



Does Primary Education Generate Returns in Kenya? Evidence from a Mincerian Earnings Model

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Abstract: *This study investigates the conditional wage association accruing from primary educational attainment in Kenya using the Mincerian earnings framework and cross-sectional data from the 2022 Kenya Continuous Household Survey. We examine the relationship between an extra year of primary education and an individual's gross monthly wages and salary while accounting for labour market experience and observable individual-level worker characteristics. The findings suggest that primary education yields insignificant returns of 0.08%. However, spatial, gendered, and age-related returns exist in the labor market. Specifically, returns to experience are concave, with an extra year of age associated with a 0.74% increase in wages, while male workers earn 69.24% compared to their female counterparts. The findings also point to rural wage penalty implying that the labour market value of primary education is driven by spatial differences. Accordingly, improving the quality and labour market relevance of primary education remains a priority, while spatial and gendered policies in earnings must be continuously addressed.*

Key words. *Mincerian Returns, Primary Education; Human Capital, Labour market, and Wage Earnings.*

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1. Introduction

Investment in education is considered a resource-intensive venture with implications for individual earnings, national productivity, and broader social returns (Psacharopoulos, 1981; Card, 1999; Sianesi & Van Reenen, 2003; Harmon et al., 2003). These benefits are observed in low- and middle-income nations, where governments and households spend huge resources on schooling. Globally, international financing frameworks recommend that nations allocate at least 4–6% of their gross domestic product (GDP) and 15–20% of public expenditure to education (UNESCO, 2015; Contreras et al., 2026). At the

household level, substantial private costs are incurred in the form of fees, uniform, transport, and other expenses to augment insufficient government spending on education (Mehrotra & DelaMonica, 1998; Acerenza & Gandelman, 2017; Wei, 2024).

In Kenya, education holds a fundamental position in the national development policy, with its financing consuming the largest share of the national budget in many periods (Mukudi, 2004; Otieno & Colclough, 2009). The justification for this investment is largely a constitutional commitment, and an economic rationale that education improves labour market outcomes of an individual (Van Kippersluis et al., 2011; Psacharopoulos & Patrinos, 2018).

Theoretically, these benefits are dual in nature: monetary returns such as improved lifetime earnings, improved employment opportunities, and greater market productivity, and non-monetary returns such as improved social cohesion, civic participation, and overall social well-being (Oreopoulos & Salvanes, 2011; Sohn, 2013; Psacharopoulos & Patrinos, 2018b).

The economic literature on returns to education is commonly associated with the Mincerian earning statistical model. Through this model, earlier global studies by George Psacharopoulos suggested that primary education exhibited relatively higher returns to education in developing countries as compared to other levels of education (Psacharopoulos, 1994). From an economic perspective, this assertion implied that primary education represented the most viable and profitable public investment in human capital (Psacharopoulos, 1972). This finding contributed to the prioritization of basic education by the World Bank and other development aid agencies through initiatives such as Education for All (EFA) and the Millennium Development Goals (MDG). Notably, during the 1963 to mid-2005 period, the World Bank committed about US\$14 billion to primary education, with the share of lending increasing from 26% to 54% in the poorest countries (Boissiere, 2004).

More recent evidence, however, indicates that the concave returns pattern to educational attainment has been reversed. In some countries, returns accruing as a function of secondary and tertiary education have now exceeded those at primary education (Psacharopoulos & Patrinos, 2018c; Montenegro & Patrinos, 2021; Koch et al., 2025). These changes may reflect differences in labor market polarization, economic structure of a nation, quantity and quality of schooling, social capital variables, and educational expansion of a nation (Mincer, 1974; Hanushek & Woessmann, 2008; Montenegro & Patrinos, 2021b; Pensiero & Barone, 2023; Woessmann, 2025). Among these factors, an individual's education credentials has been found to constitute an important determinant of an individual wage outcome in the labour market in many nations (Jaeger & Page, 1996; Ashenfelter et al., 1999; Clark & Martorell, 2014; Barrow & Malamud, 2015).

The Kenyan context suggests that Mincerian private returns are largely driven by the highest grade obtained by an individual, but this relationship varies across regions, gender, segments of employment, and other labour market dimensions (Bennell, 1996; Appleton, 1999; Manda et al., 2004; Kimenyi & Manda, 2006; Söderbom et al., 2006; Shimada et al., 2016; Sirak et al., 2022). However, much of the available evidence is based on old data, focuses on broad educational categories, and does not isolate the private rate return accruing as a function of a single year of primary educational attainment in Kenya.

Evidence on Mincerian private returns to education remains comparatively limited and fragmented in sub-Saharan Africa, despite the region's historically high estimated returns to education (Montenegro & Patrinos, 2021c). Thus, updated country-level Mincerian returns accruing as a function of primary educational attainment in Kenya are needed to establish whether primary education continues to be associated with measurable wage gains in the contemporary labour market. This study provides an updated economic relevance of returns to primary education in Kenya.

The remainder of the paper is structured as follows. Section 2 provides a brief literature review on returns to primary education. Section 3 describes the research design, data source, sample, and methods of data analysis. Section 4 presents the findings. Section 5 discusses the results and concludes. Section 6 offers policy recommendations.

2. Literature Review

2.1 Theoretical Underpinning

Literature on returns to education stems from human capital theory, which conceptualizes education and experience as investments that enhance an individual's productivity and consequently their earnings in the labour market (Becker, 1994; Weiss, 2015).

2.2 Empirical Literature

The empirical relationship between education and experience is examined by the Mincerian Earning Framework (MEF) (Heckman et al., 2006). In this framework, an individual logarithmic income is modelled as a function of years of schooling, labour market experience and experience squared as shown below.

$$\text{Log}(In) = \alpha + \beta_1 \text{EDU} + \beta_2 \text{EXP} + \beta_3 \text{EXP}^2 + \varepsilon \quad (1)$$

wherein represents measures of income such as annually, monthly, weekly, or hourly, α represents a constant term for individuals with no schooling, β_1 represents the regression coefficient for educational attainment measured in the number of years of completed education, β_2 and β_3 are coefficients for experience and experience squared, respectively. These estimates capture the number of years an individual has been in employment and their post-schooling accumulation of human capital through on-the-job training and firm-specific training (Lemieux, 2006). ε represents a matrix of covariate variables that influence an individual's earnings in the labour market apart from educational attainment (Kerridge, 1967).

The Mincerian model has become one of the most influential frameworks for estimating private returns to education across countries and labour markets (Heckman

et al., 2003). A large body of studies indicates that education is positively associated with improved earnings, although the size of the earnings premium depends on the level of education, gender, field of study, country, and characteristics of the labour market (Psacharopoulos, 1972b; Wu & Xie, 2003; Psacharopoulos & Patrinos, 2004; Seehuus & Strømme, 2024).

Historical global evidence shows that primary education is associated with relatively high but heterogeneous returns (Psacharopoulos, 1985). Most studies allude that this return was shaped by the supply of primary-educated workers, demand for labour with foundational skills, and the economic structure of a nation (Knight et al., 1992; Psacharopoulos, 1994b). Over time, differences in economic structure, school quality, sectoral wage setting, labor supply, urbanization, and mean years of schooling of a country have decayed the return to primary education (Psacharopoulos & Patrinos, 2002; Montenegro & Patrinos, 2013; Barouni & Broecke, 2014; Jones et al., 2023). In some settings, gendered returns to primary education have been found with male workers associated with a higher earning premium relative to female workers (Baye et al., 2016; Samahiya & Wirba, 2023; Tikouk & Bahida, 2025). Other studies have found spatial returns to education (Goetz & Rupasingha, 2004; Backman, 2014).

Kenyan evidence has found that returns to primary education accrue predominantly as a function of grade of educational attainment, labor market experience, alongside other salient demographic and labor market conditions such as gender, age, place of residence, occupational status, and access to education (Schultz, 2004; Kimenyi et al., 2006; Söderbom et al., 2006b; Oledibe, 2024). The global average return to education is approximately 10%, with sub-Saharan Africa exhibiting the highest returns of 18% (Psacharopoulos & Patrinos, 2018d).

3. Methodology

3.1 Design

This study adopts a quantitative, cross-sectional research design grounded in the Mincerian earnings framework. The design is appropriate for estimating the conditional association between an extra year of primary educational attainment and gross monthly wages and salaries while controlling for labour market experience and other observable individual characteristics. Because the data are observed at a single point in time, the estimates are interpreted as conditional wage associations rather than causal effects.

3.2 Data Source

The analysis uses publicly available microdata from the 2022 Kenya Continuous Household Survey (KCHS), collected by the Kenya National Bureau of Statistics (KNBS). The dataset can be accessed from the Kenya National Bureau of Statistics at <https://statistics.knbs.or.ke/nada/index.php/catalog>. The human capital variable is constructed from variable c08, which captures a respondent's highest level of schooling through the question "What is the highest Std/Form/Grade completed by [NAME]". The outcome variable is gross monthly cash income from wages and salary, derived from d40_gross, which captured respondents' total monthly income through the question "How much was [NAME]'s payment for wages and total earnings in the last one month".

3.3 Sample Size and Sampling

The 2022 KCHS provides a nationally representative household sample. The gender-disaggregated analytical sample comprises 33,639 individuals (males 49.15%; females 50.85%). Of these, 76.83% resided in rural areas and 23.17% in urban areas. Logarithmic gross monthly wages and salaries are observed for 2,494 individuals who reported positive wage employment. Labour market experience is available for 11,063 individuals. The sample is restricted to individuals with primary-level educational attainment (including pre-primary and Adult Basic Education), with single years of primary schooling ranging from 1 to 11 years.

To measure schooling incrementally, variable c08 is disaggregated into a 24-ordered schooling incremental variable (c08a). A further variable, c08b, is constructed to represent single years of primary education attainment. The coding assigns 1 year of schooling to Baby Class/Kindergarten 1, 2 years to Nursery/Kindergarten 2, 3 years to Pre-unit/Kindergarten 3, and 4 years to Standard/Grade 1. Subsequently, 5 through 11 years of schooling are assigned to Standard/Grade 2 through Standard/Grade 8 and Adult Basic Education, respectively. Adult Basic Education is classified within the primary education system because it provides foundational literacy and numeracy competencies comparable to those acquired during the primary schooling cycle (Kenya Institute of Curriculum Development [KICD], 2019). Pre-primary education is integrated into the educational mapping for conceptual and empirical reasons: early years of schooling provide foundational skills that support progression through primary education; excluding them would treat early learning as having zero relevance for later productivity; and pre-primary qualifications are not independent minimum requirements for occupations in Kenya.

Earnings are right skewed; therefore, the natural logarithm of gross monthly income is used, and zero earnings are

recoded to Kenyan Shillings (KES) 100. Two relatively higher gross monthly earnings of KES 750,000 and KES 3,002,464 are retained because excluding them could understate the earning premium associated with higher education. Sex is derived from b04 (male as the binary indicator). Place of residence is derived from resid and coded as ruralwork (1 = rural, 0 = urban). Work experience is calculated as 2022 minus the year an individual started employment; extreme values are capped at 74 years for judges and university lecturers and 60 years for other occupations. Age is included in capturing the marginal return associated with age.

3.4 Methods of Data Analysis

The empirical model extends the basic Mincer earnings equation by incorporating demographic and spatial individual characteristics:

$$\log(Wage_{ij}) = \beta_0 + \beta_1 Primary_{ij} + \beta_2 EXP_{ij} + \beta_3 EXP^2_{ij} + \beta_4 AGE_{ij} + \beta_5 Male_{ij} + \beta_6 Rural_{ij} + \varepsilon_{ij} \quad (2)$$

where $\log(Wage_{ij})$ denotes the logarithmic value of individual j 's earnings in month i ; β_0 represents the earnings of an individual with no formal education; β_1 is the coefficient of interest measuring the private return associated with a single year of primary education, holding other factors constant; EXP and EXP^2 capture experience and its square; AGE is age in years; $Male$ is a binary indicator for male gender; $Rural$ is a binary indicator for rural place of work; and ε_{ij} is the stochastic error term.

The rate of return to an extra year of primary education is computed as:

$$r_1 (Primary \text{ level of education}) = (e^{\beta_1} - 1) \quad (3)$$

Analysis proceeds in three stages. First, univariate (descriptive) statistics summarise the distribution of all model covariates. Second, bivariate (pairwise correlation) analysis examines unconditional associations among

covariates. Third, multivariate ordinary least squares (OLS) regression estimates the extended Mincerian model. Post-estimation diagnostics include the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, the Ramsey RESET test for omitted-variable bias, Variance Inflation Factor (VIF) diagnostics for multicollinearity, and a Wald test of the hypothesis that the coefficient on primary schooling is zero.

4. Results and Discussion

4.1 Univariate Statistics

Out of the 33639 gender-disaggregated sample, males accounted for 49.15%, with females at 50.85%, suggesting a fairly balanced representation (see Table 1). The sample is predominantly rural, with 76.86% of respondents drawn from rural areas and 23.17% from urban areas. Considering educational attainment, individuals on average are associated with approximately 8 years of schooling. The observed primary educational attainment values range from 1 to 11 years of schooling

The logarithmic gross monthly wages and salaries is observed for 2494 individuals. Their mean monthly mean income is 7.91, with a minimum of 4.61 and a maximum of 12.21 logarithmic values. Among 11063 sampled individuals with available labour market experience, respondents on average have about 12 years of work experience, with values ranging from 0 to 74 years. The mean of experience in years squared is 289.52, with a range of 0 to 5476 years. The mean age for individuals with primary education attainment in Kenya is approximately 23 years. In this subgroup, the reported ages range from 3 years to 103 years. The lower age values reflect the inclusion of individuals with pre-primary or kindergarten educational attainment, whereas the upper value implies the presence of exceptionally long-lived individuals with primary educational attainment in the Kenyan labor market.

Table 1: Descriptive Statistics of Model Covariates

Nominal Scaled Variables						
Variable		Freq.		%		Cum.
Female		17,104		50.85		50.85
Male		16,535		49.15		100.00
	Total	33,639		100.00		
Urban		7,795		23.17		23.17
Rural		25,844		76.83		100.00
	Total	33,639		100.00		
Continuous Variables						
Variable	Variable label	N	Mean	Std.Dev	Min	Max
c08b	c08b single years of primary education attainment	33639	7.62	3.10	1	11
d40_loggross	d40_loggross log of gross income	2494	7.91	1.54	4.61	12.21
d26_yrsexp	d26_yrsexp work experience in years	11063	12.06	12.38	0	74
d26_yrsexp2	d26_yrsexp2 work experience in yrs squared	11063	298.52	541.15	0	5476
b05_years	b05_years Age in years	33639	23.17	18.62	3	103

Note : Min = Minimum; Max=Maximum; Std. Dev.= Standard Deviation; Cum.= Cumulative Frequency; Freq.=Frequency.

4.2 Bivariate Statistics

Table 2 shows pairwise relationships between model covariates which describe the plausible associations. The correlation between primary educational attainment and gross monthly earnings is positive but statistically insignificant ($r = 0.03$, $p > .05$). This unconditional bivariate relationship provides preliminary evidence that a single year of primary schooling is not strongly associated with income in the Kenyan labour market. In contrast, other model covariates indicate positive statistically significant correlations with gross monthly wages and salaries for individuals with primary educational attainment in Kenya. Specifically, years of work experience ($r = .10$, $p < .05$), work experience in years squared ($r = .05$, $p < .05$), age in years ($r = .09$, $p < .05$), and male individuals ($r = .08$, $p < .05$) were all positively correlated with the log of gross monthly income.

The correlation between rural place of residence and male sampled individuals is statistically insignificant ($r = .01$, $p > .05$), implying that within the sample, gender does not systematically influence the residence of an individual with primary educational attainment in Kenya. Primary educational attainment is negatively correlated with work experience in years ($r = -.07$, $p < .05$), work experience in years squared ($r = -.11$, $p < .05$), and male sampled individuals ($r = -.02$, $p < .05$). This pattern may suggest that individuals with more years of primary schooling enter the labour market later and consequently report less work experience. There is a positive statistically significant correlation between a single year of primary educational attainment and age in years ($r = .51$, $p < .05$), suggesting that older individuals tend to have more years of primary education. The correlation between primary education and rural place of residence is positive and statistically significant ($r = .02$, $p < .05$), suggesting little substantive relationship between the two variables. Overall, the bivariate results demonstrate a weak unconditional relationship among a number of model covariates.

Table 2 Pairwise Associations of Model Covariates

controlling for years of primary school educational attainment, experience, age, sex, and rural place of work.

Variable	Variable Name	1	2	3	4	5	6	7
d40_loggross	1.d40_loggross log of gross income	1.00						
c08b	2.c08b single years of primary education attainment	0.03 0.18	1.00					
d26_yrsexp	3.d26_yrsexp work experience in years	0.10* 0.00	-0.07* 0.00	1.00				
d26_yrsexp2	4.d26_yrsexp2 work experience in yrs squared	0.05* 0.00	-0.11* 0.00	0.93* 0.00	1.00			
b05_years	5.b05_years Age in years	0.09* 0.00	0.51* 0.00	0.61* 0.00	0.55* 0.00	1.00		
b04male	6.1=male	0.08* 0.00	-0.02* 0.00	-0.07* 0.00	-0.07* 0.00	-0.02* 0.00	1.00	
ruralwork	7. Rural place of residence	-0.23* 0.00	0.02* 0.00	0.20* 0.00	0.17* 0.00	0.02* 0.00	0.01 0.07	1.00

Note. *.05. Pair-Wise Correlation: 0.00-0.10 = Negligible Correlation; 0.10-0.39=Weak Correlation; 0.40-0.69=Moderate Correlation; 0.70-0.89=Strong correlation; 0.90-1.00 = Very Strong Correlation; Adapted from “Correlation Coefficients: Appropriate Use and Interpretation” by Schober et al., 2018, *Anesthesia & Analgesia*, 126(5), 1763–1768

4.3Multivariate Analysis

In model 1, *Ceteris paribus*, the private rate of return to an extra year of primary educational attainment is approximately 2.23% (see Table 3). However, this return is not statistically significant, ($B = .02$, $p > .001$, $\beta = .027$) suggesting that the data does not provide sufficient evidence of a statistically detectable wage premium associated with an extra year of primary educational attainment in Kenya. This finding should not be interpreted as proof that primary education has no economic value. Rather, it indicates that the estimated earning premium is too small to be distinguished statistically from zero in our specification.

In Model 2, after controlling for experience, experience squared, age, sex, and rural place of work, the private rate of return to an extra year of primary educational attainment falls to 0.08% and remains statistically insignificant ($B = .00$, $p > .001$). The reduction in estimated coefficients between Model 1 and Model 2 indicates that once an individual's experience, experience squared, age, sex, and rural place of work are taken into account, the independent association between primary schooling and wages becomes very small.

The return associated with work experience in years is 3.15% after controlling for years of primary educational attainment, experience squared, sex, age, and rural place of work. Subsequently, the private rate of return associated with an extra year of experience squared is -0.14 % after

This implies diminishing private returns to experience squared. That is, the marginal benefit accruing from an additional year of experience decreases over time, eventually hitting an inflection point where further experience yields little or no additional wage gain in the labor market.

Ceteris paribus, the return to an extra year of age is 0.74%, whereas the return to a male worker with primary education compared to their female counterpart is approximately 69.24%. This finding points to a substantial conditional gender difference in earnings. However, an independent t-test examining the mean logarithmic earnings differences between males and females suggests that male individuals earned significantly higher gross monthly wages and salaries than women ($t(1867.1) = -8.43$, $p < .50$), although this effect size is small and limited ($d = .067$). This suggests that the gendered wage gap is negligible within the sampled population and may partly reflect the size of the sample. The t-test and regression coefficient measure different quantities and should therefore be interpreted differently.

In terms of residence, the return to a worker with primary education in a rural setting compared with their urban area is -35.33% after controlling for years of primary school educational attainment, experience, experience squared, age and sex. This return suggests that workers in rural

settings are likely to earn lower gross monthly wages and salaries than urban workers with primary-level educational attainment.

Table 3 Mincerian Earnings Regression Results

Variable	Variable label	Model 1				Model 2			
		Coef	Std.Err	p	β	Coef	Std.Err	p	β
c08b	single years of primary educ.attainment	0.02	0.02	>.001	0.02 7	0.00	0.02	>.00 1	0.000 9
d26_yrsexp	work experience in years	7.70	0.15	<.001		0.03	0.01	<.00 1	0.166 7
d26_yrsexp2	Work experience in years squared					-0.00	0.00	<.00 1	- 0.241 2
b05_years	Age in years					0.01	0.00	<.00 1	0.062 9
b04male	male					0.52	0.06	<.00 1	0.162 6
ruralwork	rural place of residence					-0.44	0.07	<.00 1	- 0.127 1
Constant						7.56	0.18	<.00 1	
Model Statistics									
n			2494				2483		
Prob > F			>.001				<.001		
R ²			0.001				0.0575		
Root Mean Squared Error (RMSE)			1.55				1.51		

4.4 Model Diagnostics

For valid statistical inference, a number of post estimation diagnostics are executed in our analysis. First, A Breusch-Pagan/Cook-Weisberg test for heteroskedasticity suggests that model residuals are homoskedastic ($\chi^2(1) = 0.03, p > .50$). That is, residual errors in the model are evenly distributed. Second, A Ramsey RESET test using powers of the fitted values of the natural logarithm of outcome

variable reports a p-value more than the usual threshold of 0.05, ($F(3, 2480) = 2.56, p > .05$). Such an estimate suggests that the model did not have an omitted-variable bias. (Peters, 2000). Third, a Variance Inflation Factor (VIF) test result indicates that the model did not exhibit severe multicollinearity, as most variables had VIF values below the conventional threshold of 10 (Gujarati & Porter, 2009).

Table 4 Multicollinearity Analysis of Model Covariates

Variable	Variable label	VIF	Tolerance
c08b	c08b single years of primary education attainment	1.02	0.977
d26_yrsexp	d26_yrsexp work experience in years	6.74	0.148
d26_yrsexp2	d26_yrsexp2 work experience in yrs squared	6.56	0.153
b05_years	b05_years Age in years	1.20	0.831
1.b04male	1= male	1.01	0.994
1.ruralwork	Rural place of residence	1.01	0.989

Note. VIF = Variance Inflation Factor. Tolerance = 1/VIF . Mean VIF = 2.92.

To test hypothesis, Wald test is conducted to examine whether an extra year of primary schooling has a statistically significant effect on gross wages and salaries. From the findings ($F(1,2483) = 0.00, p > .001$), the null hypothesis is rejected, suggesting that there is a statistically significant association between gross monthly cash income and single years of primary educational attainment for Kenyan workers.

4.5 Discussion

From the foregoing, we find no observable Mincerian wage return associated with primary education in Kenya. This finding can be explained by several reasons. Foremost, Kenya has experienced a pronounced spurt in primary educational attainment following the implementation of long-standing educational policies such as Free Primary Education (FPE). According to the World Bank (2013), the net enrolment rates for primary schooling in Kenya increased from 80.4% in 2003 to 95.7% in 2011, suggesting substantial progress towards universal primary education in the Kenyan labour market. Theoretically, as access to education expands and educational credentials become more widespread, a given credential may increasingly serve as a minimum qualification for entry into particular occupations rather than a distinctive qualification for individual productivity (Araki, 2020; Spence, 1978). Consequently, the wage premium associated with that qualification diminishes as employers place greater emphasis on additional schooling in determining wages and differentiating workers (Tsang & Levin, 1985).

A second possible explanation is the decline in quality of primary schooling and learning outcomes predominantly at lower levels of the schooling pyramid in Kenya (World Bank, 2021). Empirical evidence has found that weak foundational competencies and skills acquired at early years of education tend to constrain the labour market returns associated with additional schooling (Obiakor & Newman, 2022).

This finding is consistent with evidence that returns to education vary across countries. For instance, recent global evidence points to low and declining private returns to primary schooling of approximately 0.1 to 10% (Indrakanta and Sughirati, 2020; Liu et al., 2018; Depken et al., 2019). Sub-Saharan Africa paints a more pronounced picture. For instance, Nordman et al. (2016) find returns to primary education of approximately 0.6% in Congo. Insignificant private returns to primary education have also been documented in Ghana, Egypt, and Tanzania (Gunderson, 2016; Assaad et al., 2023). Thus, our finding fits into the emerging global pattern which indicates that universal primary education policies in many countries

may have contributed to a decline in the wage premium associated with primary education. Earlier Kenyan studies have documented relatively higher returns to primary education, although more recent evidence suggests that these wage benefits have eroded over time (Appleton, Bigsten and Manda, 1999; Shimada et al., 2016). This pattern demonstrates that the Kenyan labour market may be experiencing a declining signaling value of primary schooling.

The returns to experience and experience squared are consistent with the standard Mincerian earning profile. That is, wages rise with experience, but at a diminishing rate, eventually peaking and potentially declining later in an individual's career (Mincer, 1974). This pattern of experience likely indicates that an individual's skills become obsolete with technology and structural changes in the labour market (De Grip & Van Loo, 2004).

The positive return to age implies that older workers are associated with modest returns, perhaps as a function of maturity, seniority, occupational progression, or other age-related characteristics (Topel, 1991). Additionally, the age coefficient may partly reflect that older workers tend to have high reservation wages in the labour market (De Coen et al., 2013).

The gendered wage differential suggests that males earn substantially more than female workers conditional on model covariates. This finding may reflect occupational segregation, discontinuous labour force participation (perhaps among females due to childrearing), and employer discrimination (Kabubo-Mariara, 2003; Mulwa & Gichana, 2020; Vitellozzi et al., 2024; Alwago, 2026). Finally, the rural penalty, whereby respondents in rural areas earn less than urban workers conditional on schooling, can be attributed to monopsonistic labour markets and low reservation wage equilibrium (Jokinen, 2019; Gary et al., 2022).

Our analysis is subject to several limitations. First, our study uses cross-sectional data and thus the estimates should be interpreted as conditional wage associations rather than causal effects. Second, our model does not account for innate ability, occupational choice, selection into wage employment, and school quality, which may influence educational attainment and earnings. Future research could address these limitations using longitudinal data, instrumental variables, natural experiments, or policy-based designs to address causality.

5. Conclusion and Recommendations

5.1 Conclusions

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related characteristics (Topel, 1991). Additionally, the age coefficient may partly reflect that older workers tend to have high reservation wages in the labour market (De Coen et al., 2013).

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5.2 Recommendations

A number of complementary policy levers emerge from the findings.

1. There is a need to shift focus from quantity of primary schooling (already achieved) to learning outcomes. That means that continued investments should be sustained to support foundational literacy and numeracy programmes that equip individuals with skills and competencies valued in the labour market.
2. Declining returns to experience suggest that individuals should upskill and re-skill to update obsolete skills stemming from structural changes in the labour market. Third, based on the rural wage penalty, policies such as expanding rural infrastructure should be enforced to generate better-paying employment for rural workers.
3. The male wage differential requires stronger enforcement of equal pay policies and anti-discrimination measures for individuals with primary education in the labour market.

Data Availability Statement

The analysis uses publicly available microdata from the 2022 Kenya Continuous Household Survey (KCHS). The dataset can be accessed from the Kenya National Bureau of Statistics at <https://statistics.knbs.or.ke/nada/index.php/catalog>.

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