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Wage determination and the gender wage gap in Kenya: Any evidence of gender discrimination?

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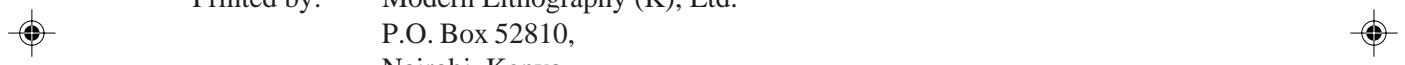
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Abstract

This study presents an analysis of the determinants of wages as well as a decomposition of the gender gap across sectors in Kenya. The study tests the hypothesis that women participate less in the labour market partly because of their characteristics and partly because of gender discrimination in wage setting. Multinomial logit techniques and ordinary least squares (OLS) with and without sample selection are used to explain participation and earnings. The results indicate that education and other demographic factors are important determinants of the choice of sector of employment and earnings and that there is no serious self-selectivity problem. The gender gap decomposition results suggest that favouritism towards men is pronounced in all sectors, while there is no evidence of discrimination against women. The study recommends investment in instruments to reduce gender inequalities in access to education and also government policies that minimize favouritism towards men.


Key words: Labour market participation, wage determination, unexplained wage gap.





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1. Introduction

Growth of employment has remained a central objective of the Government of Kenya since the country's independence in 1963. Although wage employment has expanded steadily over the years, the country has been unable to generate adequate employment opportunities to meet demand and many new job-market entrants have remained unemployed. Women appear to be especially disadvantaged. This paper examines the distribution of labour by gender across the job market in Kenya in order to determine if there is discrimination against women in both labour market participation and wages.

Background

Kenya's wage employment grew by an average of 3.6% between 1964 and 1973 and thereafter increased to 4.2% per year between 1974 and 1979. By 1980, the growth had slipped to an estimated 3.4% and this rate dropped further in 1981 and 1982 owing to a general decline in investment in the private sector. The growth rate rose to 6.1% in 1988, however, in part because of the launch of the Nyayo Tea Zones as an agro-corporation (Mwega and Kabubo, 1993). Thereafter, the growth rate declined to 4.4% in 1989, rising marginally to 4.5% in 1990. Between 1991 and 1996, wage employment rose by 11.5%, but this reversed drastically with wage employment growing by a mere 1.8% between 1997 and 2000, largely because of the economic recession, adverse weather conditions, and reduced economic activity in manufacturing and agricultural sectors (Republic of Kenya, *Economic Survey*, 2001).

Wage and self-employment as a percentage of the total have declined over the years compared with employment in the informal sector. For example, in 1972, wage employment accounted for 89.56% of the total,¹ while self-employment and the informal sector accounted for 6.24% and 4.2%, respectively. By 1997, the proportions had changed dramatically, with wage, self- and informal sector employment accounting for 35.06%, 1.36% and 63.58% of total employment, respectively (Republic of Kenya, *Economic Surveys*).

Although there have been substantial fluctuations over time, real wages have declined since the 1970s, given the high rate of inflation and almost constant money wages. The decline in real earnings was largest between 1991 and 1994 owing to more rigorous implementation of the structural adjustment programmes. This decline in real wages was more pronounced in the public sector than in the private sector (Ikiara and Ndung'u, 1996), with the huge decline attributed to the government's wage policy of holding the

civil service bill down as part of government expenditure controls (Manda, 1997). Since 1995, however, there has been a substantial increase in real wages in both the private and the public sectors partly because of the reduction of inflationary pressure, coupled with upward wage adjustments (Republic of Kenya, *Economic Survey*, 2002: 63). Earnings per employee also vary by subsector and occupation. For example in both private and public sectors, real wages per employee are lowest in agriculture and forestry and highest in the finance, insurance, real estate and business services (Republic of Kenya, *Economic Surveys*).

The government's policy on employment has centred on creating a conducive environment for the private sector to play the leading role in economic growth and employment generation. Since 1973 the country has also pursued a low wage policy aimed at attracting foreign and domestic investors and encouraging use of labour-intensive technologies. Short-term policies have focused on the need to stabilize the economy in order to create an enabling environment for investors, while long-term policies have intended to create an environment for increased productivity while still pursuing the commitment to achieve an equitable distribution of income and fair wages.

New dimensions were introduced to the government's employment policy in 1992. These included: redressing the gender imbalance in public sector employment and encouraging early retirement from the public service, increased focus on the reduction of child labour, and the use of higher wages as an incentive to raise labour productivity. In mid 1994, the labour market was restructured when the wage guidelines were relaxed, giving employers and workers greater freedom in wage negotiations.

Statement of the problem

Available literature argues that labour 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. Gender analysis shows that there is occupational and industrial segregation of the Kenyan labour market. For example, in 1984, women constituted only 16% of the total wage employees in agriculture and forestry, a dismal 10% in manufacturing, and 26% in community, social and personal services. Fourteen years later (1998), the situation had changed only marginally, with the proportion in agriculture and forestry increasing to 20%, the proportion in manufacturing to 17%, and the proportion in community, social and personal services to 40%. Although there appears to be a large proportion of women in the service categories, most of them are primary and secondary school teachers (*Economic Surveys*, various issues).

Women also have lower labour force participation rates and higher unemployment rates than their male counterparts, especially in urban areas. In 1986, just over two-thirds of the total urban working age population participated in the labour force, 56% of all women and 82% of all men. Women spend less time in wage employment and devote more time to household production than their male counterparts. Combining domestic chores with economic activities, in 1986 women in the working age group worked 50.9 hours per week, compared with only 33.2 hours worked by their male counterparts.

Gender analysis also reveals that urban women earn less than half (49%) as much as urban men. Furthermore, women's earnings are consistently lower than men's even when adjusting for type of employment, status of employment, occupation and hours of work. (Republic of Kenya, 1988).

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. Although studies of this link increasingly focus on developing countries, this phenomenon has not been well documented for Kenya. Little information currently exists on gender differences in labour force participation and earnings and how policy can effectively influence labour market outcomes for women in Kenya. Our study intends to address this research gap. The study attempts to answer the following questions: What factors lead to decisions by women to enter the labour market? Does market wage differ by gender given similar background and characteristics? Is there any evidence of male/female wage discrimination?

Objectives of the study

The general objective of the study is to explore the nature of labour market conditions on the basis of gender in Kenya. The specific objectives include:

- To analyse labour market participation and earnings along gender lines in Kenya.
- To explore the existence and nature of labour market discrimination in Kenya.
- On the basis of these two objectives, to draw policy recommendations for improving labour market conditions and welfare along gender lines in Kenya.



2. Literature review

This section presents a review of methodologies, issues and studies on wage determination and gender discrimination. To place our study in the perspective of the literature and to save space, we focus on empirical literature from developing countries but omit the wealth of literature from industrial countries.

Studies on gender differentials in earnings have traditionally used the methodology developed by Oaxaca (1973) for decomposing the wage differential into the effects of discrimination and the effect of individual characteristics. Oaxaca (1973) argues that discrimination against females can be said to exist whenever the relative wage of males exceeds the relative wage that would have prevailed if males and females were paid according to the same criteria. His results indicate that although the concentration of women in lower paying jobs produces large male–female wage differentials, a large proportion of the differentials is attributable to discrimination. Oaxaca’s methodology has been criticized for not addressing the index number problem (a question of whether it is the male or female wage that should be considered as the non-discriminatory wage) and also for ignoring the possibility that the wage gap is affected by the sectors in which men and women are employed.

Neumark (1988), Cotton (1988), and Oaxaca and Ransom (1994) focus on the index number problem, while Appleton et al. (1999) address both problems. Neumark (1988) extends Oaxaca’s methodology to derive an alternative estimator of wage-based discrimination based on the assumption that within each labour category, the underlying utility function is homogenous of degree zero with respect to labour inputs from each category. The author observes that the effect of discrimination is to redistribute wages only within each type of labour and that the resulting estimate of wage discrimination is sensitive to differences in the distribution of characteristics across men and women. Neumark’s approach has been adopted by Glick and Sahn (1997), Paternostro and Sahn (1999), and Appleton et al. (1999), and modified to different countries.

Glick and Sahn (1997) analyse gender differences in earnings in Guinea. They separate earnings from three activities: self-employment, public sector employment and private sector employment. Their results indicate that education plays an important role in allocating labour force participants among sectors and that there is heterogeneity in the urban market and wages differences by sector. Women are found to be less likely than men to be wage employees. These results tend to support findings by Meng and Miller (1995), Groshem (1991), and Schultz and Mwabu (1998). In a related study for Romania, Paternostro and Sahn (1999) find increasing returns to education and experience to be significant for both males and females. They also find higher incidence of discrimination

in rural areas and at lower levels of education. Orazem and Vodopivec (1995, 1999) use a related approach to show that though women in Estonia and Slovenia were less mobile across jobs, they gained relative to men from changes in the structure of wages and employment brought about by the transition to a market economy.

These results support earlier studies, which argue that education is the most important determinant of differentials in earnings and labour market participation (Bigsten and Horton, 1997; Appleton et al., 1990; Behrman and Wolfe, 1984; Collier, 1990; Knight and Sabot, 1990; Mwabu and Evenson, 1997). Appleton et al. (1990) argue that the gender differential in access to jobs in Côte d'Ivoire is confined to the private sector, which is attributed to low educational levels mapping onto lower wages and therefore onto a lower supply response. The author observes that discrimination in the labour market gives rise to three of the observed gender biases: First, controlling for education, women are less likely to work for wages than men. Second, parents are less likely to invest in the education of girls than in that of boys. Third, women are less educated and hence less likely to be in the labour market. Using a similar approach, Maglad (1998) applies the Mincerian human capital earnings function to estimate wage earnings and female labour supply functions for Sudan. Bigsten and Horton (1997) use evidence from Ethiopia, Uganda and Côte d'Ivoire to show that there are low levels of female schooling owing to discrimination and biases in the educational system.

Manda (1997) argues that education is more important in influencing female than male participation decisions. Collier (1990) asserts that once in the labour market, women earn equal pay to that of men, controlling for their characteristics. Nevertheless, women are less likely than men with similar characteristics to enter the labour market, but gender differences in participation narrow as education increases. In a study of Indonesia, Deolalikar (1993) finds that males earn significantly more and participate more in the labour market than females at all levels due to average differences in levels of schooling.

Job tenure and experience also influence labour force participation and the gender wage gap. Appleton et al. (1999) argue that lack of experience and discrimination against married women are plausible explanations for greater gender differential. Behrman and Wolfe (1984) also find that experience plays a substantial role in determining labour force participation and earnings, as well as in sorting among sectoral labour force participation. Meng and Miller (1995) report that job tenure has a strong and positive impact on earnings in aggregate, while job experience has a moderate positive effect on earnings. Negatu (1993) supports these studies and argues that experience and the nature of the labour market itself lead to differences in labour market participation by gender. Dabalen (2000) shows that in Kenya, women with the least skills saw their position worsen relative to men with similar skills, even as women with the most skills were gaining ground on comparable men.

Lack of assets not only leads to lower participation by women but also constrains girls' access to education. Alderman and King (1998) indicate that the absence of cash earnings in many societies limits the ability of women to realize and remit market returns from their education and thus reduces the signals to girls and parents about the desirability of girls' education. This argument supports Appleton et al. (1990), who say that asset incomes have a negative impact on work decisions and participation rates. Bigsten and

Horton (1997) also argue that biases within the family affect the amount of human capital women acquire and that girls get less education because parents think the benefits accruing to sons will be higher and thus may have pro-son bias. Neitzert (1994) argues that women's participation in the paid labour market is curtailed relative to their male counterparts because the labour market provides incentives that tend to reproduce the existing sexual division of labour in which women specialize in household and subsistence production and men participate in market production. This structure does not encourage families to keep their daughters in school for long since a daughter at home might release her mother for income-generating opportunities.

Demographic and social barriers affect women's participation in the labour force. Negatu (1993) argues that differences in labour supply behaviour usually arise from disparities in productivity endowments, including demographic variables such as age, sex and marital status. Childcare responsibilities are also said to have a negative impact on women's market participation (Maglad 1998), but Behrman and Wolfe (1984) and Appleton et al. (1990) argue that this impact is insignificant.


The studies reviewed above attribute gender differentials in the labour market to both discrimination and differences in endowments and characteristics. The characteristics include differences in educational attainment, resulting mostly from barriers in access to education by women, job tenure, skills and experience, domestic responsibilities, age, and marital status. Our study will contribute to the literature by exploring the Kenyan case, which is under-researched.

3. Empirical methodology

This paper estimates labour market participation and wage equations for men and women by sector of employment (public and private) as well as for both men and women combined. However, since labour market participation may not be random, the estimates for wages may suffer from selectivity bias since the error terms in samples used are not zero-error random variables. The practice is to correct for the sample selectivity bias by using the Heckman (1979) two-stage procedure. This procedure involves estimating a participation function in the first stage to derive an inverse Mills ratio. The ratio so derived is then used in the second stage OLS estimation of the earnings function as regressors to correct for specification bias. A close examination of the labour market in Kenya indicates that there are three main employment alternatives, self-employment, public sector employment and private sector employment. We therefore analyse the choice of sector of employment using the multinomial logit model and derive the Mills ratio for use in the earnings function using the Lee two-stage method (Lee, 1983).

We then estimate the standard Mincerian (Mincer, 1974) human capital earnings function, which assumes that the proportional change in wage earnings is a function of the characteristics of the individual (X_i), which include age, education and other characteristics, i.e.:

$$\ln W_i = \alpha_0 + \beta_1 X_i + \varepsilon_i \quad (1)$$

where $\ln(W_i)$ is the natural logarithm of the observed wage rate for individual i and ε_i is a stochastic error term distributed . Equation 1 is estimated using OLS, with and without correcting for sample selectivity.

Next we proceed to decompose the wage differential between males and females in the public and private sectors. Studies of wage discrimination use some form of decomposition analysis following the work of Oaxaca (1973). In a model for measuring wage discrimination, earnings regressions are estimated separately for men and women on the basis of a set of personal characteristics. but are extended to take into account differences in occupation. Since fitted regressions pass through the means of the data, the raw mean wage differential can be broken down as follows:

$$\bar{W}_m - \bar{W}_f = \beta_m(\bar{X}_m - \bar{X}_f) + (\beta_m - \beta_f)\bar{X}_f \quad (2)$$

where W_t is a vector of mean wages; X_t is a set of mean personal characteristics; $t = m, f$, where m and f denote male and female, respectively; β_m and β_f are the estimated coefficients. The first term on the right-hand side is the portion of the differential due to endowments, while the second term is the part attributable to differences in returns to these endowments. The first term is based on estimates of what a woman would receive if she faced the male wage structure. This term could as well be expressed in terms of how much a man would earn if paid according to the female wage structure (index number problem).

Neumark (1988) argues that the correct decomposition for Equation 2 depends on the type of discrimination hypothesized.² He proposes a general model of discrimination in which employers may have different preferences towards different types of workers. Assuming that such preferences are homogeneous of degree zero within each type of labour, Neumark (1988) and Oaxaca and Ransom (1994) show that the non-discriminatory wage structure can be estimated from an earnings function, estimated over the pooled sample (both men and women). The non-discriminatory wage structure from the pooled sample of males and females is derived as:

$$\beta = \gamma\beta_m + (1 - \gamma)\beta_f \quad (3)$$

where γ is the proposed weighting matrix, which is specified as:

$$\gamma = (X' \quad (X_m' X_m)^{-1} X_m') \beta_m \quad (4)$$

where X is the observation matrix for the pooled sample and X_m is the observation matrix for the male sample. The weighting scheme interprets the OLS estimate from the combined male and female sample as the estimate of the wage structure that would exist in the absence of discrimination.

Following Neumark (1988) and Oaxaca and Ransom (1994), the decomposition is:

$$(5)$$

The first term on the right-hand side is that part of the wage gap explained by differences in characteristics, given non-discriminatory returns. The second and third terms show the contribution of differences between actual and pooled returns for men and women, respectively,³ and can be interpreted as the wage differential that reflects discrimination. This method has been extended by Appleton et al. (1999) to take into account the index number problem. They also introduce sectoral decomposition of earnings into the model to capture differences in wage determination across sectors for Ethiopia, Côte d'Ivoire and Uganda. In this paper we use equations 2 and 5 to decompose the gender gap for the private and public sectors, and also for the full sample.



4. The data

The data used in this study are taken from the 1994 Welfare Monitoring Survey (WMSII) conducted by the Central Bureau of Statistics and the Planning Unit of the Ministry of Planning and National Development. The survey used the National Sample and Evaluation Programme (NASSEP) frame. The NASSEP frame is based on a two-stage stratified cluster design for the whole country. First, enumeration areas using the national census records were selected with probability proportional to size of expected clusters in the enumeration area. The number of expected clusters was obtained by dividing each primary sampling unit into 100 households. Then clusters were selected randomly and all the households enumerated. From each cluster, ten households were drawn at random except in the semi-arid districts. Data were collected from a sample of 59,183 individuals from 10,857 households.

The data on wages were collected from the main and other occupations and reported as money earned for the last 12 months. Because of the difficulties of computing actual hours worked, we estimated the log annual wage from the available data and used this as the dependent variable in the wage equations rather than the log hourly wage as is the standard practice. We also generated variables for the number of children below six years, aged between 7 and 17 years, and age squared, as well as dummies for being married, employment sector, education attainment and region of residence. The means and standard deviations of the sample variables are presented in Table 1.

We confine our investigation to individuals between the ages of 18 and 64 years, as this is taken as the working age in Kenya. These individuals numbered 24,079, with 46% males and 54% females. We categorize them into those who are self-employed (17,169, of which 63% are females), those not working (1,455, 37% females), those working in the private sector (3,445, 28% females) and those working in the public sector (2,010, 29% females). This implies that women are concentrated in self-employment, compared with their male counterparts who dominate private and public sector wage employment. The proportion of the unemployed is too small to form a category for comparison, as most variables for this category have very few observations, and it is therefore lumped together with self-employment to explain participation in the multinomial logit model. For example, earnings are unobserved for this category while a very small percentage of respondents had at least high school education and above. The same scenario was observed for the self-employed (Table 2).

In terms of occupational distribution, men dominate both skilled (9%) and unskilled (13%) private sector. A larger percentage of men (9%) is also found in the skilled public

Table 1: Means and standard deviations of sample variables

Variable	Private sector				Public sector			
	Men		Women		Men		Women	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Married	0.745	0.436	0.536	0.499	0.878	0.328	0.689	0.463
Age	33.959	9.875	29.729	9.396	36.890	8.432	32.389	7.882
Age squared	1250.7	743.0	972.0	664.4	1431.9	655.3	1111.1	570.2
Children 0–6 yrs	0.975	1.096	0.201	0.566	1.136	1.117	0.280	0.651
Children 7–17 yrs	0.941	1.454	0.213	0.742	1.391	1.761	0.394	1.051
Primary school	0.309	0.462	0.269	0.444	0.148	0.355	0.147	0.354
KCPE	0.199	0.399	0.164	0.371	0.140	0.347	0.096	0.294
Forms 1–4	0.143	0.350	0.153	0.360	0.176	0.381	0.189	0.392
KCE/KCSE/KACE	0.156	0.363	0.118	0.323	0.301	0.459	0.287	0.453
Post-secondary	0.030	0.170	0.030	0.172	0.101	0.302	0.166	0.372
University	0.010	0.102	0.008	0.091	0.044	0.204	0.022	0.147
Central	0.217	0.412	0.209	0.407	0.164	0.371	0.176	0.381
Coast	0.141	0.348	0.188	0.391	0.103	0.303	0.070	0.255
Eastern	0.154	0.361	0.164	0.371	0.154	0.362	0.191	0.394
North Eastern	0.010	0.098	0.020	0.140	0.034	0.182	0.012	0.109
Nyanza	0.101	0.301	0.069	0.254	0.098	0.298	0.113	0.316
Rift Valley	0.205	0.404	0.224	0.417	0.259	0.438	0.230	0.421
Western	0.035	0.184	0.020	0.140	0.052	0.222	0.072	0.258
Total land holding	1.339	3.410	0.221	1.378	3.216	22.173	0.471	2.126
Log annual wage	9.857	1.166	8.955	1.374	10.475	0.929	10.055	1.142

Note: KCPE = Kenya Certificate of Primary Education; KCE = Kenya Certificate of Education; KCSE = Kenya Certificate of Secondary Education; KACE = Kenya Advanced Certificate of Education.

sector compared with their female counterparts (3%), as well as unskilled private sector (6% compared with only 1% of their female counterparts). Overall, men are more likely to work in both sectors, except in business where men and women occupy the same percentage (8%). Women dominate less lucrative occupations, namely subsistence farming (59% compared with only 34% of their male counterparts) and unpaid family work (7% women compared with only 2% of their male counterparts).

Gender disparities in education are more pronounced at lower levels of education. For example, 38% of all women never went to school, compared with only 22% of their male counterparts. Only 59% of the women in the sample had at least finished secondary school, compared with 72% of their male counterparts, and only 2% of the women had post-secondary education and above, compared with 4% of their male counterparts.

The last row of Table 1 compares male and female log annual wages by sector of employment. We note that the mean earnings are generally higher for men than for women. For example, the mean log annual wages for males is about 0.42 points (4%) higher than for women. In the public sector, the mean wage for men is 0.9 points (9%) higher than for women. For the full sample, the gender wage gap is 0.94 points (10%)

of the male log annual wage. Furthermore, the gender wage gap in each case is statistically significant at all conventional levels of significance. The overall wage differential between men and women in the private sector is very close to the overall differential for men and women in the two sectors combined. The general implication is that earnings differentials may be present in the Kenyan labour market. In the sections below, we use multivariate analysis to explore whether such wage differentials actually exist. Our multivariate analysis is confined to salaried workers in the public and private sectors (formal) relative to self-employment. Caution should therefore be taken in extrapolating the findings to the informal sector or to self-employment, as the labour market conditions differ across sectors.

Table 2: Sample statistics for the unemployed and the self-employed

Variable / Sector	Unemployment			Self-employment		
	Men	Women	All	Men	Women	All
Married	0.01	0.05	0.03	0.69	0.74	0.72
Children 0–6 yrs	0.01	0.01	0.01	0.99	0.13	0.45
Children 7–17 yrs	0.01	0.02	0.01	1.30	0.29	0.67
Primary school	0.30	0.26	0.29	0.29	0.27	0.28
KCPE	0.04	0.02	0.03	0.15	0.14	0.14
Forms 1–4	0.52	0.61	0.55	0.09	0.08	0.08
KCE/KCSE/KACE	0.06	0.05	0.06	0.10	0.06	0.07
Post-secondary	0.02	0.03	0.03	0.01	0.01	0.01
University	0.04	0.01	0.03	0.00	0.00	0.00
Total land holding	0.03	0.04	0.04	3.42	0.60	1.65
Log annual wage	0.00	0.00	0.00	8.67	7.98	8.24
Number	893	561	1,454	6,375	10,794	17,169

Note: KCPE = Kenya Certificate of Primary Education; KCE = Kenya Certificate of Education; KCSE = Kenya Certificate of Secondary Education; KACE = Kenya Advanced Certificate of Education.



5. Participation in the labour market

Participation in the labour market is estimated using a multinomial logit model in which self-employment is taken as the base for normalization. To identify participation in the labour market, we use household demographics (presence of children aged 0 to 6 years and children 7 to 17 years) and land holding as instruments. These variables are expected to have a direct impact on participation and choice of sector of employment but no direct impact on the actual wage earned. The parameter estimates are presented in Table 3. We also report the effects of changes in the independent variables on the predicted probability of entering a sector (in parentheses). To determine whether the sectoral decomposition of the labour market underlying the multinomial model is justified, we estimated Wald tests for the equality of the slope coefficient vectors associated with each pair of sector choices.⁴ The null hypothesis was rejected at the 1% level of significance. Equality of schooling effects, number of children and assets were also rejected for each pair of sectors for both men and women. This implies that the labour market is heterogeneous such that the determinants of entry into different sectors of the labour market are not the same.

The significant positive coefficient on being married for males is interpreted as follows: Being married increases the probability that women will work in either the public or private sectors rather than in self-employment. The results imply that as expected, married women are less likely to work than their unmarried and male counterparts. The coefficient on this variable is negative and more significant for the private than for the public sector. This probably reflects a higher reservation wage for married women resulting from access to their spouses' incomes (Glick and Sahn, 1997), and also because of difficulties of coping with wage employment owing to the burden of their domestic responsibilities.

On the other hand, married men are more likely to work than their unmarried counterparts, which could be explained by the fact that men actually get married once they have a job and can provide for a family. Age and age squared have the expected positive and negative signs, respectively. The coefficients are significant in all specifications, implying that participation in the labour market increases as age increases but at a decreasing rate, reflecting an inverted U-shaped profile with age.

The number of children aged 0 to 6 years has a negative and significant impact on the probability of males participating in wage employment compared with self-employment, but the reverse holds for their female counterparts. Although these results are contrary to our a priori expectations, they confirm the argument that theoretically, small children have contradicting effects on a woman's participation, as they need care and at the same time increase the demand for goods (Glick and Sahn, 1997).

Table 3: Multinomial logit results for participation in the labour market (Delta probabilities/delta parameter in parentheses)

Variable	Males			Females			Full sample		
	Private	Public	Private	Private	Public	Private	Public	Private	Public
Married	0.52* (0.0675)	0.79* (0.0457)	-0.85* (-0.0554)	-0.41* (-0.0073)	-0.33* (-0.0382)	0.03 (0.0033)			
Age	0.29* (0.0381)	0.52* (0.0333)	0.16* (0.0084)	0.45* (0.0087)	0.19* (0.0184)	0.44* (0.0173)			
Age squared	-0.004* (-0.0005)	-0.01* (-0.0004)	-0.002* (-0.0001)	-0.01* (-0.0001)	-0.002* (-0.0002)	-0.01* (-0.0002)			
Children 0–6 yrs	-0.12* (-0.0166)	-0.19* (-0.0118)	0.37* (0.0206)	0.36* (0.0068)	0.34* (0.0367)	0.18* (0.0057)			
Children 7–17 yrs	-0.14* (-0.0213)	-0.08* (-0.0034)	-0.18* (-0.0103)	-0.08 (-0.0014)	-0.01 (-0.0017)	0.04** (0.0016)			
Primary	0.60* (0.0839)	0.85* (0.0590)	0.34* (0.0189)	1.09* (0.0283)	0.76* (0.0853)	1.13* (0.0531)			
KCPE	0.74* (0.0846)	1.52* (0.1428)	0.49* (0.0278)	1.50* (0.0522)	0.98* (0.1080)	1.80* (0.1198)			
Forms 1–4	0.52* (0.0210)	1.97* (0.2318)	0.58* (0.0264)	2.49* (0.1389)	0.90* (0.0724)	2.46* (0.2182)			
KCE/KACE/KCSE	0.79* (0.0137)	2.73* (0.3743)	0.89* (0.0311)	3.46* (0.3067)	1.29* (0.0763)	3.35* (0.3854)			
Post-secondary	1.31* (-0.0282)	3.67* (0.5912)	1.52* (0.0168)	4.83* (0.6473)	1.84* (0.0299)	4.45* (0.6413)			
University	0.66* (-0.0831)	3.37* (0.5913)	1.43* (0.0518)	3.97* (0.4578)	1.41* (0.0132)	4.02* (0.5952)			
Total land holding	-0.09* (-0.0139)	-0.003 (0.0011)	-0.13* (-0.0075)	-0.03 (-0.0005)	-0.06* (-0.0064)	0.00 (0.0003)			
Central	0.05 (0.0106)	-0.12 (-0.0091)	0.09 (0.0058)	-0.33* (-0.0061)	-0.05 (-0.0046)	-0.24* (-0.0090)			
Coast	0.53* (0.0783)	0.65* (0.0450)	0.94* (0.0749)	0.09 (0.0001)	0.69* (0.0878)	0.56* (0.0219)			
Eastern	-0.32* (-0.0460)	-0.09 (-0.0017)	-0.01 (-0.0008)	0.08 (0.0016)	-0.24* (-0.0252)	-0.02 (0.0005)			
North Eastern	-2.17* (-0.1939)	0.31 (0.0488)	-0.88* (-0.0360)	-0.32 (-0.0050)	-1.52* (-0.1055)	0.41* (0.0274)			
Nyanza	-0.26* (-0.0377)	-0.08 (-0.0020)	-0.36** (-0.0180)	-0.01 (0.0002)	-0.33* (-0.0327)	-0.07 (-0.0014)			
Rift Valley	-0.34* (-0.0555)	0.31* (0.0298)	0.05 (0.0026)	0.20 (0.0041)	-0.22* (-0.0246)	0.32* (0.0157)			
Western	-0.64* (-0.0850)	0.03 (0.0106)	-1.03* (-0.0402)	0.18 (0.0049)	-0.79* (-0.0672)	0.06 (0.0059)			
Constant	-6.50*	-13.34	-4.83	-12.61	-5.51	-12.64*			
No. of observations		11182		12896		24078			
Lr Chi ² (38)		3051.95		1620.97		4796.15			
L-Likelihood		-8279.92		-4931.90		-14075.73			

*, **, *** Significant at 1%, 5% and 10% levels, respectively.

KCPE = Kenya Certificate of Primary Education; KCE = Kenya Certificate of Education; KCSE = Kenya Certificate of Secondary Education

KACE= Kenya Advanced Certificate of Education .

Chi²= Chi squared

Contrary to expectations, older children discourage participation in the labour market for both men and women and the result is stronger for the the private than for the public sector. This could be interpreted as meaning that presence of children will increase the likelihood of being self-employed rather than working in the public or private sectors. This might also be because in some instances, employed workers move into self-employment when they have gained experience and accumulated capital, and by that age their children are older.

In general, the results for the presence of children confirm findings by Glick and Sahn (1997). Manda (1997) also found the number of children to have a negative impact on female participation and a positive impact on male participation, but all the results were insignificant, implying that the number of children may not be an important determinant of participation. However, Paternostro and Sahn (1999) found the number of children to be relevant for women's participation.

Some level of education increases the likelihood of working in the public and private sectors compared with being in self-employment for both men and women. For women, higher levels of education strongly increase the probability of being a wage employee, except for public sector female employees with university education. The same is observed for men except for those with secondary education, whose probability of participation is lower than for those with primary education. The lower participation rates for both men and women with university education could be attributed to lower sample percentages of workers in this category compared with other levels of education. The results for the full sample show that more education is a much more important determinant for the public than for the private sector relative to self-employment.

Total land holding exerts a negative impact on the probability of participation in all sectors. The coefficients are significant for both males and females in the private sector but not in the public sector. When gender is not taken into account, however, the coefficients are significant for both the private and public sectors. Coefficients for regional dummies show mixed results, but most coefficients are negative and significant, implying that workers are more likely to be in self-employment in other regions (relative to Nairobi) than in wage employment. This is probably because most of the workers in the sample are in agricultural related activities, which is mostly a rural phenomenon.

To conclude, we note that the presence of children and land ownership turn out to be good instruments for identifying participation in the labour market and choice of sector of employment. While children have an impact in both sectors and for the full sample, land holding seems to be important only for the private rather than the public sector.



6. Determinants of earnings

In this section, we present and discuss the results of the selectivity corrected log wage equations (Table 4) and uncorrected log wage results (Table 5). Two selection issues are considered here: which women are wage earners in the formal sector and why some people work in the public sector and some in the private sector. The unobserved determinant of earnings will differ between those women who are wage earners and those who are not and this is likely to bias our results if not controlled for. On the other hand, private employees will differ from public employees in unobserved ways, which should also be addressed through controlling for selectivity. We treat the sector of activity as exogenous (hence uncorrelated with the error terms), so that we run the earnings equations in OLS for males and females in the public and private sectors separately and then run a pooled model for the two sectors.

The models fit the data better than the intercept only model, as the F statistics are highly significant at all conventional levels. These Chow test results also reject the equality of earnings determinants across sectors for both men and women, confirming evidence of heterogeneity in the Kenyan labour market. The R squared, however, indicates that the models have weak explanatory powers, with that for public sector males explaining as low as 15%, while for public sector females, the model explains about 25% of the total variation in log wages.

Married men in all sectors seem to earn more than their unmarried counterparts. On the other hand, the effect of this variable for females is negative but only the coefficient for the private sector is significant. This supports findings by Paternostro and Sahn (1999). Although the sectoral results show a lower premium for married women in the private sector, the full sample coefficients imply a higher premium for married workers (both male and female) in the private sector compared with the public sector. Age is associated with higher wages for both men and women in all sectors, but the effect is stronger for private sector than for public sector employees. 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. For the full sample, the effect is the same for both sectors, but more significant for the private sector. As with participation in the labour market, there is evidence of an inverted U- shaped profile of earnings as age increases.

As expected, the returns to education are all positive and significant except for public sector males with primary education and primary school leaving examination. In most cases, the impact of education seems to be stronger (larger coefficients) for females than

Table 4: Selectivity controlled wage equations

Variable	Males			Females			Full sample		
	Private	Public	Private	Public	Private	Public	Private	Public	
Married	0.40* (6.40)	0.23* (2.65)	-0.24** (-1.79)	-0.08 (-0.80)	0.22* (4.38)	0.12** (2.08)	0.22* (4.38)	0.12** (2.08)	
Age	0.11* (6.11)	0.08* (2.82)	0.16* (5.50)	0.08** (1.86)	0.11* (6.75)	0.09* (3.94)	0.11* (6.75)	0.09* (3.94)	
Age squared	-0.001* (-5.55)	-0.001* (-2.34)	-0.002* (-4.48)	-0.001* (-1.18)	-0.001* (-5.57)	-0.001* (-3.09)	-0.001* (-5.57)	-0.001* (-3.09)	
Primary	0.19* (2.57)	-0.13 (-1.28)	0.28** (2.27)	0.32*** (1.73)	0.21* (3.09)	0.02 (0.23)	0.21* (3.09)	0.02 (0.23)	
KCPE	0.44* (5.41)	0.07 (0.60)	0.41* (2.79)	0.79* (3.89)	0.40* (4.92)	0.30* (3.08)	0.40* (4.92)	0.30* (3.08)	
Forms 1-4	0.49* (6.00)	0.34* (2.68)	0.58* (3.97)	1.06* (5.52)	0.50* (6.32)	0.53* (5.10)	0.50* (6.32)	0.53* (5.10)	
KCE/KACE/KCSE	0.86* (10.5)	0.36** (2.25)	0.95* (5.54)	1.30* (5.83)	0.86* (10.06)	0.59* (4.54)	0.86* (10.06)	0.59* (4.54)	
Post-secondary	0.99* (7.22)	0.72* (3.14)	1.49* (5.59)	1.72* (4.41)	1.06* (8.07)	0.91* (4.65)	1.06* (8.07)	0.91* (4.65)	
University	1.89* (8.72)	0.96* (3.88)	3.05* (6.72)	2.28* (6.23)	2.22* (10.82)	1.23* (6.21)	2.22* (10.82)	1.23* (6.21)	
Central	-0.10 (-1.37)	-0.11 (-1.30)	-0.18 (-1.15)	-0.11 (-0.71)	-0.17* (-2.35)	-0.10 (-1.32)	-0.17* (-2.35)	-0.10 (-1.32)	
Coast	0.15*** (1.67)	-0.03 (-0.31)	-0.75* (-3.62)	-0.01 (-0.07)	-0.36* (-4.32)	-0.02 (-0.23)	-0.36* (-4.32)	-0.02 (-0.23)	
Eastern	-0.44* (-5.27)	-0.23* (-2.65)	-0.54* (-3.43)	-0.29** (-1.95)	-0.41* (-5.43)	-0.26* (-3.35)	-0.41* (-5.43)	-0.26* (-3.35)	
North Eastern	-0.55** (-2.24)	-0.13 (-0.89)	-1.40* (-4.47)	-0.32 (-0.80)	-0.76* (-3.92)	-0.08 (-0.52)	-0.76* (-3.92)	-0.08 (-0.52)	
Nyanza	-0.12 (-1.32)	-0.01 (-0.13)	0.02 (0.08)	-0.15 (-0.89)	-0.02 (-0.26)	-0.07 (-0.77)	-0.02 (-0.26)	-0.07 (-0.77)	
Rift Valley	-0.17** (-2.12)	-0.06 (-0.76)	-0.86* (-5.76)	-0.26** (-1.83)	-0.32* (-4.49)	-0.11 (-1.53)	-0.32* (-4.49)	-0.11 (-1.53)	
Western	-0.13 (-0.98)	-0.52* (-4.30)	-0.31 (-0.97)	-0.67* (-3.36)	0.02 (0.15)	-0.61* (-5.89)	0.02 (0.15)	-0.61* (-5.89)	
Lambda	0.17 (0.49)	0.03 (0.03)	0.24 (0.17)	0.40 (0.26)	-1.73* (-4.21)	-0.39 (-0.51)	-1.73* (-4.21)	-0.39 (-0.51)	
Constant	6.99 (12.4)	8.35 (20.4)	5.92 (3.16)	7.47 (11.57)	9.17 (12.4)	7.74 (22.19)	9.17 (12.4)	7.74 (22.19)	
No. of observations	2490	1424	955	586	3445	2010	3445	2010	
F statistic	(17,2472) = 34*	(17,1406) = 15*	(17,937) = 18*	(17,568) = 11*	(17,3427) = 55*	(17,1992) = 26*	(17,3427) = 55*	(17,1992) = 26*	
R squared	0.1902	0.1515	0.2470	0.2523	0.2146	0.1844	0.2146	0.1844	

*, **, *** Significant at 1%, 5% and 10% levels respectively, t values in parentheses.

KCPE = Kenya Certificate of Primary Education; KCE = Kenya Certificate of Education; KCSE = Kenya Certificate of Secondary Education; KACE = Kenya Advanced Certificate if Education.

for their male counterparts in all sectors. This confirms results obtained by Glick and Sahn (1997), Neumark (1988), and Paternostro and Sahn (1999). Contrary to findings by Glick and Sahn (1997), however, returns to education for male employees are higher in the private than in the public sector. The reverse is observed for females except for those with university education. For the public sector, the coefficients for females are also more significant than for their male counterparts, but the reverse is observed in the private sector. Generally, for both male and female workers in the private sector and females in the public sector, returns to education increase with level of education. For the full sample, returns to education rise with the level of education for both public and private sectors.

In general, regional dummies negatively influence the wage rate, implying that wages in Nairobi are higher than those in other provinces for both men and women. The coefficients are mostly insignificant, however, except for private sector employees, whose coefficients are significant in most provinces. Returns seem to be significantly lower in Eastern and Rift Valley provinces relative to Nairobi, while those of Nyanza and Central provinces are basically insignificantly lower. The lower returns observed for other regions relative to Nairobi could be explained by the fact that most other regions are rural where the majority of employees are either in service sector wage employment (such as teachers) or self-employment, compared with Nairobi where most of the modern industries are concentrated.

The selection term portrays conflicting signs. The coefficient is only negative for the full sample, where it is insignificant for the public sector but strongly significant for the private sector. This implies that self-selection may only be a problem in choosing between private and public sectors, irrespective of whether one is male or female. As to the issue of which women work in the formal sector, we uncover no significant evidence of self-selection and therefore the gender gap can be decomposed using the OLS coefficients; if the sample were self-selected, the observed distribution of wages would be inappropriate for analysing wage differentials.

To confirm that self-selection is not a serious problem, we estimate OLS log annual wage equations and compare the results with those of the selectivity corrected log equations. For the former, we corrected the standard errors for heteroscedasticity using White's method (Greene, 1997). The results are presented in Table 5. Comparing the OLS and selectivity corrected log wage equations, we conclude that sample selection is not important as the effect on signs and significance of the results is negligible, except for the private sector full sample where the selection term was significant. Even for this, however, the signs and significance of variables are similar and therefore the conclusions are the same.

Except for a few cases, the coefficients are slightly larger for the OLS equation. The Chow tests (F statistics) for both specifications are quite close to one another. Surprisingly, the R squared values are similar in all cases. Similar conclusions are observed for the impact of being married. Age and age squared portray the inverted U-shaped profile of earnings. In all cases, wages increase with the level of education, with the highest returns being observed for private sector females with university education, just as in Table 4. As in the selectivity-corrected wage equation, returns with respect to regional location imply that returns to wage employment in Central and Nyanza are insignificantly less than those for Nairobi, while for other regions they are significantly less than those for Nairobi, while for other regions they are significantly less.

Table 5: OLS regression for log wages

Variable	Males		Females		Full sample	
	Private	Public	Private	Public	Private	Public
Married	0.39* (6.47)	0.23* (2.78)	-0.23* (-2.71)	-0.07 (-0.77)	0.18* (3.63)	0.13** (2.17)
Age	0.11* (6.95)	0.08* (3.62)	0.16* (6.07)	0.08** (2.07)	0.15* (11.37)	0.10* (5.36)
Age squared	-0.001* (-6.36)	-0.001* (-2.91)	-0.002* (-4.95)	-0.001 (-1.22)	0.00* (-9.75)	-0.001* (-4.06)
Primary	0.18* (2.57)	-0.13 (-1.31)	0.27* (2.31)	0.31*** (1.71)	0.35* (5.79)	0.03 (0.33)
KCPE	0.43* (5.63)	0.07 (0.64)	0.40* (2.94)	0.79* (3.90)	0.58* (8.54)	0.31* (3.41)
Forms 1-4	0.49* (5.98)	0.33* (3.39)	0.58* (4.20)	1.04* (5.80)	0.65* (8.89)	0.56* (6.33)
KCE/KACE/KCSE	0.86* (10.56)	0.36* (3.90)	0.94* (6.25)	1.26* (7.42)	1.04* (14.04)	0.64* (7.77)
Post-secondary	0.99* (7.20)	0.72* (6.55)	1.47* (6.02)	1.63* (8.96)	1.22* (9.75)	1.00* (10.56)
University	1.90* (8.82)	0.96* (7.00)	3.03* (6.92)	2.23* (7.03)	2.32* (11.35)	1.31* (10.17)
Central	-0.11 (-1.43)	-0.11 (-1.31)	-0.18 (-1.21)	-0.10 (-0.68)	-0.13** (-1.80)	-0.11 (-1.42)
Coast	0.13*** (1.60)	-0.03 (-0.33)	-0.78* (-5.07)	-0.01 (-0.06)	-0.20* (-2.72)	-0.01 (-0.16)
Eastern	-0.42* (-5.36)	-0.23* (-2.66)	-0.54* (-3.43)	-0.29** (-1.96)	-0.47* (-6.27)	-0.25* (-3.33)
North Eastern	-0.52** (-2.19)	-0.13 (-0.92)	-1.40* (-4.48)	-0.32 (-0.79)	-0.92* (-4.81)	-0.06 (-0.45)
Nyanza	-0.11 (-1.26)	-0.01 (-0.13)	0.02 (0.10)	-0.16 (-0.92)	-0.09 (-1.03)	-0.07 (-0.76)
Rift Valley	-0.15** (-2.08)	-0.07 (-0.84)	-0.86* (-5.77)	-0.27** (-1.87)	-0.37* (-5.28)	-0.10 (-1.45)
Western	-0.11 (-0.87)	-0.52* (-4.37)	-0.30 (-0.96)	-0.68* (-3.45)	-0.13 (-1.04)	-0.61* (-5.87)
Constant	7.24 (26.6)	8.36 (21.1)	6.24 (13.9)	7.49 (11.7)	6.22 (26.3)	7.68 (23.2)
No. of obs.	2490	1424	955	586	3445	2010
F statistic	(16,2473)	(16,1407)	(16,938)	(16,569)	(16,3428)	(16,1993)
R squared	= 36.09*	= 15.62*	= 19.00*	= 11.97*	= 56.74*	= 28.04*
	0.1901	0.1515	0.2469	0.2522	0.2104	0.1843

*, **, *** Significant at 1%, 5% and 10% levels respectively, t values in parentheses.

Note: KCPE = Kenya Certificate of Primary Education; KCE = Kenya Certificate of Education; KCSE = Kenya Certificate of Secondary Education; KACE = Kenya Advanced Certificate of Education..

For all equations, Chow tests (F-test) for equality of the estimated parameters rejected the hypothesis of equality at the 1% level of significance, confirming our assumption of differing wage structures between private and public sectors for both men and women. We also tested for serial correlation of the variables using the variance inflation factors (VIF)⁵ in order to test the tolerance of each of the independent variables (StataCorp., 1999). The results for the full sample suggested that age and age squared could be correlated. Dropping age squared had a very minor impact on the results, however, and so the variable was retained. We also used the Ramsey (1969) test using powers of the fitted values of the natural logarithm of the annual wage to test for omitted values. The hypothesis of no omitted values was accepted at the 10% level of significance for the private sector and at the 5% level for the public sector.



7. Wage decompositions

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 literature as discrimination in). The unexplained wage gap could actually reflect unobserved differences between men and women that affect earnings. We decomposed the gender wage differences using the Oaxaca and Neumark decomposition methods. The results are presented in Table 6.

We note that the wage gap in the private sector is more than twice that of the public sector. The results of the Oaxaca method imply that using pure nepotism (female wage structure), 70% of the differential in male and female mean log wages in the public sector could be attributed to unexplained factors, while the rest, 30%, can be attributed to differences in characteristics. The results for the public sector compare closely with Neumark's (1988), who found the contribution of characteristics and discrimination to be about 30% and 70% for both males and females. For the private sector, 27% of the differential is attributable to characteristics, while the rest, 73%, is the unexplained wage gap. For public and private sectors combined, 22% is attributable to characteristics, compared with 78% owing to differences in returns.

When we use the pure discrimination approach (male wage structure), however, the component attributed to unexplained factors in the public sector is 69%, compared with 74% in the private sector. These results imply that there is no difference between the components of characteristics and returns using the male and female wage structures. We therefore conclude that the Oaxaca method does not encounter the index number problem. Our results contradict those of Oaxaca and Ransom (1994), however, who found that discrimination was larger and the productivity difference smaller when the female rather than the male structure was used as the competitive standard.

The results using the Neumark decomposition method indicate that for the public sector, 78% (256-178) of the difference can be attributed to discrimination, compared with 71% (103-32) in the private sector and 78% (36 + 42) for the full sample. However, the largest component of the unexplained wage gap in all sectors springs from male advantage. We note that the results of the Oaxaca method using the female wage structure compare closely with those of the Neumark method in terms of contribution owing to characteristics (27% and 28%, respectively). For example, the contribution of education to the differentials for the private sector is almost the same in the two methods, while that for public sector differs marginally (-0.018 and -0.033). The largest contribution of education to the sectoral differentials is observed in the Oaxaca method for characteristics in the private sector using the female wage structure (0.059), while the contribution in

Table 6: Decomposition of the gender wage gap (Oaxaca and Neumark methods)

	Public sector	Private sector	Full sample
Mean log of male wages	10.48	9.86	9.11
Mean log of female wages	10.05	8.96	8.17
Wage gap	0.42	0.90	0.94

Oaxaca method

Using the female wage structure

Contribution of characteristics	0.128	0.243	0.211
% contribution	30	27	22
Contribution of education	-0.018	0.059	0.158
Contribution of being married	-0.013	-0.047	0.005
Contribution of age	0.147	0.163	0.049
Others	0.012	0.070	-0.0004
Contribution of returns $(B_m - B_f)\bar{X}_m$	0.292	0.654	0.733
% contribution	70	73	78

Using the male wage structure

Contribution of characteristics $Bm(X'_m - X'_f)$	0.132	0.231	0.211
$(Bm\bar{X}_m - Bf\bar{X}_f)$ % contribution	29	26	22
Contribution of education	-0.022	0.052	0.178
Contribution of being married	0.042	0.082	-0.012
Contribution of age	0.097	0.100	0.044
Others	0.014	0.0003	0.001
Contribution of returns	0.288	0.66	0.733
% contribution	69	74	78

Neumark's decomposition (Using a weighted wage structure)

Contribution of characteristics $B(\bar{X}'_m - \bar{X}'_f)$	0.092	0.251	0.211
% contribution	22	28	22
Contribution of education	-0.033	0.054	0.169
Contribution of being married	0.022	0.041	-0.001
Contribution of age	0.089	0.132	0.043
Others	0.030	0.023	0.0002
Deviation of male returns $-\bar{X}'_m(B_m - B)$	1.074	0.93	0.336
% contribution	256	103	36
Deviation of female returns $-\bar{X}'_f(B - B_f)$	-0.746	-0.29	0.397
% contribution	-178	-32	42

the public sector is negative irrespective of the structure. For the full sample, however, the contribution of education is positive in all cases and is largest for the Oaxaca male wage structure. Our results indicate that education has either a negative or an almost nonexistent contribution to the computation of the male and female disadvantages (Paternostro and Sahn, 1999)

In general, the Neumark decomposition results suggest that there are marked differences in the process generating the gender wage gaps in the private and public sectors. For each individual sector, the contribution of the constant term to the male advantage and female disadvantage is greater than that of education. In the public sector, the contribution of education has negative signs, which could be taken as implying that females receive a premium while men are penalized. This confirms findings for Romania by Paternostro and Sahn (1999). The reverse is observed for the private sector, however, as well as the full sample.

In the private sector, the deviation of male returns from the pooled wage structure is more than four times as important as the deviation in female returns, while in the public sector, deviation of male returns is more than twice as important as the deviation in female returns. These results imply that favouritism towards men is more pronounced in all sectors, while there seems to be no evidence of discrimination against women in any sector. The results for men support findings by Appleton et al. (1999), who found nepotism towards men to exist in Ethiopia. On the other hand, our findings do not support their argument of discrimination towards women in Uganda and Ethiopia. For the full sample, the deviation of female returns is more important than the deviation of male returns.

To wrap up, we caution against strong conclusions on the presence or absence of discrimination (unexplained gender wage gap) as these results are sensitive to the education dummies chosen for comparison (no education and pre-school education together are taken as the comparison group), and the results could change if we chose a different dummy. Another complication is that the methodology used does not take into account that workers may be engaged in several jobs at the same time, so that it is difficult to include and endogenize job classification. Residual differences in male and female wages may reflect different occupational structures of men and women, whereby there may be occupational rather than wage discrimination within occupations (Glick and Sahn, 1997). In our study we are unable to extend the wage decomposition to distinguish between occupational wage gap and the unexplained wage gap. This is because in spite of the well-known endogeneity problem, the occupational classifications in the data set only make it feasible to reclassify these into public and private sectors.⁶ However, the difference in the contribution of other factors, which includes the constant term, may capture other premiums such as occupation-specific differences that mostly accrue to men given the gender distribution across occupations (Paternostro and Sahn, 1999).



8. Conclusions and policy implications

This study attempted to analyse the determinants of labour force participation and wages, as well as a decomposition of the gender gap in Kenya's job market. Participation in the labour market was modelled using multinomial logit techniques while OLS with and without sample selection was used to estimate the wage equations. Decomposition used the uncorrected OLS results following the approaches of Oaxaca (1973) and Neumark (1988).

Summary of conclusions

The results of labour market participation indicate that the determinants of participation differ for different sectors and for males and females, confirming that there is heterogeneity in the labour market. Education and other demographic factors are important determinants of the choice of sector for both males and females, but education seems to be much more important for females than for their male counterparts. Asset ownership is an important factor in only private sector participation.

The results for wage determination imply that there is no serious self-selectivity problem. Characteristics such as being married and age are associated with higher wages for men in both sectors, while married women earn less than their unmarried and male counterparts. Increasing returns to education are in general significant for both sexes across sectors. Workers seem to receive lower wages in all other regions compared with Nairobi, although the coefficients are not consistently significant.

The results for the gender gap decomposition indicate that using the Oaxaca method, there is no difference between the components of characteristics and returns using the male and female wage structures. We therefore conclude that the Oaxaca method does not encounter the index number problem. Our results contradict those of Oaxaca and Ransom (1994), however, who found that discrimination was larger and the productivity difference smaller when using the female rather than the male structure as the competitive standard.

The results using the Neumark decomposition method indicate that the largest component of the unexplained wage gap in all sectors springs from male advantage and that the results of the Oaxaca method using the male wage structure compare closely with those of the Neumark method in terms of return to characteristics. The largest contribution of education to the differentials is observed in the Oaxaca method for characteristics in the private sector using the female wage structure. In general, the results seem to suggest that although there are marked differences in the process generating the

gender wage gaps in the private and public sectors, favouritism towards men is pronounced in all sectors while there seem to be no evidence of discrimination against women in any sector.

We note the need for caution in drawing inferences from our findings, as we are unable to extend the wage decomposition to distinguish between occupational wage gap and the unexplained wage gap. This is because, in the first place, the occupational classifications in the data set only make it feasible to reclassify these into public and private sectors. In the second place, we avoid further endogeneity and selectivity problems by not taking into account occupational choice. Probably decomposition along occupational differences could be feasible with labour force survey data, but even then it would be impossible to control for the endogeneity problem. This remains a potential area for further research.


Policy implications

Our results for labour force participation and determinants of wages imply that education is particularly crucial for women in order to increase their participation rates and earnings and thus has important implications for poverty reduction. To minimize gender differences in labour market participation, the government could therefore invest in instruments to reduce gender inequalities in access to education. This could be done through budget initiatives that target girls' schools in terms of subsidized fees, as well as provision of books, technology and teachers to bring them at par with boys' schools so as to improve enrolment and performance of girls. Recently (January 2003), the government introduced free primary education in public schools, which can be expected to increase the chances of girls going to school, given that there are parental preferences in boys' education in the face of poverty. This is a first step towards encouraging female labour force participation in the very long run.

Our gender gap decomposition results suggest the need for deliberate government efforts towards policies that minimize employer preferences/favouritism towards men. One major situation that is never addressed in the literature is where there is favouritism towards men, more so in the private sector, owing to expected lower productivity of women in the childbearing age. In this respect, the government could offer firms incentives to employ more women and also introduce measures to compel firms to make special provisions that cater for women with maternal and child rearing responsibilities. Given that our study does not explicitly address this aspect of favouritism, we recommend further research in this area.



Notes

1. Total employment refers to the sum of wage, self- and informal sector employment; wage and self-employment in this case constitute formal employment.
 2. Neumark notes that employers may practise 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.
 3. Appleton et al. (1999) advise caution on Neumark's methodology as 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 functions are likely to omit a number of important variables that affect productivity.
 4. The general form of the test is $W = (Rb-r)'(RVR')^{-1}(Rb-r)$, where b is the estimated coefficient vector, V is the variance-covariance matrix and $RB=r$ denotes the set of q linear hypothesis to be tested jointly. If the estimation command reports its significance level using Z statistics, the test is the Wald X^2 . If the significance levels are reported using the t statistics, the test is an F statistics - Chow test (see StataCorp, 1999; Greene, 1997).
 5. A VIF of >30 suggest collinearity. Age and age squared reported VIFs of between 44 and 57.
 6. The data set details main occupation of employment, which we aggregated to get public and private sectors. There are also details of employment sector, subdivided into public sector and a number of other categories, which all collapse into private sector. A third set of details is on type of industry, which is too general/broad to capture relevant gender specific occupational differences.
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