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Wage Determination and Gender Discrimination in Uganda

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ABSTRACT

This study examines male-female wage determination and gender discrimination in Uganda. The study used the nationally representative household survey 2002/03 collected by Uganda bureau of statistics. It was found out that male-female wage gap is about 39%. Wages for both males and females are estimated by implementing a Heckman selection model. Heckman selection model was employed to correct for selectivity at the stage of entrance into the labour market. Estimations from the wage equations both for men and women with sample and sector selection highlight the relevance of human capital, demographic factors and regional labour market segmentation in wage determination. The results from the gender wage gap decomposition using Oaxaca (1973) and Neumark decomposition indicate larger wage differential attributed to discrimination and that the largest component of the unexplained wage gap stems from female disadvantage. The study recommends policies that reduce gender inequalities, particularly those policies that have a positive impact on the empowerment of women who suffer from discrimination like access to education, work environment that encourage equal treatment in labour market.

1.0 INTRODUCTION

In most labour markets both in developed and developing countries lower wages are paid to female workers than to male workers. These wage differentials have been a subject of a large volume of research (Xin Meng, 1997). However, the major part of this research and attempts has been conducted in the industrialized countries (Blau & Kahn, 2000). In case of developing countries, there is very little known about gender wage gap. For example, from Weichselbaumer and Winter-Ebmer (2005)'s recent meta-analysis on this issue, it is noted that only 3% of the studies on gender wage gap stem from Africa data out of all the empirical literature since 1960s (Nordman & Rouband, 2005). And since, it is typical to find significant labor market discrimination against women, in developed and developing countries alike. This paper examines the evidence for Uganda.

Uganda's labor market is characterized by high rates of population and labor force growth, stagnation in employment to population rate (EPR), low share of wage earners in the total work force but large share of the private sector in the paid employment. Uganda's paid employment sector has shown an increasing trend over time. It grew at the rate of 2.5% during the 1990s. However, the overall rate of growth in employment remains well below that of labor force (i.e. 2.7% between 1992 and 1999, 4.3% between 1999 and 2002, compared to labor force growth of 3% between 1992 and 1999 and 4.4% between 1999 and 2002 respectively) (Okurut, et al, 2006).

Consistent with income inequality, inequalities in wages have continued to rise. According to Okurut etal., (2006), overall wage inequality has remained fairly constant, but increased in urban areas and among female wage employees. It is argued that wage inequality is driven mostly by the within – social groupings inequalities relative to between social grouping inequality.

Although real wages in Uganda rose by a health 48% per annum between 1992 and 2002, there has been a marked gender gap in wage growth. Real wages for males grew by an average of 6% per annum; those for females grew by only 1.2% per annum between 1992

– 2002. Between 1992 and 2002, public sector wages were higher than the private sector wages owing to the implementation of the structural adjustment programmes of retrenchment of public servants resulting into a smaller and well remunerated public service and deregulation of the labor market (See Okurut et al, 2006).

The government's policy on employment has centred on creating an enabling environment for private sector to play the leading role in economic growth and employment generation. Since 1980s the government has also pursued a number of policies geared to attracting foreign investors. The private sector is expected to create new jobs and pay better wages, thereby leading to welfare advancements. However, while employment opportunities in the private sector have continued to grow , the real wages fell in the last years when the number of persons living in poverty rose and rate of private sector investment is still low (Okurut et al, 2006). This presents a challenge given the higher contribution of this sector in wage employment. New dimensions are needed in employment policy to address the prevailing distortions.

Statement of the problem

Available literature argues that labor markets are segmented by gender in most developing countries with the bulk of women's work taking place in non-market activities in the home or the informal sector (Kabubo-Mariara, 2003). Gender analysis shows that women are disadvantaged in the labor market. They are occupationally and industrially segmented. If the difference in economic outcomes in the labour market for female workers is attributed to discrimination, rather than to differences in human capital endowments, this mechanism has potential to limit the human and economic development of millions of people. Therefore, searching for the reasons of the gender wage gap has important social and economic worth. At first, it would provide the paths for women to get equivalent earning as men, and so as to help realize gender equality. Besides if the gap comes from discrimination against women, women's human capital could not be fully realized as men do. So eliminating discrimination would improve economic efficiency (Xioayan He, 2004).

Notwithstanding the above, the linkage between gender and labour markets has been a major issue in discussions of the role and effectiveness of policy intervention in developing countries (Kabubo-Mariara, 2003). However, much attention of studies linking gender and labour markets has been conducted in developed world. Developing countries have few empirical studies. For example, in case of Africa, there is very little known about the gender wage gap (Appleton, Hoddinott and Krishnan, 1999). The reasons advanced in support of empirical wage gap studies in developed world relate to the increasing importance of affirmative action policies to close the income gap among groups (Gallardo, 2006) and of course the availability of data. Thus, the small numbers of studies particularly in Uganda mirrors the limited number of government policies currently in place to address the inequality between groups such as men and women and its impact on the incidence of poverty for disadvantaged groups. This paper therefore contributes to the growing literature addressing the issue of discrimination in developing countries.

Enhancing the gender gap literature on poor developing countries like Uganda is crucial for several reasons. First, it is evident that there are manifest shortcomings of studies on African countries, particularly due to the shortage of available information (Bennell, 1996). Second, gender inequality is likely to be greater while markets do not function efficiently and the States lack the resources for introducing corrective policies. Third, understanding the roots of inequalities between the sexes and reducing gender gaps have a central place in term of policies in these countries. For example, under the Poverty Reduction Strategy Paper (PRSP) initiative that concerns over sixty of the world's poorest countries, policies designed to counter gender discrimination are among the most often recommended solutions to combat poverty (Cling, Razafindrakoto and Roubaud, 2003): Goal 3 of the Millennium Development Goals (MDG) is aimed at reducing gender inequalities.

Objectives of the Study

The main objective of the study is to examine the nature of Uganda's labor market conditions on the basis of gender. Specifically the study will address the following.

(i) To analyze determinants of wage differentials; and

(ii) To explore the existence and nature of labor market discrimination in Uganda.

Thus against the backdrop, the study intends to investigate the following research question: Does market wage differ by gender given similar background and characteristics?

2.0 LITERATURE REVIEW

The literature has generally measured and analyzed the gender wage gap in various countries using the Blinder (1973)-Oaxaca (1973) decomposition. This decomposition of gender wage gap [Blinder-Oaxaca (1973)] is a common method of measuring labor market discrimination against women. The standard Blinder-Oaxaca decomposition explains wage differentials in terms of differences in individual characteristics (characteristic effects) and differences in the coefficients of the earnings equations (coefficients effect).

The standard Oaxaca (1973) and Blinder (1973) decomposition is based on an ordinary least squares (OLS) estimation of a wage equation of the semi-log functional form:

$$InW_i = \beta X_i + \varepsilon_i$$

Where InW_i is the natural logarithm of the observed workers labour market wages, X_i is a vector of observed characterizes, β is a vector of coefficients and ε_i is a disturbance term with an expected value of zero.

The Oaxaca-Blinder wage decomposition technique in general requires estimating two separate regression functions, in our samples by gender, one for male and one for the female. These are denoted by subscript m and f respectively:

$$InW_m = X_m\beta_m + \varepsilon_m \text{ ......} (1)$$

$$InW_f = X_f\beta_f + \varepsilon_f \text{ ......} (2)$$

The average wage gap (in logarithms) between males and females is then given by

$$In\overline{W}_m - In\overline{W}_f = \overline{X}_m \hat{\beta}_m - \overline{X}_f \hat{\beta}_f \text{ ......} (3)$$

Where W_m and W_f are the means of males and female wages, respectively, X_m and X_f are vectors containing the respective means of the independent variables for males and females and β_m and β_f are the estimated coefficients. The first term of the right hand side captures the wage differentials due to different characteristics of males and females. The second term is the wage gap attributable to different returns to these characteristics or coefficients.

In equation (3), the male wage structure is taken as the non-discriminatory benchmark. It can be argued that, under discrimination, males are paid competitive wages but pay males more than the females. Coefficient should be used as the non-discriminatory wage structure. Therefore, the issue in literature is to how to determine the wage structure β^* that would prevail in the absence of discrimination. This choice poses the well-known index number problem given that we would use either the male or the female wage structure as the non-discriminatory benchmark. While *a priori* there is no preferable alternative, the decomposition can be quite sensitive to the selection made (Nordman and Roubaud, 2006).

Indeed, the estimation of labour market discrimination by gender has become routine since the popularization of the wage decomposition methodology by Blinder (1973) and Oaxaca (1973). Typically, one uses the separated estimated (log) wage equations for two groups of workers to decompose the difference in their (geometric) mean wages into a discrimination (unexplained) portion and a human capital (endowments or explained) portion (Neuman and Oaxaca, 2003).

The simplest decomposition procedure is to adopt one of the estimated wage structures as the non-discriminatory norm. Often researchers select the wage structure for the group of workers believed to be dominant in the labour market (at least relative to the comparison group). If we have:

$$\beta^* = \Omega\beta_m + (I - \Omega)\beta_f$$

Where Ω is a weighing matrix and I is the identity matrix, then any assumption regarding β^* can be seen as an assumption regarding Ω. The literature has proposed different weighting schemes to deal with underlying index problem: first Oaxaca 1973) proposes either the current male wage structure as β^*, i.e. $\Omega = 1$, or the current female wage structure, $\Omega = 0$, suggesting that the result would bracket the "true" non-discriminatory wage structure. Reimers (1983) implements a methodology that is equivalent to $\Omega = 0.5I$. In other words, identical weights are assigned to both men and women. Cotton (1988) argues that the non-discriminatory structure should approve the structure that holds for the larger group. However, it is noted that in instances where the discrimination portion estimated as the summed difference in estimated coefficients between the two groups of workers weighted by the mean characteristics of the subordinate group, it would imply that the entire discriminatory wage differential is ascribed to underpayment of the subordinate group rather than to over payment of the dominant group (Neuman & Oaxaca, 2003).

A more general approach to wage decomposition however was developed by Neumark (1988), Oaxaca and Ransom (1988), and Oaxaca and Ransom (1994). In the more general approach the non-discriminatory wage structure is estimated for a pooled sample of the two demographic groups and is taken as an estimate that would exist in the absence of discrimination given non discriminatory returns. This approach allows the discrimination component to be further disintegrated into overpayment (favoritism) and underpayment (Pure discrimination). In fact, of all the alternative methodology developed, the Neumark methodology is considered the best. The methodology best captures the wage structure that would prevail if employers were gender – blind (Oaxaca and Ransom, 1994). Neumark decomposition of the gender wage differential is expressed as follows:

$$In\overline{W}_f - In\overline{W}_m = \beta^*(\overline{X}_m - \overline{X}_f) + \left[\left(\beta_m - \beta^*\right)\overline{X}_m + \left(\beta^* - \beta_f\right)\overline{X}_f\right] \ldots\ldots\ldots\ldots\ldots\ldots(4)$$

This decomposition can be reduced to Oaxaca's two special cases if it is assumed that there is no discrimination in the male wage structure, i.e.$\beta^* = \beta_f$. The first term is the gender wage gap attributable to difference in characteristic. The second term and the third term capture the difference between the actual and pooled returns for men and women respectively. Specifically, the second term measures the so called male advantage due to labour market discrimination computed as the wage males receive above what would be due if their sample characteristics were to be rewarded at the non-discriminatory wage structure β^*. The last term measures the female disadvantage due to labour market discrimination which is the equivalent to the ratio between the wage women's should receive if the non-discriminatory wage structure were enforced and the wage they actually receive.

Neumark notes that employers may practice either nepotism (where women are paid the competitive wage and men are overpaid) or discrimination (men are paid the competitive wage but women are underpaid) or both. However, caution has been raised on Neumark's methodology. Appleton et al (1999) for example, advice on grounds that it is not that clear whether the pooled coefficients will be a good estimator of the non-discriminatory wage structure. Moreover, there is no evidence that the zero homogeneity restriction on employer preferences is valid and conventional earnings are likely to omit a number of important variables that affect productivity.

Other empirical studies to analyze the gender wage differential in more detail have adopted the decompositions developed by Blinder and Cotton (see Xin Meng, 1997 for example). In this case the Blinder's decomposition of the wage differential may be written as follows:

$$R = \underbrace{\left(\hat{\alpha}^m - \hat{\alpha}^f\right)}_{U} + \underbrace{\sum_{j=1}^{n} \bar{X}_j^f \left(\hat{\beta}_j^m - \hat{\beta}_j^f\right)}_{C} + \underbrace{\sum_{j=1}^{n} \hat{\beta}_j^m \left(\bar{X}_j^m - \bar{X}_j^f\right)}_{E} \quad (5)$$

The term E is the portion of the differential attributable to different endowments and the terms U and C are the portions of the unexplained wage differential, the sum of which is usually regarded as the differential attributable to discrimination (Xin Meng, 1997).

The practical consideration associated with the adoption and use of Blinder decomposition method is the index number problem[2]. In the above equation (5), the weights used for C and E terms are $\bar{X}_j^f$ and $\hat{\beta}_j^m$ respectively. This referred to as a male-weighted decomposition. These weights can be replaced by $\bar{X}_j^m$ and $\hat{\beta}_j^f$ to yield a female-weighted decompositions. Alternatively, an average of $\hat{\beta}_j^m$ and $\hat{\beta}_j^f$ can be used to form the weights. In the view of this problem, a number of studies have provided both the male-weighted and female-weighted estimations so as to show the range of the discrimination effect. Others have taken a simple average of the male-and female-weighted estimations to get a single measure (Sloane, 1985), while others like Cotton (1988) have suggested weights that a formed using weighted average of the male and female coefficients are more accurate than the other estimations. Under this approach the non-discriminatory wage structure β^*, is defined as $\hat{\beta}^* = f^m \hat{\beta}^m + f^f \hat{\beta}^f$ where f^m and f^f are the proportions of men and women among total employees.

Another twist in the wage decomposition methodology is occasioned by selectivity bias. Analysis of this problem started in the early seventies with the papers by Gronau (1974) and Heckman (1974). In their studies, the problem of sample selection bias is discussed in the context of the decision by women to participate in the labour force or not.

[2] This refers to the fact that the decomposition of the gender wage gap is not unique.

However, selectivity bias might be found at two stages of the employment process at the stage of joining the employed labour force and when a specific occupation or an occupation status is chosen. Occupation selectivity bias affects wage differential as occupations differ in average wage rates (even after controlling for workers characteristics) and barriers to entrance of the subordinate group create another source of discrimination. In the presence of sample selection, both types, OLS estimation of the wage equations can yield biased and inconsistent estimators, Gronau (1974) and Heckman (1976, 1979). While correction for the first type is standard, correction for the second type is not usually done, and if is performed it is not taken to the stage of decomposing wage differentials including the decomposition of the inverse mills ratio (Neuman & Oaxaca, 2003).

Heckman (1979) proposed two estimation techniques to overcome the self-selection problem, one consisting in maximum likelihood (ML) estimation of selection model assuming bivariate normality of the error terms in the wage and participation equations. The other method proceeds in two steps, an estimation of the participation equation, and OLS (or GLS) estimation of the wage equations using participants only and the normal hazard λ estimated from the first step as additional regressor. Two reasons have been advanced to support the preference of two-stage estimation to the direct ML estimation of the Heckman model. First, ML relies on joint normality of the errors in the selection and level equations. Second, using OLS in the second stage has an advantage that the average of the residuals is zero, which does not hold for the ML Heckman estimator. For these reasons, this study used the two-stage procedure.

Example of studies applying the Heckman correction include Dolton et al, (1989) who estimated a simultaneous model of occupational choice, wage determination, and occupational status in which selectivity corrections are included in the wage and occupational status equations. Selectivity corrections are made for labour force participation of women and occupational selectivity corrections are made for both men and women. Wage decompositions are not performed and gender discrimination is not estimated, though male and female occupational choices are predicted using own characteristics with the estimated model for the opposite sex.

Xiaoyan He (2004) analyzed the gender wage gap in Taiwan from 1979 to 1995. The replicating results show that gender wage gap was not constant as concluded by previous literature but slightly declined. In this study, Xiaoyan noted that the original Blinder-Oaxaca decomposition omits some important independent variables and therefore he tested this by adding the sector of employment as dummy variable into the Blinder-Oaxaca equation. However, the inclusion of sector of employment in wage equation has one conceptual problem that may be difficult to resolve (Garcia-Aracil etal.2006). That is if all the discrimination takes place with respect to sector. In other words, what if mostly men get jobs in the high paying sector but, once in a sector, men and women get paid the same amounts. The wage equation will show no discrimination because it takes differences in the X's as differences in "endowments". But if sector is in X, then it could well reflect a kind of discrimination. One possible solution to this problem has been not to include sector in wage equation, but rather, to estimate the wage equation with a selection correction term for sector of employment (see Garcia-Aracil et al. 2006). Another solution is to include sector in X, but to instrument it, i.e. estimate the wage model with two-stage least squares (2SLS).

3.0 METHODOLOGY

In order to examine determinants female and male wages, cross-sectional wage equations are estimated for both male and female. It is common to refine the wage equation by using Heckman's (1979) correction for sample selection bias (Kabubo-Mariara, 2003; Xin Meng, 1997). The reason for the correction is that if the probability of being employed is correlated with unobserved capacity to earn, the error term in the wage equation will be correlated with the wages. The distribution of observed wages of those who are not employed and parameter estimates will be biased.

The type of evidence most frequently used to measure discrimination is drawn from statistical analysis using multiple regression techniques. Following the neoclassical theory of discrimination, researchers attempting to measure the amount of the differential attributable to demand side discrimination try to control for supply side factors through use of regression analysis (see Gallardo, 2006).

It should noted that there is no universally accepted set of conditioning variables that should be included for describing the causes of gender labour market differentials. However, the consensus is that controls for productivity – related factors such as education, experience and tenure, marital status, presence of children, and location of residence should be included (Nordman and Roubaud, 2006). In this study, we used education level, region, marital status, age, age squared and residence as the factors. The standard education variable (education level) is included in wage equations as a measure of human capital, which is assumed to be determinant of the productivity of individuals.

In this study the Oaxaca's male-and female weighted decomposition and the Naumark's non-discriminatory wage structure were used replicate the literature review findings.

The data

The data used in this study was obtained from the nationally representative household survey data for 2002/03 collected by the Uganda Bureau of Statistics. The sampling frame for UNHS-2 was derived from the list of EAS based on cartographic work for the 2002 population and Housing census. A two-stage stratified sampling design was used. We confined our investigation to individuals between ages of 15 and 64 years, as this is taken as the working age in Uganda. The study in estimating wage equations investigated only those individuals who reported wages during the survey exercise. The variables used in the study are explained in the table 1 below.

Table 1: Variable definitions

Variable	definition
Ininc	Logarithm of monthly wages
age	Age of the individual
Age2	Age squared
educl1	No education
educl2	Having attained primary education
educl3	Having attained secondary education
educl4	Having post secondary education
married1	Married
Married2	Not married
urban1	Rural residence
urban2	Urban residence
region1	Residing in Central region
region2	Residing in Eastern region
region3	Residing in Northern region
region4	Residing in western region
Non-wage	Non Wage payments
No.child	Number of children in household

4.0 GENDER WAGE DETERMINATION

The mean share of females employees in the wage employment account for about 52% in the total sample. The mean values and standard deviations of the monthly wage, age, educational levels dummies, region dummies, residence and marital status are shown in table 2.

The female-male wage gap is calculated from the data table 2 to be 39% for the total sample[3]. In general, women are approximately the same age as their male co-employees (22.6 versus 22.9). Comparing education levels by gender, it is noticeable from the table 2 that there is small difference between the mean values for no education, primary level,

[3] Differences in the natural logarithm of monthly wages can be converted to percentage wage differences using the formula 100[exp (difference)-1]. Hence, the difference between the mean of natural logarithm of monthly wages for females and males in the total sample in table 2 of -0.49 yields a 100[exp (-0.49)-1] = -39% wage differential.

secondary education and post secondary education with 0.08, -0.02, -0.03 and -0.03 respectively. Nevertheless, region dummies, residence and marital status similarly do not show a marked gender differences between the mean values.

Table 2: Mean values of the variables by gender

Variable	Men	Women	Difference
Log of monthly wages	11.09 (1.04)	10.6 (1.12)	0.49
No education	0.20 (0.40)	0.28 (0.45)	-0.08
Primary education	0.59 (0.49)	0.57 (0.50)	0.02
Secondary education	0.14 (0.34)	0.11 (0.32)	0.03
Post secondary education	0.07 (0.26)	0.04 (0.20)	0.03
Central region	0.28 (0.45)	0.28 (0.45)	0.00
Eastern region	0.28 (0.45)	0.28 (0.45)	0.00
Northern region	0.17 (0.38)	0.19 (0.39)	-0.02
Western region	0.27 (0.44)	0.25 (0.44)	0.02
Age	22.9 (16.2)	22.6 (15.4)	0.30
Rural residence	0.62 (0.49)	0.60 (0.49)	0.02
Urban residence	0.38 (0.49)	0.40 (0.49)	-0.02
Married	0.71 (0.45)	0.73 (0.44)	-0.02
Not married	0.29 (0.45)	0.27 (0.44)	0.02

Note: (1) Standard deviations are parentheses.

Regression Results

In this section we represent and discuss the results of the selectivity corrected log wage equations for both males and females. The regressions were based only on individuals who were in wage employment. Since, the unobserved determinants of earnings will differ between those who are wage earners and those who are not and this is likely to bias our results if not controlled for, sample selection was considered using Heckman (1979) two-step selection model[4]. In controlling for sample selection, two household variables (non-wage payments and number of children in the household) were used as instruments. The variables are expected to have a direct impact on participation in the labour market but no direct impact on the actual wage.

The models fit the data well, as the Wald Chi2 statistics are highly significant at all conventional levels. The R-squared for both gender range from 0.460 to 0.579, which are

[4] The models are estimated using STATA software

within the ranges reported for cross-sectional data. The results of wage equations for male and female observations are presented in table 3. The coefficients are statistically different from zero except having attained secondary education, living in the western region and non –wage payment for male equation and living in northern region for female equation respectively.

The results for female wage equation are all significant at conventional levels except a region dummy for northern region**.** They also have the expected signs. For the male equation, all the variables are very significant and have the expected signs.

The returns to education are all positive for females and male. This implies that impact of education seems to favour both females and males. The results also indicate that returns to education increase with level of education for both females and males. However, trend tends to favour females more than males. For instance, the earnings of female individual with secondary education rise more than 80% percent relative to one with primary education while the earnings of male individual with secondary education rise more than 70% relative to one with primary education. The difference is more pronounced when it comes to post secondary. It is noted that the earnings of female individual with post secondary education rise more than 170% compared that of a male which rise by 136% relative to ones with secondary education. These findings are supported by Psacharopoulos (1985) who reviewed the rate of return to education for fifty six countries. He noted that in developing countries the rate of return for women generally exceeds that for men. Chua (1984), Carnoy & Marenbach (1975) and Gwartney & Long (1978) reports similar results for Malaysia and United States of America respectively. The possible reason for the slightly higher rate of return to education for women may derive from differences in the demand, and supply of education between men and women (Sloane, 1985).

The regional dummies negatively influence the wage rate, implying that wages in central region are higher than those in other regions for both men and women. The co-efficients for region dummies are significant except for northern region in the female wage equation. The returns seem to be significantly lower in Northern relative to other regions for females, while those for males are significantly higher. Overall, the returns for regional dummies are lower for females in northern and western regions when compared to their male counterparts relative to those living in central region. The lower returns observed for females in the above mentioned regions relative to central region could be explained by the fact that the other regions are rural where the majority of females employees are in predominantly rural low paying activities particularly in the informal sector, compared with central region where most of the high paying job are concentrated because of the big industrial and service sector. For instance, according to Uganda National Household Survey Report (2002) and Census (2002), 74.2% and 79% respectively of female employed workers are employed in agricultural and fisheries activities compared to 57.8% and 63.5%.

Unmarried women seem to earn more than their unmarried male counterparts. The effect of this variable is very significant for both females and males. For instance, the earnings of a female unmarried individual rise more than 17% percent compared to a male unmarried individual of 15% relative to the married individuals. The residence results show a very significant impact of living in urban area relative to rural area for both females and males. However, being a male residing in urban areas increases the returns by more than 30% while for female urban residence is about 16%.

A quadratic association is observed between age and wages. Age is associated with higher wages for both females and males which may be accounted for by experience and seniority. However, this effect is much stronger for males than for females. Age squared has a negative impact on wages and the effect is stronger for males than for females in both sectors, implying that wages increase at a decreasing rate with age.

Table 3: Sample corrected log. Monthly wage estimates

	Female			**Male**		
	Coeff	Std err	$b/st.Er$	Coeff	Std.err	$b/st.Er$
Constant	8.543	0.680	12.56	8.974	0.424	21.18
Age	0.064	0.021	3.02	0.075	0.014	5.39
age ^{2}	-0.001	0.000	-2.02	-0.001	0.000	-4.73
Educ level:(No education)						
Primary	0.244	0.080	3.05	0.315	0.666	4.80
Secondary	0.851	0.089	9.51	0.703	0.072	9.77
Post secondary	1.708	0.169	10.08	1.360	0.086	15.73
Region: (cf:Central)						
Eastern	-0.173	0.068	-2.54	-0.166	0.054	-3.04
Northern	-0.061	0.078	-0.78	-0.146	0.055	-2.68
Western	-0.114	0.062	-1.85	-0.219	0.042	-5.24
Not married *(cf:married)*	0.169	0.089	1.90	0.147	0.367	3.99
Urban *(cf:rural)*	0.162	0.103	1.58	0.307	0.062	4.97
Number of observations	20529			18766		
R-squared	0.579			0.460		
Wald Chic2 (10)	540.94			455.40		
Prob > Chic2	0.000			0.000		
L-Likelihood	-3981.978			-7526.722		

5. ESTIMATION OF GENDER WAGE DISCRIMINATION

In this section, we seek to find out whether gender differences in earnings reflect productivity enhancing characteristics such as schooling or unexplained wage gap (termed in the labour market literature as discrimination. The unexplained wage gap could actually reflect unobserved differences between men and women that affect earnings. We decomposed the gender wage differences using Oaxaca and Nuemark decomposition methods. The results are presented in table 4-6.

Table 4: Structural Analysis of the male-female differential
Oaxaca method

Using the male wage structure

	$\beta^m(X^m - X^f)$	$X^f(\beta^m - \beta^f)$
Age	0.023	0.249
Education	0.068	0.010
Region	-0.002	-0.040
Residence	-0.006	0.055
Marital status	0.003	-0.006
Subtotal	**0.083**	**0.268**
U	0.431	
C	0.268	
D = U + C	0.699	
E	0.083	
Total	0.782	
D/Total	0.894	
E/Total	0.106	

Note: E represents the amount attributable to the endowment differential; C represents the amount attributable to the coefficient; U is difference between the estimated constants of the male and female wage equations; D represents the total differential attributed to discrimination (D= (U + C)) and D + E is the total gender wage differential. Total is given by U + C + E.

Table 5: Using the female wage structure

	$\beta^{f}(X^{m}-X^{f})$	$X^{m}(\beta^{m}-\beta^{f})$
Age	0.019	0.252
Education	0.128	-0.009
Region	-0.001	-0.041
Residence	-0.003	0.055
Marital status	0.003	-0.006
Subtotal	**0.147**	**0.251**
U	0.431	
C	0.251	
D = U + C	0.682	
E	0.147	
Total	0.829	
D/Total	0.823	
E/Total	0.177	

Table 6: Neumark's decomposition (Using a weighted wage structure)

	$\beta^{*}(X^{m}-X^{f})$	$X^{m}(\beta^{m}-\beta^{*})$	$X^{f}(\beta^{*}-\beta^{f})$
Age	0.023	0.000	0.249
Education	0.077	-0.067	0.068
Region	-0.001	-0.014	-0.027
Residence	-0.004	0.033	0.023
Marital status	-0.005	-0.030	0.022
Subtotal	**0.090**	**-0.078**	**0.335**
C1	-0.078		
C2	0.335		
D = C1+ C2	0.257		
E	0.090		
Total	0.347		
D/Total	0.741		
E/Total	0.260		

As discussed in previous section, on average, women earn 39% less than men in Uganda. It is of interest to know the proportion of these wage differentials that is due to differences in the marketable endowments of women and men and the proportion that is unexplained by the model as specified. A positive number may be interpreted as the percentage by which the gender gap would be reduced if men and women were equal in respect to this characteristic assuming that the characteristic is rewarded according to the estimated wage function for women/male. If a term is negative it means that if women were more like men in this respect but the wage functions remained the same, the gender wage gap would actually increase.

The results of the Oaxaca method imply that using the pure discrimination approach (male wage structure), the proportion of the wage differential due to discrimination is 89% and the proportion of the wage differential due to endowment is 11%.
When using the pure nepotism (female wage structure), 82% of the differential in male and female mean log of wages could be attributed to unexplained factors (discrimination), while the 18%, can be attributed to differences in characteristics. These results imply that there is difference between the components of characteristics and the returns using the female and male structures. We therefore conclude that the Oaxaca method does encounter index number problem. These results contradict those of Oaxaca and Ransom (1994), who found that discrimination was larger and the productivity differences smaller when the female rather than the male structure was used as the competitive standard.

The results also show that the wage gap attributable to different returns to coefficients are more important in accounting for wage differences than differences attributable to different characteristics of males and females. Overall, educational differences explain more of the gender gap than any other characteristics. However, the largest contribution of education to the differentials is observed in the Oaxaca method (87%) using the female wage structure.

The results using the Neumark decomposition method indicate interesting results. 74% of the difference in male and female mean wages is attributed to discrimination and 26% is attributed to differences in characteristics or endowment. However, the largest component of the unexplained wage gap springs from the component (female disadvantage) that measures the female disadvantage due to labour market discrimination which is the equivalent to the ratio between the wage women's should receive if the non-discriminatory wage structure were enforced and the wage they actually receive. This is essentially an indication of male favourism in the labour market.
This result is supported by the fact the deviations in female returns from the pooled earnings regression is more important than deviations in male returns. Therefore, it

can be concluded that discrimination against women is more relevant than nepotism towards men (in Nuermark's terminology) in explaining the gender gap (see Nordman and Rouband, 2006). The proportions due to discrimination and endowment differentials calculated using various methods are summarized in table 7.

Table 7: Summary of decomposed wage differentials

Oaxaca (1973)	
Using male wage structure	
Differences	
Due to returns to Characteristics (E)	0.083
Due to returns to characteristics (C)	0.268
Shift in constant coefficients (U)	0.431
Due to discrimination (D): C + U	0.699
Using male wage structure	
Differences	
Due to returns to Characteristics (E)	0.147
Due to returns to characteristics (C)	0.251
Shift in constant coefficients (U)	0.431
Due to discrimination (D): C + U	0.682
Neumark (1998)	
Differences	
Due to characteristics (E)	0.090
Due to deviation of male returns	-0.078
Due to deviation of female returns	0.335
Due to discrimination (D): C1 + C2	0.257

6.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

In this paper male-female wage determination and gender wage discrimination using data obtained from the nationally representative household survey data for 2002/2003 is presented. Wage determination was analyzed using OLS with sample selected for participation in labour market. The decomposition used the approach developed by Oaxaca (1973) and Neumark (1988).

The results of gender wage determination show that female employees account about 52% of the total sample. The female-male wage gap is calculated to be 39%. The returns to education are all positive and significant for females and male. However, trend tends to favour females more than males. For instance, the earnings of female individual with secondary education rise more than 80% percent relative to one with primary education while the earnings of male individual with secondary education rise more than 70% relative to one with primary education. The difference is more pronounced when it comes to post secondary. It is noted that the earnings of female individual with post secondary education rise more than 170% compared that of a male which rise by 136% relative to ones with secondary education. The regional dummies are associated with negative influence for wages, for both males and females. However, the returns seem to be significantly lower in Northern and western regions relative to central region for females, while those for males are significantly higher.

Characteristics such as being unmarried, age and residence account for varied wages for males and females. For instance, the earnings of a male unmarried individual rise more than 17% percent compared to a female unmarried individual of 15% relative to the married individuals. The residence results show a very significant impact of living urban area relative to rural area for both females and males. However, being a male residing in urban areas increases the returns by more than 30% while for female urban residence is about 16%. Age was found to be a significant predictor of earnings for both females and males. However, age squared had a negative impact on wages for both male and female.

The results for the gender gap decomposition indicate that using the Oaxaca method, there is difference between the components of characteristics and returns using the male and female wage structures. We therefore conclude that Oaxaca method does encounter the index number problem. The results however contradict those of Oaxaca and Oaxaca and Ransom (1994), who found that discrimination was larger and the productivity differences smaller when using the female rather than the male structure as the competitive standards.

The results of decomposition using Neumark's approach indicated a lower wage differential attributed to discrimination (74%) and very low endowment contribution (26%) compared to Oaxaca's decomposition. It is concluded also from Neumark's method that discrimination against women is more relevant than nepotism towards men in explaining the gender gap.

RECOMMENDATIONS

Our results from the determinants wages imply that education is particularly important for females in order to increase their earnings and thus has implications for poverty reduction efforts. Therefore, policies to reduce gender inequalities in access to education are paramount in this respect. The significance of regional dummies on wage differential, points to the regional segmentation of Uganda's labour market. Such heterogeneity is likely that result of both economic history and more specifically, the spatial allocation of resources by governments. Whether market forces alone will distribute resources across regions in a more or less even way represents an interesting question for future studies

Our gender gap decomposition results suggest the need for deliberate government policies and efforts to reduce discrimination. The policies and efforts should have positive impact on the empowerment of the women who suffer from discrimination. In addition, along government efforts to provide incentives to spur private sector growth as engine of development need be accompanied with incentives and efforts to introduce measures that compel firms to make equal treatment to both males and females.

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APPENDIX 1

Sample corrected log. Monthly wage estimates for pooled sample

Variable	**Pooled Sample**		
	Coeff	Std err	$b/_{st.Er}$
Constant	8.723	0.347	25.15
Age	0.075	0.010	7.22
age ^{2}	-0.001	0.000	-5.89
Education level:(No education)			
Primary	0.382	0.049	7.77
Secondary	0.835	0.057	14.58
Post secondary	1.482	0.087	16.98
Region: (cf:Central)			
Eastern	-0.177	0.043	-4.15
Northern	-0.119	0.045	-2.65
Western	-0.174	0.036	-4.91
Not married *(cf:married)*	0.250	0.031	8.07
Urban *(cf:rural)*	0.219	0.049	4.47
Number of observations	39295		
Wald Chic2 (10)	754.60		
Prob > Chic2	0.0000		

In brackets are effects of changes in the independent variables on predicted probability of entering labour market.

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