRP is the actual marginal revenue productivity of all workers in a market and, D is the extent to which this productivity is subjectively devalued for women and minorities. Thus the market equilibrium for male will occur at $MRP = W_m$ and that of women will be when $MRP = W_f + D$. This implies that women should offer their labor at lower payment than men in order to compete for a job. This situation is represented by the following graph.

Figure 2.1 Equilibrium employment of women in firms that discriminate.



According to Ehrenberg and Smith (1996), two implications are inherent in employer discrimination model as observed from the above graph. The first one is about the level of employed labor for discriminatory employer and profit maximizing employer. A discriminatory employer hires N_0 with a market wage rate of W_f where $MRP = W_f + D$. But, a profit maximizing employer will hire N_1 labor which is attained when $MRP = W_f$. As a result of this, a profit for a discriminating employer is $AEFB$ while it is AEG for a non-discriminating one. The second implication of this model has to do with the magnitude of the

pay gap W_m and W_f . In order to understand the determinants of the pay differences, one should extend the analysis of a firm to that of the market demand.

Customer Discrimination: There are conditions under which clients of a given organization dislike to be served by women or minorities. In such cases the owner or employer of that organization refuses to employ women and minorities even though he/she has no any taste for discrimination. Hence, this type of discrimination is referred to as customer discrimination (Reynolds *et al*, 1997).

Employee Discrimination: When, employees belonging to some demographic group, posses a taste for discrimination against some other groups, they will give up to be associated with the later. Consequently, the majority group will forego some job opportunities due to their discriminatory taste (Reynolds *et al*, 1997).

Occupational Crowding: If we assume a gender based discrimination, it seems widely acceptable for males to give orders to females. Conversely, orders given from females face a great objection from male recipients. Due to this fact, it is less likely for females to move up the occupational ladder. Therefore, females are 'crowded' into the least paying jobs (ibid).

b) Statistical Discrimination

Statistical discrimination, some times called imperfect information model of discrimination, is the one that happens when employers guess the potential productivity of employees based on the average characteristics of the groups to which they belong. If equal payments prevail for male and females, but employers believes that females have less work attachment, they will

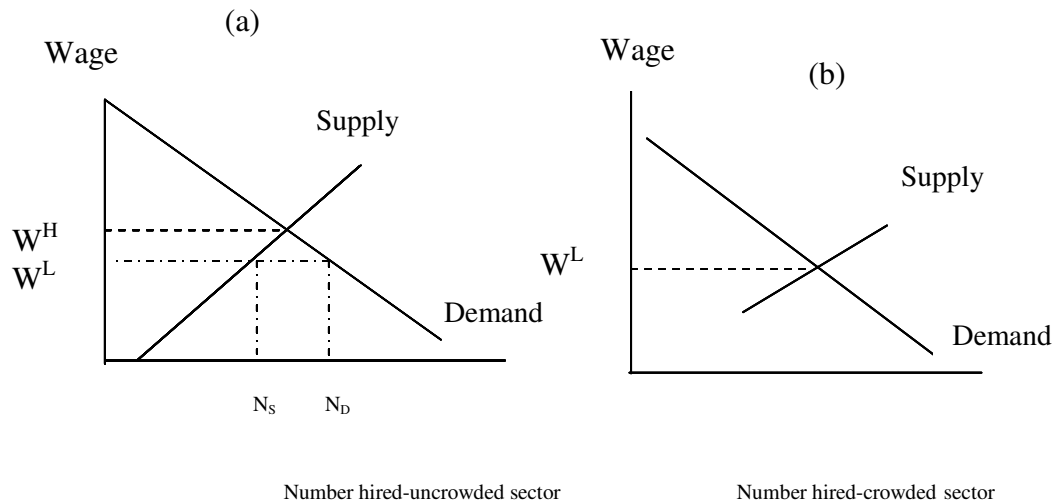
offer less jobs to females. This model is considered as part of the screening problem where information on personal productivity characteristics is imperfect (Reynolds *et al*, 1997).

2.2.1.2 Non competitive Models of Discrimination

In practice, we found most labor markets to be non-competitive (Ehrenberg and Smith, 1996). There are direct and indirect entry restrictions on potential entrants. There are many effects of labor unions, occupational licensing and minimum wage laws. On the other hand, firms have some degree of control over the wages they pay either through collusive behavior or monopsonic power. Based on this, Ehrenberg and Smith (1996) identified the following four cases.

Crowding: A great deal of occupational segregation is observable in labor market following many reasons. There are situations where a deliberate crowding policy that pushes wages down in some occupations. This is a phenomenon called 'Crowding hypothesis'. The hypothesis can be shown using graph or mathematical presentation.

Figure 2.2 Occupational Crowding



In Figure 2.2, if we compare panel (a) and panel (b), panel (a) shows a market where demand is higher than supply and the wage (W^H) is relatively higher. Conversely, panel (b) represents the influence of crowding in boosting supply in relation to demand. This will eventually lead to a lower wage as compared to the former. The magnitude of occupational crowding and its effect on wages can be estimated also using an empirical method.

According to Hersch (2006), occupational segregation is often measured by the index of dissimilarity (d) as:

$$d = \frac{1}{2} \sum_{i=1}^I |p_{im} - p_{if}|, \dots\dots\dots (6)$$

where p_{im} and p_{if} represent the proportions of males and females, respectively, in the labor force employed in occupation i , and I is the number of occupational categories. If men and women are equally distributed across occupations, the index (d) will have the value of zero. An index value of 100 would come out in case of a complete segregation. However, this is not a perfect measure of occupational segregation since it is not invariant to the units of measurement.

There is also another approach that would help in testing the crowding hypothesis as documented in Polachek and Siebert (1993). This is performed by assessing the variations in average wages of male and female when occupational distributions are interchanged.

To this end, Polachek and Siebert (1993), assumed two occupations, skilled (s) and unskilled (u). Average male and female wages $\bar{w}_m$ and $\bar{w}_f$, respectively, are the weighted averages of the two sexes in the two occupations:

$$\bar{w}_m = w_m^s p_m^s + w_m^u (1 - p_m^s) \dots\dots\dots (7)$$

$$\bar{w}_f = w_f^s p_f^s + w_f^u (1 - p_f^s) \dots\dots\dots (8)$$

Where p is the fraction of each sex in each occupation, the superscripts s and u stand for skilled and unskilled occupations respectively, and subscripts m and f are for male and female respectively.

The hypothetical females' wage if they face equal pay with males in each occupation is:

$$\bar{w}_f^H = w_f^s p_f^s + w_m^u (1 - p_f^s) \dots\dots\dots (9)$$

The next work is comparing $\bar{w}_f^H$ with $\bar{w}_m$ and $\bar{w}_f$.

$$\bar{w}_m - \bar{w}_f^H = w_m^s (p_m^s - p_f^s) + w_m^u (p_f^s - p_m^s) \dots\dots\dots (10)$$

Therefore, provided $\bar{w}_m = \bar{w}_f^H$, then $p_m^s = p_f^s$ and $\bar{w}_m$ could differ from $\bar{w}_f$ if and only if $w_m^s > w_f^s$, and $w_m^u > w_f^u$. This is the indicator of wage discrimination. On the other hand, if there is a large gap between $\bar{w}_m$ and $\bar{w}_f^H$, then the gap between p_m^s and p_f^s will be bigger. In this case occupational crowding is more important. In addition to this:

$$\bar{w}_f^H - \bar{w}_f = (w_m^s - w_f^s) p_f^s + (w_m^u - w_f^u) (1 - p_f^s) \dots\dots\dots (11)$$

Equation (11) shows that if $\bar{w}_f = \bar{w}_f^H$, with in an occupation, wages are the same and the reason for which $\bar{w}_m > \bar{w}_f$ must be because females are *crowded into* the unskilled occupations.

Practically, it is often for $\bar{w}_f - \bar{w}_f^H$ to be quite larger than $\bar{w}_m - \bar{w}_f^H$ implying that it is variations in wage given the job rather than differences in the type of jobs done that mainly makes females earn lower than males (Polachek and Siebert, 1993).

- **Dual Labor Market:** According to recent works by economists, there are two non competing sectors in the labor market namely the primary and secondary sectors. In primary sectors jobs offer relatively better wages, stable employment, better working environment and optimistic future. On the other hand, secondary sector employments are characterized by lower wages, insecure jobs with poor work environment, and nearly zero return to human capital endowment. The most important feature of this model is the limited opportunity for workers to move between sectors. Therefore, workers in the secondary sector are less likely to attain jobs in the primary sector once they are hired.
- **Search Related Monopsony:** Search related monopsony is the model in which mobility is restricted due to high job search costs to employees. It is the mixture of monopsonistic model of firms and the prejudice model. In simple word, the prevalence of, at least, some discriminatory employers push the search costs of minorities and women up thereby limiting their mobility.
- **Collusive behavior:** There are theories that assume employers colluding with each other in order to get power over minorities or women. The eventual result of this collusion is the

creation of monopsonic wage upon the minorities or women group while owners happen to serve their own interest.

2.2.2 Manifestations of Gender Discrimination

With regard to the manifestation of discrimination, Ehrenberg and Smith (1996) categorized into wage and occupational discriminations. Wage discrimination occurs when employers pay lower wages to women than men despite their similarity in productive characteristics and occupation. On the other hand, occupational discrimination is said to happen when employers hinder women's entry into higher paying job or levels of responsibility. But it should be noted that the prevalent gender wage differential and occupational segregation are not caused entirely by wage discrimination and occupational discrimination, respectively. Many factors contribute to such inequality while discrimination could account only to a portion of it. The following sub sections will try to give an insight into this issue by presenting some of the theoretical and empirical evidences.

2.2.2.1 Occupational segregation by sex

Gender based segregation is prevalent in almost all economies regardless of the level of economic development, the political system, or the religious, social or cultural environment. Women's access to formal employment is lower than men's. They dominate men in the informal sector of employment where returns are low and working conditions are poor (UNRISD, 2005). The distribution of men and women is different across the economic sectors. According to ILO research, about half of the world's employments in gender

stereotyped jobs where one gender group is over represented to the extent of 80 percent (Wirth, 2001) in a particular job type.

In Kenyan labor market, Kabubo-Marara (2003) found that the occupational distribution of males and females is skewed in favor of males. In both skilled public sector and unskilled private sector the proportion of males is higher than females, except in business where both sexes occupy the same percentage (8%). Women occupied less lucrative jobs such as farming in which they account for about 60 percent of the total employment in the sector. In Ethiopia, it was indicated that women have less chance to be employed in the private formal sector than the public sector while they account more than 90 percent of all employees in domestic works (Krishnan, 1994).

Within the same sector of employment, too, there is a sex based occupational segregation (Brown *et al*, 1980a). Male and female are disproportionately represented in different occupations. According to Hatt (1997), if male and female work in different occupation, it is said that horizontal segregation prevails. But if males occupy the more senior position while women are limited to the lower hierarchy of the same occupation, it is referred to as vertical segregation. In any of these dimensions, females' occupations are typically characterized by low payment, little employment security, little authority or career opportunities and are socially less valued (UNRISD, 2005). Consequently, the impact of occupational segregation goes beyond lowering the average earnings of women unlike their men counterparts.

As far as occupational segregation is concerned, it seems necessary to identify the underlying causes. According to Hatt (1997), the major source of occupational segregation is the prevalence of barriers on the mobility of workers across different jobs. If there are barriers

that hinder the mobility of workers between men's jobs and women's jobs, the labor market will be separated into two distinct parts. Such barriers can stem from either the demand side or the supply side of the labor market. From the supply side, human capital endowment, differences in talents and ability, entry barriers and social exclusions make the major explanation. From the demand side, employer's discrimination against male or female candidates will lead to over representation of one group in some occupations.

Human capital theory explains occupational segregation as the result of differences that men and women possess in terms of taste and preferences, talents and aptitudes, and skills and qualifications. Due to these factors males' occupational choice differ from that of females'. The differences in the subject studied by girls and boys, both at secondary school and higher institutions make them equipped with diverse skills and qualifications. Besides each sex has its own expectation about their future work life. These two differences will end up with distinct job choices for males and females (Wirth, 2001; Hatt, 1997; Reynolds *et al*, 1998). Particularly, if these occupational choices arise from preferences that have been shaped by household responsibility or traditional beliefs held against females, it signifies the prevalence of pre market discrimination. In these cases, current labor market discrimination does not reflect the overall discrimination females face in the market (Ehrenberg and Smith, 1996).

An alternative explanation of job segregation is social exclusion. If one occupation is dominated by males, females lack confidence and willingness to join the job. In this set up the possibility of representing males in all management position will exert a push force on female entrants. Therefore, organizational culture becomes exclusionary for females. Ehrenberg and Smith (1996) added that fear of sexual harassment, the influence of social factors and

expectations, and the effects of trade unions discourage potential women entrants into some occupations.

The other important explanation of occupational segregation goes with employer's discriminatory employment against females. This discrimination can take any of the forms that exist in theory. From the above discussion we can clearly see that occupational segregation is not necessarily caused by occupational discrimination. Rather it is the added effect of various factors in addition to discrimination. Empirical findings (for example, Brown *et al*, 1980b) indicate that personal characteristics and tastes explain only part of the gaps in the distribution of occupation between males and females. A substantial portion of occupational segregation is attributed to discrimination.

2.2.2.2 Gender Wage Differential

There is a considerable debate among academicians and researchers about the contribution of sex discrimination in the persistent gender pay gap (Hersch, 2006). It is known that part of wage differential is attributed to differences in measurable characteristics like education, work experience, occupation and other personal and family characteristics. But, the quantitative dimension of the contribution of such sources of gender wage disparity is not perfectly computable if not difficult (Blinder, 1973; Polachek and Siebert, 1993; Hersch, 2006). Even when all the observable characteristics are accounted for, some portion of the wage differentials still exist whose sources are not readily known. But, we can identify a number of potential factors that may lead women into the unfavorable positions of the labor market.

According to Hersch (2006), the choice of women that arise from their responsibility in the house hold and child related activities, may cause a gender wage difference. They differ from men in terms of their anticipated and actual labor market commitment, and preferences. This brings about a gender disparity in investment in human capital. Becker (1993) has documented that women's labor force attachment is lower than men and, thus have a less motivation towards putting their money in their human capital development. They want to share their investment in ways that foster their roles in the family and their participation in the labor market. As a consequence to lower human capital investment, women's earning becomes lower (Hersch, 2006; Mincer and Polachek, 1974)

Hersch (2006) indicated that, the average earnings of women with children is substantially lower than that of men (and correspondingly below that of childless women). He argued that having children has a negative effect on women's earning in most of the cases. One of the justifications goes with the intermittent participation of women in the labor market due to marriage and child bearing. Indeed, Mincer and Polachek (1974) identified particular stages where married women cease labor market participation and their tendency to resume later on. The resulting intermittency leads women's skills and experience to be lower than that of men's which in turn reduces their average earning.

Women and men also differ in the major they choose in college education and even in high school based on the costs and benefits of their choice. Hersch (2006) cited the findings of Polachek (1978) that, women select college majors that entail lower penalties to their potential intermittency in the labor force participation. This differential in college major accounts for a substantial portion of the gender wage gaps owing to the direct influence this choice has on

occupational segregation. Both horizontal and vertical segregation play a significant role on the gender wage differential (Wirth, 2005). According to this study, even though recent trend shows that the gap is slowly closing it is likely to remain in face of occupational segregation. Blinder (1973) documented that the failure of females to move up the occupational ladder throughout their lives was the most important factor that brought about a gender wage differential.

In order to measure the impacts of each of the factors, that determine earnings, on the gender wage differential, different researchers use different approaches of analyzing the problem. One of the famous approaches is the traditional methodology introduced by Oaxaca (1973). This approach decomposes the wage gap into the effects of discrimination and the effect of individual characteristics. Oaxaca (1973) argues that there exists a discrimination against females whenever the relative wage of males exceeds the relative wage that would have prevailed if payments were made according to the same criteria. This method is anonymous to that of Blinder (1973) except, for the special treatments made to solve the endogeneity of some regressors in the wage equation. But this approach suffers from the index number problem in determining whether it is the male or female wage which should be used as the non-discriminatory wage.

The other variant of the Oaxaca's approach with some appealing features is the one by Brown, Moon and Zoloth (1980a, 1980b) that accounts for an endogenous selection of occupations in the wage and salary sector. This method is attractive, in the first place, that it takes into account that gender differences in sectoral distributions could result from barriers to entry into certain sectors, and second, it allows for in the endogenous determination of the sectoral

distribution. Besides, it takes into account that difference, in characteristics vary across economic sectors and, hence, that they play an important role in explaining male female differences in earnings.

The other developments that were intended to solve the index number problem include cotton (1988), Neumark (1988) and Oaxaca and Ranson (1994). These approaches compute the non discriminatory wage structure as the weighted mean of male and female wages. The underlying assumption here is employers are not only nepotistic towards females but also discriminate against females. However some studies criticize this approach for its practical applicability. They argue that it is the male's wage that is used as a reference to deal with legal cases.

According to Beblo *et al* (2003), Oaxaca-Blinder decomposition was developed for a cross-section wage models. Therefore, they preferred using the method introduced by Juhn, Murphy and Pierce (1993). They had a belief that this method is more suitable for extensions either in time (longitudinal wage made) or in space (for cross-country comparisons). The approach is the extension of the Oaxaca-Blinder method that decomposes the wage gap not only at the mean but over the whole wage distribution there by accounting for the residual (unexplained) wage distribution. Similarly, Albrecht, Vuuren and Vroman (2004) used a generalized version of Oaxaca-Blinder approach called Machado-Mata Decompositions. In this method the authors introduced the utilization of a quintile regression in their wage decomposition. This and other recent studies make an adjustment to sample selection bias in various manners.

In Africa's context, most of the above techniques have been adopted to deal with the gender pay gaps. For instance, Appleton *et al* (1999) used the Neumark (1988) and the variant of

Brown *et al* (1980b) methods by taking data from Ethiopia, Uganda and Cote d'Ivoire. The approach of Brown *et al* (1980b) was used to account for the effects of labor market segmentation as public sector, private sector and self employment to deal with the non-random selection of individuals into these sectors. The other study is the one conducted in Kenya by Kabubo-Mariara (2003). She adopted the Oaxaca and Ranson (1994), and Neumark (1988) approaches both with correcting and without correcting sample selection bias. The usage of quintile regression approaches have also been used by Ntuli (2004) in South Africa. Results of these approaches indicate that differences in the methodologies bring about different sizes of the gender wage differential. Besides, the result varies also with time, age group, country, size of the wage earned, and sector of employment.

Using quantile regression, Ntuli(2004) showed that differences in returns to observable characteristics between males and females vary along the age distribution and from year to year. In 1995 the raw gender wage gap monotonically falls as it moves up the quartiles. However, in 1999 the gap reveals a sudden increase between the 10th to the 25th percentile after which it starts declining. Similarly, the gender wage gap was shown to be declining towards the upper tails of 2004 wage distribution. More importantly the counterfactual wage gap decomposition shows women receive lower wage than men though they had the same characteristics. This result is peculiar to the South African formal sector employees over 1995, 1999 and 2004.

When similar methods are used across countries, the results may often differ. Appleton *et al* (1999) indicated a great deal of differences in the decomposition of wages across three African countries. Accordingly, they have found that the largest portion of the gender wage

differences is due to unobservable factors for Ethiopia and Uganda. Particularly, the Neumark decomposition resulted in a less than 20 percent of the wage differential attributed to differences in personal characteristics in case of Uganda. For Ethiopia, however; both differences in returns to characteristics and differences in observable characteristics were shown to have equal roles in contributing to the implied wage gaps.

In order to see differences between countries, Beblo *et al* (2003) used the Juhn-Murphy-Pierce method. They compared the wage gaps between Italy and Germany. In the raw wage gap, the differences between these two countries range from 2 to 7 percentage points. The inter country and intra country differences were found to explain some portion of this difference. France men were relatively advantageous than their Germany counterparts in terms of human capital and job characteristics. But the largest part of the raw differential between these two nations was attributed to differences in remuneration gaps. The distribution of the wage gaps along the age group also differ from country to country. In Colombia, Badel and Pena (2007) found a U shaped distribution along the age quartiles. But the same methodology in South Africa; (Ntuli, 2004) exhibited a consistent increase from bottom to the higher tails of the wage distribution in 1995 while this result is reversed for 1999.

The gender wage gaps also differ with the size of wage earned. For Germany, Beblo *et al* (2003) indicated that the raw wage gap first declines and then rises when moving up the wage distribution. Upon decomposition of the raw gap they found not only the effect of endowment and remuneration, but also that of unobservable characteristics. Part of the wage differential attributed to different endowments of males and females rises up the wage distribution in

which it is only 20 percent of the lower wage level while it is more than 50 percent among the high wage members of the two sexes. The effect of remuneration exhibited the reverse way.

In Kenya, the Oaxaca method resulted in a 70 percent male female wage differential attributed to unexplained factors when female wage structure is used as a non discriminating wage in the public sector. This result was found to be 75 percent in the private sector. But from the combination of private and public sectors, the result was amounted to 75 percent. On the other hand when male wage structure is used, 69 percent of the wage gap was due to unexplained factors in the public sector while this result stood up to be 74 percent in the private sector. Hence these results justify that the Oaxaca method does not suffer from the index number problem. Using Neumark (1988) decomposition method the wage gap due to discrimination was 78 percent for the public sector and 71 percent in the private sector. The wage gap from the full sample was also the same to that of the public sector (Kabubo-Mariara, 2003).

Between public and private sector, Appleton *et al* (1999) estimated the gender wage gap to be comparable in Uganda. But in Ethiopia there exist a much wider gap in private sector as compared to the public sector. In both the sectors, differences in returns account for the largest portion of the wage gap. In case of Uganda and Cote de'Ivoire, this is true only in the private sector. On the other hand, it is the difference in characteristics that explain much of the gap in public sectors. As a result it was alleged that the public sector in Uganda and Cote de'Ivoire is less discriminatory against women than the private sector. This, however, is not true in case of Ethiopia.

A closer look at the literatures suggests the importance of knowing the root causes of gender inequality in the labor market. To this end, we need to select the appropriate method of

investigating the problem. Even though there are no hard and fast rules in choosing the required method, the relevance of the underlying assumptions is crucial in using one of the available methodologies, in view of a particular labor market and the nature of the available data. Nevertheless, the findings of all the above works, commensurately, indicate that gender inequalities in occupations and earnings are not entirely the consequence of market discrimination. There are many other factors that explain the implied differences between male and female. Most of these factors represent such characteristics as human capital, personal, demographic and job related variables. More importantly, the consulted works indicate that discrimination still plays a significant role in denying women's access to the opportunities they would deserve in the labor market.

Chapter 3: Overview of the Ethiopia's situation

Ethiopia is among those countries who have ratified the international instruments including: Convention on the Elimination of all forms of Discrimination against Women (CEDAW), Equal Remuneration Convention (convention No.100), and convention concerning occupation and employment discrimination (convention No.111) (ILO, 2003). In line with these conventions, the Ethiopian government has passed compatible laws and established the corresponding institutions. Despite this fact, the United Nations' report (UN, 2002) indicated that majority of the Ethiopian women suffer from all forms of discrimination and violence. Particularly, women are the primary victims of injustice in the areas of civil and political rights, personal and family rights, protection against violence, employment and working conditions, and administration and usage of property (World Bank, 1998).

This chapter will briefly present the prevailing situation of gender inequality in the Ethiopian formal sectors of employment with a special emphasis given to the public sector. In order to do this, it is necessary to examine the legal and institutional frameworks that govern the employment and working conditions of men and women.

3.1 The Legal and Institutional Framework

International legal instruments, in which Ethiopia is also a signatory, require that all forms of discrimination are abolished in access to employment, training and working conditions on grounds of race, color, sex, religion etc. Among the famous instruments are: the United Nations' CEDAW; the ILO Equal Remuneration Convention, 1951 (convention No.100); and the Discrimination Convention, 1958 (convention No.111). Convention No.100 calls for equal

pay for men and women in doing works of equal value while convention No.111 forbids discrimination in employment and occupation (ILO, 2003).

The United Nations' CEDAW encompasses broader range of areas in which women shall not be discriminated. One of these areas is the area of employment in both private and public spheres (Art.11 of the convention). In this regard, the convention requires that men and women shall be granted equal rights to employment opportunity; free choice of profession and employment, promotion, job security and all benefits and condition of service and the right to vocational training and retraining; and the rights to equal remuneration, social security, protection of health and safety in working condition. Besides, it prohibits dismissal on the grounds of pregnancy or of maternity leave and discrimination in dismissals on the basis of marital status. The convention also requires that states parties introduce maternity leave with pay or with comparable social benefits without loss of former employment, security or social allowances, and provide special protection to woman during pregnancy in types of work proved to be harmful to them.

As a prerequisite to implementing the international instruments, it is expected that the same is incorporated in the national legislation. Accordingly, Ethiopia has enshrined elements of the ratified conventions in the national labor legislation. But this does not imply that anti-discriminatory provisions are incorporated in the national legislation only when international conventions demand to do so. They can be legislated before ratifying such conventions, as long as they are important to the nation. For instance, Ethiopia has ratified Equal Remuneration Convention in 1963 and Discrimination Convention in 1966 (ILO, 2003). But, the right to equal pay for men and women for doing works of the same value and equal access

to employment opportunity were incorporated in Public Service Regulation No. 1/1962, Decree No. 49 of 1962, and the Civil Code of 1960, before ratifying these conventions.

Appendix (vi) displays the Ethiopian labor legislations by which employee and employer relations are governed. In addition to the anti-discrimination conventions, Ethiopia has ratified about 18 ILO conventions that are currently being in effect (ILO, 2003). Elements of these conventions are well incorporated also in the national legislations. Only two of the eight core ILO conventions are yet ratified. These are Forced Labor Convention, 1930 (convention No.29) and Worst Forms of Child Labor, 1999 (convention No.182) (ibid). Despite this fact, among all the legislations, the 1995 constitution of FDRE embodied provisions that forbid forced or compulsory labor and the worst forms of child labor.

A critical look at the Ethiopian labor laws indicates that all are not equally gender sensitive. With regard to maternity leave, they do, commensurately, recognize the need for it. But they differ in terms of the duration of the leave and the recognition of the prenatal and postnatal leaves. Public Service Regulation No. 1/1962 states that, ‘maternity leave shall be granted for up to six weeks on full pay, reckoning against normal sick leave.’ During the early period of pregnancy, if a woman requires a leave to deal with pregnancy related matters, she can get the leave which will be considered as an ordinary sick leave. Similarly, the Civil Code of 1960 allows only for 30 days with half pay which in effect means a 15 day leave with pay. Therefore, these laws provide not only a short duration of maternity leave but they also ignore the need for prenatal and postnatal leaves. Labor Proclamation No. 1975 prolonged a paid maternity leave to 45 consecutive days which commence after the delivery.

The subsequent laws: Labor Proclamation No. 1993, Proclamation No. 377/2003, the Civil Service proclamations No. 262/2002 and Proclamation No. 515/2007 guaranteed a woman worker a total of three months leave in relation to pregnancy and delivery. A period of 30 consecutive days is provided with full pay preceding the presumed date of confinement and a period of 60 consecutive days of maternity leave after her confinement.

Generally, all the Ethiopian labor legislations guarantee every Ethiopians the right to equal opportunities in employment and the right to equal remuneration for equal works regardless of sex, religion and culture. They also reflect other issues that are included in the international instruments most of which have been ratified. Some of the conventions have already been incorporated in the legislation without being ratified. Therefore, the Ethiopian labor legislations are in agreement with most of the labor related international instruments.

3.2 Current actual situation regarding anti gender discrimination legislation

The legal and policy environment

In order to end any kind of injustice that women face in every sphere of life, various efforts have been made by the Government of Ethiopia. The current Constitution of the FDRE entitles women to enjoy a special type of affirmative measures by considering the historical legacy of inequality and discrimination they suffered. Particularly, these measures have aimed at providing special attention to women so as to enable them compete and participate on the basis of equality with men in political, social, and economic life as well as in the public and private institutions.

According to the UN (2002) report, a significant change has been noticed in the legal and institutional framework of the country to ensure protection of women's right. From family code to penal code, from succession law to citizenship rights, a massive revision has been carried out to make the legal system and instruments women friendly. The Women's Affaire Office lobbied the law makers and different agencies to ensure revision of all discriminatory laws. Consequently, the labor laws have been revised in favor of women's right in which additional affirmative actions have also been incorporated.

Even though Ethiopia's labor laws meet the international standards in gender equality, they may lack other qualities that may entail indirect impacts on women's working condition. For instance, Teshome (1995) indicated that Proclamation No. 42/1993 (and hence its direct copy: Proclamation No. 377/2003) harms the occupational security of workers that would have been ensured by Labor Proclamation No. 64/1975, had it not been repealed. On the other hand, all the new labor legislations have failed to achieve the desired objectives due to loose enforcement and ineffective implementation (United Nations, 2002).

With regard to anti-discrimination laws, MOWA (2006) disclosed that there is a problem of implementing these laws which results, mainly, from lack of awareness concerning both the national laws and the national policy on women. The causes of the poor track record of anti discrimination laws, also, include inadequacy of institutional assistance; the difficulty of proofing discrimination; the delays in the operation of the judicial process; and understaffed, ill-equipped and poorly resourced enforcement bodies (Daniel, 2004).

Contrary to this, additional guidelines have been developed to facilitate the implementation of the labor laws. These guidelines include the national policy on women's affaire and the

national action plan on gender equality. The national policy had been developed in 1993 through which Ethiopia has reflected its commitment to ensure gender equality. The formulation of this policy was based on the respect for human and democratic rights without distinction and on the international agreements and conventions to which Ethiopia is a signatory. The primary objective of this policy is facilitating condition to the speeding of equality between men and women so that women can participate in the political, social, and economic life of their country on equal terms with men. In addition to this, this policy aims at ensuring women's human and property rights; removing barriers that exclude women from the enjoyment of the fruit of their labor or from performing public functions and becoming decision makers (TGE, 1993).

In order to implement this policy, the corresponding strategies were also set in the document. In this regard, the government has promised to take all the necessary measures that ensure equality of men and women in every spheres of life including employment, education, and decision power. The implementation strategy includes also the establishment of a responsible institution at every levels of government administration. At the national level the Women's Affaire sector in the Prime Minister Office has been given the responsibility of coordinating, facilitating and monitoring of women's affaire activities. The regional Women's Affairs sector and the Women's Affaire departments in Ministries and Public Organizations are the responsible organs at regional levels and in the Ministries and Public Organizations, respectively.

Following the strategies set in the national policy, some Ministries were found to have played a relatively better role in mainstreaming gender. According to the report by the United Nations

(2002), the Ministry of Education and the Ministry of Health are the prime leaders not only in terms of developing their own policies but also by bringing sizable changes upon an effective implementation. The report also indicated that the Ministry of Labor and Social Affairs (MOLSA) has exerted its possible effort in improving women's condition through incorporating special provisions in the labor legislation. MOLSA has also identified jobs and works that are dangerous for women's health and developed women's social services which are run by Nongovernmental Development Organizations (UN, 2002).

As of the recent period, a five year National Action Plan for Gender Equality (NAP-GE) is in effect after being developed by the Women's Affaire Office (WAO) in 2006; which will be used as a tool for the promotion of gender equitable development. This plan was formulated after identifying the prevailing gaps between male and female in many aspects. All the possible factors that would impede the implementation of gender policy and related legislations were also identified through situation analysis (MOWA, 2006).

The above measures are among the practical steps that have been undertaken to implement the labor laws and related international instruments against gender discrimination. Following this measures, improvements have been observed in some social and economic spheres though it is difficult to conclude that the improvements have entirely resulted from the implied policy measures. The following section describes the trends and the current situation on the gaps between males and females along with the areas of improvements, regardless of the possible sources.

Situations in work related environment

The situation of wage employed women in the Ethiopian labor force differs between the private and the public sector. Evidences show that women face more discrimination in the private sector than in the public sector. The survey on urban establishments by Daniel (2004) revealed that women candidates are less preferable to be hired by many of the private employers. According to this study, private employers perceive women as less productive and less efficient (31.9 percent); endowed with less supervisory skills (48 percent); have unstable work attachment(38.3 percent); lack punctuality(44.7 percent); and prone to absenteeism(57.4 percent). Regarding the criteria for recruitment, this study documented that though human capital characteristics assume the primary position, other factors such as personal appearance, sex of the applicant and marital status also play their own roles. In his conclusion, Daniel (2004) described that the employment conditions are more conducive to men than to women applicants.

In the public sector, the presence of a better legal framework minimizes the possibility of such a discriminatory treatment against women. Nevertheless, women have been denied equitable benefits with men in the public sector, too. Past trends and current experiences show that women make an insignificant portion of the total employment in the sector.

According to Teshome (1992), female employees in the public sector had been only about 23 percent of the total employment in the sector in the year 1983. Even after including private sector employees, women workers had been only 32 percent of the total employment during the same year. The current actual data from the Federal Civil Service Agency also reveals the persistence of the same trend.

Table 3.1 The trend of male and female employees in the Public Sector

<i>Year</i>	<i>Permanent employee</i>				
	Male		Female		Total
	No.	Percentage	No.	Percentage	
1976/7	96970	87	14890	13	111860
1981/2	126655	80	30925	20	157578
1986/7	165616	77	49832	23	215448
1991/2	167548	75	56185	25	223733
1996/7	220328	71	88622	29	308950
2001/2	252113	68	11956	32	371699
2005/06	324291	66	166072	34	490363

Source: the Federal Civil Service Agency: Personnel Statistics, 2006

As can be seen from table 3.2, the proportion of females in the public sector is much lower than that of male. In 1976/77, they constitute only 13 percent of the permanent employment in the sector. But it is undeniable that the trend shows some improvement over the years. Between 1976/77 and 2005/06, the proportion of women has shown an increment of 11 percent. This apparent progress indicates that men and women may enjoy the same employment opportunity in the future.

Apart from the unbalanced trend of participation, women are less benefited in the type of occupation they assume in the public sector. The Federal Civil Service Agency (2005/06) report shows that the majority of female workers are concentrated in a particular category of jobs. According to this report, among the newly hired civil servants in the 1998 Ethiopian fiscal year, females dominate the Clerical and Fiscal (80.9%), and Custodial and Manual (56.8%) positions. In Professional Science (PS) and Administrative (AD) positions, however; they accounted only for 16.7 and 9.6 percentage points, respectively. This condition mainly stems from the educational attainment in general and the type of field of studies women

choose in tertiary level of education. In order to assert this fact, let us see the data on the distribution of men and women across the generalized category of education types.

Table 3.2 Permanent employees by the type of education in 2005/06

Ser .no.	Type of education	Permanent employees				Total
		Male		Female		
		No.	%	No.	%	
1	General Education	78456	60	52397	40	130853
2	Teaching and Education	55641	62	33840	38	89481
3	Arts	260	70	57	30	371
4	Humanities	12322	78	3555	22	15877
5	Social and Behavioral Science	8339	87	1193	13	9532
6	Commercial and Business Administration	14658	56	11446	44	26104
7	Law and Jurisprudence	2672	82	571	18	3243
8	Natural science	9396	87	1434	13	10830
9	Mathematics and Computer Science	4941	84	938	16	5879
10	Engineering	1708	93	138	7	1846
11	Architect and Town Planning	153	85	27	15	180
12	Agriculture, Forestry, and Fishery science	17957	86	2891	14	20848
13	Home economics	300	37	519	63	819
14	Mass communication and Documentation	867	72	343	28	1210
15	Medical and Health Science	8820	52	8105	48	16925
16	Others	5770	82	1234	18	7004

Source: Federal Civil Service Agency: Personnel Statistics, 2006. (Data in this table does not include Afar, Somalie, Tigray, & SNNP employees).

Table 3.3 shows that the type of education in which women totally overweigh men is Home economics (63%). In medical and health related fields, the number of females is nearly equal to that of males due to the fact that the majority of nurses are females. Nursing is generally perceived as women's job; by the society too. The figures in table 3.3 indicate that General education, commerce and teaching are also among the common preferences of females. On the other hand, the most lucrative fields like Engineering, Law and Social Science are occupied, almost totally, by males. Females constitute only 7 percent of the employees in the

Engineering, 13 percent in Social Science, and 18 percent in Law and Jurisprudence fields. This implies that it is less likely for females to be assigned in jobs that pay high returns.

Table 3.3 Salary scale of the Federal Civil Servants

Salary Scale	Permanent employee				
	No.	Male %	No.	Female %	Total
200-599	12946	50.7	12590	49.3	25536
600-999	6634	52.6	5989	47.4	12623
1000-1399	4681	64.8	2548	35.2	7229
1400-1799	2552	80.9	603	19.1	3155
1800-2199	1596	86.4	252	13.6	1848
2200-2599	1263	86.8	192	13.2	1455
2600-2999	373	89.9	42	10.1	415
3000-3399	182	91.5	17	8.5	199
≥ 3399	95	93.1	7	6.9	102

Source: Federal Civil Service Agency: Personnel Statistics, 2006

The data in table 3.4 describe that females are the inferior group in both the overall participation in wage employment and the returns they make out of their occupation. The source of this disparity is traced back to the past discrimination females used to face in the society due to which females have been denied equal access to productive resources, education, and employment with males.

The education environment

One of the priority areas of the government to change women's situation is education. Therefore, special emphasis has been given to ensure policy reform and substantial changes towards effecting women's lives for their advancement. In this regard, two concrete measures have been proved effective. One is the affirmative action for girls and women's education and literacy. This measure has increased enrollment of female students in the educational

institutions at different levels. Thirty percent of the total number of seats has been reserved for female students in the higher education. The second measure was the designing of appropriate policy instruments and strategic measures initiated by the MoE to sustain change as well as to effect greater change so as to eliminate systematic discrimination (UN, 2002). These measures have helped improve girls' situation in education as can be seen herein under.

The current data from the Ministry of Education (MoE) reveals that the Gross Enrollment Rate (GER) of girls in primary level has increased from 51.2 in 2001/02 to 83.9 in 2005/06¹. Similarly, the Apparent Intake Rate (AIR) has increased by 35.6 percentage points for the last five years². In this regard, MoE(2006) indicated that the gender disparity has reduced in favor of girls from 20.4 percent in 2001/02 to 13.3 percent in 2005/06.

Using Gender Parity Index (GPI), MoE compared the inter-regional differences in the gender gap. Accordingly, GPI was the minimum in Addis Ababa (1.19) and Tigray (1.00), implying that gender disparity is almost nonexistent in these regions³. On the other hand, the indices were the highest in Gambella (0.62) and Somalie (0.69) which exceed the national average (0.84).

With regard to the 2005/06 enrollment in Preparatory and TVET, the proportion of girls was very low in Preparatory (25.7 percent) while it was almost equal for both sexes in TVET programs. The enrollment in degree program, on the other hand, shows an improvement

¹ GER is the percentage of total enrollment in primary schools, irrespective of age, out of the corresponding primary school age population, ages 7-14.

² AIR is the percentage of new entrants (irrespective of age) in grade 1 out of the total number of children at an official admission age.

³ GPI is the ratio of female to male enrolment rates. In case of perfect equality between males and females enrollment rates, GPI is 1 while 0 indicates the highest disparity.

between 2001/02 and 2005/06 by jumping from 15.9 percent to 24.8 percent respectively (MoE, 2006).

In conclusion, we can see that there exist some desirable changes in the participation of females in the public sector and girl's enrollment at all levels of education. If such progresses in women's access to formal education and paid employment are made to sustain, women will easily acquire sufficient power to reap the best possible benefit out of the economy. Specifically, they can equally compete with males and thus earn equal wages in the labor market. Moreover, women can also improve their decision power in their respective households which in turn fosters their access to productive resources.

Chapter 4: Data and Methodology

4.1 Data

4.1.1 The Data Set

To undertake the analysis of gender pay gap in the Ethiopian public sector, we draw upon the 2006 Urban Employment–Unemployment Survey (UEUS) collected by the Central Statistics Agency (CSA). It was collected under the employment and unemployment survey program which was designed to provide statistical data on the size and the behaviors of economically active and non-active population on continuous basis. The survey was conducted on the individual basis, covering all urban centers of the country except three zones of Afar and six zones of Somali regions.

In collecting the data, CSA used a three stage stratified cluster sampling design in order to select the samples from each domain with the exceptions of Harari, Addis Ababa and Dire Dawa, where all urban center of the domain were included. By doing so, 15,575 households were interviewed out of the 15,810 which was expected (CSA, 2006).

The UEUS data set is the appropriate one to this study as it incorporates a broad range of information about gender, age, education, earning, employment status, terms of employment, wage and non wage activities, job characteristics and the status of individuals in their respective households. The limitation this data set entails is lack of variables like actual experience, ethnicity, and the family back ground characteristics.

In addition to the UEUS, secondary data from the Ministry of Education and the Federal Civil

Service Agency are used in order to show the trends and the current situation of Ethiopian women in terms of their access to education and employment opportunities in the Civil Service.

4.1.2 Sample Definition

Employed Population

The definition of employed population is given either using usual activity status or current activity status (CSA, 2006). Using the later approach, employed populations are those who are engaged in productive activity at least for four hours during the seven days prior to the interview date. Persons who had regular jobs, or business, holdings to return to but temporarily absent from job (that is, not at work or worked less than four hours) for different reasons are also considered as employed in productive activities as paid employees. These workers are defined as wage employed.

In this sample, the wage employed accounts for 45.4 percent of total employed. In terms of gender, wage employed males are 47.8 percent where as wage employed female are only 42.1 percent (CSA, 2006).

For the purpose at hand, we use the sub-sample of 2006 UEUS including only those who are wage employed and whose ages range between 10 and 65 years to estimate the choice of sector of employment⁴. For the analysis of gender wage differential, the sample is further reduced by taking only public sector employment subject to the correction of possible

⁴ Even though the national legislation forbids employees less than 18 years age, there are about 23 observations, 14 male and 9 female, in the current sample of the public sector. Therefore we have taken them for granted in the analyses.

selection bias. The analysis is made by considering the monthly earnings obtained only from the main job.

Formal and Informal Wage Employment

According to CSA's definition and World Bank (2007) recommendation, formal wage employment is the one in which employers or owners employ more than ten employees, enterprises own book account and have a license). Therefore, formally wage employed are paid employees who work in a sector which has the above characteristics whether it is public sector, NGO or private organization. Informal wage employment, on the other hand, includes paid employees who work in a private organization that owns less than ten workers, is not licensed and with no book account. It constitutes also, employees whose information is lacking in that regard and who are only paid in kind or who are doing casual work.

Based on these definitions, wage decomposition is done only for public formal wage employment (which consists of government sector and parastatal employees), while formal private wage employment (employees in formal private organization); and informal wage employment (employees in informal private organizations and domestic employees) are considered only for the purpose of estimating sectoral choice which is eventually used in correcting the resulting bias.

4.2 Modeling and Estimation Strategy

In this study a two step estimation procedure is hired for estimating log monthly earnings. In the first step, the multinomial logit model of worker's allocation to the three defined employment sectors: public formal, private formal and private informal: (with non

participation in wage employment being the base category) is estimated. In the second step the log monthly earnings equation is estimated by incorporating the selection terms obtained from the first step. In decomposing the gender wage gap we use the Oaxaca–Blinder (1973) and Cotton-Neumark (1988) methods.

The earnings function utilized in this study follows the standard Mincerian formulation.

$$\ln y_i = x_i\beta + u_i, \quad \dots\dots\dots (12)$$

where y_i is monthly earning; x_i is the vector of all the observable characteristics and β is the vector of the estimated parameters.

4.2.1 The Estimation Procedures

4.2.1.1 Correction for self selection bias: Dubbin-McFadden (DMF) approach

Given the segmentation of the urban labor market, the determination of wages may differ across the types of wage employment. If we are interested in all the possible segments, we need to estimate a separate earning function for each. In this paper, three different sectors of wage employment are identified as formal private, informal private and public formal employment based on the data at hand. However, the interest of this paper lies on the public sector employment. Therefore, earning equation is estimated only for the public sector. But, estimating wage equation using the conventional method poses two problems, in view of the nature of the data set.

Firstly, it is possible for a person either to be non-wage employed (self employed) or wage employed by his/her own choice. For those who are in wage employment, we may expect that they have a special talent for it. In such cases, *ceteris paribus*, unobserved characteristics that determine earnings have to be higher on average. Secondly, being in private or public sector is endogenously determined in which case individuals may join either of the sectors by their own choice. These two problems may lead to the inconsistent and biased OLS estimates in the wage regression which can not be corrected by the usual Heckman's two steps estimation (Maddala, 1983).

In order to solve such problems, a two step estimation method is recommended. One of the common approaches is the Lee's (1983) technique which is simple as it requires the computation of only one selection term. But, Bourguignon *et al* (2007) argue that the simplicity of Lee's method is at the cost of restrictive assumptions on residual covariates which have good chances to be violated in practical work. They also added that, Lee's method is adapted to a very small sample and would not be recommended in most contemporary empirical contexts. Instead, they recommend Dubbin-McFadden (1984) estimation procedure.

For this reason, we use the Dubbin-McFadden's (DMF) two steps estimation procedure in this paper. This method accounts for the selection biases that arise, one from selection into wage employment and the other selection into the type of wage employment. This method uses the multinomial logit (Mlogit) model in order to correct the selection bias mentioned above. According to Bourguignon *et al* (2007), using Mlogit model is a fairly good correction for the outcome equation even when the Independent Irrelevant Alternative (IIA) hypothesis is violated.

The DMF procedure constitutes two stages. In the first phase, maximum likelihood estimates of multinomial logit model of sectoral choice (with non-participation in wage employment being the base category) are made, separately, for male and female. Secondly, in each earnings function, three selection correction terms computed from the estimated parameters of the Mlogit Sectoral choice model are included. Then, the augmented log monthly earning equations are estimated by OLS for males and females, separately.

The formal presentation of the model is:

$$\ln y_{ij} = x_i' \beta_{ij} + u_{ij} \dots\dots\dots (13)$$

$$V_{ij}^* = \rho_{ij} Z_i + \varepsilon_{ij} \dots\dots\dots (14)$$

Where j is a categorical variable running from 0 to 3 (0= non participation in wage employment, 1 = formal public employment, 2 = formal private employment, and 3= informal private employment) based on the “utilities” v_{ij}^* . The log monthly earnings are not observed for j=0.

For instance, the outcome variable $\ln y_i$ is observed only if the alternative 1 is chosen by the working age person i which happens when:

$$v_{ij}^* > \max_{i \neq 1} (v_{ij}^*) \dots\dots\dots (15)$$

Let us define:

$$\theta_{i1} = \max (v_{ij}^* - v_{i1}^*) = \max (\rho_{ij} Z_i + \varepsilon_{ij} - \rho_{i1} Z_i - \varepsilon_{i1}) \dots\dots\dots (16)$$

If we consider condition (15), equation (16) is similar to $\theta_{i1} < 0$. In view of the IIA hypothesis, (ε_i) 's are independent and identically Gumbel distributed. Following McFadden (1973), Maddala (1983), described the Cumulative Density Function (CDF) as: $G(\varepsilon) = \exp(-e^{-\varepsilon})$, and the Density Function (DF) as, $g(\varepsilon) = \exp(-\varepsilon - e^{-\varepsilon})$,

Hence this specification leads to the Mlogit model with

$$P(\theta_i < 0/Z_i) = \frac{\exp(\rho_{i1}Z_i)}{\sum_{j=0}^3 \exp(\rho_{ij}Z_i)} \dots\dots\dots (17)$$

From expression (17), the maximum likelihood (ML) estimates of (ρ_i) 's can be estimated.

When the sample of workers who have chosen alternative 1 is nonrandomly selected, then u_1 from equation (13) is not independent of all (ε_i) 's. Thus, there might be correlation between the regressors and the disturbance term in the wage equation. As a result, OLS estimates of β_{i1} would not be consistent.

Finally, the DMF two steps estimation procedure will give us the log monthly earnings function conditional on choosing alternative 1 as follows:

$$\ln y_{i1} = x_{i1}\beta_{i1} + \sigma \frac{\sqrt{6}}{\pi} \sum_{j=2, \dots, M} r_j \left\{ \frac{P_{ij} \ln(P_{ij})}{1 - P_{ij}} + \ln(P_{i1}) \right\} + \mu_{i1} \dots\dots\dots (18)$$

where r_j is the correlation coefficient between u_1 and ε_j while M is the number of possible categories. P_{ij} is the probability that category j is chosen by individual i . The number $\frac{\sqrt{6}}{\pi}$ is

the inverse of the conditional standard deviation of ε_{ij} . Thus, the OLS estimates of the log monthly earnings function in equation (18) are, therefore, unbiased and consistent even in the presence of sample selection bias (Bourguignon *et al*, 2007). In this wage regression, the problem of heteroscedasticity is fixed by using white standard errors.

4.2.1.2 Decomposition of Gender Wage Differentials:

After estimating the wage equation by OLS, the next job is decomposing the wage differences. Denoting the superscripts m and f , for males and females, respectively the wage equations are given as:

$$\ln \bar{y}^m = \bar{x}^m \hat{\beta}^m \dots\dots\dots (19)$$

$$\ln \bar{y}^f = \bar{x}^f \hat{\beta}^f \dots\dots\dots (20)$$

Where $\ln \bar{y}^m = \sum \ln y_i^m / N_m$ and N_m stands for the number of males in the sample. The vector $\bar{x}^m$ represents the average human capital characteristics of males. For females the terms are defined accordingly. In decomposing the raw wage differences, different researchers use, different methods. According to Oaxaca (1973) and Blinder (1973) we can use either of the dominant (males) or the minority (females) wage as a competitive price. If we use Oaxaca's assumption that in the absence of discrimination the majorities are paid a competitive price, we use male's weight in decomposition. Hence the raw wage difference is given by:

$$\bar{x}^m \hat{\beta}^m - \bar{x}^f \hat{\beta}^f = \hat{\beta}^m (\bar{x}^m - \bar{x}^f) + \bar{x}^f (\hat{\beta}^m - \hat{\beta}^f) \dots\dots\dots (21)$$

The first term of the right hand side of equation (21) represents difference due to endowment effect which arises from differences in average characteristics. As a result of this, the term is often called the justified or explained part of the gap. The second term which is due to differences in coefficients is the portion that captures the discrimination effect. Here, we have taken the wages of males as a non-discriminatory wage. But, the variant of this approach includes the ones proposed by cotton (1988) and Neumark (1988). In these alternative approaches, it is generally, assumed that there is a vector β^* that reflects the rate of returns to human capital characteristics that prevail in the absence of discrimination. Then equation (19) and (20) can be rewritten as:

$$\ln \bar{y}^m - \ln \bar{y}^f = \beta^* (\bar{x}^m - \bar{x}^f) + \bar{x}^m (\hat{\beta}^m - \beta^*) + \bar{x}^f (\beta^* - \hat{\beta}^f) \dots \dots \dots (22)$$

where the first term of the right hand side (RHS) is the usual difference due to personal characteristics, the second term is the element of discrimination in favor of male, and the third term is the amount of discrimination against females. Cotton (1988) specified the value of β^* as:

$$\beta^* = f_f \hat{\beta}^f + f_m \hat{\beta}^m \dots \dots \dots (23)$$

where f_f and f_m are the proportions of females and males in the sample, respectively. On the other hand, Neumark (1988) specified β^* as the coefficient that is obtained after estimating the wage equation of the pooled sample (male and female). Thus, the value of β^* is computed as:

$$\beta = \Omega \hat{\beta}^m + (1 - \Omega) \hat{\beta}^f \dots \dots \dots (24)$$

where Ω is the weighting matrix.

Comparing all the approaches, Beblo *et al* (2003), indicated that, using males or females wage as the competitive wage, as what was done by Oaxaca and Blinder, and following the approaches of Cotton and Newmark have their own limitations. However, they have cited the justification of Ginther and Hayes (2003) as; it is not likely to use the pooled approach obtained from a weighted average of male and female wage structures in legal cases. Rather, men are the usual comparison group in legal proceedings of gender discrimination.

In order to get closer estimations, both Oaxaca's and Neumark's decomposition techniques are utilized in this paper. In the Oaxaca's approach, both male and female's wage structures are used, interchangeably, as non discriminatory wage structures. In the Neumark's approach, the weighted wage structure is computed following Cotton's definition (equation 23). To account for the effect of sample selection biases, correction terms are integrated in wage decomposition of equations (21) and (22) as follows.

$$\ln \bar{y}^m - \ln \bar{y}^f = \hat{\beta}^m (\bar{x}^m - \bar{x}^f) + \bar{x}^f (\hat{\beta}^m - \hat{\beta}^f) + (\hat{\alpha}^m \bar{\lambda}^m - \hat{\alpha}^f \bar{\lambda}^f) \dots\dots\dots (21a)$$

$$\ln \bar{y}^m - \ln \bar{y}^f = \beta^* (\bar{x}^m - \bar{x}^f) + \bar{x}^m (\hat{\beta}^m - \beta^*) + \bar{x}^f (\beta^* - \hat{\beta}^f) + (\hat{\alpha}^m \bar{\lambda}^m - \hat{\alpha}^f \bar{\lambda}^f) \dots\dots\dots (22a)$$

where $\hat{\alpha}$ is the estimated parameter; and $\bar{\lambda}$ is the mean of the estimated correction

terms $\frac{\sqrt{6}}{\pi} r_j \left\{ \frac{P_{ij} (\ln P_{ij})}{1 - P_{ij}} + \ln(P_1) \right\}$. Consequently, there is one additional term in the wage

decomposition. It is not obvious, however, that how the last terms of equation (21a) and (22a) are treated in the overall decomposition. There are two possible ways researchers treat this term. The first set of researchers consider the selection term as a separate component. The

second method is to subtract the selection term from the observed wage gap on the left hand side of equation (21a) and (22a). Then, the differentials resulting from this method are often interpreted as the potential or offered wage gaps as opposed to the observed wages (Beblo *et al*, 2003).

In this study, the selection term is treated as a separate component; following what the first set of studies do. Consequently, there are three components of the wage differential upon decomposition. The first component is the part that is determined by differences in the observable characteristics of individuals while the second component is due to differences in the returns to characteristics or other missing variable. The last part of the differential is due to selection terms.

4.3 The hypotheses

- Determinants of earnings are equally significant for both male's and female's wage. Since we are dealing with public sector, the major determinants of earnings are expected to be equal in number for men and women's regression.
- Being married has a positive impact on the wage of an employee. According to Nutli (2004), married people are more disciplined, stable and highly motivated than unmarried. Their human capital investment is also higher than those who are single. Therefore, it is expected that their earnings are higher as compared to unmarried employees.
- More than half of the gender wage gap is explained by the human capital characteristics (education, experience and training). The presence of a better legal and institutional framework in the public sector seems to ensure equal pay for work of

equal value. Therefore, though occupational difference also contributes to the gender wage differential, not less than 50 percent of the differential is expected to come from differences in human capital endowments.

- There is no sex discrimination in the public sector. The national labor legislations especially, public service regulations, strictly forbid gender wage discrimination. Therefore, the entire gender wage differentials are explained by observable characteristics.

4.4 Definition of variables

In order to make the analyses easy and understandable, all the generated variables are defined in the following table. They include dependent and independent variables in both earning and selection equations.

Table 4.1 Definition of variables

Variables	Description
Dependent variables	
Lny	The natural logarithm of monthly earnings
P	The categorical outcome that takes the value : 0 = for non-wage employment 1 = for public formal employment 2 = for private formal employment 3 = for private informal employment
Independent Variables	
Education Dummies	- noeducation(reference group): it constitutes individuals who have no formal education, who have attended literacy campaign or who are totally illiterate - primaryeducation:-represent individuals who have completed grade 1- 8 - Secondaryeducation: represents individuals who have completed grade 9-12 in the old curriculum, grade 9-10 in the new curriculum or who are attending preparatory. - TVETC:-represents those who have attended Technical Vocational Education and Training or who have certificate.

	- Higher education :- represents those who have completed diploma and above
Exp	It is the potential experience which is computed as : $age - 6 - years\ of\ schooling$
Exp ²	It is the square of potential experience
Married	Dummy for marital status which takes the value 1 if an individual is married and 0 otherwise
Training	Dummy for training that takes 1 if an individual has received some form of training
Dummies for the economic sector	Primary sector (reference group) = it represents agriculture, Fishery, mining and related activities Secondary sector = stands for trade and manufacturing activities Tertiary sector = stands for service and related activities
Dummies for terms of employment	employeeper = permanent employees employeecont = contract workers tempcasual (reference category) = includes temporary and casual workers
Dummies for employment status	nonwageemp (reference category) = includes members of cooperatives, self employed, unpaid family workers, employer, apprentice and others pubforemp = employees in the government organization and government parastatals privforemp = all employees in NGOs and formal private sectors priveinfem = all domestic workers employees in the informal private sector
Dummies for occupation	Managerial_1 = legislators, government officials, managers and employees who are in related positions clerical = employees in clerical and related positions prof_1 = includes all types of professionals prof_2 = includes all kinds of associate professionals, technicians, armed forces and police detectives. servicesales = includes service and sales activities; craftsplus = includes crafts making and related works operatives = includes various machine and plant operators and vehicle drivers elementary_1 (reference category) = represents all laborers and other elementary job workers
Dummies for regions	Addis Ababa, Oromia, Amhara, Tigray, Benshangul gumuz, Gambela, Afar, Dirre Dawa, Snnpr (Southern Nations Nationalities and People's Region), Harari, and Somalie (reference category)
Hhdepratio	Household dependency ratio
nochild0to6yrs	The number of children between 0 to 6 years old
nochild7to14yrs	The number of children aged 7 to 14 years

Chapter 5: Results and Discussions

5.1 Descriptive Analysis

5.1.1 Distribution of males and females across job characteristics

Men and women are disproportionately represented across different occupations and they have different job related characteristics. In the Ethiopian public sector, the sector of activity that constitutes the largest number of employees is the tertiary sector which is involved mainly in providing service to the public. In the following table (table 5.1) it is shown that about 80 percent of the total public servants are employed in the tertiary sector activities. The other two sectors, primary and secondary sectors together absorb the remaining proportion. The number of female employees in the major sector (tertiary sector) accounts only for about 35 percent of the total employees in the sector. Similarly, women make 30 percent of the primary sector and 29 percent of the secondary sector employees.

In the Ethiopian public sector, employment structure differs between the state sector and government parastatals or government development organizations. With regard to size, government sector assumes the lion's share of public sector employment (more than 90 percent). In this sector, women employees constitute 34 percent of the total employees which is almost equal with the proportion of women in parastatals. Unlike private sectors, public sector hires the majority of workers on permanent basis. Accordingly, table 5.1 shows that more than 80 percent of public sector employees are permanent workers while contract, temporary and casual workers together make the residual amount.

Table 5.1 Distribution of males and females by sectors and terms of employment

Characteristics	Male		Female		Total
	Obs.	Percent	Obs.	Percent	
<i>Sector of activity</i>					
Primary sector	79	69.9	34	30.1	113
Secondary sector	517	71.	211	29	728
Tertiary sector	2426	65	1308	35	3734
<i>Employer type</i>					
Government	2748	66.1	1406	33.9	4154
Parastatals	274	65.1	147	34.9	421
<i>Terms of employment</i>					
Permanent	2634	66.8	1309	33.2	3943
Contract	163	63.9	92	36.1	255
Temporary and Casual	225	59.7	152	40.3	377

Source: UEUS, 2006

5.1.2 Gender disparity in the type of occupation and education

Gender disparity in the type of occupation and educational achievement are prevalent in the Ethiopian public sector as we have already seen in the earlier chapter (chapter 3). This condition is confirmed by the UEUS data, too, as we can see from the following tables: table 5.2 and 5.3. In order to simplify the discussion, wide ranges of occupation types are categorized into 8 simple classes that are displayed in table 5.2.

Table 5.2 Occupational distribution

Occupation	Male		Female		Total
	Obs.	Percent	Obs.	Percent	
Managerial_1	338	88.5	44	11.5	382
Prof_1	391	76.8	118	23.2	509
Prof_2	726	66.6	364	33.4	1090
Clerical	376	43.9	480	56.1	856
Servicesales	233	74.2	81	25.8	314
Craftsplus	201	75.9	64	24.2	265
Operatives	257	87.4	37	12.6	294
Elementary_1	500	57.8	365	42.2	865

Source: UEUS, 2006

From this table, it is apparent that women are less likely to assume managerial occupations. Out of 382 workers in this category only 44 (11.52 percent) of them are women. In addition to this, it is uncommon to get women employees in the category of operatives which requires physical strength as the majority of the jobs are related to such activities as plant and machine operation. Therefore, it has happened that only about 13 percent of employees in this category are females. It is also important to note that, clerical occupations are held dominantly by women where they accounted for 56 percent of the total occupants in this category. Women's number is substantial also in the elementary jobs as they do not require higher qualifications as compared to other categories. As it is generally argued that this situation is highly correlated with the educational achievements of women, it is important to see the differences that exist between men and women concerning education.

Table 5.3 Education levels by sex

Level of education	Male		Female		Total
	Obs.	Percent	Obs.	Percent	
Noeducation	139	52.9	124	47.1	263
Primaryeducation	584	69.8	256	30.2	837
Secondaryeducation	861	61.5	538	38.5	1399
TVET and Certificate	352	54.8	290	45.2	642
Highereducation	1086	75.7	348	24.3	1434

Source: UEUS, 2006

As can be seen from the table, females who are illiterate or who have no formal education amounts to 8 percent out of total female workers. But, the proportion of male employees in this situation is only about 4.6 percent. From the total number of female public servants, those who work without having any certificate or diploma or above diploma levels, are 58.9 percent while male are 52.4 percent. On the other hand, female are better represented in the TVET and

certificate levels (45 percent). Beyond this level, more than three- fourth of the public servants are found to be males.

5.1.3 Unadjusted wage gaps between men and women

In addition to occupational and educational disparity, men and women differ in the amount of income they earn in work places. A quick reference to this reality can be made by computing simple gender earnings ratios. Table 5.3 presents the unadjusted wage gap between men and women as described as the amount of female's average monthly earning in terms of male's using percentages⁵.

Table 5.4 Mean monthly earnings by age and employer type

Sex	Age group					Type of employer	
	<18	18-33	34-49	50-65	>65	Government sector	Gov't Parastatals
Male	267.63	716.61	897.19	844.14	364.94	829.02	605.33
Female	142.78	517.83	668.41	651.11	282	597.15	459.59
<i>Wage gap</i>	53.4	72.3	74.5	77.1	77.3	72	75.9

Source: UEUS, 2006

As can be seen from the table, the average monthly earnings of male and female are different across various age groups and the type of employer. The wage gap is higher at the lower age of the age quantile. The wage of a typical female whose age is under 18 is only about 53 percent of the average monthly salary of male in the same age group. This gap decreases as

⁵ The percentage is computed as the ratio of the mean monthly wage of females to that of males multiplied by 100. It is one of the measures of gender pay disparity.

we move up the age quantile. At the upper age of the age group the gender wage gap is about 23 percent.

With the public sector itself, the average monthly salary of government parastatals is lower than that of the government sectors. However, the gender wage gap in the government sectors (28 percent) is higher as compared to the gap in the government parastatals (24 percent). This implies that government parastatals may apply less discriminatory rules against females than government sectors. However this cannot be considered as a final generalization for two reasons. Firstly, the sample of parastatal employees is too low to represent the reality, and secondly the analysis of gender wage differentials using unadjusted wage gap by itself is neither sufficient to come up with a universal generalization nor to draw up an anti discriminatory policy.

However, it seems necessary to use such kinds of wage gaps, as a quick reference, if someone is interested to see a signal of gender inequality in the labor market. For the purpose of undertaking an elaborate investigation on the gender wage differential with its corresponding determinants, it is very crucial to extend the analysis using the necessary econometric tools. Therefore, the next section presents the results discovered by using such tools.

5.2 The estimation result

The wage equation is estimated using two specifications in this paper. The first estimation constitutes the determinants of earning without controlling for selectivity bias. In the second estimation, three selection terms are included in order to account for the impact of self selection into wage employment and into public sector. In both specifications the wage equations are estimated for male and female, separately, after proving that the coefficient

Table 5.5 Regression output for log monthly earnings(without selectivity control)

Variables	Male		Female	
	mean	Coefficient	mean	Coefficient
Human capital				
Exp	18.1016	0.0226 ^{***} (8.46)	14.3213	0.0238 ^{***} (7.57)
Exp2	456.3729	-0.0003 ^{***} (-5.5)	304.8738	-0.0002 ^{***} (-2.77)
Training	0.6866	0.1448 ^{***} (5.49)	0.5744	0.1580 ^{***} (5.18)
noeducation ^a	0.046	-	0.0798	-
Primaryeducation	0.1932	-0.1277 ^{**} (-2.23)	0.1629	-0.2000 ^{***} (-3.35)
Secondaryeducation	0.2849	0.0717 (1.19)	0.3464	0.0123 (0.21)
TVETC	0.1165	0.1230 [*] (1.85)	0.1867	0.0939 (1.42)
Highereducation	0.3594	0.4325 ^{***} (6.55)	0.2241	0.3465 ^{***} (5.28)
Married	0.6889	0.0640 ^{***} (3.1)	0.5113	0.0323 (1.46)
Job characteristics				
Empgovparast ^a	0.0907	-	0.0947	-
Employeegovorg	0.9093	0.0184 (0.57)	0.9053	-0.0114 (-0.2)
Employeeper	0.8716	0.4260 ^{***} (9.13)	0.8429	0.7733 ^{***} (15.69)
Employeecont	0.0539	0.1553 ^{**} (2.49)	0.0592	0.1866 ^{**} (2.39)
Tempcasual ^a	0.0745	-	0.0979	-
Primarysector ^a	0.0261	-	0.0219	-
Secondarysector	0.1711	0.0437 (0.8)	0.1359	0.0137 (0.17)
Tertiarysector	0.8028	0.0172 (0.32)	0.8422	-0.0741 (-1.02)
elementary_1 ^a	0.1655	-	0.235	-
Operatives	0.0850	0.3925 ^{***} (10.31)	0.0238	0.2389 ^{***} (2.61)
Craftsplus	0.0665	0.4306 ^{***} (10.17)	0.0412	0.0562 (0.84)
Servicessales	0.0771	0.5104 ^{***} (12.69)	0.0522	0.2964 ^{***} (4.96)
Clerical	0.1244	0.4499 ^{***} (11.9)	0.3091	0.4804 ^{***} (11.73)
prof_1	0.1294	0.7334 ^{***} (17.25)	0.0760	0.6632 ^{***} (12.31)
prof_2	0.2402	0.5803 ^{***} (15.66)	0.2344	0.5675 ^{***} (12.94)
managerial_1	0.1118	0.9118 ^{***} (21.29)	0.0283	0.7789 ^{***} (10.65)
Region				
Somalie ^a	0.0437	-	0.0187	-
Tigray	0.0589	0.0269 (0.47)	0.0625	0.1499 [*] (1.78)
Afar	0.0754	-0.0307 (-0.6)	0.0457	0.1352 [*] (1.62)
Amhara	0.1340	-0.0474 (-0.94)	0.1449	0.0531 (0.64)
Oromia	0.2376	-0.0011 (-0.02)	0.2466	0.1034 (1.3)
Benshgum	0.0503	0.0315 (0.58)	0.0522	0.1084 (1.28)
Snnpr	0.1343	-0.0253 (-0.52)	0.1172	0.1752 ^{**} (2.14)
Gambela	0.0513	0.0522 (0.97)	0.0412	0.2006 ^{**} (2.29)
Harari	0.0526	-0.0208 (-0.38)	0.0573	0.2191 ^{**} (2.49)
AddisAbaba	0.1251	-0.0130 (-0.25)	0.1745	0.1385 [*] (1.65)
Dirre	0.0367	0.0171 (0.28)	0.0393	0.1651 [*] (1.64)
_cons	-	5.0118 ^{***} (67.75)	-	4.6108 ^{***} (61.81)
R-squared		0.6246		0.7057
F-statistics		F(31, 2990)= 141.35 ^{***}		F(31, 1521)= 123.11 ^{***}
Mean log of monthly earning		6.4892		6.1529
Number of obs.		3022		1553

Note: Figures in parentheses are t- ratios ; ^a reference category ;

‘*’, ‘**’, ‘***’ represent significance levels at 10, 5 and 1 percent, respectively

of gender dummy (male dummy) is statistically significant at 1 percent level (Appendix vii). These models fitted the data well as their respective F-statistics are highly significant leading to the rejection of the null hypotheses that ‘the coefficients of the variables are jointly zero’.

The R- square values are also reasonably higher which is 0.62 for male’s equation and 0.70 for female’s equation in both specifications. However, the Ramsay test for omitted variable shows that some relevant variables are missing from the models as we failed to accept the null hypothesis of ‘there is no omitted variable in the model’ at 1 percent level of significance. This is what we normally expect since it is difficult to measure all the determinants of earning due to limitation of data in providing some of the characteristics (Wooldridge, 2002).

Some of the variables included in the model have revealed inter correlation. In such cases, it may be necessary to measure multicollinearity to see how much serious the problem is. For this reason, variance inflation factor (vif) is computed for each variable (Appendix ii). The result shows that the most important variables that determine wage are correlated with other characteristics. But they are not excluded from the model as Maddala (1992) advises that dropping such relevant variables does worse than allowing multicollinearity. He, specially, argues that multicollinearity is not a problem if we are not interested in drawing inferences. According to him, examining t- values and standard errors of the parameters is preferable to judge whether to take a correction measure or not. Accordingly, there is no reason to drop these variables in our case. Therefore, all the included variables are reflected in the regression results.

In this part, the two specifications are discussed sequentially one by one. Let us start the discussion from the first specification. Table 5.5 presents the result of this specification for the

public sector including the means of the covariate patters. As can be seen from the table, the mean of potential experience (Exp) for male is higher than that of female. But the explanatory power of this variable and its square is the same for both sexes, which is significant at 1 percent level. The coefficients of potential experience and its square say that, for a person with 10 year of experience, a one extra year of experience leads to an increase in the monthly wage by about 1.7⁶ percent for both sexes.

Similarly, training has a positive and a highly significant effect on the earnings of an employee at 1 percent level of significance. It increases the expected wage of a man by more than 14 percent while increasing the earning of female by about 16 percent indicating a greater influence. The returns to education are also different for male and female. The odd result in this regard is the negative and significant coefficients to the primary level for both sexes. This is to mean that having an informal education or no education at all is associated with a better earning than having a primary level of education. The impact is also stronger on females than males. This result opposes the findings of Krishnan *et al* (1998) that the private returns to primary education are positive and significant for males in the public sector in 1994 and 1997.

Apart from this, the rest of the education coefficients reveal positive correlations that become higher as we move up the level of education for both sexes. Having a technical and vocational education and training or other certificate (TVETC) has also a positive impact on the returns of an employee regardless of sex difference. But the impact is significantly higher for males than females.

⁶ Following Verbeek (2000), the net effects of experience is calculated as $0.0226 - (0.0003 \times 2) \times 10$. The justification for including Exp^2 in the regression is that after some period (especially during retirement), returns to experience starts declining. This indicates experience has nonlinear relation with earning after some period of time.

The returns to higher education (diploma and above) has a strongly positive effect on the earnings of male and female which is significant at 1 percent level. But the effect is stronger for males than females, as opposed to the findings of Kabubo-Mariara (2003) in the Kenyan labor market. In the Ethiopian public sector, a man who happens to be a college graduate expects an extra salary of more than 43 percent as compared to uneducated person (*ceteris paribus*). On the other hand, an equivalent female employee will face an expected salary premium of 34 percent which is lower than that of men by about 10 percent.

It is also discovered, in this study, that being married has a positive and highly significant impact on male's wage while it affects female's wage without any significance⁷. A married man would earn about 6 percent marginal return than unmarried one. A married woman, on the other hand, faces a 3 percent more wage in excess of what a single woman would expect. This shows that the return to married man is twice of the return to married woman. This result supports the findings of Ntuli (2004) in South African formal sector of employment.

In this study, gender earning difference is observed, also, between government sector and government parastatals. Being in the government sector is more favorable to male than to female as the female coefficient reveals a negative correlation. On the other hand, government parastatals are relatively better for females' wage as compared to that of males'. This result conveys the same finding to the analysis of unadjusted wage gap which has been discussed in the previous section.

The effects of occupational dummies are found to be very relevant in determining wages. All of the eight categories, defined in this paper, are highly significant (1 percent levels) in

⁷ Marriage is considered as a proxy for factors such as stability, discipline, and motivation (Ntuli, 2004).

affecting wages of males and females. However, they have different explanatory powers on male and female wages. Returns to all occupational categories are higher for male than female except for the clerical occupation in which female's return is higher. As compared to the elementary jobs, men's expected monthly earning is higher by over 40 percent in all the remaining occupational categories. Being in managerial_1 occupation, men would earn about 91 percent more salary, as compared to the base category, which is higher than that of women (78 percent). On the other hand, the returns to performing occupations in the 'craftsplus' category has no significant effect on the earnings of women as compared to the reference category. This may be due to the fact that the implied occupational category requires physical strength or creativity which women are less likely to be endowed with.

In prof_2 category, which includes all kinds of associate professionals, armed forces, and police detectives, the returns of male and female are nearly equal. On the other hand the marginal returns of men in the 'operative' and 'servicesales' categories are far higher than that of females. Similarly, the expected wage of males overweighs the expected wage of females in the prof_1 categories. These findings show that occupational segregation plays a significant role on gender earning differentials which may partly be traced to differences in the human capital endowment and personal choice.

Terms of employment also affect wages positively and significantly. The extent of its effect is different for male and female employees. Permanently employed woman gets a 77 percent premium of monthly earning than who is temporary or casual worker (base category). Similarly, the earnings of a female worker in contract term is also a bit higher than the earnings of an equivalent male.

The sector of activity in which a person is employed does not have a significant effect on his/her wage. However, having been engaged in the secondary and tertiary sector activities has a positive effect on male's wage, as compared to the base category. This is true only for the secondary sector in case of female's wage. It is unfavorable for females to be employed in the tertiary sector as the coefficient is negative implying that primary sector is better for them.

Concerning the effects of the regional dummies, there is no any significant difference for male employees in all the regions. In contrary to this, females' earnings are positively correlated with being in some of the regions. Indeed, the coefficients are highly significant (5 percent) for Southern region (Snnpr), Gambella and Harari while that of Tigray, Afar, Addis Ababa and Dirre Dawa are also significant at 10 percent level. The most important implication of this finding is that there is no uniformity in the payment structure of the public service across regions. This problem may arise from lack of implementing the national policies and the labor legislations in addition to the regional variation in girl's access to education.

Selectivity Controlled Regression result

In the second specification (table 5.6), selection terms calculated from the multinomial logit of sector choice (Appendix i) are included in the log monthly earnings equation following Dubbin and McFadden (1984). After doing so, a slight change has been observed in the coefficients of the determinants of earning. Accordingly, returns to experience has increased to 2.38 percent for a typical man with ten years of potential experience. For female with the same potential experience, the return to one extra year is 2.7 percent which is higher than the previous figure. The impact of training on male's wage has not only decreased but also become insignificant in the current specification. But returns to female's training are still

higher and significant as compared to that of males. The changes in the effect of being married are negligible strengthening the earlier finding that marriage increases the expected wage of men while leaving the wages of women unaltered.

The result concerning private returns to primary education is still striking that the coefficient reveals a negative sign with 1 percent significance level for male and 10 percent significance level for female. But in reality, it is difficult to accept such a result as far as public sector is concerned. A person with a primary level of education is most likely to face better payment opportunity than a person without any formal education. However, there might be occupations that require traditionally developed skills or which do not require any kind of education. A permanent employee who happens to assume such kinds of occupation is likely to earn high salary due to accumulated work experience. The returns to secondary education is positive as usual but insignificant.

On the other hand, the marginal returns to TVETC level has become insignificant for males while its coefficient, which is insignificant in the earlier equation, turned to be significant in female's equation. Regarding the effects of higher education, there is no any change on the significance levels. But the magnitude of the effect has become higher for female as compared to the first specification. This implies that the returns to female's education are higher in the public sector than the returns in self employment and private sectors. No relevant changes are observed on the effect of being in the government sector or government parastatals, on the terms of employment and sector of activity. Thus, the interpretations of these variables are

Table 5.6 Selectivity controlled regression output for log monthly earnings

Variables	Male		Female	
	mean	coefficient	mean	Coefficient
Human capital				
Exp	18.1016	0.0198*** (6.28)	14.3213	0.0326*** (6.12)
Exp2	456.3729	-0.0002*** (-3.83)	304.8738	-0.0003*** (-2.87)
Training	0.6866	0.0462 (0.8)	0.5744	0.2097*** (4.17)
noeducation ^a	0.046	-	0.0798	-
Primaryeducation	0.1932	-0.1194* (-1.88)	0.1629	-0.1935*** (-3.22)
Secondaryeducation	0.2849	0.0621 (0.81)	0.3464	0.1334 (1.54)
TVETC	0.1165	0.1102 (1.2)	0.1867	0.2650** (2.25)
Highereducation	0.3594	0.4197*** (4.36)	0.2241	0.4999*** (3.67)
Married	0.6889	0.0805*** (3.09)	0.5113	0.0373 (1.04)
Job characteristics				
Empgovparast ^a	0.0907	-	0.0947	-
Employeegovorg	0.9093	0.0174 (0.54)	0.9053	-0.0129 (-0.23)
Employeeper	0.8716	0.4280*** (9.11)	0.8429	0.7872*** (15.69)
Employeecont	0.0539	0.1537** (2.48)	0.0592	0.1977** (2.53)
Tempcasual ^a	0.0745	-	0.0979	-
Primarysector ^a	0.0261	-	0.0219	-
Secondarysector	0.1711	0.0383 (0.71)	0.1359	0.0255 (0.33)
Tertiarysector	0.8028	0.0093 (0.17)	0.8422	-0.0612 (-0.85)
elementary_1 ^a	0.1655	-	0.235	-
Operatives	0.0850	0.3880*** (10.18)	0.0238	0.2484*** (2.73)
Craftsplus	0.0665	0.4245*** (10.05)	0.0412	0.0655 (0.96)
Servicessales	0.0771	0.5074*** (12.59)	0.0522	0.3005*** (5.03)
Clerical	0.1244	0.4501*** (11.83)	0.3091	0.4880*** (11.72)
prof_1	0.1294	0.7303*** (17.11)	0.0760	0.6648*** (12.2)
prof_2	0.2402	0.5757*** (15.48)	0.2344	0.5722*** (12.85)
managerial_1	0.1118	0.9082*** (21.16)	0.0283	0.7796*** (10.69)
Region				
Somalie ^a	0.0437	-	0.0187	-
Tigray	0.0589	0.0096 (0.13)	0.0625	0.0791 (0.81)
Afar	0.0754	-0.0228 (-0.41)	0.0457	0.2349** (2.52)
Amhara	0.1340	-0.0465 (-0.81)	0.1449	0.0122 (0.14)
Oromia	0.2376	-0.0157 (-0.27)	0.2466	0.0414 (0.44)
Benshgum	0.0503	0.0389 (0.69)	0.0522	0.1582* (1.87)
Snnpr	0.1343	-0.0216 (-0.41)	0.1172	0.1143 (1.28)
Gambela	0.0513	0.0379 (0.65)	0.0412	0.2026** (2.09)
Harari	0.0526	-0.0238 (-0.42)	0.0573	0.2026** (2.3)
AddisAbaba	0.1251	-0.0758 (-0.71)	0.1745	0.0324 (0.27)
Dirre	0.0367	-0.0179 (-0.27)	0.0393	0.1024 (0.87)
Selection terms				
Term 1	-0.2054	2.4055** (2.01)	-0.1034	0.5111 (0.18)
Term 2	-0.0189	-4.0450 (-0.21)	-0.0421	-8.8918 (-1.18)
Term 3	0.0999	3.4919 (1.47)	0.1601	-0.9685 (-0.87)
_cons	-	5.1880*** (30.64)	-	4.2346*** (18.18)
R-squared		0.6255		0.7073
F-statistics		F(34, 2987)= 133.01***		F(34, 1518)= 115.7***
Mean log of monthly earnings		6.4892		6.1529

.....*continued*

Number of obs.	3022	1553
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Note: Figures in parentheses are t- ratios

‘*’, ‘**’, ‘***’ represent significance levels at 10, 5 and 1 percent, respectively

^a reference category

similar to that of the results obtained in the first specification.

Similarly, the marginal returns to all of the occupational dummies are almost equal in both types of specifications. The coefficients of region dummies for male equation are still insignificant in all the cases. But the sign of Dirre coefficient has changed from positive into negative. The remarkable difference in selectivity controlled equation in this regard is the reduction in the number of significant coefficients from 7 to 4 with respect to female’s equation. Tigray, Snnpr, Dirre, and Addis Ababa are found to be insignificant in the current specification. This implies that, differences in the earnings of females between Somalie and other regions are partly explained by self selection of employees into the public sector in these cases. On the other hand, we can see that selection has no any effect on the wages of females in Harari and Gambella regions while its impact on the general wage equation can be examined from the coefficients of the selection terms.

None of the selection terms, however, exhibit a significant effect on female’s wage equation while only one term is found to be significant in determining male’s wage. The negative signs of the correction terms indicate that unobserved characteristics that increase the probability of working in the public sector have a negative effect on the earnings of men and women.

In general, the hypothesis that “determinants of wage are equally significant for both male’s and female’s wage” is not found to be supported by this study. Referring to selectivity

controlled regression result, four of the region dummies, TVETC, and training are highly significant for females wage while they are not significant for male's wage. On the other hand, marriage and being in craftsplus occupation are significant, only, for male's wage. Besides, the hypothesis that marriage is positively associated with earnings is found to be true only for male employees as we reject the null hypothesis of zero-coefficient at 1 percent significance level. For females, it is not significant even at 10 percent level in both types of specifications implying the irrelevance of marriage on female's wage in the public sector. This findings are confirmed by the Chow-test in which the null hypothesis of equality of the coefficients of male's and female's regression is rejected at 1 percent level of significance.

5.3 Decomposition of the gender wage differential

We have seen that the determinants of wage are not equally significant for male and female wages. Particularly, there exist a wide range of differences among returns to the human capital characteristics and occupations in the two gender specific equations. This differences in the returns and differences in the average values of the wage determinants between men and women result in gender earning differentials. In order to describe this differential with its distinct sources, we need to use some decomposition techniques.

Results of the decompositions from Oaxaca-Blinder and Cotton-Neumark techniques are presented in table 5.7 and 5.8. The Oaxaca-Blinder method suffers from the common index number problem while the Cotton-Neumark method is believed to solve this problem as it uses the weighted average of male's and female's wage structures. The index number problem is said to occur if the results are significantly different when male and female wages are interchangeably used as nondiscriminatory wages. But it is not always likely that this problem

happens. For instance, Appleton *et al* (1999) indicate that among the three African countries: Ethiopia, Uganda, and Cote d'Ivoire which were covered in their study, the Oaxaca method suffered the index number problem only in case of Uganda. Fortunately, no serious index number problem is encountered in this study for which reason using any of the two wage structures is intuitively right.

The decomposition techniques are applied on two specifications of the wage equations: one without selectivity control and the other as augmented by the selection terms. To begin with, let us see first the result of decomposition without selectivity control as a reference.

Decomposing gender pay differential without selectivity control

Table 5.7 Decomposition result without selectivity control

Mean log of male wages	6.4892		
Mean log of female wages	6.1529		
Wage gap	0.3363		
Sources of the wage differentials	Results of decomposition using:		
	Male's wage structure	Female's wage structure	Weighted wage structure
<i>Contribution of human capital characteristics</i>	28.42%	31.82%	29.6%
experience	0.0378 (11.23)	0.0558 (16.60)	0.0439 (13)
education	0.0416 (12.36)	0.0334 (9.95)	0.0388 (11.6)
Training	0.0163 (4.83)	0.0177 (5.27)	0.0168 (5)
<i>Contribution of being married</i>	0.0114 (3.39)	0.0057 (1.71)	0.0095 (2.84)
<i>Contribution of job characteristics</i>	28.4%	18.77%	24.77%
Sector of activity	0.0009 (0.25)	0.0034 (1.01)	0.0017 (0.0)
Terms of employment	0.0114 (3.39)	0.0212 (6.31)	0.0147 (4.4)
occupation	0.083 (24.76)	0.0385 (11.45)	0.0681 (20.37)
<i>Contribution of other characteristics</i>	0.0003 (0.09)	-0.0015 (-0.46)	-0.0003 (0.0)
<i>Contribution of returns to characteristics(unexplained)</i>	0.1335 (39.69)	0.1619 (48.15)	0.1431(42.8)
			0.0550 (16.5) ^a
			0.0881 (26.3) ^b

Note: numbers in parentheses show percentages;

^a due to nepotism towards males

:Negative sign shows difference in favor of females;

^b due to discrimination against females

Table 5.7 presents the result of the decomposition on the gender wage differential in the Ethiopian public sector. In this sector, the gender pay gap to be decomposed is 0.3363 log points. As can be seen from the table, the gap is distributed across various personal, human capital and job characteristics through the decomposition technique. The residual gap, after controlling the observable characteristics, is described as the differences that has come from returns to those characteristics which is often considered as the discrimination effect (Blinder, 1973; and Oaxaca, 1973)⁸.

Table 5.7 reveals that, about 60 percent of the gender earning differential is due to differences in the average endowment of the observable characteristics between men and women, provided that male's wage is used as the nondiscriminatory wage structure. When female's wage structure is used, the explained part of the gender wage differential falls to 52 percent. On the other hand, the contribution of returns to the unobservable characteristics or the unexplained portion of the wage differential is found to be about 40 and 48 percent upon using male and female wage structures, respectively.

Out of the total explained portion, human capital characteristics account for 28 to 30 percent of the differential. Among the human capital characteristics, education contributes 12.37 (9.93) percent when male (female) wage structure is used. From the weighted wage structure, the contribution of education is closer to that of male's weight (13%). The contribution of potential experience is higher (16.59 percent) when female's weight is used as compared to when male's wage and weighted wage are used (11%). Training contributes close to 5 percent

⁸ If we use male's wage as a competitive wage, then the discrimination effect (the unexplained part of the wage differential) is computed as:

$(\beta_0^m - \beta_0^f) + \bar{x}^m(\beta^m - \beta^f)$, where β_0 's stand for the constant terms in wage equations.

in all the cases. The differential that arises from marital status under female's wage structure ranges between 1.7 and 3.38 percent.

A substantial amount of the gender wage differential is explained, also, by the job characteristics. This comes mainly from occupational segregation by gender. Out of the total contribution of job characteristics (28.43 percent) from the Oaxaca's method, occupation makes 24.77 percent which is more than 85 percent of the contribution while terms of employment and sector of activity together make less than 4 percent of the differential. In this regard, the impact of sector of activity is negligible. From the Neumark's approach, job characteristics contribute 24.77 percent out of which 20.37 percent is the share of occupation.

As it was discussed in chapter 3, men and women are disproportionately distributed across different occupations in the Ethiopian civil service. Corresponding to this, there exist pay disparities between the two sexes; most of the females being in the lower salary scales. The findings from analyzing the subsample of UEUS using both descriptive and econometric tools also confirm this reality. The prevalence of occupational segregation that stems, mainly, from education differences (see Appendix iv for the correlation among these variables), personal choice, and the traditional view of gender role gives rise to low average earnings of females as compared to that of their male counterparts. The mean monthly earnings of both male and female vary depending on the type of occupations. Occupation that pays the highest return is Managerial_1 while elementary_1 is associated with the least monthly payment (see Appendix iii).

Pertaining to the effect of occupational segregation, it is reasonable to suspect whether the reported result reflects the full effect or not. According to Brown *et al* (1980b), treating the

impact of occupational differences in the way many researchers do (such as: Oaxaca, 1973; Blinder, 1973; Mincer and Polachek, 1974) make only ad hoc adjustments for variations in average productivity traits between men and women. While they argue that, incorporating occupation like any other wage determinants may not reflect the full impact of occupational difference on the gender wage differential. Accordingly, our finding may also suffer from such inadequacy as the multiplicity of the type of occupations posed the intractability problem to pursue the remedy method proposed by Brown *et al* (1980a). However, it does not mean that the applied methodology is useless, for many other researchers also used the same method.

Regional differences and the type of employer (government sector and parastatals), are also considered for their possible effects on the wage gap. But, the result indicates that these factors do not significantly affect the pay differentials as their contribution is lower than 1 percent. The remaining part of the gender earning gap is the portion that comes from unobservable characteristics. This part is described as due to differences in the returns to the controlled characteristics. Provided that all determinants of wage are perfectly captured, it represents the part of gender wage differential that arises from gender wage discrimination in the labor market (Blinder, 1973). In the Ethiopian Public sector, this portion is found to make 40 to 48 percent of the earning differential between men and women. However, it is empirically difficult to measure the actual impact of discrimination since part of this portion might have resulted from lack of perfection while measuring some of the factors.

In conclusion, it is found that about 52 to 61 percent of the gender wage differential in the Ethiopian public sector is explained by observable characteristics or it is due to endowment

effect. On the other hand, part of the differential that ranges between 39 to 48 percent is due to unobservable characteristics or it is the unexplained part of the gender pay differential. This part is about 43 percent when the weighted wage structure is used which can be further divided into the part due to nepotism towards male (17%) and due to discrimination against females (26%)⁹. From this result, we can say that there is gender discrimination in the Ethiopian public sector confirming the finding of Appleton *et al* (1999).

Decomposition with selectivity control

Decomposition after controlling for selectivity bias (table 5.8) shows that the explained and the unexplained portions of the wage differentials have modest differences from the results obtained earlier. Using the weighted wage structure the explained part of the wage differential decreases by 2 percent while decreasing by the same amount when male's wage is used. The largest difference is obtained when female's wage structure is used in which the endowment effect increases by about 10 percent. This indicates that selection into the public sector has stronger effect on female's wage.

The contribution of job characteristics is the same to the previous results ranging between 19 to 28 percent upon Oaxaca's decomposition. Similarly, selection terms have no any effect on the contribution of job characteristics in the wage gap when Neumark's method is used. Occupation contributes 20 percent in both specifications using the later technique. The impact of training reduces from 5 to 3.4 percent while the contribution of marriage shows some

⁹ Part of the unexplained differential due to employer's nepotism towards male is given by: $\bar{x}^m (\hat{\beta}^m - \beta^*)$ whereas the effect of discrimination against women is computed as: $\bar{x}^f (\beta^* - \hat{\beta}^f)$. For the description of the variables, refer back to equation 22.

increment. On the other hand, the contribution of marriage does not show any significant change when Oaxaca's method is used.

The effect of human capital characteristics, however, shows a reduction from 28 to 25 percent under male's wage structure while increasing from 31 to 38 percent under female's wage

Table 5.8 Decomposition with selectivity control

Mean log of male wages	6.4892		
Mean log of female wages	6.1529		
Wage gap	0.3363		
Sources of the wage differentials	Results of decomposition using:		
	Male's wage structure	Female's wage structure	Weighted wage structure
<i>Contribution of human capital characteristics</i>	24.92%	38.31%	29.45%
Experience	0.0370 (11)	0.0703 (20.90)	0.0483 (14.36)
Education	0.0416 (12.37)	0.035(10.41)	0.0394 (11.7)
Training	0.0052 (1.55)	0.0235 (7.00)	0.0114 (3.39)
<i>Contribution of being married</i>	0.0143 (4.25)	0.0066 (1.96)	0.0117 (3.48)
<i>Contribution of job characteristics</i>	28.16%	18.76%	24.9%
Sector of activity	0.0010 (0.3)	0.0033 (0.98)	0.0018 (0.5)
Terms of employment	0.0115 (3.42)	0.0216 (6.42)	0.0149 (4.4)
Occupation	0.0822 (24.44)	0.0382 (11.36)	0.0674 (20)
<i>Contribution of other characteristics</i>	0.0038 (1.13)	0.0071 (2.11)	0.0047 (1.40)
<i>Contribution of returns to characteristics (unexplained)</i>	0.3746 (111.39)	0.3656 (108.71)	0.3716 (111)
			0.1241(37) ^a
			0.2475 (74) ^b
Selection effect	-0.2349 (-69.85)	-0.2349 (-69.85)	-0.2349 (-69.85)
Note: numbers in parentheses show percentages		^a portion of the differential due to nepotism towards men	
:Negative sign shows difference in favor of Females		^b portion of the differential due to discrimination against women	

structure. But, the contribution of human capital characteristics does not vary with the specification of wage equations if the weighted wage is used.

The most important observation is that including the selection terms does not change the contributions of education in all the three wage structures. Unlike the decomposition without

selectivity control, decomposition with selectivity control increases the effects of differences in region and employer type, though they are insignificant.

The total endowment effect (explained part) of the wage differential from the current specification amounted to 58 to 61 percent. The remuneration effect or the unexplained difference ranges between 108 to 111 percent. With regard to the independent effects of all the factors and the overall contributions, the results obtained by the weighted wage structure and male's wage structure are nearly equal. This indicates that using male's wage structure as the nondiscriminatory wage is more justifiable than using female's wage. Therefore, it seems plausible to use the result of decomposition obtained from male's wage and weighted wage structures for policy implications.

The additional terms meant for capturing the selection effect explain -69.85 percent of the gender wage differentials. This implies that, the unobservable factors that affect sectoral choice are favorable to female's wage. This implication, in turn, leads to a generalization that the currently observed gender wage gaps could have been higher, had it not been in the public sector.

Generally, decomposition of the gender earning differentials using with and without selection control methods resulted in close estimates. Accordingly, we find that more than 50 percent of the gender earning differentials is due to the endowment effect where about half of this component is the contribution of occupational segregation. Thus, the result does not confirm the proposed hypotheses that 'more than 50 percent of the gender wage gap will be explained only by human capital characteristics'. On the other hand, between 39 and 48 percent of the earning gap is attributed to the effect of unobservable factors or it is the unexplained part.

The interpretation of the unexplained part, however, requires some caution. Particularly, we cannot say that this component has entirely resulted from wage discrimination. Part of this component may come from characteristics that are imperfectly captured in the wage equations. For instance, the computation we used in generating experience variable is among the imperfect methods which may overestimate the experience of females. Despite this fact, our finding disproved, also, the hypothesis that ‘there is no gender wage discrimination in the Ethiopian public sector’. Indeed, it describes the contribution of gender wage discrimination on the earnings differentials in the sector.

Chapter 6: Conclusion and Recommendations

This paper has aimed at exploring factors that contribute to the gender earning differentials in the Ethiopian public sector. In order to achieve this objective, priority was given to the assessment of the actual situation of gender disparity in education and employment at national level. This has provided supplementary information to the data set meant for the main analysis. In the analytical phase, wage equations are estimated using two different specifications. Then the observed gender wage gap is decomposed by using Oaxaca's and Neumark's methods. These methods, however, are not free of limitations as they are sensitive to specification of the wage equations. Despite this fact, the following findings are discovered upon integrating the descriptive and the analytical tools.

First, from the descriptive statistics and the actual secondary data, it was discovered that males and females are disproportionately distributed across education levels and different job characteristics. Female are not only endowed with lower average schooling but also study less favorable types of education majors. Moreover, they are concentrated in particular type of occupations such as clerical and other elementary type of jobs. Their proportion is relatively higher in the lower salary scales as compared to males.

Second, from the wage equations, returns to the human capital characteristics: education, experience and training, are different for males and females. On average, a return to education is higher for males while that of experience and training, to some extent, are favorable to females. The effect of being married has no any significance for female's wage while it has

positive and significant effect on male's wage. In addition to this, except clerical occupations, all occupational categories are more favorable to male's earning as compared to females.

Thirdly, the decomposition results indicate that not less than half (52 to 61) of the gender wage gap is attributed to the observable characteristics. The remaining portion of the gap is left unexplained, implying that there could be wage discrimination against females in the public sector as opposed to the legal provisions. Such sex based wage discrimination is known to have a distracting effect on the improvement of women's earning. But, it is difficult to conclude that the unexplained portion of the gender wage differential is entirely attributed to wage discrimination. Some measurement problems regarding wage determinants may also share a portion of this part. On the other hand, no one can be sure that every legal provision is uniformly and effectively implemented throughout the country. Therefore, it could be possible that public officials offer positions based on illegal grounds. Specially, with the current regional and decentralized system of administration, the possibility of acting against the national rules is higher. There is a room for an official to discriminate against females based on his sexual desire, ethnicity and/or political affiliation. As a result, the implied gender wage discrimination is a real threat for women employees in the public sector.

Therefore, considerable efforts must be exerted in strengthening the implementation of countervailing clauses on the violation of the gender neutral rules embedded in the national labor legislation. In Hungary, the establishment of strong legal and institutional framework, meant for meeting the criteria to join European Union, contributed in decreasing a substantial amount of the unexplained part of the gender wage differential over 1986-1998 (Jolliffe and Campos, 2003). Thus, the Ethiopian government must pay a due attention to enhancing the

capacity of institutions in charge of implementing antidiscrimination laws in a uniform manner throughout the regional states.

Fourth, differences in the average endowment of education and experience assume about half of the explained portion of the gender pay gap. This implies that women enter into the labor market with lower education levels and a shorter work history in the public sector. This has substantially decreased the average earnings of females. A study by Jolliffe and Campos (2003) shows that, in Hungary, more than 80 percent of the gender earning differentials has reduced due to increased number of women employees who possess higher level education, and who have been working in large firms, between 1986 and 1999. This is a good evidence to envisage the criticality of education to women if the current pay gap is to be lowered.

Fifth, among the job characteristics, occupation contributes the largest portion while the impacts of sector of activity and terms of employment are only marginal. Interestingly, difference in occupation has contributed a reasonably higher share which is comparable to the joint effect of human capital characteristics. This implies that the persistence of sex based occupational segregation is among the major challenges that have stunted the progress of women's income. Here, it should be noted that education has a multiple effect on women's wage as it also reinforce occupational segregation. However, the approach pursued to handle the effect of occupation on the gender wage differential may be inadequate in disclosing the full impact. This suggests the need for further research that would give special emphasis to the nexus between occupational segregation and the gender pay gap by using more comprehensive tools.

In general, the above findings indicate that difference in observable factors plays a dominant role among the sources of the gender wage differential. The effect of pure wage discrimination may also take the second lead since the unexplained portion is not insignificant, too. The current progress in the participation of girls in formal education may close the prevailing gap between males and females as it has both direct and indirect impacts on earnings of women. It directly affects earning as higher level of education is associated with a better paying job. The indirect effect of education can be envisaged through understanding its power in destroying occupational segregation.

Finally, it is worth recommending a further research as this study entails some limitations. First, there are evidences that indicate that gender wage differential varies with the size of wage and the age of an employee. Despite this fact, the study fails to capture this situation by examining inter and intra quantile wage differentials. Second, it also fails to uncover the temporal effect of antidiscrimination laws as it used a cross-sectional data. Third, it is concentrated only on the public sector. Thus, there should be a more comprehensive research that would take the above limitations into account.

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Appendices

Appendix i: Multinomial logit estimates for sectoral choice

Variables	Public formal sector				Private formal sector				Private informal sector			
	Male		Female		Male		Female		Male		Female	
	Coeff.	z-value	Coeff.	z-value	Coeff.	z-value	Coeff.	z-value	Coeff.	z-value	Coeff.	z-value
Primaryeducation	0.1660	[1.48]	-0.2390	[1.64]	-0.3100	[2.50]**	0.5040	[3.17]**	-0.0450	[0.46]	-0.0190	[0.16]
Secondaryeducation	1.3500	[11.61]***	1.4970	[10.39]***	0.2270	[1.79]*	1.3250	[8.37]**	-0.1540	[1.47]	-0.4720	[3.53]***
TVETC	2.4520	[13.80]***	2.8540	[13.02]***	0.5280	[2.35]**	2.0170	[7.66]**	-0.3530	[1.64]	0.2310	[0.90]
Highereducation	3.0360	[20.53]***	3.3630	[15.18]***	1.2760	[7.54]***	2.8030	[11.02]***	-0.8920	[4.73]***	-0.1400	[0.50]
Training	1.4610	[20.49]***	1.1120	[10.02]***	0.9090	[10.33]***	0.6610	[4.55]**	0.8800	[11.92]***	0.2960	[2.23]**
Married	0.5880	[8.03]***	-0.0260	[0.31]	-0.0480	[0.55]	-0.4900	[4.99]**	-0.4380	[6.38]**	-1.8120	[22.42]***
Exp	0.0750	[9.74]***	0.1380	[10.81]***	0.0300	[3.63]***	0.0520	[3.53]**	0.0180	[2.46]**	0.0750	[4.00]**
Exp2	-0.0010	[7.43]***	-0.0020	[7.17]***	0.0000	[2.65]**	-0.0010	[3.69]**	-0.0010	[3.50]**	-0.0030	[5.36]**
Hhdepratio	0.5230	[3.88]**	1.1080	[6.15]**	0.4690	[3.01]**	-0.2240	[1.06]	0.7400	[6.03]**	0.2700	[2.08]**
Children0to6yrs	-0.2650	[6.68]**	-0.2980	[5.68]**	-0.1550	[3.39]**	-0.0660	[1.00]	-0.1280	[3.57]**	0.1170	[3.11]**
Children7to14yrs	-0.0790	[2.73]**	-0.2380	[5.84]**	-0.1540	[4.13]**	-0.1130	[2.29]**	-0.1790	[6.46]**	-0.1390	[4.55]**
Tigray	-0.6550	[3.79]**	-0.2650	[0.96]	0.5260	[2.24]**	1.2030	[2.59]**	0.2850	[1.59]	0.0180	[0.09]
Afar	0.9310	[5.20]***	1.3290	[4.40]***	-0.1480	[0.48]	-0.0640	[0.10]	-0.5970	[2.39]**	0.5030	[2.18]**
Amhara	-0.7150	[4.83]**	-0.1620	[0.63]	0.1710	[0.78]	0.7340	[1.61]	0.0800	[0.50]	0.4440	[2.50]**
Oromia	-0.6150	[4.34]**	-0.0050	[0.02]	0.4240	[2.00]**	1.3510	[3.01]**	0.2980	[1.94]*	0.3770	[2.14]**
Benshgum	-0.0460	[0.26]	0.6770	[2.41]**	-0.3340	[1.09]	-0.5360	[0.84]	-0.0750	[0.36]	-0.5600	[2.18]**
Snnpr	-0.7170	[4.78]**	-0.2330	[0.90]	0.0130	[0.06]	1.0060	[2.20]**	0.1080	[0.67]	0.4710	[2.56]**
Gambela	0.2390	[1.27]	0.8020	[2.67]**	0.6100	[2.25]**	1.1080	[2.12]**	0.0970	[0.44]	-0.1590	[0.57]
Harari	-0.5290	[2.87]**	-0.0920	[0.32]	-0.3920	[1.30]	0.1380	[0.26]	0.2490	[1.26]	-0.0010	[0.01]
AddisAbaba	-1.0760	[6.84]**	0.0390	[0.15]	1.0910	[5.14]**	2.1630	[4.80]**	0.8050	[5.15]**	1.8410	[10.20]***
Dirre	-0.5620	[2.80]**	0.0650	[0.21]	0.3420	[1.30]	1.4890	[3.12]**	0.5220	[2.77]**	0.6920	[3.38]**
Constant	-2.8420	[17.45]***	-3.5050	[13.09]***	-2.5360	[11.87]***	-3.8470	[8.68]**	-1.3900	[8.82]**	-1.1870	[6.73]**

Log pseudo likelihood	-12357.968	-8678.2436
Pseudo R2 =	0.1848	0.2402
Wald test	chi2(63)= 3527.32***	Chi2(63) = 3285.73***
Observations	(males) 12407	(females) 10129

Note: Robust z statistics in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix ii: Variance inflation factor (vif)

Variable	VIF	1/VIF
Highereducation	8.07	0.123951
Tertiarysector	7.81	0.128031
Secondarysector	7.07	0.141478
Oromia	6.22	0.160892
Secondaryeducation	5.92	0.168901
TVETC	4.9	0.204075
AddisAbaba	4.59	0.217773
Amhara	4.43	0.225633
Primaryeducationn	4.29	0.233203
Snnpr	4.24	0.235601
prof_2	3.14	0.318648
Afar	2.74	0.36541
Tigray	2.64	0.378453
Harari	2.48	0.403833
prof_1	2.46	0.407294
Benshgum	2.4	0.415813
Gambela	2.32	0.431222
Clerical	2.27	0.44024
Dirre	2.06	0.485265
Training	1.97	0.508146
Employeeper	1.97	0.50871
managerial_1	1.94	0.515064
Employeecont	1.63	0.613421
Exp	1.53	0.652402
Operatives	1.51	0.662546
Servicessales	1.47	0.680291
Craftsplus	1.36	0.732965
Employeegovorg	1.33	0.752277
Married	1.23	0.810148
Mean VIF	3.31	

Appendix iii: Mean monthly earnings by occupation and sex and the differences with their significance levels

<i>Occupation type</i>	<i>Male</i>	<i>Female</i>	<i>differences</i>
managerial_1	1423.50	943.02	480.48 ^{***} (4.57)
prof_1	1178.80	951.17	227.63 ^{***} (4.14)
prof_2	894.05	751.95	142.1 ^{***} (6.23)
clerical	705.67	660.74	44.93 [*] (1.61)
servicesales	666.88	407.73	259.15 ^{***} (4.3)
operatives	605.85	463.65	142.2 ^{***} (2.67)
craftsplus	585.82	315.75	270.07 ^{***} (6.7)
elementary_1	333.21	254.24	78.97 ^{***} (4.54)

Note: t statistics in parentheses

* Significant at 10 percent, *** significant at 1 percent level

Appendix iv: partial correlation among occupation and education dummies

	Clerical	sservices	Craftsplus	operative	prof_1	prof_2	managerial_1	elementary_1
Primaryed	0.0355**	0.0387***	-0.0053	0.0384***	-0.0055	0.0217	0.0091	-0.1209***
Secondar	0.1856***	0.0359**	-0.0486***	0.0131	0.0029	0.0767***	0.0425***	-0.3259***
TVETC	0.0713***	-0.0518***	-0.0946***	-0.0571***	0.0806***	0.2874***	0.0404***	-0.3635***
Highered	0.0805***	-0.0546***	-0.0571***	-0.065***	0.209***	0.1809***	0.1401***	-0.4125***

*, **, ***: significant at 1%, 5% and 10% levels, respectively

Appendix v: Summary statistics of the independent variables for public sector

Variable	Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.
Children7to14yrs	0.8246	1.0355	0.8667	0.9737
Hhdepratio	0.4821	0.2853	0.4660	0.2526
Children0to6yrs	0.5870	0.8355	0.4559	0.7022
Employeeper	0.8716	0.3346	0.8429	0.3640
employeecont	0.0539	0.2259	0.0592	0.2362
Tempcasual	0.0745	0.2626	0.0979	0.2972
primarysectorr	0.0261	0.1596	0.0219	0.1464
secondarysector	0.1711	0.3766	0.1359	0.3428
Tertiarysector	0.8028	0.3980	0.8422	0.3646
managerial_1	0.1118	0.3152	0.0283	0.1660
Prof_1	0.1294	0.3357	0.0760	0.2651
Prof_2	0.2402	0.4273	0.2344	0.4238
Clerical	0.1244	0.3301	0.3091	0.4623
Servicessales	0.0771	0.2668	0.0522	0.2224
Craftsplus	0.0665	0.2492	0.0412	0.1988
Operatives	0.0850	0.2790	0.0238	0.1526
elementary_1	0.1655	0.3717	0.2350	0.4242
employeegovorg	0.9093	0.2872	0.9053	0.2928
empgovparast	0.0907	0.2872	0.0947	0.2928
Training	0.6866	0.4639	0.5744	0.4946
Married	0.6889	0.4630	0.5113	0.5000
Exp	18.1016	11.3467	14.3213	9.9919
Exp2	456.3729	502.7519	304.8738	371.7900
Afar	0.0754	0.2642	0.0457	0.2089
Tigray	0.0589	0.2355	0.0625	0.2421
Amhara	0.1340	0.3407	0.1449	0.3521
Oromia	0.2376	0.4257	0.2466	0.4312
Somalie	0.0437	0.2044	0.0187	0.1354
Benshgum	0.0503	0.2186	0.0522	0.2224
Snnpr	0.1343	0.3411	0.1172	0.3218
Gambela	0.0513	0.2206	0.0412	0.1988
Harari	0.0526	0.2233	0.0573	0.2325
AddisAbaba	0.1251	0.3309	0.1745	0.3797
Dirre	0.0367	0.1881	0.0393	0.1943
Noeducation	0.0460	0.2095	0.0798	0.2711
Primaryeducation	0.1933	0.3949	0.1629	0.3694
Secondaryeducation	0.2849	0.4514	0.3464	0.4760
TVETC	0.1165	0.3209	0.1867	0.3898
Highereducationn	0.3594	0.4799	0.2241	0.4171

Appendix vi: The Ethiopian labor legislations

No	Legislation	Objective	Note
1	Central Personnel Agency and Public Service order No. 23 of 1961	To provide for the creation and functions of the Imperial Ethiopian Central Personnel Agency	Later amended by the Central Personnel Agency and Public Service order No. 28 of 1962
2	Public Service Regulation No. 1/1962	Regulation issued pursuant to Central Personnel Agency and Public Service order No. 1961	It applies to employees of Ministries, chartered government agencies and other Public Authorities
3	The Public Service Position Classification and Salary Scale Regulation No.2 of 1972	To classify Public Service positions and salary scale, pursuant to order No. 23 of 1961	Still effective
4	Decree No.49 of 1962	To operationalize the duties and responsibility of the Ministry of National Community Development and help standardize and harmonize labor management practices in the private economy.	Amended by the Labor Relations Proclamation No. 210/1963
5	Labor Proclamation No.64/1975	To assure worker's right to work free of exploitation and protection of his safety and health	
6	Labor Proclamation No. 42/1993	To provide for the basic principles which govern worker- employer relations and labor conditions	It repealed Labor Proclamation No. 210 of 1963, Labor Proclamation No. 64 of 1975 and other related laws
7	Labor Proclamation No. 377/2003 (as amended by Labor Proclamation No. 494/2006)	To revise the existing labor law providing for the basic principles which govern worker employer relations and for labor conditions considering the national policy and international conventions	It is the direct copy of Proclamation No. 42/1993
8	Proclamation No. 8/1995	To establish the Federal Civil Service Commission(FCSC)	FCSC replaced the CPA

9	Federal Civil Servants Proclamation No. 262/2002	To provide a clear provisions which guarantee job security and fair conditions of service to civil servants and define their obligations	
10	Federal Civil Servants Proclamation No. 515/2007	To address the problems identified during the implementation of Proclamation No.262/2002 and give the later sufficient clarity and to strengthen the justice system so as to give civil servants better protection and to incorporate the changes occurring as a result of the implementation of the human resource management subprogram of the civil service reform.	It repealed Proclamation No. 262/2002
11	Civil Code Proclamation, 1960	The orderly development of the legal system of the Ethiopian empire.	It is still effective
12	Constitution of the Federal Democratic Republic of Ethiopia Proclamation No. 1/1995	To ensure the full respect of individual and people's fundamental freedoms and rights, to live together on the basis of equality and without any sexual, religious or cultural discrimination.	It is the supreme law of the land [Art.9(1)]

Appendix vii: Log monthly earnings' regression result for the pooled sample (Public sector)

<i>Indep. variables</i>	<i>Coefficient</i>	<i>Robust Std. Err.</i>	<i>t- value</i>
Exp	0.0240***	0.0021	11.69
Exp ²	-0.0003***	0.0000	-6.87
training	0.1631***	0.0198	8.25
married	0.0470***	0.0148	3.17
male	0.1448***	0.0142	10.23
Primaryeducation	-0.1392***	0.0419	-3.32
Secondaryeducation	0.0700*	0.0427	1.64
TVETC	0.1239***	0.0477	2.6
Highereducation	0.4086***	0.0475	8.6
Employeegovorg	0.0120	0.0285	0.42
employeeper	0.5748***	0.0352	16.35
employeecont	0.1738***	0.0496	3.5
secondarysector	0.0287	0.0444	0.65
tirtiarysector	-0.0123	0.0436	-0.28
operatives	0.3401***	0.0326	10.42
craftsplus	0.3290***	0.0365	9.02
servicesales	0.4127***	0.0329	12.56
clerical	0.4624***	0.0270	17.15
prof_1	0.6950***	0.0328	21.16
prof_2	0.5574***	0.0278	20.02
managerial_1	0.8644***	0.0349	24.79
Tigray	0.0436	0.0476	0.91
Afar	0.0057	0.0447	0.13
Amhara	-0.0489	0.0436	-1.12
Oromia	-0.0030	0.0417	-0.07
Benshgum	0.0279	0.0462	0.6
Snnpr	0.0071	0.0425	0.17
Gambela	0.0756*	0.0461	1.64
Harari	0.0343	0.0474	0.72
AddisAbaba	0.0098	0.0449	0.22
Dirre	0.0384	0.0539	0.71
_cons	4.7732***	0.0542	88.07
R-squared			0.6589
F-statistics F(31, 4543)			248.09***
Number of obs.			4575

Note: *, **, *** show significance at 10%, 5%, and 1%, respectively

The thesis is my original work, has not been presented for a degree in any university and that all sources of materials used for the thesis have been duly acknowledged.

Declared by:

Name: _____

Signature: _____

Date: _____

Confirmed by Advisor

Name: _____

Signature: _____

Date: _____

Place and Date of Submission: Addis Ababa, June 10, 2008