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DECOMPOSING THE GENDER WAGE GAP IN THE URBAN LABOR MARKET IN KENYA

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Abstract: Legislation and regulation have been effective in reducing the gender wage gap in developed countries; however, the gap still exists globally, and progress towards narrowing the gap has been unacceptably slow even in regions where it is improving. This study presents the analysis of gender wage gap in Kenya's urban labor market by using the World Bank Skills Towards Employability and Productivity Survey (WBSTEPS). This study employed Mincer earnings regressions with Heckman selection correction and the Blinder-Oaxaca and Neumark decomposition procedures to answer the research questions. The results of the wage determination and participation in the labor market show that there is no selectivity-bias problem. Personal characteristics such as education and age, as well as work-related characteristics, are important factors in determining earnings. The magnitude of the gender wage gap varies across the wage distribution, and the results of the wage decomposition reveal that women in urban Kenya earn 84.5-to-86% of men's earnings. The earnings gap is overwhelmingly due to differences in returns to endowments, which account for between 70% and 94.7% of the total earnings gap. Admittedly, the study found evidence of discrimination against women in the returns to endowments, but also observed pronounced favoritism towards men. However, discrimination against women is more pronounced than favoritism towards men. Addressing the gender wage gap in Kenya requires a multifaceted approach that tackles both systemic biases against women and structural barriers that hinder women from accessing equal opportunities in education, training, and career advancement and government policies that minimize favoritism towards men.

Keywords: Gender wage gap; Wage determination & decomposition; urban labor market; Kenya.

JEL Codes: J32, J71.

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1. Introduction

The issue of gender inequality in the workforce has been a significant concern on the global stage, both in terms of human rights and social welfare, as well as its impact on macroeconomic efficiency and poverty reduction (Robles, 2012; International Labor Organization [ILO], 2017). Women are often underrepresented in the labor market and, when they do secure employment, they often face various forms of workplace discrimination (ILO, 2017). Promoting gender equality in a country's labor market can have positive effects not only on economic development and efficiency but also on social and political equity (World Bank, 2011). Gender-based wage inequality, in particular, is among the greatest social injustices the world over as well as a chronic catastrophe in Sub-Saharan Africa (SSA) and developed economies (Abdiaziz & Kiiru, 2021; Blau & Kahn, 2003). This type of inequality relates to the differences in average gross earnings between men and women who are in the same job, industry, or occupation, and is a manifestation of gender discrimination and social inequality (Blau & Kahn, 2017; Metcalf, 2009). The wage gap has a significant detrimental impact on poverty reduction and sustainable development. As a result, Sustainable Development Goal SDG #5 aims to promote gender equality and empower all women and girls (UN, 2015).

Virtually, female labor force participation increased in almost all countries throughout the twentieth century (Madalozzo, 2010). However, despite this progress, the working conditions for women with family responsibilities remain challenging. Traditional gender roles persist in the division of labor within families, even when women are active in the labor market. As a result, women must balance between market labor and home labor (Alvarez et al., 2006; Lundberg, 2000; Gupta & Ash, 2008). In addition, women still face wage discrimination when compared to men, even when considering individual endowments and job attributes (Madalozzo & Martins, 2007; Olivetti & Petrongolo, 2008). The literature is divided on whether the gendered division of labor at home causes the wage gap or vice versa. Nevertheless, most studies acknowledge that certain inherent gender-related factors have a considerable impact on outcomes such as lower wages and being burdened with a "second shift" i.e., domestic responsibilities after work (Madalozzo & Martins, 2007; Olivetti & Petrongolo, 2008).

There are several potential explanations for why women earn lower wages than men. One reason could be the career interruptions that women experience during their reproductive years, which may result in lower productivity and availability to work for lower wages (Blau et al., 2006; Bryan & Sanz, 2007). Secondly, women's wages are lower due to benefits that are exclusively available to women, such as maternity leave (Bergmann, 2008). Thirdly, it is possible that women choose to pursue occupations and activities that offer lower earnings compared to those typically chosen by men (Miller, 2009). It is possible that any of the possibilities may

influence, or be influenced by, the gendered division of labor within households. For instance, it may be less costly for women to spend more hours at home than men, which could impact the labor market if both spouses possess equal productivity levels. If the husband earns higher wages than the wife, the man may have a comparative advantage in dedicating more time and effort to the labor market (Ferber, 2003).

The World Economic Forum (WEF, 2018) reveals that globally, women earn only 63% of what men earn for the same job and are paid 50% less annually than their male counterparts and women are much more likely to perform unpaid household duties. In the same vein, studies conducted in Sub-Saharan Africa have provided evidence of gender wage inequality, and Kenya is no exception (Kabubo-Mariara, 2003; ADB, 2005; Abdiaziz & Kiiru, 2021; Kolev & Robles, 2010; Danquah et al., 2021; Brizmohun et al., 2021). Gender wage disparities are prevalent in Kenya, where women are less likely to participate in the labor force, and when they do, they earn significantly less than men, particularly in sectors such as agriculture (Republic of Kenya, 2019). In Kenya, female labor force participation is particularly crucial since women make up a significant proportion of household heads and are overrepresented among the disadvantaged. Despite accounting for 53% of the labor force, women's wage contribution in the contemporary sector remains low at 36% (Republic of Kenya, 2015). Although it is widely accepted that systemic gender-based earnings gaps exist in Kenya, the extent of these disparities across various employment sectors is less clear. Achieving gender equality, equity, and the elimination of all forms of discrimination against women and young people are fundamental components of Kenya's Vision 2030. However, despite the government's efforts, the gender wage gap persists, and the progress made has been minimal compared to the programs designed to address these concerns.

The aim of this study is to examine the presence and implications of the gender wage gap across the wage distribution in the urban labor market of Kenya. Furthermore, it seeks to ascertain whether there is evidence of wage discrimination against women in this labor market and identify the factors that influence earnings for both men and women. The paper contributes to the limited body of empirical research on the gender wage gap in Kenya's urban labor market by examining its existence and magnitude. Building on prior studies in Kenya (Agessa, 1999; Kabubo-Mariara, 2003; Abdiaziz & Kiiru, 2021), this study broadens the analysis by investigating gender wage disparities across the entire wage distribution in the urban labor market. To accomplish this, the study utilized data from the World Bank's Skills Towards Employability and Productivity (STEP) Household Survey Wave 2, which after cleaning, comprises a representative sample of 1,380 urban household members aged 15 to 64. This study is distinctive in three ways: firstly, it adopts the Mincer earnings equation and Heckman two-step approach to analyze earnings determinants and in

Kenya's urban labor market; secondly, it extends the analysis by applying the Quantile regression method (QRM) to explore gender wage differences across the wage distribution and to identify possible indications of a glass ceiling or sticky floor; and thirdly, it employs the Oaxaca-Blinder and Neumark wage decomposition approaches to estimate the explained and unexplained gender wage gap and assess the evidence of discrimination or men nepotism in Kenya's urban labor market. Given the significance of reducing gender wage disparities, this research seeks to address the following research questions.

i. What is the degree of gender-based wage disparity across the wage spectrum, and what are its consequences?
ii. Does the urban labor market in Kenya show proof of pay discrimination against women?
iii. What household and job characteristics influence the earnings of men and women in Kenya's labor market?
iv. What is the estimated gender pay gap in the urban labor market in Kenya, and are there indications of the sticky floor or glass ceiling market phenomenon?

The rest of the study is organized as follows: Section II provides a literature review of relevant studies on gender wage disparities. Section III describes the data and methodology used in the analysis. Section IV presents the results of the study, including the findings and discussions. Finally, in Section V, I draw policy implications and recommendations based on the research findings.

2. Literature Review

2.1. Theoretical Foundations

The foundation of this study is Becker's (1957) neoclassical human capital model, which is used to forecast and assess earnings. The central premise of this model is that each person possesses a human capital endowment. Human capital encompasses the knowledge, skills, and experience that individuals acquire through education, training, and work, and their earnings in the labor market are determined by their capacities and capabilities. The theory suggests that as individuals invest in enhancing their skills and improving their stock of capabilities, their incomes increase, and earnings in the labor market are strongly linked to investments in skill development. Becker (1981), building on his earlier work, proposed that disparities in the labor market between males and females are due to differences in skill investments or external factors such as preferences. Women tend to focus on household chores due to differences in comparative advantages related to family production, childbirth, and child-rearing, while men concentrate on market labor. This specialization results in women investing less in human capital relevant to the labor market, leading to gendered occupational and industrial segregation. These

preferences result in gender wage disparities based on marginal productivity (Polacheck, 2006).

Conversely, the Feminist theory asserts that gender disparities in the job market cannot be resolved solely through individual choices (Figart, 2005). Proponents of this theory contend that women face constraints imposed by institutionalized norms, regulations, and societal gender identities. The underlying cause of the disparity is that women do not experience the same living and working conditions as men worldwide. In general, women are often in a position of being "controlled" individuals. The lower status of women's jobs is linked to the belief that women are intrinsically inferior, rather than the quality of the work they perform (Phillips & Taylor, 1980). Therefore, the approach of feminist economists to gender inequalities is more in line with Arneson's (2018) concept of opportunity disparity. Opportunities are factors that are imposed on individuals and are not based on their will or choices. When the distribution of measures of social welfare, such as wages, knowledge, occupation, and health, is dependent on people's social context, social inequality exists. Thus, being male or female influences individuals' preferences in the job market.

It's acknowledged that human capital factors, such as work experience and education, are significant in understanding pay inequality. However, there is increasing recognition that the human capital hypothesis is based on general assumptions that do not consider the fact that all choices are made in a normative context where gender roles are established ideas. Moreover, men and women cannot be analyzed independently, and the diverse working conditions they encounter must be considered in a material and social context. It is also important to note that disparities in human capital endowments may not entirely account for the wage gap, as only a small portion of pay inequality results from endowment factors such as education and experience.

2.2. Empirical Literature

In Kenya, Kabubo-Mariara (2003) analyzed the causes of gender earnings disparity and discovered that personal and work-related characteristics significantly influenced occupation choice and earnings. The returns to education of male workers were higher in the private sector than in the public sector. The wage gap in the private sector was more than twice that in the public sector. Wage decomposition revealed 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 remaining 30% could be attributed to differences in characteristics. Additionally, using pure discrimination (male wage structure), the component attributed to unexplained factors in the public sector was 69%, compared with 74% in the private sector.

Relatedly, Abdiaziz and Kiiru (2021) also explored inter-industry gender wage gaps in Kenya. The findings of the study revealed that even after considering personal characteristics and gender pay disparities across industries, women still earn less than men. In the commerce and trade sector, men's wages were 27.2% higher than women's, but women's earnings would increase by 17.5% if they had the same characteristics as men. In the services sector, men earned 28.5% more than women, and women's wages would increase by 22% if they had the same characteristics as men. In the manufacturing and construction sector, men earned 23.1% more than women, and women's earnings would increase by 18.4% if they had the same characteristics as men. In the agriculture, fisheries, and mining sectors, 57.9% of the difference was due to human capital characteristics.

At Sub-Saharan African regional viewpoint, Siphambe and Thokweng-Bakwena (2001) examined gender wage inequality in Botswana's formal labor market and discovered that women constitute 46% of the workforce, with occupational segregation prevalent across all sectors. The study found that in the private sector, women earned 73% less than their male counterparts. However, in the public sector, women managers earned 1.2 times as much as male managers, indicating a glass ceiling effect. The wage decomposition revealed that the total pay gap in the public sector was 0.9 log points, with 0.6 of the total log wage gap attributed to variations in human capital skills and 0.3 due to variations in returns to human capital endowments. The "unexplained" component of the pay disparity associated with labor market discrimination was found to be 66% larger in the private sector than in the public sector.

In Ethiopia, Kolev and Robles (2010) investigated gender wage disparities and factors contributing to pay inequality. The study found that female wages accounted for 66% of male earnings, with wage disparities being particularly significant among young women in the labor market. However, the gender income gap tended to narrow as women got older. Moreover, the unexplained gender wage gap resulting from discriminatory labor market practices was found to be large in the formal private sector but low in the public sector. The study also revealed that occupational segregation was prevalent in the Ethiopian labor market.

In Uganda, Kagundu and Pavlova (2007) explored gender wage inequality and discovered a substantial gender pay differential in urban regions, with the unexplained component of wage inequality ranging between 41% and 68%. The study also found that nepotism towards males accounted for 24% of the pay gap, while discrimination against females accounted for 22%. In rural areas, the larger fraction of income disparity was caused by variations in employer treatment, accounting for 61% to 78% of the total earnings inequality between males and females.

Moreover, in Ghana, Danquah et al., (2021) investigated gender wage inequalities within families, as well as women's empowerment and welfare in Ghana. The study found that the average wage gap between females and males was 27%. Additionally, the study revealed that childrearing had a significant impact on women's ability to actively engage in the workforce, particularly among families with children under the age of six years. This reduced capacity to work had negative implications for women's empowerment and welfare.

From global inclinations, Blundell et al., (2019) investigated the impact of education on gender wage disparities in the United Kingdom and found that training could reduce the gender pay gap, particularly due to the prevalence of part-time work and unemployment. Similarly, Machini & Puhani (2003) found that male college graduates generally received higher wages than female graduates in Europe, with college majors explaining a significant portion of the wage differences between female and male workers. In the same vein, Dolado et al., (2003) demonstrated that younger and more educated women had higher labor market participation rates compared to their older and less educated counterparts. These studies demonstrate the significance of education and training in reducing gender wage disparities and promoting gender equality in the labor market from a global perspective. Kaya's (2019) study investigated gender wage differentials across earnings distribution in relation to corporate segregation. The study found that discriminatory employment patterns were more prevalent at the top levels of the earnings distribution than at the lower levels. Moreover, the study found that this pattern worsened as women progressed in their careers, particularly among workers in the same firm.

To sum up, the literature review highlights the existence of pay differentials across countries and over time, particularly in Sub-Saharan Africa, which challenges the assumption of a perfectly competitive labor market. This suggests that factors beyond a worker's endowment characteristics, such as differences in the sector of employment and discrimination, also influence wages and wage inequality. However, there is limited empirical evidence on this topic in the context of the urban labor market in Kenya.

3. Data and Methods

3.1. Data Sources

This study utilized data from the World Bank Skills Towards Employability and Productivity Survey (WBSTEPS) to investigate gender wage disparities in Kenya's urban population. The survey collected sex-disaggregated data on employability and household skills in various developing countries, including Kenya. The STEP household survey covered a wide range of topics, such as demographics, education and training, employment, job skill requirements, earnings, and family characteristics of individuals aged 15 to 64. I specifically employed the STEP Skills

Measurement Household Survey (Wave 2) to examine gender wage disparities using a representative sample of 1380 households that included all urban household members aged 15 to 64 after data cleaning, considering only employed persons.

For this analysis, it utilized the World Bank STEP survey data collected in 2017. This dataset is the most recent available data that captures information on the wages of households in the urban labor market in Kenya. Longitudinal studies track the same population over time, providing valuable insights into long-term trends and changes in gender wage disparities, particularly in labor markets where wages remain unchanged over time.

The World Bank's STEP Skills Measurement Program (STEP) is a pioneering initiative aimed at measuring skills in low and middle-income countries. The STEP dataset currently includes data collected between March 2012 and August 2017 from various countries, including Albania, Armenia, Azerbaijan, Bolivia, Bosnia & Herzegovina, Colombia, Georgia, Ghana, Kenya, Kosovo, Lao PDR, Macedonia, Serbia, Sri Lanka, Ukraine, Vietnam, and the Yunnan Province in China. The target population in all these countries is urban adults aged 15 to 64 participating in the labor market.

3.2. Methods

3.2.1. Mincer Earnings function

This study based the empirical modeling on Mincer's theoretical framework to investigate gender earnings disparities. The Mincer theory suggests that variations in earning profiles among individuals can be attributed to differences in human capital, such as labor market experience, innate abilities, and education (Mincer, 1974). To identify the factors that have a significant effect on earnings, the augmented version of the traditional human capital semi-logarithmic earnings equation was applied, which is as follows:

$$lnWi = \beta 0 + \beta iXi + \alpha i\, Yi + \varepsilon i \qquad (1)$$

Where, lnW_i - is the Natural logarithm of hourly wages of individual i, X_i – represents the vector of individual explanatory characteristics like the traditional human capital attributes i.e education, job tenure, experience, occupation category, etc. Y_i – vector of the control variables that capture individual firm-specific characteristics like sector, size, ownership, and geographical location. β_i – is the coefficient of each of the individual characteristics X, α_i - is the coefficient of the firm-specific control variables, ε_i – is the stochastic term. I adopt Lemieux's (2006) recommendation to incorporate log-hourly earnings specification as the chosen measure of earnings.

3.2.2. Heckman two-step selection

To address potential sample selection bias in estimating the gender earnings gap, Heckman's procedure (Heckman, 1979) was applied. This bias may arise because we only observe the earnings of individuals who are currently engaged in income-generating activities, while others may be seeking employment, receiving in-kind payments, or working without pay in domestic work including childbearing and rearing. In the first stage of the procedure, a selection function was estimated using a logit or probit regression model separately for men and women, which involves the binary decision of participating in income-generating activities. To account for potential sample selection bias, a selection correction term (the inverse of the Mills' ratio) was included in the log hourly earnings equations separately for women and men. Based on the selection function, the earnings function was estimated using an OLS regression model to generate unbiased results (Heckman, 1979).

3.2.3. Quantile regression method (QRM)

Previous research has suggested that the gender pay gap may vary across different parts of the earnings distribution, with the gap being more pronounced at higher earnings levels in developed countries, which supports the glass ceiling theory (Kolev & Robles, 2010). To align with this concern, a quantile regression method (QRM) was employed to estimate earnings functions at three different percentiles of the earnings distribution: the first quartile, the median, and the third quartile. QRM has the ability to produce different responses of the dependent variable to changes in the regressors at different percentiles of the conditional distribution of the dependent variable. Additionally, unlike the OLS method, QRM is robust to the influence of outliers (Heinze, 2010). To answer the research question, three simultaneous QRM estimations were conducted (at the first quartile, median, and third quartile) of the log hourly earnings equation separately for wage-employed men and women. Bootstrapped standard errors were generated to obtain consistent estimates of the variance-covariance matrices.

3.2.4. Oaxaca- Blinder decomposition

Next, the Blinder-Oaxaca decomposition method (Blinder, 1973; Oaxaca, 1973) was then followed to deconstruct the gender earnings gap into disparities in human capital endowments and differences in returns to those endowments. While the Mincer earnings functions assume similar returns to characteristics for both genders, in reality, male and female workers may receive different rewards for their endowments. Therefore, the Blinder-Oaxaca decomposition method, which assumes distinct returns to characteristics by gender and employs separate parameter estimates for males and females, is a commonly used approach for analyzing gender gaps. As shown in Equation (2), the decomposition process involves representing the

gender earnings gap as the difference in the linear prediction at the male- and female-specific mean values of individual characteristics.

$$lnW_m - lnW_f = \bar{X}_m\hat{\beta}_m - \bar{X}_f\hat{\beta}_f \quad (2)$$

Where $lnWm$ – represents the logarithm of average wages for men, $lnWf$ – is the logarithmic notation for the average wages for women, $\bar{X}_m\hat{\beta}_m, \bar{X}_f\hat{\beta}_f$ – fitted values of men and women respectively. Xm and Xf represents the vector of means of explanatory factors in the male and women earnings equations respectively while $\hat{\beta}_m$ and $\hat{\beta}_f$ represents the parameter estimates from the male and female wage structures. Adding and subtracting the term $\bar{X}_m\hat{\beta}_f$ to the right-hand side of equation (2) to obtain:

$$lnW_m - lnW_f = \bar{X}_m\hat{\beta}_m - \bar{X}_m\hat{\beta}_f + \bar{X}_m\hat{\beta}_f - \bar{X}_f\hat{\beta}_f \quad (3)$$

Through the factorization process, Equation (3) can be split into two components: the "explained" and "unexplained" portions of earnings inequality. The explained component refers to the portion of the wage gap that can be accounted for by differences in human capital characteristics, while the unexplained component refers to the proportion of the overall gender earnings differential that arises from unobservable characteristics, such as returns to labor endowment characteristics, which may be associated with discriminatory behavior. Therefore, Equation (3) can be deconstructed into two components, as shown below:

$$ln\bar{W}_m - ln\bar{W}_f = \bar{X}_m(\hat{\beta}_m - \hat{\beta}_f) + \hat{\beta}_f(\bar{X}_m - \bar{X}_f) \quad (4)$$
$$ln\bar{W}_m - ln\bar{W}_f = \bar{X}_f(\hat{\beta}_m - \hat{\beta}_f) + \hat{\beta}_m(\bar{X}_m - \bar{X}_f) \quad (5)$$

Equations (4) and (5) illustrate the breakdown of gender earnings when men and women are compensated based on each other's payment structures (Appleton et al., 1999). Equation (4) is appropriate when men receive competitive wages while women face discrimination and earn less. Conversely, Equation (5) applies when women receive competitive wages, but men receive preferential treatment (such as nepotism) and earn more (Nordman & Roubaud, 2009). However, it is unclear which earnings structure should be considered the non-discriminatory benchmark. Additionally, the decomposition results may differ considerably across different earnings structures, particularly if characteristics and parameter estimates vary by gender, and both discrimination and nepotism may coexist. To solve the index number problem, Oaxaca (1973) suggested using both male and female earnings

structures as a non-discriminatory earnings structure. However, using a weighted or pooled earnings structure is generally preferred (Cotton, 1988; Neumark, 1988; Reimers, 1983). Although each method has its advantages, it is difficult to determine the most appropriate approach since we cannot test the assumptions and restrictions of these methods. Therefore, this study first followed Oaxaca's (1973) suggestion and presented both male and female earnings structures.

3.2.5. The Neumark decomposition

The Oaxaca-Blinder decomposition method is frequently employed in studies on the disparity in pay between genders (Blinder, 1973; Oaxaca, 1973). It operates under the supposition that if there were no discrimination, women would earn according to the same structure as men, and men would earn according to the same structure as women. Discrimination occurs when men (or women) receive more (or less) compensation than what a non-discriminatory labor market would allocate to them. However, there are inherent challenges in interpreting the results of the Oaxaca-Blinder decomposition. The explained portion of the gender wage gap is based on estimates of what a woman would earn if she faced the male wage structure, or what a man would earn if he faced the female wage structure, without considering the wage structure that would exist in the absence of discrimination. Furthermore, the decomposition is sensitive to the choice of earnings structure used (whether male or female wage structure), and there is no preferred structure beforehand. This is why estimates for both specifications are typically calculated and utilized to establish a range within which the actual values of the components may lie.

The Oaxaca-Blinder decomposition method contradicts one of Becker's (1971) fundamental assumptions regarding the labor market, which is the existence of a wage structure in the absence of discrimination. Becker's seminal paper on labor market discrimination suggests that a perfectly competitive labor market without discrimination assumes that men and women are treated as perfect substitutes in terms of productivity. Consequently, differences in earnings would solely arise from disparities in human capital and equal labor characteristics would lead to equal earnings. Therefore, in the absence of discrimination, both men and women would experience income equality, thereby addressing the issue of the index problem phenomenon.

To address the challenges in interpretation, Neumark (1988) proposed an enhanced variation of the Oaxaca-Blinder decomposition technique, which has gained widespread use in economics literature. Neumark suggests that employers may exhibit nepotism towards men or engage in discrimination against women. Under nepotism, women receive a fair wage while men are overpaid. By analyzing the coefficients derived from women's earnings functions, it is possible to estimate the non-discriminatory wage structure. Conversely, in cases of discrimination, men are

paid a fair wage while women are underpaid. The coefficients from men's earnings functions can be used to estimate the non-discriminatory wage structure.

In reality, employers may practice both nepotism and discrimination simultaneously. Neumark demonstrates that, under the assumption that employers only consider the proportion of men and women employed (with homogeneous preferences of degree zero), the non-discriminatory wage structure β^* can be estimated by averaging the male and female wage structures using an earnings function estimated from a combined sample that includes both men and women.

In contrast to the Oaxaca-Blinder decomposition method, Neumark's approach assumes the presence of similar wage structures for both men and women in the absence of discrimination, rather than assuming varying wage structures. This key difference allows Neumark's procedure to overcome the index number problem. Furthermore, in the Neumark decomposition procedure, the unexplained component, often referred to as the discrimination or treatment component, is further decomposed into two components. These components reflect the advantages experienced by the favored group and the disadvantages faced by the discriminated group when compared to the situation that would have occurred in the absence of discrimination. The Neumark decomposition procedure is therefore precisely defined as follows:

$$ln\bar{W}_m - ln\bar{W}_f = \sum \hat{\beta}^* (\bar{X}_m - \bar{X}_f) + \sum \bar{X}_m(\hat{\beta}_m - \beta^*) + \sum \bar{X}_f(\beta^* - \hat{\beta}_f) \quad (6)$$

The first component on the right-hand side of the equation $\sum \beta^*(Xm - Xf)$ represents the portion of the gender average earnings gap that can be attributed to differences in characteristics when evaluated under the assumption of a hypothetical market without discrimination. This component reflects the earnings gap that would exist based solely on variations in individual characteristics. The second and third components represent the treatment or discrimination component. The second component $\sum Xm(\hat{\beta}_m - \beta^*)$ represents the extent to which men's characteristics are overvalued in the labor market, resulting in an advantage for men. This component captures any favorable treatment or bias towards men in terms of how their characteristics are valued. Equally, the third component $\sum \bar{X}_f(\beta^* - \hat{\beta}_f)$ represents the extent to which women's characteristics are undervalued in the labor market, leading to a disadvantage for women. This component captures any unfavorable treatment or bias against women in terms of how their characteristics are valued.

While Neumark's decomposition method offers an improved approach, it is not without criticism. One key concern is that assuming employers only care about the ratio of men and women employed lacks evidence backing it up. As a result, using the pooled coefficient as an estimator for the non-discriminatory wage structure is not clearly justified (Appleton et al., 1999). In response to this limitation, alternative methods have been proposed in the literature to estimate the fair wage structure. Reimers (1983) uses a technique that gives equal importance to the wage structures of both men and women. On the other hand, Cotton (1988) calculates the fair wage structure by weighting the wage structures of men and women based on their respective proportions in the sample.

4. Findings and Discussions

4.1. Descriptive statistics

To conduct a detailed analysis of wages and other employment characteristics, a general overview of the sample construction is first presented using descriptive statistics. Table 1 provides basic labor market metrics for male and female workers, respectively. Based on these metrics, it appears that men tend to have more favorable characteristics compared to women. Men are more likely to work in highly skilled white-collar jobs and as plant and machine operators, while women occupy a greater share of low-skilled white-collar jobs and elementary occupations. Additionally, a larger proportion of men are employed in the manufacturing and commerce sectors, while women are more likely to work in the service industry. However, there is no significant gender difference in the distribution of employment across sectors. Both men (87.8%) and women (88.6%) are primarily employed in the private sector, which constitutes the largest share of wage employment (88%). There is a slight gender difference in the number of years of education completed, which suggests gender parity in access to education in Kenya. On average, both men and women invest between 5-to-19 years in education to improve their human capital endowments and skills.

Table 1 Selected Labor market indicators

	Female (%)	Male (%)
Public or private sector employee		
private sector	88.60	87.75
public sector	11.40	12.25
Occupation type (STEP Aggregation)		
Highly skilled white-collar Managers/Professionals/Technicians	-24.60	27.54
Low skilled white collar	41.80	36.29
Crafts and trades workers; Plant and machine operators	5.40	23.92

Elementary occupations	27.40	11.44
Skilled agriculture work	0.80	0.58
Economic sector		
Agriculture, fishery, mining	1.60	1.05
Manufacturing & construction	8.40	24.27
Commerce	10.60	12.37
Other services	79.40	62.31
Education		
1= 0-5 years	7.86	6.68
2= 5-9 years	30.24	24.03
3= 10-14 years	39.72	42.20
4= 15-19 years	21.57	26.85
5= 20 years	0.60	0.23

Source: Own computation (2023) based on World Bank STEP Survey

The aggregate household statistics presented in Table 2 indicate that women in urban Kenya have lower hourly earnings compared to their male counterparts. On average, women's earnings represented 87.9% (= exp (0.571)/exp (0.70)) of men's earnings in the urban labor market. Men in Kenya have slightly higher levels of education than women, with men having an average of 0.5 years more educational attainment than women. Male employees are also older (31.465 years) than female employees (29.89 years) and have more work experience, with men having a 5-year advantage in terms of tenure. A lower proportion of women than men possess industry-recognized training certificates in addition to formal education qualifications. Moreover, urban employees in Kenya have on average, 48% of the children under 6 years old. Both men and women tend to work in larger firms with 16 or more workers. The average daily hours of work for both men and women are 8.6 hours, with men having a slight advantage. Finally, it was observed that there is a gender imbalance in the occupational distribution between men and women in urban Kenya.

Table 2 Aggregate descriptive statistics by gender

	Women			**Men**		
	N	Mean	SD	N	Mean	SD
lnwages USD	484	.571	1.075	835	.70	1.014
Maritalstatus	500	4.334	5.002	857	3.495	2.901
Children	500	.576	0.744	857	.382	0.654
children0	500	.562	0.497	857	.709	0.454
children1	500	.316	0.465	857	.204	0.403
children2	500	.244	0.655	857	.173	0.562
Age	500	29.89	8.412	857	31.463	9.513
age2	500	964.034	580.774	857	1080.331	717.909
Occupation	500	2.38	1.152	857	2.205	0.996

employment sector	500	.114	0.318	857	.123	0.328
firm1	496	.238	0.426	852	.12	0.325
firm2	496	.347	0.476	852	.383	0.486
firm3	496	.415	0.493	852	.498	0.500
Tenure	500	48.49	57.635	856	53.336	61.655
tenure squared	500	5666.438	14639.513	856	6641.729	17384.087
tenure dif	487	2.83	0.473	846	2.784	0.500
economic sector	500	3.678	0.695	857	3.359	0.883
Hours	499	8.31	2.588	855	8.921	2.518
training certificate	500	.076	0.265	857	.118	0.323
Education	496	10.841	4.341	853	11.347	4.263

Source: Own computation (2023) based on World Bank STEP Survey data

4.2. Kernel Density estimation

In addition to examining the mean hourly wages of both genders, it is also important to compare the distribution of hourly wages for men and women. Figure 1 displays a kernel density plot of the distribution of log wages by gender, which helps to visualize the extent of wage differences between genders across the entire distribution. To account for skewness in the wage distribution and sensitivity to outliers, the hourly earnings variable was log-linearized for robustness.

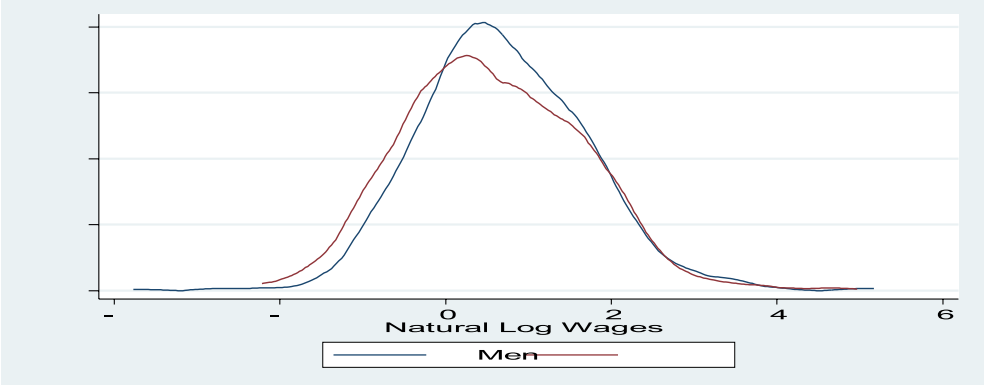

Figure 1. Kernel density plot of earnings distribution by gender
Source: Own Construction (2023) based on World Bank STEP survey data

Figure 1 shows that, for both the lower and middle quantiles of the wage distribution, men earn more than women. It is worth noting that the kernel density plot for women lies above that of men, suggesting that women have a higher density at lower earnings while men have a higher density at the middle of the wage distribution. However, at the upper end of the wage distribution, the difference in earnings between men and women is insignificant. This is evidence of the existence of a sticky

floor market phenomenon. Therefore, there is a gender wage gap across the wage distribution in the urban Kenyan labor market that favors men. However, the magnitude of the wage gap varies at different points along the wage distribution.

4.3. Mincer OLS regression results

Using Mincer's (1974) earnings function as the basis for estimating the earnings of both male and female employees in the sample, a basic Ordinary Least Squares (OLS) wage equation was estimated separately for men and women by employment sector. This study adopted the approach recommended by Lemieux (2006) and Moyser (2019), which involves using a log hourly earnings specification as the dependent variable. Table 3 presents the results of the OLS Mincer wage equation estimation, separately for men, women by employment sector, and pooled samples. The Mincer OLS regression and Heckman two-step results provide a better fit to the data because of the highly significant F statistics at all conventional levels. Additionally, the results of the Chow test (F-tests) show that the determinants of earnings differ across sectors for both men and women, indicating heterogeneity in the Kenyan labor market. This supports the findings by Kabubo-Mariara (2003). The R-squared values indicate moderate explanatory power for the models, with the models for both males and females in the private sector explaining 53% of the variation in log wages, and the models for males and females in the public sector explaining around 60% and 55% of the variation, respectively.

Being married (monogamous) was treated as the reference category in the Mincer estimation, and the results show that men in a polygamous marriage earn less than those in the monogamous union in both the public and private sector, however, in full sample, it's vice-versa. For the full sample in urban Kenya, married men (monogamous and polygamous) significantly earn more than their unmarried counterparts (Divorced, Separated and Cohabitation). One possible explanation from the literature is that employers perceive married employees to be more stable than unmarried employees. Being a widower significantly determines earnings in all sectors including a full sample while a widow earns more than their married counterpart in the private sector and a full sample but insignificant in the public sector. Being single (never married) significantly determines men's earnings in both sectors and the full sample, however, the effect is insignificant for women.

Table 3 Mincer OLS results

	Private sector		**Public sector**		**Full sample**	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**
lnwages_USD	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
Marital status						
Married_polyga	-.88** (-2.17)	-.024 (-0.06)	-2.241**(2.06)	.702(0.89)	1.113**(3.18)	.371 (1.01)

Co-habitation	.092 (0.39)	-.016 (-0.07)	.687 (1.08)	-1.319(-1.41)	.138 (0.62)	.056 (0.27)
Divorced	.058 (0.19)	-.048 (-0.19)			.072 (0.23)	-.039 (-0.16)
Separated	.141 (0.49)	-.218 (-1.35)	.227 (0.66)	-.606(-1.52)	.062 (0.30)	-.223 (-1.52)
Widowed/er	.504* (1.70)	-.479*** (-2.60)	.205 (0.33)	-.898(-1.49)	.471* (1.76)	-.496**(2.88)
Never married	.159** (2.08)	-.026 (-0.28)	.472** (2.63)	-.014(-0.05)	.19*** (2.67)	-.033 (-0.38)
Children	.304 (0.83)	.122 (0.40)	.23 (0.94)	-.43(-1.25)	.306 (0.86)	.123 (0.41)
children0	.37 (0.49)	.238 (0.36)	.111 (0.29)	-1.002* (1.99)	.342 (0.46)	.253 (0.39)
children1	.165 (0.41)	.377 (1.02)			.129 (0.33)	.412 (1.16)
Age	.055*** (2.86)	.042 (1.25)	.078 (1.18)	-.21** (-2.05)	.059***(3.25)	.016 (0.53)
age2	-.001** (-2.45)	0 (-0.62)	-.001 (-0.73)	.004** (2.51)	-.001**(2.70)	0 (0.23)
Occupation	-.197*** (-6.46)	-.136*** (-3.35)	-.258***(3.31)	-.267 (-1.68)	-.201**(7.14)	-.142**(3.66)
Employ_sector					.116 (1.46)	.379***(3.20)
firm1	-.573*** (-6.72)	-.78*** (-6.83)	-.475 (-0.64)	1.387 (1.55)	-.583**(7.09)	-.744**(6.79)
firm2	-.349*** (-5.89)	-.524*** (-5.79)	-.559***(2.73)	.401 (0.54)	-.348**(6.26)	-.494**(5.67)
Tenure	-.001(-1.33)	.003* (1.69)	.003 (0.77)	.001 (0.12)	-.001 (-1.06)	.003* (1.69)
tenure_squared	0*** (2.58)	0 (-1.47)	0 (-1.10)	0 (-0.92)	0** (2.11)	0* (-1.67)
economic_sector	-.036 (-1.19)	-.037(-0.67)	.039 (0.34)	-.093 (-0.53)	-.035 (-1.21)	-.036 (-0.68)
Hours	-.17*** (-16.27)	-.17*** (11.67)	-.118	-.065 (-1.05)	-.166**(16.76	-.163**(11.88
training_certif	.156* (1.81)	-.103 (-0.67)	.172	-.112(-0.37)	.157** (2.06)	-.093 (-0.70)
Education	.062*** (8.42)	.053*** (4.87)	.085	.115** (2.36)	.064***(9.08)	.057***(5.55)
Constant	.885	.817 (0.86)	-.282	4.821** (2.29)	.773 (0.90)	1.116 (1.24)
	R-square = 0.527	R-square = 0.529	R-square = 0.6	R-square = 0.55	R-square =	R-square =

	F-stat = 44.52, Prob>F = 0.000	F-stat= 23.85 Prob>F = 0.000	F-stat =7.18 Prob >F = 0.000	F-stat = 2.09 Prob>F = 0.031	0.56 F-stat = 56.82 Prob>F = 0.000	0.57 F-stat = 30.21 Prob>F = 0.000

Source: Own Computation (2023), *** p<.01, ** p<.05, * p<.1, t-statistics in brackets

Age has both linear and non-linear relationships with earnings for men and women. The positive coefficient for Age implies higher wages for older men/women than younger ones, *ceteris paribus*. Age squared has a negative impact on wages implying that wages increase at a decreasing rate with age. We draw the conclusion that there is evidence of an inverted U-shaped profile of wages as age increases, implying that as individuals get older (associated with experience), their wages increase up to a certain point, after which their wages start to decrease. These results support the findings by Kabubo-Mariara (2003). Occupation has a negative but significant coefficient for men in all sectors, indicating that individuals in certain occupations earn lower wages compared to those in other occupations, however, in the public sector, the type of occupation does not determine women's earnings, but the sector of employment significantly determines women's earnings in the full sample.

The size of the firm in terms of the number of workers, significantly determines the earnings for both men and women. The effect is more profound in women than men in the private sector and full sample. Tenure has a quadratic relationship with earnings for men but a linear relationship with women's earnings in the private sector and full sample. Average daily hours of work in the main occupation also inversely influences both men's and women's earnings. Holding an industry-recognized training certificate other than a formal education qualification significantly determines men's earnings in the private sector and full sample, indicating that men with a training certificate earn higher wages compared to those without a certificate. As anticipated, the results demonstrate that having higher levels of education is associated with higher wages, and these effects are significant, except for males in the public sector. The impact of education appears to be more pronounced for males than for females in the private sector and in the full sample, as evidenced by the larger coefficients. However, for female employees, the returns to education are higher in the public sector than in the private sector. Overall, on average, male workers in the full sample (urban Kenya) tend to have slightly higher returns to education compared to their female counterparts.

4.4. Heckman's two-step selection model

Table 4 presents the results after correcting for selection bias in the sample. Specifically, it's presumed that the exclusion restriction (number of children under

6 years) affects labor force participation but not directly affect the wages of both men and women in urban Kenya. It's argued that traditionally, women are assigned home labor; childbearing and social reproduction limiting their participation in the labor market. There may be unobserved factors that affect earnings differently for individuals who perform domestic work compared to those who do not, and this difference may also exist between men and women. If these unobserved factors are not accounted for in the analysis, it is likely to introduce bias into the results. Therefore, these unobserved determinants of earnings were controlled to obtain accurate and unbiased estimates of the effect of other variables on earnings. Not accounting for selection into wage employment when estimating the model would result in a significant underestimation of the gender wage gap. Hence, it's essential to control selection to prevent overestimating women's relative position in the labor market or misrepresenting the gender wage gap. The inverse of the Mill's ratio (λ) in the Heckman selection model which accounts for the selectivity effect, is insignificant across all sectors for sample selection in urban Kenya, implying that the model is not sensitive to selection bias. In other words, the number of children under 6 years in the household insignificantly determines selection or participation and earnings in the urban labor market in Kenya. These results are inconsistent with findings by Danquah et al., (2021). Since it was uncovered that there is no significant evidence of selectivity bias, the gender earnings gap can be decomposed using the Mincer OLS coefficients; if selectivity bias was detected, the observed distribution of wages would be inappropriate for analyzing wage disparities. Comparing the OLS and Heckman results, it's concluded that most of the signs and significance of variables are similar, drawing the same conclusions.

Table 4 Heckman selection model - two-step estimates

	Private sector	**Public sector**	**Full sample**
lnwages/ Labor force participation	**Coef.**	**Coef.**	**Coef.**
Marital status			
Married (polygamous)	-.136 (-0.32)	.732(0.66)	.281(0.78)
Co-habitation	-.06 (-0.27)	-1.007(-0.74)	.021(0.10)
Divorced	-.033 (-0.13)		-.03(-0.12)
Separated	-.227 (-1.47)	-.708(-1.27)	-.238*(-1.67)
Widowed/er	-.374** (-2.20)	-.772(-1.00)	-.4**(-2.49)
Never married	-.048 (-0.55)	-.043(-0.11)	-.058(-0.70)
Age	.056* (1.70)	-.165(-1.16)	.026(0.89)
age2	-.001(-1.13)	.003(1.55)	0(-0.16)
Occupation	-.141***(-3.65)	-.221(-1.00)	-.145***(-3.90)
Employment sector			.395***(3.41)
economic sector	-.034 (-0.63)	-.104(-0.40)	-.033(-0.65)

firm1	-.736***(-6.73)	1.214(0.95)	-.705***(-6.67)
firm2	-.511***(-5.86)	.215(0.20)	-.483***(-5.72)
Tenure	.003(1.54)	.002(0.33)	.002(1.51)
tenure squared	0(-1.35)	0(-1.02)	0(-1.51)
Hours	-.173*** (-12.42)	-.057(-0.62)	-.166***(-12.55)
training certificate	-.103(-0.69)	.045(0.11)	-.073(-0.56)
Education	.053***(5.03)	.116*(1.68)	.057***(5.70)
Constant	1.35* (1.93))	5.162(1.27)	1.714***(2.62)
Selection into labor force children under 6 years	.263(4.92)	.143(0.96)	.249(4.95)
Constant	-.485*** (-10.66)	-.469***(-3.77)	-.484***(-11.31)
Inverse Mill's ratio (λ)	-.298 (-1.05)	-1.791(-0.60)	-.335(-1.18)

Source: Own Computation (2023), *** p<.01, ** p<.05, * p<.1, t-statistics in brackets

4.5. Quantile Regression Results (QRM)

Several significant conclusions can be drawn from the results of the simultaneous quantile regression estimation's results (Table 5). First off, the binary gender variable is significant and has a negative impact on wages throughout the entire wage distribution. As a result, these outcomes align with the kernel density estimates that men often earn more than women across the wage distribution. However, at the highest income quartile, there is a significant reduction in the gender pay gap. The results contradict the findings of Siphambe and Thokweng-Bakwena (2001).

At the 25th quantile, women earn 88.6% (= exp (0.121) -1) of the men's earnings, while at the medium and upper quartiles, women earn 89.6% and 91.3% of the men's earnings, respectively. These results indicate that significant wage disparities persist in the urban Kenyan labor market, even after accounting for observable gender differences. The gender pay gap tends to narrow in the upper quartile but wider in the lower and middle segments of the wage distribution. This finding supports the existence of a "sticky floor" phenomenon in the urban Kenyan labor market, where women are disproportionately relegated to low-paying jobs with limited prospects for upward mobility. The persistence of the sticky floor underscores the presence of structural problems that must be addressed to achieve greater gender equality in the workforce.

With "married" as the reference category in the analysis, it was found that married men earn more than male employees with any other marital status, and this effect increases as we move up the wage distribution. However, for women, this effect is insignificant across the income spectrum, except for the pooled sample in the lower quartile. Marriage is often considered a sign of stability, discipline, and motivation in the labor market. As a result, employers may perceive married individuals as more dependable and committed employees, which could lead to higher earnings.

The impact of having children under the age of 6 years on men's earnings is only significant in the lower and medium quartiles, and the effect decreases as we move up the wage distribution. However, for women and the overall sample, this effect is insignificant aligning with Heckman selectivity results. It's worth noting that the lack of significance in the relationship between the number of children and earnings in urban Kenyan households may be attributable to various factors, including family support and labor market discrimination. In urban areas of Kenya, parents may receive assistance from family members or paid domestic workers in caring for their children, which may help them balance work and family responsibilities more effectively. This could potentially reduce the impact of having children on earnings. Additionally, discrimination against women or individuals with children may be a factor that is suppressing wages, overshadowing any effect that the number of children may have on earnings. This could be due to employer biases or social expectations about gender roles and caregiving. Furthermore, some employers in Kenya may offer benefits such as flexible work arrangements or parental leave, which could alleviate the negative impact of having children on earnings.

Table 5 Simultaneous QRM Log hourly earnings regression estimates for full sample by gender

	First Quartile			**Median**			**Third Quartile**		
	Men	**Women**	**Pooled**	**Men**	**Women**	**Pooled**	**Men**	**Women**	**Pooled**
lnwages_USD	Coef.	Coef.		Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
marital status	.027* (1.79)	.005 (0.27)	.023**	.028** (2.28)	.01(0.48)	.019	.038*** (3.29)	.01 (0.72)	.011
Children	.666** (2.09)	.17 (0.43)	.074	.454* (1.72)	-.029 (-0.10)	-.115	.204 (0.87)	-.32 (0.61)	.203
children0	.997 (1.47)	.462 (0.47)	-.028	.727 (1.17)	-.272 (-0.42)	-.352	.186 (0.34)	-.772 (0.68)	.284
children1	.438 (1.15)	.551 (0.96)	.047	.437 (1.26)	.021 (0.05)	-.08	.136 (0.43)	-.262 (0.41)	.205
Age	.064** (2.09)	.017 (0.40)	.066***	.046 (1.53)	.047 (1.42)	.046***	.071** (2.57)	.034 (0.66)	.059***
age2	-.001* (-1.86)	0 (0.01)	-.001*	0 (-1.19)	0 (-0.76)	0**	-.001** (-2.18)	0 (0.17)	-.001*
Occupation	-.176** (-5.39)	-.133** (-2.80)	-.174**	-.23** (-7.85)	-.151*** (-4.61)	-.188**	-.226** (-8.43)	-.227* (4.63)	-.235***
firm1	-.535** (-4.66)	-.872** (-8.50)	-.642*	-.621* (-5.29)	-.914*** (-7.82)	-.706***	-.669** (-6.08)	-.799* (4.67)	-.738**
firm2	-.355** (-4.97)	-.557** (-4.09)	-.402**	-.342** (-4.11)	-.706*** (-6.07)	-.426***	-.385** (-4.72)	-.48* (-2.57)	-.422*
Tenure	0 (-0.33)	.003 (1.08)	.001	0 (0.30)	.003*** (2.73)	.001	0 (0.10)	0 (0.01)	0

tenure squared	0 (1.09)	0 (-0.57)	0	0 (0.24)	0* (-1.94)	0	0 (0.24)	0 (0.25)	0
Tenure difference	-.052 (-0.91)	-.025 (-0.21)	-.033	-.037 (-0.67)	.04 (0.50)	-.018	-.153 (-1.47)	-.103 (0.70)	-.096
economic sector	-.042 (-1.47)	.008 (0.12)	-.054*	-.033 (-1.06)	-.006 (-0.09)	-.029	.02 (0.59)	-.022 (0.29)	-.025
Hours	-.164* (10.56)	-.14** (-8.80)	-.159**	-.182* (10.59)	-.167* (-9.62)	-.184***	-.165** (8.65)	-.175* (8.90)	-.17***
training certificate	.215* (1.87)	-.09 (-0.38)	.117	.203** (2.03)	-.105 (-0.55)	.153	.181* (1.65)	.151 (0.73)	.167**
education	.068** (4.89)	.048** (3.79)	.062**	.058** (5.97)	.055*** (4.45)	.059***	.053** (7.21)	.058*** (4.42)	.056***
Gender			-.121*			-.11*			-.091*
Constant	-.546 (-0.52)	.379 (0.35)	.44	.691 (0.87)	1.093 (1.28)	1.701***	1.236 (1.34)	2.856 (1.58)	1.543
Pseudo R2	0.328	0.323	0.322	0.345	0.364	0.344	0.356	0.349	0.348

Source: Own Computation (2023), *** p<.01, ** p<.05, * p<.1, t-statistics in brackets. Bootstrapped standard errors.

The returns on education, as measured by earnings, have a significant influence on income for both men and women across all wage levels. However, the effect is more pronounced for women, as the returns to education rise for females but decrease for males across the income distribution. This trend can be explained by a "catching up" effect stemming from greater gender equality in access to schooling and training, which enables women to build up their human capital and earning potential to a greater degree. Additionally, as women increasingly enter growing sectors and industries in the Kenyan economy, driven by shifts in consumer demand and technological changes, they can command higher wages in these expanding job markets. The combined forces of more equitable educational opportunities and structural economic changes benefiting female-dominated fields are leading to higher economic returns for women's education and training.

The number of daily work hours in an individual's primary occupation has a negative correlation with earnings for both men and women and the pooled sample, across the wage distribution. The finding that longer work hours are linked to lower pay in urban Kenya aligns with Mincer and Heckman's estimations. One argument is that people who are willing to work longer hours might accept jobs with lower hourly pay but more total hours (because of the high unemployment rate), driving down their overall earnings. Furthermore, certain industries and occupations where long work hours are the norm, such as service sector or manufacturing jobs, tend to offer lower wage rates. The concentration of workers in these lower-paying jobs requiring extensive hours further contributes to the inverse link between hours worked and

earnings. Thus, the structural dynamics of the urban labor market in Kenya link longer daily work hours with lower compensation, explaining the observed adverse correlation throughout the income distribution.

The results of the pooled sample align with previous findings that age has both a linear and non-linear relationship with earnings across all income levels. Having an industry-recognized training certificate impacts men's wages, with the largest effect (0.215) in the lowest income quartile. Occupation is associated with lower pay for both genders across the wage distribution. Additionally, firm size, as measured by number of employees, has an increasingly negative drag on earnings for men and women at higher quantiles of the income spectrum. To sum up, age and vocational credentials confer earnings benefits for men, while occupational category and larger firm size correlate with lower wages for both males and females across the wage distribution.

4.6. Oaxaca-Blinder Decomposition

An aggregate decomposition analysis was performed using gender-specific Mincer earnings equations for the full urban Kenyan sample. The marital status variable was aggregated because the decomposition method requires a non-zero coefficient variance, which small samples with missing categorical data cannot provide. The study corrected for sample selectivity bias using the number of children under 6 years old in the household as an exclusion restriction. However, the inverse Mills ratios were generally insignificant in the Heckman models. Hence, the decomposition results were based on the uncorrected OLS estimates because the earnings equations from the Heckman estimation were not sensitive to sample selection bias.

The analysis shows there is an approximately 14.1% (= exp (0.132) -1) wage gap in Kenya's urban labor market (Table 6). The Oaxaca decomposition output first presents the mean predicted wages for men and women, with the difference between them representing the raw wage gap. In the sample, men have a mean predicted log wage of 0.705 while women's is 0.573, resulting in a 0.132 log wage gap. The decomposition then splits the gap into three components. The first is the 2% increase in women's wages if they had equal human capital endowments as men. The second is the 13.3% (= exp (0.125) -1) increase in women's wages when applying male coefficients to female human capital endowments. This signifies almost the entire wage gap stems from differences in returns to characteristics (13.3%), driving gender discrimination against women in the urban labor market in Kenya. The third component captures the joint endowment and coefficient difference effects.

Table 6: Oaxaca-Blinder decomposition using OLS regression earnings function

	Log Value	% Contribution
Mean of log male hourly earnings	0.705	
Mean of log female hourly earning	0.573	

Gender earnings gap	0.132	100
Using the male wage structure		
Differences due to endowments	0.020	15.2
Differences due to returns	0.125	94.7
Interaction	-0.013	-9.9
Using a female wage structure		
Differences due to endowments	0.007	5.3
Differences due to returns	0.112	84.5
Interaction	0.013	9.9

Source: Own Computation (2023)

The aggregate decomposition results without Heckman selection correction are presented in Table 5. In Kenya, the unadjusted average log hourly earnings are higher for men than women. Men earn 14.1% (= exp (0.132) -1) more than women in urban Kenya. This gender wage gap is largely attributable to differences in returns, which account for 84.5% -to 94.7% of the total earnings gap. Regardless of whether discrimination against women or favoritism toward men is assumed (using male or female wage structure), most of the gender earnings gap in urban Kenya is explained by the unexplained portion of the decomposition. In fact, women have more favorable characteristics, and the gap would widen by 5.3%-to-15.2% if men and women had identical endowment characteristics.

Table 7 shows that differences in household productivity and work-related characteristics between genders contribute to the earnings gap, based on the interpretation of consistent results from male and female earning structures. First, the gender gap would decrease by 24.3-28.8% in urban Kenya if men and women had equal education levels, as this is a productivity-related characteristic. Second, the gap would reduce by 19-23.5% if men and women had the same occupational distribution. Third, in urban Kenya, the gender difference in work hours widens the earnings gap. Fourth, the gap would shrink if men and women had similar firm size distribution, as firm size impacts earnings. Therefore, gender differences in productivity traits like education, as well as work attributes like occupation, hours, and firm size account for a notable portion of the explained earnings gap in urban Kenya.

The results of this study are consistent with previous research on the gender earnings gap in other African countries. Previous studies have found that women typically earn significantly less than men and that differences in factors such as education and experience between men and women only account for a small portion of the gender gap (Kabubo-Mariara, 2003; Kim, 2020). The gender earnings gap (14.1%) for hourly wages in the urban labor market in Kenya is similar to findings in other African countries such as Malawi (Kim, 2020), Zambia (Nielsen, 2000), and seven

West African capital cities (Nordman et al., 2011). The study also found that between 84.5% and 94.7% of the total gender earnings gap in Kenya was due to differences in returns, which is consistent with findings of 62.8% to 77.8% in Madagascar (Nordman & Roubaud, 2009), 41% to 68% in Uganda (Kagundo & Pavlova, 2007), and 58.8% or more in South Africa (Bhorat & Goga, 2013). The findings of this study partially align with those of Kolev and Robles (2010) that differences in educational attributes between males and females accounted for a substantial portion of the wage disparity in Ethiopian labor markets.

Table 7 Detailed Oaxaca-Blinder decomposition using OLS regression earnings function

	Using a male wage structure		**Using a female wage structure**	
Difference due to characteristics	**0.020**	**% Contribution (15.2%)**	**0.007**	**% Contribution (5.3%)**
Marital status	-0.010	-7.6	-0.030**	-22.7
Children	-0.018	-13.7	-0.057	-43.2
children0	0.028	21.3	0.047	35.6
children1	-0.045	-34.2	-0.013	-9.8
Age	0.058	44.1	0.108**	81.8
age2	-0.024	-18.2	-0.088**	-66.6
Occupation	0.025**	19	0.031**	23.5
Employment sector	0.003	2.3	0.001	0.8
firm1	0.085***	64.6	0.065***	49.2
firm2	-0.012	-9.1	-0.008	-6.1
Tenure	0.016	12.2	-0.007	-5.3
tenure_squared	-0.014	-10.6	0.011	8.3
tenure_dif	-0.000		0.004	3.0
economic_sector	0.008	6.1	0.011	8.3
Hours	0.110***	83.6	-0.111***	-8.3
training_certif	-0.002	-1.5	0.006	4.5
Education	0.032**	24.3	0.038**	28.8
Difference due to returns	**0.125**	**94.7**	**0.112**	**84.5**

Source: Own Computation (2023). Notes: Decomposition results are provided in proportions relative to the total earnings gap. *** p<.01, ** p<.05, * p<.1, t-statistics in brackets. Bootstrapped standard errors.

4.7. Neumark wage decomposition Results

The OLS regression estimates from the prior wage equations were then utilized to carry out the decomposition methods put forth by Neumark (1988). This allows us

to evaluate gender wage disparities by applying a non-discriminatory wage structure. Table 8 presents the results.

Table 8 Neumark wage decomposition (using weighted wage structure)

	Log Value	% Contribution
Mean of log male wages	0.701	
Mean of log female wages	0.557	
Wage gap	0.144	100
Explained/due to human characteristics $\sum\beta^{*}(Xm - Xf)$ Contribution of marital status Contribution of children Contribution of Age Contribution of Occupation Contribution of employment sector Contribution of tenure Contribution of economic sector Contribution of Hours of Work Contribution of training certificate Contribution of education	0.043 -0.014 0.001 0.103 0.037 0.002 -0.004 0.018 -0.108 0.004 0.039	30
Unexplained/Deviation of male returns $\sum Xm(\hat{\beta}_m - \beta^{*})$	0.037	26
Unexplained/Deviation of female returns $\sum \bar{X}_f(\beta^{*} - \hat{\beta}_f)$	0.064	44

Source: Author's Computation (2023)

Using a non-discriminatory wage structure, the analysis shows a gender wage gap of 15.5%, meaning women earn 84.5% of what men earn on average. These results are similar to the earlier Oaxaca-Blinder decomposition analysis. The non-discriminatory analysis finds that 30% of the wage gap can be explained by differences in human capital endowments between men and women. In comparison, the Oaxaca analysis found that 15.2% and 5.3% of the gap was explained when using male and female wage structures, respectively. Moreover, the non-discriminatory analysis suggests that 70% (26+44) of the wage gap is unexplained and potentially due to discrimination or other unobserved factors. This compares to 94.7% and 84.5% unexplained when using the male and female wage structures in the Oaxaca decomposition. The contribution of education to the explained wage gap is positive in both analyses; implying men receive premiums for education while women are disadvantaged. Thus, the results from both methods point to a significant unexplained gender wage gap that potentially stems from discrimination and favoritism towards men.

Relatedly, looking at the work-related characteristics, occupation (0.037), sector of employment (0.002), and economic sector (0.018) contribute positively to explaining the wage gap, while hours worked (-0.108) and tenure (-0.004) widen the gap. The analysis found that the deviation of female returns from the pooled wage structure is more significant than the deviation of male returns. This implies that discrimination against women is more pronounced than favoritism towards men. Specifically, the extent to which women's characteristics are undervalued and lead to a disadvantage is more important than any overvaluation of men's characteristics that gives them an advantage. Thus, the unfavorable treatment and bias against women in how their characteristics are valued seem to be the bigger factor driving the unexplained gender wage gap. However, there is still evidence of some nepotism towards men in the urban Kenyan labor market. These findings are partially in line with previous research by Kabubo-Mariara (2003).

To sum up, while the findings suggest that men may receive preferential treatment and women may face discrimination in terms of wages, it's cautioned against drawing strong conclusions about the presence or absence of discrimination. This is because the results are sensitive to the choice of personal characteristics used for comparison, such as different categories of education. Additionally, the methodology does not account for the possibility of individuals having multiple jobs simultaneously, making it difficult to incorporate job classifications and account for wage discrimination within occupations. Furthermore, the study did not extend the analysis to differentiate between the wage gap attributed to occupational differences and the unexplained wage gap. Lastly, the differences in the contribution of other factors, including the constant term, may capture premiums associated with specific occupations that predominantly benefit men due to the gender distribution across occupations. Given these limitations, it is important to approach the results with caution and consider that various factors beyond discrimination may contribute to observed wage disparities.

5. Conclusions and Policy Recommendations

5.1. Conclusions

This study aimed to investigate the extent to which the gender wage gap exists across the wage distribution in Kenya's urban labor market and what its implications are. It also sought to determine whether there is evidence of wage discrimination against women in this labor market and to identify the factors that affect earnings for both men and women. In addition, the study employed various statistical techniques, including Mincer OLS, kernel density plots, Heckman two-step, and quantile regression, to answer the research questions. To decompose the gender gap in Kenya's job market, the analysis utilized the uncorrected Mincer OLS results,

following the approaches of Oaxaca and Blinder (1973) and Neurmark (1988) procedure.

The wage determination results implied no significant issue of self-selectivity in the sample. Factors such as marriage, education, and age are positively associated with higher earnings for both men and women. Specifically, we observed an inverted U-shaped profile of wages as age increases. The impact of education on earnings appears to be more significant for males than for females, particularly in the private sector and the full sample. Regarding occupation, it was found that it significantly determines men's earnings across all sectors. However, in the public sector, the type of occupation does not significantly influence women's earnings; instead, the sector of employment (public vs private) has a significant impact on their earnings in the full sample. The analysis revealed that at the lower and middle quantiles of the wage distribution, men earn more than women. However, at the upper end of the wage distribution, the difference in gender earnings is insignificant. This indicates the presence of a "sticky floor" in Kenya's urban labor market, where women are disproportionately confined to low-paying jobs. The persistence of this sticky floor suggests that there are structural issues that need to be addressed to promote greater gender equality in the workforce. These may include disparities in education and training opportunities, biases in hiring and promotion practices, and other systemic factors that contribute to the concentration of women in low-wage occupations.

The results for gender gap decomposition using the Oaxaca method indicate that there is no difference between the characteristics and returns components of the male and female wage structures. This suggests that the Oaxaca method does not suffer from the index number problem. The aggregate decomposition results without Heckman selection correction show that the unadjusted average log hourly earnings are higher for men than women in urban Kenya, with men earning 14.1% more than women. It was found that differences in returns account for the majority (between 84.5% and 94.7%) of the total earnings gap in urban Kenya. Regardless of whether we assume discrimination against women or favoritism toward men (using either the male or female wage structure), most of the gender earnings gap in urban Kenya is explained by the unexplained portion of the decomposition. In fact, women have more favorable characteristics, and the earnings gap would widen by 5.3% to 15.2% if men and women had identical endowment characteristics.

The Neumark decomposition shows a 15.5% gender wage gap, with women earning 84.5% of men's wages on average. 30% of this gap can be explained by differences in qualifications and human capital. However, 70% of the gap remains unexplained and potentially due to discrimination or other unobserved factors. The deviation in returns for women from the pooled wage structure is more significant than for men. This suggests discrimination against women is more pronounced than favoritism towards men. Specifically, the undervaluation of women's characteristics leading to

disadvantage is a bigger issue than any overvaluation of men's characteristics. Thus, unfavorable treatment and bias against women in how their characteristics are valued appear to be the primary driver of the unexplained gender wage gap, though some nepotism towards men is still evident in the urban Kenyan labor market.

To conclude, the findings suggest that there are significant differences in the factors contributing to the gender wage gap in urban Kenya. While we found evidence of discrimination against women in the returns to endowments, pronounced favoritism towards men was equally observed. Therefore, addressing the gender wage gap in Kenya requires a multifaceted approach that addresses both systemic biases against women and structural barriers that prevent women from achieving equal access to education, training, and career opportunities. By identifying the specific factors contributing to the gender wage gap, the results provide important insights that can inform policy efforts aimed at promoting greater equity and opportunity in the Kenyan labor market.

5.2. Policy recommendations

The preliminary findings of the study suggest that discrimination against women is the primary cause of the gender wage gap in urban Kenya. This discrimination can take various forms, including unequal pay, limited access to promotions, and job opportunities. To address this issue, it is necessary to prioritize gender education parity and encourage women to pursue occupations and industries that require technical skills and offer higher earnings. To achieve this, there is a need to provide more opportunities for girls to access education and encourage them to major in competitive fields such as science and technology, which tend to have higher-paying jobs. However, the impact of such efforts would be limited without a concerted effort to remove any barriers for women in households and workplaces. Furthermore, policies that encourage women's participation in non-traditional occupations, such as construction, engineering, and manufacturing, could also help to reduce the gender wage gap. Such policies could involve providing training and support to women in these fields, promoting gender diversity in hiring, and creating workplaces that are more inclusive and supportive of women's career development.

In addition, there is still a need for deliberate government efforts to implement policies that minimize employer preferences or favoritism towards men. One situation that is not often addressed in the literature is the preference towards men, particularly in the private sector, due to the perceived lower productivity of women in the childbearing age. To address this issue, the government could provide incentives to firms to employ more women and introduce measures that compel firms to make special provisions for women with maternal and child-rearing responsibilities.

5.3. Suggestion for further research

The presence of an unexplained gender wage gap suggests the existence of social or cultural barriers against women that are not captured by individual characteristics or workplace factors. Therefore, it is important to consider other potential factors, such as institutional factors, occupations, industries, and sociocultural norms. To better understand the factors contributing to the gender wage gap in Kenya, it's necessary to extend the wage decomposition analysis to distinguish between the occupational wage gap and the unexplained wage gap while accounting for the endogeneity problem. This could be an area for further research.

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APPENDIX I

Table 10 Variable Definitions

Variable	Definitions
Gender	Gender of the household (0 = male, 1 =Female)
Marital status	Household marital status (1 = married; monogamy, 2 = married; polygamy, 3 = co-habitation, 4 = divorced, 5 = separated, 6 = widowed, 7 = never married)
Children	Number of children under 6 years old
Children0	No children under 6 years old in the hh
Children1	One child under 6 years old in the hh
Children2	2 children under 6 years old in the hh
Age	Age of hh member
Age2	Age squared
Occupation	Type of occupation (STEP aggregation 1 =low-skilled white collar, 2 = High skilled white collar/managers, 3 = Crafts and related trades work, 4 = elementary occupations, 5 = skilled agriculture)
Employment sector	Public or private employee (1 = public, 0 = private)
Firm1	Firm with 1 worker (0 = no, 1 = yes)
Firm2	Firm with 2 to 15 workers (0 = no, 1 = yes)
Firm3	Firm with 16 or more workers (0 = no, 1 = yes)
Tenure	Number of months in current job
Tenure_squared	Tenure squared
Tenure-diff	Difference between tenure and time required to do the job well
Economic sector	Sector of economy employed (1 = agriculture, fishery, and mining, 2 = manufacturing & construction, 3 = commerce, 4 = other services)
Hours	The average number of hours worked daily in the main occupation
Lnwages_USD	Natural logarithm of hourly earnings in dollars
Training_certificate	An industry-recognized or government certificate is needed on the job but not from a formal education/institution
Education	Years of education completed
Region	Place of residence (0 = rural, 1 = urban)

Source: Own construction based on STEP World Bank Survey data (2023)