FEMALE AND MALE WAGE DIFFERENTIALS IN ADDIS ABABA

(A CASE STUDY IN FOUR FACTORIES)

A Thesis submited to the School of Graduate Studies

Addis Ababa University

In Partial Fulfilment of the Requirement

for the degree of Master of Science in

Human Resource Economics

by

Tsehay Haile

June, 1998

ADDIS ABABA UNIVERSITY
School of Graduate Studies

Female and Male Wage Differentials in Addis Ababa

By
Tsehay Haile Sima
Faculty of Business and Economics

Approval by Board of Examiners:

Dr. Dejene Aredo
Advisor
Signature

Dr. Mulat Demeke
Examiner
Signature

Dr. Andre Croppenstedt
Examiner
Signature

TABLE OF CONTENTS

ACKNOWLEDGEMENT

I acknowledge my advisor Dr. Dejene Aredo for his advise. I wish to express my heartfelt gratitude to Dr. Andre Croppenstedt who has devoted his precious time and knowledge to giving me constructive and valuable suggestions.

I would like to thank AERC for all support it made to complete our study. I am grateful to thank the department head Dr. Assefa Admassie for all his support.

I am also happy to acknowledge my mom and dad for giving me moral support.

Finally I am also grateful to express my indebtedness to my family and all my friends for their support.

DEDICATION

My work is dedicated in honor of my friend Truf, without her support and inspiration this paper is not materialized.

LIST OF TABLES

TABLES

ABSTRACT

In this study we used two methods to estimate the extent of labour market discrimination. The sample is taken from four factories in Addis Ababa. The first method is descriptive statistics, which estimate whether there is wage difference between female and male. The findings of the study indicate that there is wage difference, which is mainly attributable to differences in relevant variables and to a lesser extent due to sex difference. Consistent with the above result the second method, i.e., Oaxaca (1973) and Oaxaca - Ransom (1994) also indicated the existence of wage difference. This method decomposes log of monthly gross wage differentials into labour market discrimination, the cause of which is difference in sex, and difference in relevant ones.

In method of Oaxaca (1973) using female wage as a base, labour market discrimination is found to be higher. While using male wage as a base the difference between relevant variables caused larger parts of wage differentials.

In method of Oaxaca -Ransom (1994) the difference between relevant variables caused larger parts of wage differentials.

Both descriptive and wage decomposition indicate the existence of wage difference. The majority part of this difference is explained in both methods by relevant variable difference.

CHAPTER I

INTRODUCTION

1.1 STATEMENT OF THE PROBLEM

Ethiopia is a country with a population of around 57 million (C.S.A., 1992 census). The country is said to be endowed with natural resources while the living standard of the people is one of the lowest in the world as indicated per capita income about $120. The economy is recovering from stagnation through the policy reforms undertaken recently and the absence of civil war which the country had undergone over the last 30 years.

One of the major resource of the economy is labour. Out of the total population 28 million in the age group of 15-64, which represents the labour force of the country with 13.5 million male and 14.5 million female members. It is indicated that women account for 51.7 percent of the labour force. The question however is whether this percent of the populations actively participate in the production process or not.

"One major shortcoming of development strategies has been the failure to take into account the role and potential of women", (UN, 1989).

This statement strongly indicates that any effort made without recognition of the female participation, (which is 51.7% in the case of Ethiopia), will not bring the expected result in

terms of production, growth and development.

Women not only participate in the production process but are also sole actors in the reproduction process which is not accounted for the national product estimates. As indicated by a number of studies the future growth of the economy is highly determined by the physical and human capital of the economy. The physical capital formation requires the active participation of this 51.7 percent of the labour force.

The participation of women in the labour force and their decision to stay may depend on a number of direct and indirect factors. Among the direct factors the return to their labour and the opportunity cost is the major one.

In this, one should consider the environment in which they are working as there exist social, cultural, attitudinal features of colleagues in the work place which may restrain women from being active in the formal sector of the economy. The responsibility of women in their reproductive role, the level of technology both in the formal and informal sector, the social, cultural and political environment are some of the indirect factors which explain the participation of women in the formal sector.

Even if the participation of women in the labour force is growing the working conditions are not favourable. They hold the same traditional women's jobs, occupy low-status positions, and received much less payment than men do, (UNECA, 1996).

Female employment opportunities have been associated with occupational segregation. A

number of studies made in the developed and developing world found out the existence of sex differences in occupations and earnings of men and women. One study indicates that in 1960 all females but less than 25% of male workers received daily wages below $1 (Stevenson 1984).

The report by the Organization for Economic Co-operation and Development (1979) shows for several countries women receive much lower wage than men do. Further it explained that the differential in manufacturing industries was fairly consistent. For instance textiles and clothing in different parts of the world have a high proportion of women workers but they received 70-75 percent of men's earnings.

According to 1990-1991 figures female in Africa constitute only 37% of formal labour and most of them are in lower level positions in Africa. The rest are in the informal sector mostly in the urban areas, (UNECA, 1996).

Further this study indicates that even if female labour force participation is low in the modern sector they are found to be predominant in manufacturing, business and social services, (UNECA, 1996).

It is also indicated that women are poorly represented in administration and managerial categories and they are in lower position of the labour force. Women's participation is low in economic decision-making particularly in the formal economic sectors, whether private or public, (UNECA, 1996).

Women's presence at the district, municipal and ministerial levels is negligible in Africa. As pointed out by UNECA (1996), only 10 countries had more than 10% representative at ministerial level in 1994 who were women and 11 countries had no women ministers.

Further it is shown in the same study the average female representation at the parliamentary level was 8% and 4% in Sub -Saharan and North Africa respectively. Only 12 countries had women representatives in local councils while another 7 countries had women mayors in some of their rural municipalities, (UNECA, 1996).

Gender bias discrimination limited women to access education and participating in the labour market. Job segregation and sex classifying based on culture and social attitude has limited women from getting certain job categories such as managers, high ranking diplomatic jobs and high profile law-related jobs,
(UNECA, 1996). Strongly indicates that the work place is segregated by sex. Even within an occupational group women received lower positions.

There is high sex segregation within the more specific job titles eventhough the occupation categories appears to be sex neutral. Wage and salary employment is more stable and secure than self-employment but it is not always available to women and almost never with the same wages and benefits as for men, (UNECA, 1996).
Some factors are shown which are responsible for the limitation of wage and salary employment given by (UNCEA, 1996). They are men's domination of trade unions in developing regions, employer's fear that women as potential mothers may demand social legislation favouring maternity leave with pay, employers' reluctance to hire and train

women, on the believe that women, who enter and leave the labour force frequently, should be confined to marginal jobs.

Also in Ethiopia the problem of access to participation of women in the formal sector is prevalent even if the labour force participation of women is increasing over time with the expansion of educational services and urbanization. Ethiopian women also occupy low-paying jobs and receive lower earnings compared to their male counterparts.

For instance in large and medium scale manufacturing and Electricity female participation account only 24% of 13.2 thousand in private sector. For the same manufacturing in public sector out of 77.9 thousand labour force female labour force participation is only 32%(CSA. October, 1997).

The average annual payment of women in private and public sector is 2673.21 and 3713.49 Birr respectively. It is lower when it is compared to average annual payment of men which is 3260.04 and 5051.85 Birr in private and public sector respectively,(CSA,1997).

Women presence in the production sector is also higher (40%)than presence in administrative, technical, clerical and office worker (25%) in the manufacturing. It shows that women predominantly exist in lower positions and receive lower payment, (CSA, 1997). There have been no intensive studies made to measure the extent of wage differentials and to explain the factors responsible for it. This study is believed to fill the gap and come up with relevant policy recommendation.

1.2 OBJECTIVES OF THE STUDY

This study examines the earning differentials between females and males in Addis Ababa by taking the sample from four state owned factories: Akaki Textile Factory, Akaki Spareparts and Hand Tools Factory, Addis Ababa Bottles and Glass Factory and Clay Products Enterprise. The analysis is based on survey data collected from these factories using a questionnaire. The data collected information about men and women on various aspects, including their wages\salaries employment situation, household conditions and other socio-economic activities.

This study analyses the existence of wage discrimination by sex in Addis Ababa. The analysis focuses on three major objectives:

1. To determine whether wage differentials exist between female and male workers in Addis Ababa. Here the emphasis is on the wages\salaries of sampled employees.
2. To estimate the extent of wage differentials between female and male workers,
3. To identify and explain factors behind the differentials. Here we classify the factors as relevant and irrelevant factors to estimate wage differentials.

The relevant factors which determine the wage are education, experience, training. While irrelevant factors which indicate discrimination are sex, religion and ethnic groups. This paper is critically concerned with sex differentials.

On the whole this study attempts to explain gender based differences in the working

environment. The findings are expected to provide information concerning the level and differences in wages of women and men who are in the labour force particularly in the factory.

1.3 SIGNIFICANCE OF THE PROBLEM

A number of studies have been conducted on wage differentials between men and women, and between black and white. However most of the studies analyzed using the data from developed countries.

In these days wage differentials between women and men are the main issue for the developed and developing countries. Study is also made in Africa recently, (Appleton and et.al., 1996).

The importance of such studies viewed in to different perspectives. On the one hand decreasing the pay gap between men and women promote the well-being of women and increase the female participation on the development process. On the other hand the same empirical studies documented the difference is wider because of the difference level of human capital such as education and thus important to increase access to education for women. Therefore this study examines wage differentials on the object of adding to the literature on factors responsible to female and male wage differentials in the developing countries context.

1.4 ORGANIZATION OF THE STUDY

The study divided into five sections. The next section presents literature review. It consists

theory of discrimination and empirical evidence.

Section three presents data and specification of the model. In this section it is explained the nature of data, sample characteristics and theoretical model.

Results are explained in section four. In this section the determinants of wage and wage decomposition are presented.

Finally, conclusions and policy implication are presented based on the findings.

CHAPTER II

REVIEW OF THE LITERATURE

Studies have been made in different parts of the world to identify the existence and the extent of wage differentials between different groups, such as between male and female, between white and black etc. Efforts have been made on explaining the factors responsible for the prevalence of wage differentials in the labour market.

Wage differentials are explained by two factors: human capital and market discrimination. Human capital factors are the relevant factors which determine wage in the labour market, such as education, experience and training. The difference in spending on education and accumulating experience leads to wage differentials.

Since the life style of men and women are different, the spending on themselves are also different which may lead to different wage between them. Most of the time men enter in the labour force and develop skills and accumulate experience while women give priority to their role in the family and lead wage difference between women and men. In this case there exist the human capital difference in the labour market.

The above explanation is cited in a number of literature as a reason for why employers give priority to male rather than female employees. As pointed out by Blau and Ferber (1989) employers prefer men if the work involves on the job and firm-specific training in human capital. It is also shown that even if the return for labour is identical at the time of

employment differences later arise in the process of promotion as most on the job training is provided to men.

The above argument cited against this explanation is that this occupational choice is caused by less on the job training, less incentive, past discrimination in employment, differences in preference for job characteristics and information about wages, working conditions and job openings. The other explanation of wage differential is market discrimination.

2.1 CONCEPT OF "DISCRIMINATION"

Market discrimination arise when wage is determined by irrelevant factors such as sex, religion and ethnicity.

Before the explanation of discrimination we will define discrimination particularly wage discrimination.

> "Discrimination is affording treatment to different persons on ground of race, tribe, place of origin, political opinion, color and sex" (ILO, 1990).

On the basis of human right the definition is given as:

> "Discrimination is any distinction exclusion, or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition enjoyment or exercise by women... on a basis of equality of man and women of human rights and fundamental freedoms in the political economic, social, cultural, civil or any other field",(Hillina, 1996).

Aigner and Glen, (1977) explained labour market discrimination from economic

discrimination point of view.

> "Economic discrimination is said to exist when workers do not receive pay or remuneration commensurate with their productivity-when in short, equal productivity is not rewarded with equal pay"

The definition which is useful for this study is that of wage discrimination as the objective of this study is to estimate wage differentials and factor responsible to wage differentials. One of the factors is paying on the basis of sex which leads to wage discrimination.

The definition of wage discrimination originated from Becker (1957) is "the difference between the actual ratio of male to female wages and the ratio that would exist in the absence of discrimination," (Blau in Reskin 1984).

Barros and et.al. in Schultz(1995), define wage discrimination as:

> "Wage discrimination occurs whenever equally productive workers receive different wages based on some of their non-productive attributes, such as gender or race".

This definition shows employer taste for discrimination in the work place. This discrimination taste decrease the productivity of workers by reducing the motive for some groups of workers.

"The negative aspects of discrimination are not only the question of justice, equality and poverty. Discrimination may also lead to the inefficient allocation of labour and capital and therefore to reductions in total output"(Barros and et. al.

1995).

It means that discrimination lead to different incentive among workers. The firm which has high taste for discrimination lead to decrease labour supply below the social optimum. So that it will be under utilization of labour and hence will decrease the output.

Mallier and Rosser (1987) look discrimination in the labour force as pre-entry and post-entry discrimination. According to them pre-entry discrimination is unequal opportunity of women into some occupation.

Post-entry discrimination, according to them, is even women successfully gained the employment, they do not get equal reward for their endowments. That is they will face lower pay, less sick pay and fewer holidays. And post-entry discrimination take the form of unequal opportunity for training and/or promotion, (Mallier and Rosser, 1987).

In the early mid-nineteenth century it was argued that there is no natural inequality between sexes except perhaps in bodily strength... if nature has not made men and women unequal, still less ought the law to make them so... men and women ought to be perfectly coequal and a woman ought not to be dependent on a man, more than a man on a woman, except so far as their affections make them so, (Sapsford and Tzannatos, 1993).

Sapsford and Tzannatos (1993) also explained the pre-neo-classical debate that inferior position of women in the labour market mostly concentrated on the wage differentials. The early analysts indicate potential reasons for women's low earnings that women's

secondary nature of employment lower productivity, women's lack of trade union support and lower standards of living, insufficient education and few opportunities for alternative employment.

Edgeworth crowding out hypothesis shows that women are over-represented in certain sectors and this depresses female wages in these sectors ceteris paribus. This theory formalized by Bergmann fifty years later even though this was criticized by Florence(1931) as incomplete, (Sapsford and Tzannatos, 1993).

Pre-Becker literature on discrimination also summarizes the theory by Bonfenbrenner who examined monopsony, union and employer discrimination as the source of wage differentials, Sapsford and Tzannatos (1993). In this literature Bronfenbrenner considered employer to be prepared to offer lower wages to the minority group in anticipation for higher costs which might arise when majority and minority groups were working together.

They identified that this three reasons which make this analysis interesting:

1. the analysis can be seen as an extension of the monopsony case.
2. employing heterogeneous labour was seen as something which increases employer cost though it might seen either as a form of diversification and spreading the risks or as a divide and conquer tactic
3. the mechanics of Bronfenbrenner's analysis is in effect, similar to that adopted by Becker who also assumed that employers will employ members from the minority group only if the latter's wages were

sufficiently lower. (Sapsford and Tzannatos, 1993).

It is also shown Becker's theory of discrimination in (Sapsford and Tzannatos, 1993). Beaker's theory is based on physical disutility; individuals may prefer to incur costs rather than come into contact with members of certain groups. The disutility comes from the individual taste as Becker said.

The above theories give us a cite for number of empirical evidence in the different parts of the world measuring discrimination particularly wage discrimination which is useful for our study.

2.2 EMPIRICAL EVIDENCE

A number of studies made in various parts of the world reach consensus on the existence of wage differentials. Though all may agree on the human capital explanation, agreement is not reached on the market discrimination component of wage differentials (Blau and Ferber, 1989). While many studies used different methods to measure wage discrimination in different parts of the world.

Blau, (1984) using earning function, found out that sex segregation in employment and labour market discrimination are important factor in earnings differential between men and women.

Fishback and Terza (1989) measured sex discrimination using two techniques. The first

is including both married and never-married to take care of women traditional roles in the household. The other is excluding married workers in the regression. And hence used Blinder -Oaxaca (1973) method to measure sex discrimination. The result from the first technique show higher sex discrimination.

Gyimah - Brmpong and F. (1997) used Cotton/Neumark decomposition methodology to measure the wage gap between white males and racial minority. It was found out that the wage gap due to human capital differences within the minority group. However the wage gap is due to market wage structure when it is comparing between white and racial minority. That is the wage setting in the labour market is different because of irrelevant variable like race. This show that the wage gap between white and racial minority is mainly due to irrelevant factor.

Nadeau et.al., (1993) tested whether wage discrimination is present and if wage discrimination is present whether or not it is in sufficient magnitude to make statistically significant. They found out that male/female endowment difference capture highly significant amount 96% of earning differences which let pure discrimination as very small and statistically insignificant factor in Canadian public sector.

One study employed economic perspective to find out the determinants of labour force participation and male - to - female earning differentials using household data from fifteen countries in Latin America.

In this study it is found out that woman who has more years of schooling, participate in

the labour force rather than others. It is also found out that educated women received highly significant salary than less educated women. In addition, the study found out that the difference in earnings between men and women due to differences in human capital explain a small portion of the wage differential in most of the country's studies. While the remaining larger portion is explained by discrimination, (Psacharopoulos. and Tzannatos, 1992).

Using the model (Oaxaca - Ransom, 1994) in measuring discrimination in USSR using the data from the city of Tangenbrog in 1989, the results of wage decomposition show strong indication of discrimination (Katz, 1997).

Neumark (1988) considered the problem of linking empirical estimates of wage discrimination and theoretical model of discriminatory behaviour of employers. He uses simple model of employer discrimination to show how particular assumptions about tastes of the employer can justify Oaxaca's widely used estimators.

Using wage decomposition,(Oaxaca,1973)to measure wage differentials between men and women in China's rural industrial sector it is shown that the existence of wage discrimination with in each occupation, (Oxford Economic papers, 1995)

Appleton and et. Al. (1996) used Oaxaca - Ransom method to estimate wage discrimination in three African countries. They found out that the difference between the actual and "gender neutral" wage is higher in Ethiopia and Uganda while less in Cote d'Ivoire.

Actual wage is the wage that the worker received from the labour market. "Gender neutral" is the average of men and women wage (Oaxaca-Ransom 1994) which is used as the base to calculate wage differentials Appleton (1996).

Effort is made to estimate the distribution of wage in terms of sex in one of the Ethiopian State Owned Enterprise (Wolday, 1988). It is shown in the paper that the coefficient for sex is significant which imply that there is wage discrimination in the factory. The study pointed out further that education and experience are the major determinants of earnings.

Another study is also made to estimate wage gaps in Ethiopia comparing with two other African countries by (Appleton and et. al., 1996). The results in this study show that there exist gender wage gap in Ethiopia.

The results of wage gap in Ethiopia comparing with other two countries is shown in the appendix 1. The paper used the Oaxaca (1973) decomposition method to measure discrimination using the data from "survey of Adolescent Fertility, Reproductive behaviour and Employment status of the youth population in urban Ethiopia. Using the female wage as a base for Ethiopia show that the difference in endowments is only 1% while 99% of wage gap is due to the gender difference. Using male wage as a base explain higher discrimination between men and women which is constitute the gender gap 109%. While the difference in relevant variables is (-9%).

Using Oaxaca - Ransom (1994) the actual and gender neutral wage structure for men

women are equal (48%). This also shows that there is wider gap between gender neutral and actual wage in Ethiopia . That is the wage gap due to differences in relevant variables are very low (4%).

These studies give an insight for further investigation in this field, since we cannot conclude from these studies the existence of a wage differentials. It is with this intention that this study is necessitated to look at the situation of wage differentials in Ethiopia.

CHAPTER III

DATA AND METHODOLOGY

3.1 SOURCE OF DATA AND SAMPLE CHARACTERISTICS

The data used in this study is collected from four public enterprises in Addis Ababa using a questionnaire to be filled by the employees of the enterprises. The questionnaire is designed and pre tested using fifty sample in different factories. Some questions are corrected after the pre test, finally used the adjusted questionnaire in all factories. Nine hundred samples are taken randomly given to each factory proportionally.

The survey data were collected from sample members by a team of interviewers. This team meet with a group of interviewees, distribute the questionnaire and instruct the group on the method of completing the forms. The factories which are taken as a sample are Akaki Textile, Akaki Spareparts and Hand Tools, Addis Ababa Bottles and Glass Factory and Clay Products Enterprise.

Total employees and percentage of women in each factory is presented in table 3.1 below.

Table 3.1 Number of employees in the factories

FACTORIES	MEN	WOMEN	TOTAL	% OF WOMEN
Akaki Textile	2991	1340	4331	31
Akaki Spare parts	370	73	443	16
A.A. Bottles and Glass	205	79	284	28
Clay Products Enterprises	227	277	504	54

Source: Compiled From December 1990 E.C payroll.

For three factories the representation of women are lower. Only in Clay Products Enterprises females participation rate is higher than males' participation,(54%). This shows that the participation of women in the labour force is lower. Further the smallest participation rate is shown in Akaki Spareprats factory . Women are predominantly exist in Clay products and also high in Akaki textile.

For the analysis the final sample used includes 481 men and 388 women.

3.2 Sample of the study

Enterprises	No. of samples		
	Male	Female	Total
Akaki Textile	402	330	732
Akaki Spare parts	28	13	41
A.A. Bottle and Glass	27	22	49
Clay Products	24	23	47
Total	481	388	869

3.2 METHODOLOGY

In this study descriptive statistics and Oăxaca -Ransom (1994) are used, comparing with Oaxaca (1973).

In using Oaxaca-Ransom (1994) method starting with two different approaches in order to differentiate which part of the pay gap is due to differences in productivity and which part is due to the way these productivity are treated in the labour market.

The two approaches are:-

1. examine whether there is a fixed disadvantage association with the sex of the worker.
2. investigate whether individual characteristics of female workers are rewarded differently in the labour market from the corresponding characteristics of men.

Some of the characteristics are education level, experience, family size, marital status and training.

The first approach consist of running a regression of earnings upon the characteristics of all workers (female and male) including a separate variable which indicates the sex of the workers.

this can be shown as:-

$\mathbf{Ln(w_i) = a + bx_i + cD_i + e_i}$ ---------- **(1) Mincer (1970)**

where $ln(w_i)$ is the natural log of the i^{th} workers pay

a is a constant term,

x is a vector denoting relevant measurable personal characteristics,

b is the vector of the estimated coefficients of these characteristics upon pay,

D is a dummy variable taking the value of 1 if the workers are female and 0 if the worker is male, and

e is an error term. The error term assumed to be normally distributed with zero mean and refers to unobserved or unmeasurable characteristics.

The interpretation of equation (1) is that individual earnings depend on the worker's observed characteristics (x's), the worker's sex (D) and unobserved characteristics (e), assuming that e is not correlated to D, at given x. If the error term negatively correlated to D, the coefficient on discrimination will unobservable than men with the same x's.

This bias arises because the characteristics which are unobserved and affect women

negatively will indicate an effect through the coefficient on the dummy variable measuring sex in addition to the pure effect of sex upon pay.

The coefficient which we are interested in is that on the variable representing the sex of the worker, which shows whether women receive on the average lower pay than men ($c<0$), other things being equal.

However this approach constrains the values of the coefficients on the other explanatory variables, such as education and experience, to be the same for women and men. Given that sex - specific earnings functions have produced coefficients on female characteristics that are significantly different from those for men, this approach is bound to yield in genders biased results.

The second approach consists of running two regressions separately on women's and men's earnings and comparing the two results, (Oaxaca, 1973).

This method requires two regressions to have a strictly comparable specifications, that is the same in both female and male earnings functions.

So that the estimation will start with the following two regressions:-

$$\ln(w_m) = a_m + (x_m)b_m + e_m \qquad (2)$$

$$\ln(w_f) = a_f + (x_f)b_f + e_f \qquad (3)$$

Where the subscripts m and f are male and female respectively.

a is the constant term,

x is the vector of male and female characteristics,

b is the vector of respective coefficients of these characteristics,

e is the error term.

From these two regressions the wage gap can be decomposed in the following way. That is the difference in the average logarithms of male and female pay can be shown to be equal to the percentage difference of male to female average pay (Oaxaca, 1973).

$$\ln(w_m) - \ln(w_f) = \ln [(1+(w_m - w_f)) / w_f] \qquad (4)$$

$$= \ln(w_m - w_f) / w_f$$

Given equations (2) and (3), using the regression property that the error term has a mean value of zero, we can rewrite equation (4) as

$$\ln (w_m - \ln (w_f) = (a_m - a_f) + [(x_m)b_m - (x_f)b_f] \qquad (5)$$

Where the first bracket on the right-hand side refers to the respective constant terms in the male and female earnings functions and x_m and x_f are the average values of the male and female characteristics in the sample. Add to subtract from equations (5) the term $(x_f)b_m$ or $(x_m)b_f$, and rearranging in the following way; that is,

$$[\ln(w_m) - \ln (w_f) + (x_f)b_m - (x_f)b_m] = [a_m - a_f + (x_m)b_m +$$

$$(x_f)b_m - (x_f)b_f - (x_f)b_m] \qquad (5.1)$$

$$\ln(w_m) - \ln(wf) = a_m - a_f + (x_m)b_m - (x_f)b_m + (x_f)b_m - (x_f)b_f \qquad (5.2)$$

$$\ln(w_m) - \ln(w_f) = a_m - a_f + b_m(x_m - x_f) + x_f(b_m - b_f) \qquad (5.3)$$

By doing the same way for $(x_m)b_f$, we produce the following two decomposition of the gross differential in average pay.

$$\ln (w_m) - \ln (w_f) = [a_m - a_f + b_m(x_m - x_f) + x_f (b_m - b_f)] \qquad (6)$$

$$= [a_m - a_f + b_f (x_m - x_f) + x_f (b_m - b_f)] \qquad (7)$$

So that we can see the percentage difference in pay comes from two different sources:

1.the differential rewards to male and female characteristics (b_m - b_f) in the labour market including the difference between the constant terms and;

2.the differences in the quantities of these characteristics held by men and women (x_m-x_f)

In this approach the portion of the wage gap due to differences in relevant variables held by women and men be considered to be non - discriminatory. On the other hand the portion of the wage gap which is due to differences in the values of the coefficients, including the constant term to be sex discrimination.

Equations (6) and (7) which uses two separate earning functions comprises of the previous on (equation (1)) which is based on a single regression and examines the difference is only in the constant terms.

Equations (6) and (7) do not produce the same results. The former decomposition evaluates the justified and potentially discriminatory components of the pay gap, if women were paid as men. The latter decomposition assumes that men are paid like women. The Oaxaca (1973) method has indexing problem since using two methods the results are significantly different. To solve this measurement problem it is used Oaxaca and Ransom (1994) decomposition method. This method used the average of men and

women wage as a base called B^*. To use this as an index, Oaxaca and Ransom set an assumption that in the competitive market there is no discriminatory wage structure.

This was stated by Oaxaca and Ransom in the form of:-

$$B^* = WB_m + (I-W)B_f \quad \text{.....(8)}$$

Where W is a weighting matrix

They called W as the "gender neutral" wage structure.

Oaxaca and Ransom show the weighting matrix as:-

$$W = (X'X)^{-1} (X_m'X_m) \quad \text{.....(9)}$$

Where X is the observation matrix for the pooled sample.

By calculating the weighting matrix (W) we get the "neutral wage structure". So that the decomposition given by Oaxaca and Ransom (1994) is:-

$$Ln(W_m) - Ln(W_f) = B^*(X_m'-X_f') + X_m'(B_m - B^*) + X_f' (B^* - B_f) \qquad (10)$$

In equation (10) the first term in the right hand side is the wage gap explained by differences in characteristics given gender neutral returns for male and female. The second and the third terms show the difference between actual and gender - neutral return for male and female respectively.

In this paper the Oaxaca - Ransom (1994) decomposition is used comparing with Oaxaca (1973).

The regression model in this paper is:-

$$\ln(w) = b_o + b_1D_1 + b2x_1 + b3x_2 + b4D_2 + b_5D_3 + b_6x_1^2$$

Where b_o is the constant term

ln(w) is log of monthly salary

D_1 is dummy for education where below primary education level is taken as a reference group

x_1 is experience include past and present service years

x_2 is family size

D_2 is dummy for marital status

D_3 is dummy for training

x_1^2 is experience squared

The regressors experience, experience squared dummies for education level, training dummy, marital status and, family size are explained below. This are the relevant variables which determine the wage in the labour market. Two regressions are made for men and women separately.

Experience - used in the study is the predicted of actual experience to take care of endogenity problem.

Endogenity problem occurs if the dependent variable is determined by the explanatory variables and some of the explanatory variable are in turn determined by the dependent variable, (Gujarati, 1995).

"Experience is accumulated participation and participation depends on pay which indicates the elasticity of labour supply. For men this may not be important issue since

men participate and accumulate experience independent of earnings. But in the case of women specially married women their labour supply to earnings is positive and high. So that if we use only one equation ignoring multi- equation model, present and past pay and work show strong endogenity", (Sapsford and Tzannatos,1993).

In this context we have two endogenous variables, earnings and experience. Therefore there are two equations and we use simultaneous equation model. The first one which help us to get the predicted experience and the second is the main equation which is earnings on predicted experience and other explanatory variables.

To get the predicted experience we regress the following equation by OLS.

$Ln(x)=a(Z)$

Where x is the actual experience

Z is the vector of explanatory variables including age and age squared,

a is the estimate of the respective explanatory variable.

From the above equation we save the predicted value and used as the explanatory variable to determine the wage.

The next step is testing whether experience is endogenous or exogenous variable. To do this :-

1. We regress ln of wage on predicted experience, predicted experience squared, actual experience and its squared including other explanatory variables.

That is

$Ln(w)=a_o + a_1x_1 + a_2x_2 + b_1X_1 + b_2X_2$.....(1)

where x_1 is the actual experience

x_2 is its squared

X_1 is the predicted experience

X_2 is its squared

a_1 is the estimate of actual experience

a_2 is the estimate of its squared

b_1 is the estimate of predicted experience

b_2 is the estimate of its squared.

The regression results for both sexes present in Appendix 2A and 2B.

2. We regress ln of wage on actual experience and its squared with other explanatory variables excluding predicted experience and its squared.

That is ,

$Ln(w) = a_o + a_1x_1 + a_1x_2$.....(2)

The equation that explains the predicted experience, which is incorporated in the main wage function, results for both sexes present in appendix 3A and 3B.

From equation (1) and (2) we get the unrestricted residual sum of squares (URSS) and restricted residual sum of squares (RRSS) respectively. The hypothesis is that b1=b2=o, means experience is exogenous. To test this hypothesis we used the F-test for the two regression.

$$F = \frac{(RRSS - URSS)/r}{URSS/(n-k-1)}$$ (Maddala 1992)

Where r is the restriction made in the regression,

n is number of observation and,

k is the number of explanatory variables including the constant. The test results present in Appendix 3 show the F- calculate for both sexes are significant and hence it is used predicted experience.

Experience Squared is also used to show the non-linear relationship between experience and earnings.

The other important human capital variable used is education level. Education level used as dummies in the regression taking below primary school level as a reference group.

Marital status is also used taking 1 if the person is currently married and otherwise 0. The economic aspects of marital status is that married women have responsible to take care of household works and children specially who have children below 6 years may be absented from job and hence affect their earnings.

The continuous form of family size also used. Large family size do have positive significant effect on earnings. The reason is that the household members other than the wife serve as child care alternatives and helps on domestic works. On the other hand if this larger number constitute more of dependent ages it may take the negative sign.

The results of estimation and the decomposition is shown in the next section.

IV. EMPIRICAL ANALYSIS

In this section the results of descriptive statistics and wage decompositions are explained. The first part presents the descriptive part and follows the decomposition after the regression results explained.

4.1 DESCRIPTIVE STATISTICS

Table 4.1 shows the characteristics of the total sample used as well as the wage characteristics of employees in each factories.

Table 4.1 SAMPLE CHARACTERISTICS

	FACTORY 1[a]		FACTORY 2[b]		FACTORY 3[c]		FACTORY 4[d]	
	men	women	men	women	men	women	men	women
% of Education	100	100	100	100	100	100	100	100
Uneducated	0.5	4.7						
Below primary	8.9	31.1		8.3			20.9	
Primary	39,5	33.1	7.4			4.8	16.7	43.3
Secondary	48.9	29.6	48.1	50	37	71.4	54.2	47.7
Diploma	2.3	1.6	14.8	41.7	40.7	14.3	4.2	4.3
Degree			29.6		22.2	9.5	4.2	4.3
%of Married	70.8	66.8	35.7	69.2	48.1	86.4	91.7	65.2

[a] Akaki Textile Factory, [b] Akaki Spareparts, [c] A.A. Bottles and Glass Factory, [d] Clay Products Enterprises

contd. Table 4.1

	FACTORY 1		FACTORY 2		FACTORY 3		FACTORY 4	
Selected mean Variables	Men	Women	Men	Women	Men	Women	Men	Women
Experience (Years)	17.76	17.36	11.82	8.72	15.55	14.71	16.69	11.91
salary (in Birr)	314.07	264.20	594.71	338.85	859.63	553.86	378.57	332.83
Family size(numbers)	5	6	3	3	4.04	5	3.02	4

The highest percentage of employees predominant in secondary school level. The primary level employees are relatively higher in factory 1, shows the employees drop out of school earlier.

In all factories the higher education level employees are lower. Specially in factory 1 there is no degree level employees. In degree level the percentage is relatively higher in factory 3. In factory 2 percentage is higher for men than other factories while women in this factory sample are not available.

In this section the mean, standard deviation and percentage of the wage difference are explained. This analysis indicates the wage gap between female and male employees. It also show the important variables which affect the earnings of employees.

Ethnic background by education level is shown in the table below.

Table 4.2 % of Employees by Ethnic background

Education level		Amehara	Oromo	Gurage	Tigre	Others
% of Below primary level	female	23.7	59.4	24.3	0	0
	male	7.5	9.6	12.1	0	6.3
% of primary	female	34.3	36.8	37.8	11.1	16.7
	male	28.0	40.0	39.4	0	31.3
% of secondary	female	37.3	34.9	35.1	66.7	58.3
	male	53.8	46.5	42.4	71.4	31.3
% diploma level	female	4.1	1.9	2.7	22.2	16.7
	male	7.0	3.1	0	14.3	18.8
% of degree level	female	0.6	0.9	0	0	8.3
	male	3.8	0.9	6.1	14.3	12.5
Total	female	100	100	100	100	100
	male	100	100		100	100

As shown in the above table the education level for different ethnic origin is explained. For below primary education level the highest percent is recorded for female in the Oromo 59.4% while for male employees 12.1% of Gurage. There is no below primary education level for Tigrian respondents.

When we look to secondary level the highest percentage is recorded for Tigrian respondents for both female and male respectively. Generally the highest education level recorded for the Tigrian respondents.

Average monthly salaries by ethnic origin is explained in the table below.

Table 4.3 Average Monthly Salary by ethnic origin

Ethnic Origin	Average Monthly Salary	
	Male	Female
Amehara	387.01	271.68
Oromo	325.29	277.98
Gurage	359.51	319.58
Tigre	566.71	377.22
Others	558.04	503.75

As shown in the table 4.3 the highest average monthly salary received by the Tigrian respondents.

The percentage of satisfaction on the job and on pay is explained in the table below.

Table 4.4 level of job satisfaction

Satisfaction	Female		Male	
	NO.	%	No.	%
Satisfied on job	304	77.1	329	68.1
Not satisfied on job	91	22.9	154	31.9
Satisfied on pay	168	42.5	147	30.7
Not satisfied on pay	227	57.5	332	69.3

From female respondents 77% of them gave positive responses while the rest 23% are not satisfied on their job. For male employees 68% of the respondents gave positive responses while the rest are not satisfied on their job.

When we look to the satisfaction of their pay the larger percentage of the respondents are not satisfied on their pay. For instance 57.5% of female respondents and 69.3% of male respondents are not satisfied on their pay.

The employees who read books and newspaper and listen foreign radio explained in the table below.

4.5 Percentage of responses

Responses	Listen Foreign Radio		Reading books		Reading newspaper	
	Female	Male	Female	Male	Female	Male
Yes	74.4	48.3	49.4	77.5	47.4	79.9
No	25.6	51.7	50.6	22.6	51.9	20.1

These responses need to use as a proxy to estimate the ability of employees. But it is difficult to attach the value for every responses and hence it is explained the responses only in this part.

For female respondents 74.4% of them are listening foreign radio while the rest never listen to foreign radio. Out of male respondents 48.3% of them are listening foreign radio while the rest are not.

When we look to the responses for reading books and newspaper, 49.4% and 47.4% of female respondents gave positive responses while the rest are not. But male respondents gave highest percentage of positive responses. For instance 77.5% and 79.9% of the respondents gave positive responses for reading books and newspaper respectively.

The effects of important explanatory variables are shown in the table below.

Table 4.6. Effects of Experience on The Salary of Employees

Service Years	Average Salary (in Birr)		
	Men	Women	% of wage difference using male wage as a base
Blow 6	312.54	204.93	34
6-10	267.98	232.65	13
11-15	362.56	311.04	14
16-20	387.16	299.38	23
21-25	389.43	287.71	26
26-30	399.41	300.47	25
Above 30	398.35	321.31	19

For all experience level men received the higher share of pay than women do. It shows that experience level affect the salary of employees since salary is increased as experience is increased.

But for men between 6-10 and for women between 16-20 and 21-25 is started to decrease. This might be because of the education level of the employees in this level of experience.

The percentage difference of mean salary for every experience level also show the extent of wage difference between male and female. Below 6 years of experience level the percentage difference is higher.

Table 4.7 Effects of Education Level on Salary

Education level	Average Salary (in Birr)		
	Men	Women	% of wage difference using male wage as base
Primary education	316.08	265.86	16
Secondary education	383.01	281.81	26
Diploma	712.52	516.50	28
Degree	957.83	744.16	22

The effects of education on salary for women and men are shown in table 4.7. It is presented that for the same level of education the average salary of men employees is greater than women. Further the study presents the wage gap between education level is wider for both sexes. The implication is that education is an important variable which determine earnings of employees.

The extent of wage differentials is explained by percentage of wage difference. In this case the highest difference is recorded in the diploma level. That is the difference due to the reward given to the characteristics in the labour market is 28% in the diploma level. Next highest difference is recorded in the secondary education level which shows the difference due to the reward given to characteristics in the labour market is 26%.

Table 4.8 Effects of Marital Status and Training on Salary

Variables	Average Salary (in Birr)		
	Men	Women	% of wage difference using male wage as a base
Marital Status			
Married	351.00	285.23	19
Single	399.14	303.14	24
Small family size	359.47	280.97	21
Large family size	367.42	294.48	20

Note: Small and large family is taken as below and above the mean family size(4.5 and 5.3 for men and women respectively).

As shown in table 4.8 married men received higher salary than women.

The percentage of wage difference for marital status (19%) tells us the extent of average salary difference between married male and female employees. Single men and women received higher salary than married men and women. The wage difference between single men and women is also higher (24%).

The family size also indicate the wage difference. Both men and women who have large family size received higher wages. On the other hand the difference between men and women wages are higher for small family size (21%)

The above descriptive statistics indicate there is wage difference and the percentage tells us the extent of wage difference. And hence some parts of the difference is explained by irrelevant variable, sex.

The table shown below presents the means and standard deviations of the variables used in the analysis.

Table 4.9 Means and (standard deviations)

VARIABLES	MEN	WOMEN
Experience (Years)	17.16	16.54
Education Level (in fractions)		
Primary	.3347 (.0525)	.2964 (.0367)
Secondary	.4719 (.0573)	.3222 (.0591)
Diploma	.0520 (.0921)	.0361 (.0837)
Degree	.0291 (.0908)	.0077 (.0155)
Family size(numbers)	4.5 (2.65)	5.34 (2.43)
Marital status: (fraction)		
Married	.684 (.0456)	.683 (.0398)
Monthly earnings (in Birr)	363.53 (200.32)	287.02 (122.840

Note: The values in parenthesis are standard deviations.

It is presented that on the average years of experience is higher for men than women. Education level, who completed primary school is higher for men (33%) compared to women (30%). On the average 47 percent of men have completed secondary school while 32% of women have completed secondary school. It is higher for men compared with women. On the average 5% and 3% of men have completed diploma and degree level and higher compare to women 3% and 7% diploma and degree level respectively.

Average monthly earnings are also higher for men than women. On the other hand this part indicate that there is a difference in relevant variables lead to difference in wage. Therefore the results from descriptive statistics indicate that there is female and male wage differentials. The difference is partly due to relevant variables and partly due to the irrelevant variable sex. But the difference is higher for the important variables difference between men and women.

Very important variables are experience and education level. Since it is indicated that salary for both sexes increased as experience and education level increased.

In the next section it is presented which variables are the most important factors to affect the earnings of employees.

4.2 RESULTS OF THE REGRESSION

Before the regression results it is given the description of variables.

Table 4.10 DESCRIPTION OF VARIABLES

VARIABLES	DESCRIPTION
ED1	primary education level (1-6) =1 if primary school completed =0 otherwise
ED2	secondary school education level (7-12) =1 if secondary school completed =0 otherwise
ED3	Diploma level =1 if person received diploma =0 other wise
ED4	Degree and above =1 if person received degree =0 otherwise
HHZ	Family size of the employees (numbers)
MARID	marital status =1 if the person currently married =0 otherwise
TRAIN	Receiving training in the present job =1 if the person trained =0 otherwise
PX	Predicted experience (year)
NUBCH	number of children (numbers)
PXSQ	predicted experience squared

The results of estimated variables for men and women are shown in table 4.11 below.

The regression is used corrected for heteroscedasticity.

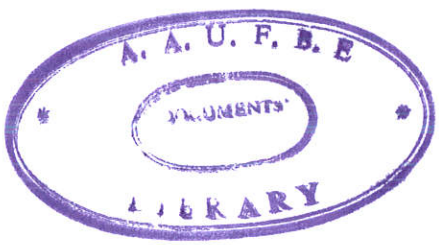


TABLE 4.11 Wage Regressions For Men And Women
(Dependent Variable LN(W))

VARIABLES	COEFFICIENTS	
	Men	Women
Constant	4.3890 (35.960)	4.2704 28.21)
ED1	0.0835 (1.642)*	0.0488 (1.136)
ED2	0.2717 (4.926)***	0.2276 (4.260)***
ED3	1.1801 (12.754)***	0.9043 (9.386)***
ED4	1.4963 (15.968)***	1.4856 (7.651)***
HHZ	-0.0005 (-0.066)	-0.0016 (-0.187)
MARID	0.0360 (0.810)	0.0380 (0.961)
TRAIN	0.0719 (2.126)*	0.0809 (1.1151)
PX	0.0975 (7.775)***	0.1151 (6.887)***
PXSQ	-0.0017 (-5.754)***	-0.0024 (-5.400)***

Number in parenthesis are t- ratios Adjusted-R^2 = 46%

* 10% significant level N = 869
** 5% significant level
*** 1% significant level

Note: Property of Semi-log

The slope coefficient in semi - log case measures the constant proportional or relative change in the dependent variable for a given absolute change in the value of the regressor (Gujarati, 1995).

That is for a continuous variable the relative change in the mean value of explained for a unit change in explanatory variable.

For dummy variable first we have to obtain the relative change by taking the exponent of the estimated dummy coefficient and subtract 1 from it, (Gujarati, 1995).

So that for the dummies taking in this study the relative change is shown below.

Table 4.12 RELATIVE CHANGE

VARIABLES	MEN	WOMEN
ED1	0.0871	0.0500
ED2	0.3121	0.2556
ED3	2.2547	1.4702
ED4	3.4651	3.4176
MARID	0.0366	0.0387
TRAIN	0.0746	0.0843

As shown in table 4.11 experience and education are significant and have the expected sign indicating that they are the most important factors determining earnings.

The mean salary of men employees increased by 9.8% per year. While the mean value of female employees increased by 11.5% per year which shows that experience is more important for women than male employees. Experience is significant at the 1% level for both sexes. The increment shows that for female employees the mean salary increased more than the male salary per year. This indicate that female favoured than male.

Experience squared is also significant at the 1% level which shows the existence of a non-linear relationship between earnings and experience. It is negative indicating diminishing returns. That is after experience reaches a certain level (28.68 and 23.98 for men and women respectively) the mean salary of employees increased by a decreasing rate per year.

The dummies for education are also significant for both sexes and they are increasing. For primary education the significance level is lower, that is for men it is significant at 10% while for women the significant level is at above 10% level. While secondary, diploma and degree are significant at the 1% level. The mean salary of men employees increased by 8.7% for primary schooling and it is lower compared to other education level. It is also indicate that the mean salary of female employees is increased by 5% and it is lower compared to other education level.

The rate of mean salary of both sexes increased for every education level. This strongly indicates that education is the most important factor for earnings.

For diploma and degree level the increasing rates are more than double which show the mean salary for diploma and degree level increased by more than double relative to reference groups. This shows that the wage gap between below primary (literate and have no education) and higher education level is wider.

The dummy for marital status is not significant and positive which shows whether employees are married or not their salary is not significantly affected. In the descriptive statistics the mean salary of married men and women is lower than single men and women. The difference in wage is higher for single than married. The other variable family size is also not significant. But in the descriptive statistics the mean salary is increased for large family size.

The above regression results show that human capital variables are important for earnings. The next section presents which part of the difference is due to characteristics difference and which part is explained by reward given to the characteristics in the labour market.

4.3 WAGE DECOMPOSITION

As shown in the methodology section we used the Oaxaca - Ransom (1994) wage decomposition, comparing with Oaxaca (1973).

Table 4.13 presents the decomposition of sex differentials in to the percentage points to differences in relevant variables and the percentage points due to discrimination.

Table 4.13 Decomposition of wage - gap using the Oaxaca

	Differences in relevant variables	Discrimination (difference in irrelevant variables)
The Oaxaca (1973) decomposition: Using female wage structure	.1365 (48%)	.1421 (52%)
the Oaxaca (1973) Using male wage structure	.1720 (62%)	.1067 (38%)

As can be seen in table 4.13 using the Oaxaca (1973) decomposition using female wage as a base, 48 percent of the wage difference is due to relevant variables and the rest (52%) is due to irrelevant factor, sex.

The discrimination part is higher than the relevant variables differences. Using the male wage as a base the discrimination part of wage difference is lower (38%) relative to the female wage structure. Most part of the wage difference is due to relevant variables differences.

This was also indicated in the descriptive analysis that in the same level of education the mean salary of women is less than men. It is also presented that there is a wage gap within the same level of experience between female and male employees.

Table 4.14 Decomposition of wage -gap using the Oaxaca -Ransom method

	Endowments	Discrimination
The Oaxaca -Ransom (1994)		
$B^{*}(X_m - X_f)$	.1640 (56%)	
$Xm\ (B_m - B^{*})$		.1158 (40%)
$Xf\ (B^{*} - B_m)$		.0127 (4%)

Since Oaxaca (1973) has measurement problem it is used the weighted average of male and female wages which is extended by Oaxaca-Ransom (1994).

Using Oaxaca - Ransom decomposition method the gap between actual wage and gender neutral wage is also wider even if the difference is less than fifty percent. Due to differences in characteristics consist of 56% while the rest 44% is due to the difference between the actual and gender neutral wage.

For both Oaxaca (1973) and Oaxaca - Ransom (1994) methods even if more than half of the wage gap is explained by relevant variables differences, there is a significant wage difference because of sex differences.

When we compare this study with Appleton (1996) which estimate the wage gap between female and male in Ethiopia, the latter result indicated larger parts of the difference is due to sex differences.

This difference may come because the two studies used different data sources and the

sample for Appleton is from urban Ethiopia while for this study the sample is used only from Addis Ababa.

Having these findings the next section presents the conclusion and recommendation from the empirical analysis.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

CONCLUSION

In this paper we have used descriptive analysis and Oaxaca -Ransom (1994) decomposition methods to analyze female-male wage differentials in Addis Ababa. To apply these methods we took the sample from four factories in Addis Ababa.

In applying these methods we investigate whether there is a wage gap between female and male. And hence which part of the wage gap is due to relevant variables difference and which part is due to irrelevant variable differences.

Although there are other variables, which are not included in this study that determine earnings due to the limitation of data, the result will lead to more intensive investigation in this area. It highlights the relevant variables and the relations of these variables with earnings of employees in the factory.

From this aspects we conclude the following based on the findings. Education and experience are very important determinants of earnings for both men and women. The percentage of male employees for primary, secondary and tertiary level of education is greater than female employees. The percentage of employees at tertiary level is very low; 5.2% and 3.6% diploma level and 3% and 0.7% degree level of men and women respectively.

Both descriptive and wage decomposition results indicate the existence of wage differentials attributable to differences in relevant and irrelevant variables.

Using Oaxaca (1973) method for the relevant variables the extent of wage differentials is 48% while due to sex difference is 52% when female wage used as a base. When male wage used as a base the relevant variables difference is 62% while due to the sex difference is 38%.

Using Oaxaca-Ransom (1994) wage difference due to relevant variables is 56% while due to sex difference is 44%. The results show that even if the wage gap due to sex difference is below fifty percent it is significant to say that there is sex discrimination.

The major explanatory variables are experience and education. It is shown in the descriptive statistics that, when experience increased the salary of both men and women except, for men 6-10 years and for female 16-20 and 21-25 years of experience, is increased.

When we used the regression result the t-ratio indicate that experience is significant at 7.8 and 6.9 level for men and women respectively, and the mean salary increased by 9.8% and 11.5% per year, for men and women respectively.

When we take education, the descriptive statistics show that mean salary of both men and women increased. For instance the difference between the mean salary of degree level and primary education is wide for both sexes, (641.75 Birr and 478.3 Birr for men and women

respectively).

When we look the results from the regression three of the education level are highly significant. The coefficients show that the mean salary increased by 27% and 22% of secondary education level over the reference group for men and women respectively. Diploma and degree levels increased by more than hundred percent over the reference group.

Generally the wage gap due to irrelevant variable difference is lower in this study than Appleton (1996). It is may be because the latter used the sample from urban Ethiopia while the sample used for this study is from Addis Ababa only.

RECOMMENDATION

The above findings have some policy implications regarding to earning differentials and relevant factors.

The important variables like education and experience are the most important factor to determine earnings for both sexes. So that these findings help to extend policies to increase access to education.

The higher primary school employees indicate drop outs from school. The reasons for these may be poverty and early marriage.

From the findings the wage gap between male and female employees is wider in higher education level. It may indicate that even if Ethiopian law equal -pay for equal work for all people after entering the job women may not received promotion equally. And hence most of the times specific jobs like managerial position is not given to women. It imply that employers are male biased.

One of the shortcoming of development is failure to consider the potential of women (UN,1989). From this statement to exclude this female labour force is costly to the society because of under utilization of human resources.

The government should have a means to follow up the implementation of this law. The findings indicate that the law remained on the paper. Thus there is a need to design a strategy by which the government ensure equal rewards for their labour.

REFERENCES

African Center For Women (ACFW) (1994),Fifth African Regional Conference on Women: vol. 3, Draft Africa platform for Action, Dakar Senegal.

Aigner J. Dennis and Glen G. Cain (1977), Statistical Theories of Discrimination in Labor Markets, Industrial and labor relations Review 30: 175-187.

Almaz Haile Salassie (1995), Gender and Development, Gender Dynamism and Institutional forms of the promotion of Gender perspectives; For a workshop on Gender/ WID Expertise Organized by the Netherlands embassy A.A.

Appleton Simon, John Hoddinott and Pramila Krishnan (1996), The Gender Wage gap in Three African Countries, Center for the study of African Economies (working paper series) England.

Barros Ricardo, Lauro Ramos and Eleonora Santos (1995), Investment in Women's Human capital in T. Paul Schultz 380-425, London.

Boserup Ester (1989), Women's Role in Economic Development, London.

Carlson Dale (1977), Girls are equal Too, The women's movement for Teenagers, Decorations by Carol Nicklaus, Canada.

Chant Sylvia (1989), Gender and Urban production, women in the Third World; Gender issues in rural and Urban Areas Lynne Brydon and Sylvia Chant (eds.), Great Britain.

Cotton J (1988), On the decomposition of Wage Differentials, Review of Economics and Statistics, 70: 236 -243.

CSA (January,1997), Report on Large and Medium scale manufacturing and Electricity, Addis Ababa.

CSA (October, 1997), Report on Small scale manufacturing Addis Ababa.

Elson Daine (1993), Gender - Aware analysis and Development Economics,Journal of International Development 5: 2: 237-247.

Fatima Babiker mahmoud (1991), African women transformation and evelopment, Institute for African Alternatives London.

Fishback V. Price and Joseph V. Terza (1989), Are Estimates of Sex discrimination By Employers Robust? The use of Never - Married, Economic enquiry vol.27 No. 2.

Greene H.William, (199), Econometric analysis, 2nd edition, USA.

Gujarati N Damodar, (1995), Basic Econometrics, 3rd Edition,

Singapore.

Gyimah - Brenpong Kwabena and Rudy Fichtenbaum (1997), Applied Economics, 29:1033 - 1044.

Hillina Taddesse (1996), Discriminatory Norms and Application Against Women in the Ethiopian family Law, EWLA - sponsored Research, Addis Ababa.

Hyde A. L. Karin (1989), International science and Technology institute inc. increasing Female Access to Education: An annotated guide to Questionnaires and Research instruments, Washington D. C.

ILO (1990), Women's Employment patterns, Discrimination and Promotion of Equality is sub-Saharan Africa, World Employment program; A synthesis report Jobs and skills program for Africa, Addis Ababa.

Kanellopoulos N. Costas (1997), Public - Private wage differentials in Greece, Applied Economics 29: 1023 -1032.

Karen S. K., Michael H. M. and Lucretia D. T. (eds.) (1989), Working women; Past, present and Future USA.

Katz Katarina (1997), Gender, wages and discrimination in the USSR: a study of a Russian Industrial town, Cambridge Journal of Economics, 21: 431-452.

Kesteren Van Jose' 91989), Female Labour force participation and fertility: the case study of one Kebele in Addis Ababa, IDR Research Report No. 33, Addis Ababa.

Maddala S. G. (1992), Introduction to Econometrics Second edition,USA.

Mallier T. A. and M. J. Rosser (1987) Women and the Economy, A comparative Study of Britain and the USA, London.

Meng Xin and Paul Miller (1995), Occupational Segregation and its impacton Gender wage Discrimination In China's Rural Industrial Sector, Oxford Economic Papers 47: 1, 136-155.

Mincer Jacob (1970), The distribution of Labor Incomes: A Survey with Special Reference to the Human capital approach, Journal of Economic Literature 8:1:1-26.

Ministry of Information and culture of The federal Democratic Republic of Ethiopia and the African Hinerant College For culture and Development (1997), A Technical report of The Sensitization workshop on culture, Gender and Development For Eastern and Southern African English Speaking countries, A.A., Ethiopia.

Nadeau Serge, William D. Walsh and Catherine E. Wetton (1993), Gender wage discrimination: Methodological issues and empirical results for Canadian Public sector employer, 25: 227-241.

Neumark David (1988), Employers' Discriminatory Behaviour and the Estimation of Wage Discrimination, the Journal of Human Resources, 23: 279-295.

Oaxaca Ronald (1973), Male - Female Wage Differentials in Urban Labour Markets, International Economic Review, 14:3:693-709.

Oaxaca Ronald and Michael R. Ransom (1994), On discrimination and the decomposition of wage differentials, Journal of econometrics, 61:5-21, North Holland.

Organization for Economic Co-operation and Development (1979),Equal opportunities For women, Paris.

Psacharopoulos George and Zafiris Tzannatos (eds.) (1992): Case studies on women's Employment and pay in Latin America: The World Bank Washington D.C.

Psacharopoulos G. and Zafiris T. (1992), Women's Employment and pay in Latin America: Overview and Methodology, USA.

Randall Filler (1983), Sexual Differences in Earnings: the role of Individual Personalities and Tastes, Journal of Human Resources 18: 1: 82-99.

Reskin F. Barbara (ed.) (1984), Sex Segregation in the Work Place Trends Explanations, Remedies, USA.

Rosholm Michael and Nina Smith, (1996), The Danish Gender Wage gap on the 1980s: A panel data study, Oxford Economic papers 48: 2, 254-279.

Sapsford David and Zafiris Tzannatos (1993): The economics of The Labour Market, London.

Sheila Mclean and Noreen Burrows (1988), Some Aspects of Sex - Based Discrimination, The Legal Relevance of Gender.

Stevenson Huff Mary (1984), Determinants of Low Wages for Women Workers, in Annette Baxter (ed.), USA.

Tewodros Tessema (1997), Sex Based Wage Discrimination: The case of Adei Ababa Yarn factory, Senior Essay: Department of Economics, Addis Ababa University, Addis Ababa.

The Transitional Government of Ethiopia Office of the Prime Minister(1993), National Population Policy of Ethiopia, Addis Ababa.

UNECA/African Centre For Women (1996), African Women Report 1995, Participation of women in the Economic sector.

United Nations (1991), World's Women 1970-1990: Trends and Statistics, New York.

United Nations (1989), world Survey on the role of women in Development, USA.

UNECA (1996), A study of the Economic Empowerment of women and their Role in the Socio-Economic Development of Africa, Ethiopia.

Wolday Amaha (1986), Personal Earnings in Ethiopian State - owned Manufacturing: The case of Ediget Cotton Factory, Eastern Africa Economic Review 4:2.

Appendix 1a

Decomposing the gender-wage gap using the Oaxaca and Oaxaca-Ransom methods

	Ethiopia	Cote d'Ivoire	Uganda
Difference in log of offered wages:	0.522	0.322	0.270
The Oaxaca (1973) decomposition: using the female wage structure			
Bm(Zm'-Zf')	0.005(1%)	0.033(10%)	-0.061(-23%)
(Bm-Bf)Zf'	0.517(99%)	0.289(90%)	0.330(122%)
The Oaxaca (1973) decomposition: using the male wage structure			
Bm(Zm'-Zf')	-0.049(-9%)	-0.019(-6%)	0.082(30%)
(Bm - Bf)Zf'	0.571(109%)	0.341(106%)	0.187(69%)
The Oaxaca-Ransom (1994) decomposition:			0.057(21%)
B^*(Zm' -Zf')	0.023(4%)	0.088(27%)	0.062(23%)
Zm'(Bm -B^*)	0.258(48%)	0.045(14%)	0.150(56%)
Zf'(B^* - Bf)	0.249(48%)	0.188(58%)	

source: Simon Appleton and et.al., 1996.

Appendix 1b
The Oaxaca-Ransom decomposition by sector

	Ethiopia	Cote d'Ivore	Uganda
public sector:			
Actual wage gap	0.178	0.235	0.307
Offered wage gap	0.648	1.022	0.153
$B^{*}(Zm' - Zf)$	0.049(8%)	0.266(26%)	0.100(65%)
$Zm'(Bm - B^{*})$	0.306(47%)	0.165(16%)	0.019(12%)
$Zf'(B^{*} - Bf)$	0.923(45%)	0.591(58%)	0.034(22%)
Private sector			
Actual wage gap	0.560	-0.052	0.378
Offered wage gap	0.209	-0.176	0.430
$B^{*}(Zm' - Zf)$	0.038(18%)	0.072(-1%)	0.040(9%)
$Zm'(Bm-B^{*})$	0.079(38%)	-.044(25%)	0.093(22%)
$Zf'(B^{*} -Bf)$	0.092(44%)	-0.204(116%)	0.297(69%)

source: Simon Appleton and et.al., 1996.

APPENDIX 2A

Unrestricted Regression Result For Women

VARIABLES	COEFFICIENT	T-RATIO	MEAN
ED1	.0525	1.262	.2964
ED2	.2177	4.215	.3222
ED3	.9067	9.741	.0361
ED4	1.4570	7.776	.0077
HHZ	-.0015	-.176	5.335
MARID	.0409	1.072	.6830
NUBCH	.0005	.023	.5979
TRAIN	.0878	1.746	.1237
PX	.0663	3.491	16.54
PXSQ	-.0015	-3.016	311.4
AEXP	.0366	3.815	17.54
AEXPSQ	-.0005	-2.258	372.7
CONSTANT	4.3511	29.469	

APPENDIX 2B

Unrestricted Regression Results for Men

VARIABLE	COEFFICIENT	T-RATIO	MEAN
ED1	.0780	1.399	.3347
ED2	.2607	4.653	.4719
ED3	1.1329	12.593	.0520
ED4	1.4586	13.317	.0291
HHZ	.0024	.239	4.574
MARID	.0473	1.084	.6840
NUBCH	-.0231	-1.006	.7775
TRAIN	.0787	2.212	.2973
PX	.0669	4.231	17.16
PXSQ	-.0013	-3.266	347.8
AEXP	.0275	2.745	17.84
AEXPSQ	-.0004	-1.575	388.3
CONSTANT	4.4188	38.497	

APPENDIX 3A

Restricted Regression Results for Men

VARIABLE	COEFFICIENT	T-RATIO	MEAN
ED1	.0343	1.046	.3347
ED2	.2145	3.879	.4719
ED3	1.0315	11.717	.0520
ED4	1.3905	12.699	.091
HHZ	.0135	1.389	4.574
MARID	.0687	1.546	.6840
NUBCH	-.0249	-1.095	.7775
TRAIN	.0980	2.721	.2973
AEXP	.0551	7.070	17.84
AEXPSQ	-.0008	-4.143	388.3
CONSTANT	4.7626	52.690	

APPENDIX 3B

Restricted Regression Results for Women

VARIABLE	COEFFICIENT	T-RATIO	MEAN
ED1	.0343	.825	.2956
ED2	.1393	2.968	.3213
ED3	.8501	9.170	.3600
ED4	1.3156	7.070	.0077
HHZ	.0080	.967	5.324
MARID	.0258	.677	.6812
NUBCH	-.0107	-.487	.5964
TRAIN	.1097	2.178	.1234
AEXP	.0529	6.353	17.5
AEXPSQ	-.0008	-3.850	371.7
CONSTANT	4.8010	55.820	

For men from the regression we found out that:

URSS = 53.7421 RRSS = 56.6218

N =481 r = 2

k = 13

$$F = \frac{(56.6218 - 53.7421)/2}{53.7421/(481-13-1)}$$ F(2,468) = 12.51

For women from the regression of (1) and (2) it is found out that

URSS = 35.9315 RRSS = 37.3065

N = 388 r = 2

k = 13

So $$F = \frac{(37.3065 - 35.9315)/2}{35.9315/(388-13-1)}$$ F(2,275) = 7.15

It is found out that the F calculated is significant at 5 percent significant level for both men and women since F- critical at 5 percent is 3.00. It means that the null hypothesis b1=b2=0 is rejected. So that experience is endogenous variable and hence we used the predicted experience in the regression of wage function.

APPENDIX 5

The questionnaire is prepared to collect necessary information on the participation and earnings of employees in this factory. You are kindly requested to fill in this questionnaire. We assure you that all information provided here in will remain confidential. Thank you for your cooperation.

PART I: EMPLOYEES BACK GROUND

1.1. Basic information

1. Fill your age, sex, marital status and family size in the table below.

Age	Sex		Marital status		Family size
	Female	Male	single		
			married		
			widowed		
			divorced		

2. Fill the information below.

Do you have children?		
Yes -----		No ---
Number of children		
Number of children below 6		

3. Basic information about employees' parents:

<table>
<tr><td rowspan="3">Parent</td><td colspan="2">Do your parents have education?</td><td rowspan="3">Occupation</td><td rowspan="3">Average Income per month</td></tr>
<tr><td>Yes</td><td>No</td></tr>
<tr><td colspan="2">If yes what is their education level?</td></tr>
<tr><td>Father</td><td colspan="2"></td><td></td><td></td></tr>
<tr><td>Mother</td><td colspan="2"></td><td></td><td></td></tr>
</table>

1.2 Education

1. Have you ever attended/ attending school? Yes ------

No _____

If yes what was the highest level of schooling completed?_____

1.3. Fill your results in the table below.

What is your result in	
Eighth grade national exam?	
ESLCE?	

4. Where did you finish your elementary school?

Region _____

City \Town _____

Zone_____

5. Where did you finish your secondary school?

Region _____

City\Town _____

Zone _____

6. How many languages can you speak? _____

No.	Languages	speak only	speak and write
1			
2			
3			

7. What is your mother tongue?

8. How do you pass your spare time? ----------

9. What is your hobby?----------

Fill the answer for question 10 and 11 in the table below.

10.Do you listen foreign radios program (such as American Radio or BBC)?

11.Do you read books/newspaper?

	Never	Sometimes	Always
Books			
Newspaper			
Radio			

PART II: OCCUPATION AND WAGE \ SALARY

2.1 Occupation and Wage \ Salary

1. What is your occupation in the current job?

   _____

2. What is your occupational status? _____

3. Fill present payment in the table below.

Types of payment	Gross	Net	payment period (monthly, daily...)
Basic salary			
Bonus			
Others, specify_____			

4. How much time do you spend at this job per week?

   _____hours.

5. Do you work overtime? (a) Never __ (b) Sometimes __

   (c) Most of the time__

6. If you are working how much are you paid for the overtime per month?

   _____Birr.

7. How much is your family gross income (including yours and family members) per month? _____Birr.

8. How long have you been employed at your current job?

Years _____ Months _____

9. Are you satisfied with a current job? Yes _____ No ___

10. Are you satisfied with current salary? Yes ___ No ___

11. What was your previous job experience? Please write the date as year you were for the first time employed and write type of work, place, employers in the table below.

No.	Institutions	Years	Wage\salary	Occupation
1.				
2.				
3.				
4.				
5.				

12. Have you ever competed for promotion while being on this job?

Yes ____ No _____

13. If yes have you been promoted? Yes ___No ___

14. Can you tell us your frequency of promotion in the last 5

years? _____ times.

15. How many times do you get promotion since employed here? _____ times.

16. Have you ever been participating in seminars?

Yes ____ No ____

17. If yes for how long and on what? _____, _____

18. How many times did you get salary adjustment since employed in this organization ? _____ times.

19. Have you received any training on this job? Yes ___ No ___

20. If yes what is your benefit after training? _____

21. Have you ever been absent from your work? Yes ____ No ____

22. If yes, on the average, how many days in a month have you been absented and why? ____ days _____.

2.2 Other job related questions

1. Have you ever been a leader in a professional organization? Yes___ No __

2. Have you ever been a leader in 'idir'/'iqub'? Yes __ No __

3. Have you ever been a leader in labor union? Yes ___ No __

4. If yes, for question 24 and 25, when? _____

5. Have you ever been an executive committee member in

   a. a professional organization?-----

   b. idir or iqub? -----

   c. Labor union?-----

   d. no -----

6. Have you ever got a prize? Yes _____ No _____

7. If yes from where did you get and why? _____,

8. What was the prize? _____

9. Have you ever been penalized by your employer in terms of

   (a) fines? ___ (b) warning? ___ NO __

10. What is the reason for the punishment? _____

11. Do you accept the penalty (is it justified)? Yes ___ No __

12. What is your ethnic background? _____

13. What is your religion? _____

14. Do you have a health problem? Yes ---- No ----

15. If yes (a) serious ---- (b) not serious ----

16. Have you taken a sick leave in the last twelve months?

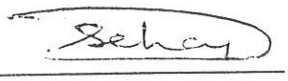
Yes ---- No ----

17. If yes for how long? ---- days/months.

(For women only) for how long do you get maternity leave? _____days.

I, the under signed, declare that this thesis is my work and that all sources of materials used for the thesis have been duly acknowledged.

Name: Tsehay Haile

Signature: 

Place: Addis Ababa University

Date of Submission: June, 1998