

Uganda: Wage Earnings and Returns to Education

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This brief provides estimates of the returns to education in Uganda where the education system follows a 7-4-2 pattern, with seven years of primary education, four years of lower secondary education, and two years of upper secondary education. Estimates of the returns to schooling have been a mainstay of the education literature for decades with hundreds of studies and many reviews conducted over the years. The focus has been typically on estimating the returns to education by years of education, or for various levels of education such as primary, secondary, and higher education. Less is known about the benefits from technical and vocational education and training (TVET) and lower secondary education. The Uganda National Household Surveys (UNHS) have sufficiently detailed questionnaires and large enough sample sizes to estimate the labor market benefits from lower secondary education separately from those of upper secondary or TVET education. The first part of the brief provides statistics on wage earnings for selected levels of education. The second part provides results from wage regressions. Analysis is conducted with three successive and comparable surveys: the 2012/13, 2016/17, and 2019/20 UNHS.



Background: This brief was prepared for a KIX Africa 19 Hub national policy dialogue in Uganda with a focus on promoting meaningful Inclusive quality education. KIX (Knowledge and Innovation Exchange) Africa 19 contributes to education systems strengthening in African anglophone countries by bridging the gap between research and policy making. With support from the Global Partnership for Education and Canada's International Development Research Center, KIX Africa 19 is managed by UNESCO IICBA.

Key findings: This brief provides estimates of the returns to education in Uganda based on the Uganda National Household Surveys (UNHS) for 2012/13, 2016/17, and 2019/20 UNHS.

- In 2019/20, the average monthly wage for workers with no education or less than P1 (first grade in primary school) was UGX 143,045 (US\$ 26). This increased to UGX 211,327 (US\$ 57) for primary education, UGX 350,112 (US\$ 95) for lower secondary, and UGX 492,492 (US\$ 133) for upper secondary. As expected, workers with higher levels of educational attainment earn more. The same is true for hourly earnings.
- There has been an increase in earnings in real terms over time for wage earners with no education or less than P1. For workers with higher education levels, changes in real earnings over time have been more limited with some gains and some losses.
- Regression analysis suggests relatively stable wage premia by education level over time versus having no education or less than P1. Workers with some primary education earn only slightly more than those with no education. With primary education completed, the gains remain small versus no education. Gains are slightly larger with lower secondary education, but they start to become more substantial with higher levels of education (upper secondary, TVET, or higher education).
- Results for the probability of wage employment in Heckman models show – not surprisingly – that a higher level of education is also associated with a higher probability of positive wage earnings from employment.

Average earnings increase with higher levels of education

Estimates of average wage earnings for Uganda using the three surveys are provided in Table 1 and Figure 1 for individuals with selected levels of educational attainment (a more detailed analysis is available in Tsimo and Wodon, 2023). Estimates in the second column are in current terms, while estimates in the third columns are in constant terms (2020 UGX). The adjustment used for inflation is based on the Consumer Price Index as available in the World Bank's World Development Indicators. Between 2012/13 and 2019/20, there has been a substantial increase in earnings in real terms of 48 percent for wage earners with no education at all or less than P1 (the first grade in primary school). For individuals with other education levels, changes in real earnings over time have been limited (loss of -9 percent in real terms for primary, and gains of respectively 4 percent, 17 percent, and 15 percent for some lower secondary, lower secondary completed, and some/completed upper secondary between 2012/13 and 2019/20).

In 2019/20, the average monthly wage for workers with no education at all or less than P1 was UGX 143,045 (US\$ 26 using the exchange rates at the time of writing – the exchange rate has been fairly stable since the 2016/17 survey). This increases to UGX 211,327 (US\$ 57) for workers with primary education completed, UGX 350,112 (US\$ 95) for lower secondary education completed, and UGX 492,492 (US\$ 133) for some upper secondary education or that level completed. Clearly, workers with higher levels of educational attainment earn more. Although this is not shown in the Table, a similar progression is observed for hourly earnings, accounting for the number of hours worked.

Figure 1: Average Monthly Wages by Education Level (UGX)

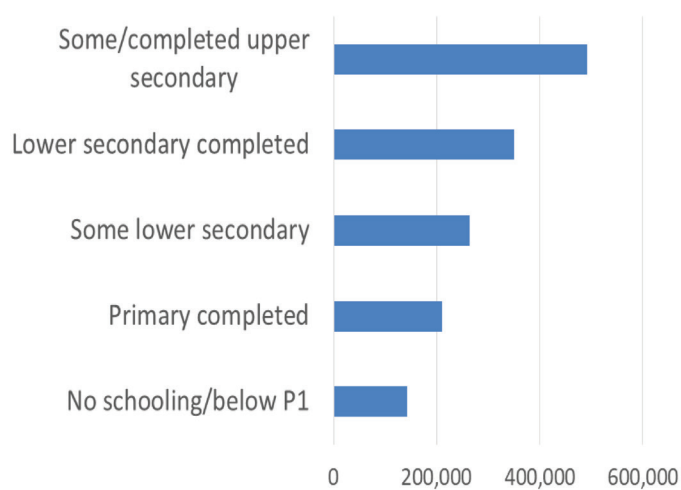


Table 1: Average Monthly Wags for Selected Levels of Education, 2012/13 to 2019/20

	Current (UGX)	Constant (2020 UGX)
2012/13		
No schooling/below P1	69,696	96,514
Primary completed	167,770	232,325
Some lower secondary	182,227	252,345
Lower secondary completed	216,050	299,183
Some/completed upper secondary	308,920	427,787
2016/17		
No schooling/below P1	93,970	107,819
Primary completed	194,652	223,339
Some lower secondary	201,804	231,545
Lower secondary completed	251,784	288,891
Some/completed upper secondary	348,405	399,752
2019/20		
No schooling/below P1	143,045	143,045
Primary completed	211,327	211,327
Some lower secondary	263,354	263,354
Lower secondary completed	350,112	350,112
Some/completed upper secondary	492,492	492,492

Source: Authors' estimations using UNHS data.

Note: Cumulative inflation from 2013 to 2020 is estimated at 38.5% based on World Bank data. Cumulative inflation from 2017 to 2020 is estimated at 14.7%. Different assumptions could be used for computing cumulative inflation, but this would not fundamentally affect the results.

Wage regressions confirm substantial premia for higher levels of education

The progression in earnings in Table 1 suggests positive returns to educational attainment, but to estimate the marginal benefits from a higher level of educational attainment, regression analysis is needed to control for other variables affecting earnings. For example, earnings may depend on the worker's sex and his/her geographic location, and these effects are typically controlled for when estimating the gains in earnings associated with higher levels of educational attainment. Another control sometimes added to the analysis is the occupation of the worker. While occupation depends in part on educational attainment, in rural areas for example occupational choice is limited. As to labor force participation itself, it is affected by other variables including family structure. Using the logarithm of earnings as the dependent variable, two types of regressions are estimated to measure the benefits from educational attainment: Ordinary Least Squares (OLS) for workers with positive earnings, and a Heckman model accounting for sample selection and the probability of having positive earnings. Estimations are provided for both monthly and hourly earnings, thus generating four sets of estimates of the marginal benefits from educational attainment.

Table 2 provides summary results. All coefficients measure gains in percentage terms versus workers with no education or less than P1 (the reference category)

indicated by “ref.” in the Table). Coefficients that are not statistically significant at the ten percent level are indicated as such (NS in the Table). Most coefficients are statistically significant at the ten percent level, and there is substantial stability in the estimates across years. Results are also broadly consistent between the four different estimations for each survey year, although there are exceptions. For example, in 2019/20, the coefficients for the premium associated with TVET education in comparison to no education are not statistically significant. It is best however not to rely on a single year of data when making inferences from such results.

Table 2: Wage Benefits from Higher Educational Attainment, 2012/13 to 2019/20

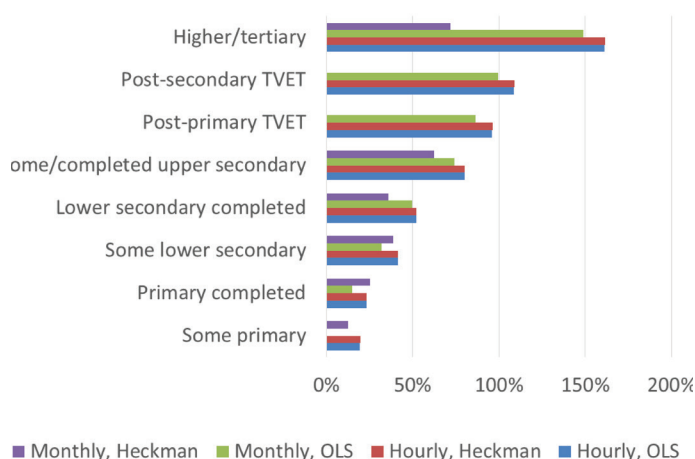
	Hourly Wage		Monthly Wage	
	OLS	Heckman	OLS	Heckman
	2012/13			
No schooling/below P1	Ref.	Ref.	Ref.	Ref.
Some primary	0.197	0.198	0.162	0.200
Primary completed	0.371	0.378	0.345	0.493
Some lower secondary	0.267	0.269	0.365	0.432
Lower secondary completed	0.461	0.454	0.545	0.398
Some/completed upper secondary	0.700	0.690	0.790	0.604
Post-primary TVET	0.874	0.850	0.894	0.457
Post-secondary TVET	1.119	1.088	1.154	0.578
Higher/tertiary level of education	1.708	1.686	1.669	1.304
Data on educational level missing	NS	NS	NS	NS
	2016/17			
No schooling/below P1	Ref.	Ref.	Ref.	Ref.
Some primary	0.146	0.270	0.239	0.373
Primary completed	0.230	0.323	0.303	0.410
Some lower secondary	0.340	0.379	0.448	0.508
Lower secondary completed	0.444	0.359	0.588	0.508
Some/completed upper secondary	0.607	0.343	0.761	0.521
Post-primary TVET	0.858	NS	0.979	0.355
Post-secondary TVET	1.105	0.320	1.171	0.414
Higher/tertiary level of education	1.616	0.935	1.653	1.022
Data on educational level missing	0.320	NS	0.470	0.331
	2019/20			
No schooling/below P1	Ref.	Ref.	Ref.	Ref.
Some primary	0.193	0.192	NS	0.125
Primary completed	0.232	0.232	0.149	0.254
Some lower secondary	0.413	0.413	0.319	0.385
Lower secondary completed	0.522	0.522	0.498	0.360
Some/completed upper secondary	0.802	0.803	0.741	0.624
Post-primary TVET	0.960	0.964	0.864	NS
Post-secondary TVET	1.086	1.090	0.994	NS
Higher/tertiary level of education	1.612	1.615	1.490	0.719
Data on educational level missing	0.500	0.501	0.497	0.483

Source: Authors’ estimations using UNHS data.

Note: NS means not statistically significant.

After controlling for other variables, in 2019/20 workers with some primary education earn 12.5 percent to 19.3 percent more than those with no education depending on the regression (one estimate is not statistically significant). With primary education completed, the gains range from 14.9 percent to 25.4 percent versus no education. With lower secondary education completed, the gains range from 31.9 percent to 41.3 percent versus no education. Gains start to be larger with higher levels of education: they are at 62.4 percent to 80.3 percent for upper secondary education. In most specifications, TVET education doubles earnings versus no education at all, while again in most cases, individuals with a higher education earn one and a half times more than those with no education at all (the returns to tertiary education are lower with the Heckman model for monthly earnings than with the other three models). Overall, there are clear wage benefits from a higher education level, but these benefits are not large in comparison to other countries. Results for the probability of wage employment in the Heckman specification also show – not surprisingly – that a higher level of education is associated with a higher probability of positive earnings from employment. Figure 2 provides a visualization of the wage premia or (loosely speaking) returns to education associated with different education levels.

Figure 2: Wage Premium by Education Level vs. None, 2019/20



Takeaways

Using data from the last three Uganda National Household Surveys, this brief provides estimates of the returns to education in Uganda’s labor market. There has been an increase in earnings in real terms between 2012/13 and 2019/20 for wage earners with no education at all or less than P1 (first grade in primary school), while for workers with other education levels, changes in real earnings over time have been more limited. Still, across years, average

monthly wages are higher when individuals have a higher education level. A similar progression is observed for hourly earnings. Despite some changes in earnings over time, regression analysis suggests relatively stable wage premia by education level over time. Workers with incomplete or completed primary education earn only marginally more than those with no education at all. Gains are a bit larger with lower secondary education, but they start to become more substantial with higher levels of education (upper secondary, TVET, or higher education). The probability of employment with positive (wage) earnings is also higher with a higher level of education. None of those results are surprising, but they can be used among others for cost-benefit analyses of investments in education.

Disclaimer& Acknowledgment

The analysis in this brief is that of the authors only and need not reflect the views of UNESCO, its Executive Directors, of the countries they represent, nor do they necessarily represent the views of the UNESCO International Institute for Capacity Building in Africa. This brief is an updated version of previous analysis conducted by the authors while at the World Bank.