Work and Income for Young Men and Women in Africa: The Case of Uganda

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Bringing Rigour and Evidence to Economic Policy Making in Africa

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Contents

List of tables

List of figures

List of abbreviations and acronyms

AfDB	African Development Bank
BTVET	Business, Technical, Vocational Education and Training
COVID-19	Corona Virus Disease 2019
EDA	Employment Diagnostic Analysis
EPI	Export Potential Indicator
FTE	Full Time Equivalent
GDP	Gross Domestic Product
HS	Harmonized System
ILO	International Labour Organization
IMR	Inverse Mills Ratio
IPR	Import Penetration Ratio
ITC	International Trade Centre
IV	Instrumental Variables
LFPR	Labour Force Participation Rate
MoGLSD	Ministry of Gender, Labour and Social Development
NDP	National Development Plan
NLFS	National Labour Force Survey
PDI	Product Diversification Indicator
SAM	Social Accounting Matrix
SDG	Sustainable Development Goal
SIDA	Swedish International Development Cooperation Agency
SMEs	Small and Medium-sized Enterprises
SSA	Sub-Saharan Africa (SSA
SUT	Supply and Use Tables
UBoS	Uganda Bureau of Statistics
UIA	Uganda Investment Authority
UN	United Nations
UNHS	Uganda National Household Survey
YLP	Youth Livelihood Programme

Abstract

This study sets out to undertake an in-depth country study to establish the economic sectors with the highest multipliers and potential to create employment opportunities for the youth in Uganda. The study used Uganda National Household Survey (UNHS 2019/20) and the Social Accounting Matrix (SAM 2016/17) for Uganda. The study employs descriptive analysis and multiplier approach together with regression analysis by estimating a two-stage Heckman probit model. First, the study examines the employment potential and linkages across the different sectors with decent jobs for the youth using the multiplier analysis. Secondly, the study analyses youth employment using full time equivalent in sectors taking into account gender issues by estimating probit and Tobit-Heckman two-stage regression models. This study finds that more female youth are employed in non-farm self-employment activities, while male youth are mainly employed in non-farm wage activities. In addition, the study finds that farm agricultural work employs most of the youth than other sectors. Furthermore, the results show that off-farm self-work is a significant source of youth employment in all regions. The regression findings show that youth employment is strongly related to their education attainment, skill attainment, and residence of the youth. This highlights the need for policy makers to be cognizant of the rural-urban gradient, skilling and reskilling of the youth in sector-specific skills for potential decent job creation. Also, there is need for the promotion of value addition and supporting agro-processing and import substitution, specifically firms that use local inputs, so as to create employment opportunities for the youth.

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1. Introduction

Background

African youth are at the core of its economic transformation given that two-thirds of its population consists of people below 35 years of age. As such, they constitute the largest group of labour market entrants that has a strong bearing on the development of the continent. However, despite having such human resources, African countries are dealing with rising unemployment among its youths, with unemployment being higher among female youths. Both male and female youth face a lot of challenges upon joining the labour market, these include obtaining employment, and most important, getting a decent job that would enable them to live above the poverty line. If they are lucky and find a job, majority are in the informal sector which keeps them below the poverty line. It is estimated that over 98% of the youth in sub-Saharan Africa (SSA) who find a job are in the informal sector (ILO, 2017; van Waeyenberge & Bargawi, 2018).

The problem of youth unemployment has been identified globally as a ticking time bomb (Mwesigye, 2014), particularly for developing countries whose demographic composition is increasingly being skewed towards a younger population. This was evidenced during the Arab Spring uprising, where youths were at the centre of it due to lack of decent unemployment and livelihood. The social unrest that resulted into a mass uprising had devastating effects on the economy. Thus, creation of decent jobs for the youths to enable them earn a livelihood is a significant way of avoiding such strife. In addition to youth unemployment, economic empowerment of women is an important avenue for achieving gender equality and uplifting women livelihoods, particularly the young women. The fifth Sustainable Development Goal (SDG, UN, 2015) calls for the attainment of gender equality and empowerment for all women and girls by 2030. Also, the 2030 Agenda for Sustainable Development emphasizes productive employment and decent work for youth. The Agenda acknowledges that, to reduce poverty, promote economic growth and peace and prosperity for all, there is need for decent youth employment. The Agenda further emphasizes increasing the number of youth and adults with relevant skills both technical and vocational for employment, decent jobs, and entrepreneurship.

Unemployment in general and for the youth in particular poses unprecedented socioeconomic and political consequences to developing countries like Uganda. Youth unemployment is exacerbated by the additional challenges of a youth population which is considerably higher in the country, weak national labour markets and persistently high levels of poverty (UBoS, 2019/20). Numerous studies argue that youth unemployment and underemployment are a threat to the social, economic and political stability of nations (Urdal, 2006, 2012; Collier & Hoeffler, 2002; Miguel et al., 2004; Lin and Xu. 2016.). Presence of youth bulges significantly increase the risk of conflict outbreak.

Unfortunately, according to International Labour Organization (ILO, 2017), although the global economy outlook looked promising especially before COVID-19 pandemic outbreak, it was not accompanied by job creation, and the youth are likely to face more unemployment. Worse still, the global unemployment rates for the youth is three times that of the adults, and for the past two decades, there has been a significant decline for the global labour force participation rate (LFPR) for the youth from 55.0% in 1997 to 45.7% in 2017 (ILO, 2017).

The World Bank notes that Uganda has one of the youngest and most rapidly growing populations in the world (World Bank, 2015). About 53% of Uganda's population is younger than 15 years, which is higher than sub-Saharan Africa's average of 43.2%. Youth (18-30 years) labour force participation rate was 57.3% in 2016/17 (UBoS, 2019/20). Obtaining a decent job in Uganda is one of the most challenging tasks for most youth: educated, semi educated and non-educated, male and female, able and dis-abled (ILO, 2017). According to The Guardian (2013), youth unemployment in Uganda is the highest in Africa. Also, estimated youth unemployment in Uganda stood at 62% (Action Aid, 2012). The African Development Bank put Uganda's youth unemployment at an even higher rate of 83%, of which 64% are aged 24 years and below (AfDB, 2013; Kheng et al., 2017). Over 87% of the youth in Uganda work in insecure, low-income and often unsafe informal sector jobs or in family income generation activities with little or no pay at all. It is also hypothesized that the current education system in Uganda may prohibit the youth from achieving the relevant skills that are compatible with the demands of the labour market. Hence, the youth (18-30 years) in Uganda, remain highly susceptible to changing patterns in work opportunities and they experience difficult transitions from school to decent jobs which are grossly scarce.

It is estimated that over 400,000 youth enter the labour force to compete for 9,000 jobs yearly in Uganda. This is exacerbated by those who leave the agricultural sector in the rural areas in search of urban jobs. In response, government has attempted to reduce the youth employment problem by designing and implementing a number of strategies. Among these include: provision of start-up capital (youth livelihood programme), providing an enabling investment climate, providing youth skilling programmes, among others.

Youth livelihood fund, and youth SACCOs (Saving and Credit Cooperatives)

Youth Livelihood Programme (YLP) was developed for the unemployed and poor youth in the country. The programme started in 2013 targeting youth of age group 18-30 years and covered 112 districts and had a budget of Ush265 billion. The major aims of the programme were to provide the youth with vocation skills as tools for self-employment and to make youth entrepreneurship a life skill and an integral part of youth livelihoods. The youth groups received support and interest-free revolving funds on condition that they started an entrepreneurial project. Acquiring a loan did not require collateral instead it required youth forming SACCOs. The major challenges of the programme included the high demand vis-a-vis the limited resources. Others were: desire for free funds, youth preferring white collar jobs, and need for immediate results.

Providing enabling investment climate

The creation of Uganda Investment Authority (UIA) in the early 1990s was aimed at providing a one-stop investment centre for prospective investors who would then create jobs for the local Ugandans particularly the youth. Although there has been an increase in investment, to some extent the aim has not been achieved because some of the investors come along with own workers, while others provide minimal value addition to their products hence limiting job creation. Also, there is segregation between local firms and foreign firms by UIA. Foreign firms receive several benefits such as tax holidays, free land for construction of factories unlike local firms that have to incur all costs, yet local firms employ mostly local labour. Also, the tax policy in Uganda does not favour small and medium firms (SMEs), let alone the high power tariffs. Several studies have highlighted these two factors as the major barriers to firm performance, no wonder over 50% of SMEs do not live to celebrate their first birthday. The investment climate, therefore, does not favour local firms hence limiting job creation.

Promotion of skills among the youth

Since 1997, the government embarked on reskilling the youth through redesigning secondary schools curriculum and deliberately promoting business, technical, vocational education and training (BTVET). The aim was to empower the youth especially those who drop out of school or those who are unable to progress to higher institutions of learning (National Planning Authority [NPA]. 2015). In addition, the government emphasized teaching of entrepreneurship at higher institutions of learning in order to equip the youth with business skills as a strategy for self-employment in case one fails to get a white collar job. Unfortunately, however, there is still low enrolment in the BTVET institutions and most do not have the necessary infrastructure such as laboratories, so students end up with theories and little practical skills.

Overall, despite these interventions, the problem of youth unemployment has remained high in Uganda and probably the highest on the continent. Therefore, there is need to identify the sectors that have the potential to provide youth with descent jobs and designing strategies that enable decent jobs creation for youth. According to ILO (2017), decent job, involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for the youth to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all male and female youth.

It remains unclear of what works to support the youth in the labour market. This is one of the most common and pressing question posed by policy makers and practitioners today. Other unanswered pressing questions include: What are the most effective interventions for boosting productive employment for the heterogeneous groups, particularly, the rural/urban, male/female, disabled/not disabled, educated/not educated, skilled/un-skilled, have access to finance/resources/no access to resources. In what sectors and jobs are youth and women engaged?

Research aimed at looking at ways youths can get engaged and earn a decent livelihood is a key input in devising policies that deals with youth unemployment. This study aimed at making a contribution in identifying economic sectors that can generate more jobs for youths.

Objectives of the study

The major aim of this study, therefore, was to undertake an in-depth country study to inform policy makers and development practitioners on the economic sectors with the highest multipliers and potential to create decent employment opportunities for the youth. The study attempted to address the following specific objectives:

i. To identify growth sectors which are most promising and the activities that have the potential to improve youth employment, and why?

ii. To identify inequalities related to gender, spatial, or socioeconomic background, and their effects on youth's access to employment in the growth sectors.

iii. To identify factors underlying youth's access to employment opportunities in the growth sectors.

Significance of the study

Given the current and future challenges that young people can experience in the labour market, our study finding may be of interest to the Uganda Government and other stakeholders in the contexts of labour force development, education, unemployment

insurance, youth policy, or macroeconomic policy. Our study findings shade light on the effective youth policies in order to address the challenges and uncertainties regarding what works, for whom, in what sector, for both male and female youth. Notably, this study provides empirical evidence on youth labour participation in the different sectors of the economy by gender. This is likely to guide government and other stakeholders to make evidence based policies to address youth unemployment in the economy. At the same time, our study highlights the existing policies, particularly those that have worked and those that have not, and why. Much remain unknown about the best policy on employment interventions on how they affect the vulnerable youth. Thus, this study shades light on which interventions can be of help to absorb the youth in decent employment in the different sectors of the economy.

Also, the study findings contribute to the existing literature on decent youth employment in growth enhancing sectors adding gender, rural-urban, and sectoral dimensions. Little is actually known in the case of Uganda about youth employment at a sectoral level with a gender disaggregation. This disaggregation is helpful in case a policy targets a specific gender. For example, if the government wishes to assist female youth, then it should focus on sectors such as agriculture, trade, and tourism where there are more females than males.

Analytically, in addition to using recent national data sets (2019/20), this study goes further to use the concept of Full Time Equivalent (FTE), which measures the total time spent in a given job rather than the conventional approach that simply measures one's participation in the labour market. The study generates new insights for evidence based policies regarding the nature of youth's economic activity in both farm and nonfarm activities at sectoral level. Finally, we include spatial effect on youth employment in order to analyse how sectoral and functional employment patterns change across the urban and rural areas in the country.

2. A brief review of the literature

The Employment Diagnostic Analysis (EDA) report (Ministry of Gender, Labour and Social Development [MoGLSD], 2018) assesses the Government of Uganda's attempts to promote structural transformation into high productive job-rich activities and exports (Coorary et al., 2017). The EDA emphasizes the need for a comprehensive and consistent approach to gainful employment creation emerging from different levels: macro, sectoral and micro. However, the report does not provide sufficient and precise information about the employment potential of specific sectors or value chains.

On the other hand, Haussmann et al. (2014), distinguish between products which balance the desire to increase the diversification and complexity of production, while not over-stretching existing capabilities (the so-called *parsimonious transformation*) and those which are more complex but within the country's reach of current capabilities (strategic bets). They single out food processing and agrochemicals as the top-ranking products for Uganda under parsimonious transformation strategy, while construction and industrial materials were identified under strategic bets strategy.

The International Trade Centre (ITC) developed two indicators to identify potentially promising sectors: The export potential indicator (EPI) and the product diversification indicator (PDI), both based on export data at the six-digit Harmonized System (HS) classification level, encompassing roughly 4,000 products (Cheang et al., 2018).[1] Kucera (2019) summarizes Uganda's untapped export potential values for the top 25 products by the EPI, as well as the top 25 products by the PDI and he emphasizes the usefulness of providing policy makers with a wide range of prioritized options. However, one weakness with the ITC method is that it concentrates on primary products with no value addition which limits gainful job creation, which at the same time is against the objectives of EDA.

To this end, first, there is need to assess the structure of the economy by sector in order to identify those with high employment potential which should be promoted as drivers of economic growth. This will explicitly enable the government and policy makers to establish the potential of the country. Second, there is need to understand and establish the existing and potential value addition in the production of the promising products by the different sectors and subsectors of the economy. Third, it is important to know the current employment status and potential employment growth of decent jobs in the driving sectors of the economy.

3. Data sources and methods

The data

Our empirical analysis is based on two data sets. First, we use the 2019–2020 Uganda National Household Survey (UNHS) to decompose the aggregate payment to labour captured in the Social Accounting Matrix (SAM) and identify inequalities related to gender, spatial, or socioeconomic characteristics, as well as to estimate their effects on youth's access to employment in the growth sectors. The UNHS data set which is the 7th in a series of cross-sectional data collected by Uganda Bureau of Statistics is preferred because it is rich, nationally representative and the data collection method is robust (UBoS, 2019/20).[2] The UNHS covers a total of 15,110 households compared to the NLFS which has only 4,105 completed households. Most importantly, the UNHS is designed to allow separate estimates at the national level (for urban and rural areas) and for all the 15 sub-regions of Uganda unlike the NLFS with only five sub-regions. This data set has a specific module on labour force which provides detailed information on employment status, education, occupation, sectors of employment and other individual socioeconomic and household characteristics including age, gender, residence and location, sectors of operation, among others. We use this information to decompose the aggregate payment to labour by skill level, age group, and gender. In addition, we use the disaggregated information to generate the employment multipliers by sector and output. Thus, the UNHS data is very useful for decomposing the aggregated employment/labour payment to different subgroups.

Secondly, the study utilizes the most recent Social Accounting Matrix (SAM 2016/17) which is an advanced version of the Input-Output (I-O) Table and Supply and Use Tables (SUT) to develop a multiplier model for identifying growth sectors which are most promising in the economy (Bandra & Kelegama, 2008). The SAM is a framework that captures transactions (linkages and leakages) between all economic agents in the country via the factor and product markets (Round, 2003). The 2016/17 SAM provides aggregate information on all transfers and real transactions regarding production, and the generation, distribution and use of income between sectors and institutions (including different domestic industries, household groups, enterprises and governments) in the economy within the relevant year. The SAM contains 435 accounts, namely: 186 production activity accounts, representing industries that produce goods and services in the economy, 186 commodity accounts representing goods and

services produced by domestic industries and imports that are used in production, final consumption, and exports. Others are two accounts for trade and transport margins, five accounts for direct and indirect taxes, 17 factor accounts consisting of one capital account and 16 labour accounts. The labour accounts are distinguished by skill levels (unskilled, semi-skilled, skilled, and highly-skilled), rural/urban, and gender. It also has 32 household accounts, distinguished by four regions (Central, Eastern, Northern, and Western), rural/urban, and expenditure quartiles, where quartile 1 is poorest and quartile 4 is richest. There are two enterprise accounts for financial and non-financial enterprises. An account for NPISH, government, investment/saving, changes in inventory, and rest of the world. The broad structure of the SAM is presented in Table A1 (in the appendix). The Uganda's SAM has a standard scope similar to most SAMs developed in other countries (Powell, 2014; Randriamamonjy & Thurlow, 2019; Thurlow, 2006). This level of disaggregation allows for the detailed economic analysis, and the SAM multiplier models have been widely used for assessing the nature and transmission mechanisms of the social economic structure of an economy (Pyatt & Round, 1979, 2006; Llop Llop, 2005; Bandara & Kelegama, 2008).

We use the SAM multiplier model/matrix to compute changes in endogenous accounts like GDP and outputs following changes in final demand. This approach employs matrix algebra and algorithm to develop multipliers by using the backward and forward leakages embedded in the structure of the economy. We transform the Leontief coefficients into a customized SAM model to be able to assess the response of the economy to exogenous shocks and the impact on employment of the youth and women. Employment is measured in terms of Full Time Equivalent (FTE). We use the multiplier model to form an interactive process and feedback effects between the policy instrument variables (exogenous) with policy target variables (endogenous) and leakage variables. For every exogenous shock introduced to the system, incomes of the endogenous accounts adjust up to the point where the sum of injections is equal to the sum of leakages.

Methodology

Identifying the key growth sectors

To realize the study objectives, we employed the Uganda National Household Survey (UNHS) data (UBoS, 2019/20) to identify the most promising sectors regarding young men and women employment. Thereafter, the study used the most recent Social Accounting Matrix (SAM 2016/17) multiplier model to assess the nature and transmission mechanisms of the social economic structure of an economy. This approach is largely based on matrix algebra and algorithm to develop multipliers by using the backward and forward leakages embedded in the structure of the economy (Bandra & Kelegama, 2008). We transform the Leontief coefficients into a customized SAM model to be able to assess the response of the economy to exogenous shocks

and the impact on employment of the youth and women. Employment is measured in terms of Full Time Equivalent (FTE). The multiplier model is used to form an interactive process and feedback effects between the policy instrument variables (exogenous) with policy target variables (endogenous) and leakage variables. For every exogenous shock introduced to the system, incomes of the endogenous accounts adjust up to the point where the sum of injections is equal to the sum of leakages.

To identify the growth sectors with highest potential for youth employment using labour income multipliers, we begin by deriving the SAM multiplier model basing on assumptions that underpin the structure embedded in the Social Accounting Matrix (SAM). The SAM is the main database used to develop multiplier models. For example, we assume that the amount of sector *i's* output required for the production of sector *j's* output X_{ij} is proportional to sector *j's* output X_j. This assumption allows us to generate the Leontief technical coefficients, a_{ij}. The relationship between these coefficients and sector *j's* output X_j is:

$$X_{ij} = a_{ij} X_j \qquad i, j = 1, \dots, n \tag{1}$$

We now equate total demand to total supply at equilibrium as follows:

$$X_i = \sum_{j=1}^{n} X_{ij} + F_i, \qquad i = 1, \dots, n \tag{2}$$

Where: X_{ij} represents intermediate demand and F_i denotes final demand. We now substitute (1) into (2) to get Equation 3.

$$X_i = \sum_{j=1}^{n} a_{ij} X_j + F_i, \qquad i = 1, \dots, n \tag{3}$$

Equation 3 shows the relationship between final demand and production. This also holds when we consider changes; thus enabling us to assess the impact of an exogenous change to the endogenous variables. This is shown as follows:

$$\Delta X_i = \sum_{j=1}^{n} a_{ij} \Delta X_j + \Delta F_i, \qquad i = 1, \dots, n \tag{4}$$

Where: ΔX_j represents change in output of sector *I* and ΔF_i denotes change in final demand. To generate the multiplier model, let's first simplify Equation 3 and display it in a matrix format as follows:

$$X = AX + F \tag{5}$$

Thus the multiplier model would be derived as shown in the following equation:

$$(I - A)X = F \rightarrow X = (I - A)^{-1}F \quad (6)$$

Where: *F* represents a vector of final demands, *X* is a vector of outputs, *I* is an identity matrix with ones on the diagonal and zeros elsewhere. Then, the multiplier matrix is given by $(I - A)^{-1}$. Therefore, we use the multiplier matrix to compute changes in endogenous accounts like GDP and outputs following changes in final demand.

Linking youth and women labour by gender to productive sectors

First, we identify sectors with highest potential for youth employment using labour income multipliers for the youthful workers. We extend this to capture number of youth and women employees per sector by using the Full Time Equivalent (FTE) approach. After deriving the changes in the endogenous accounts, we use them to derive other accounts like number of employees categorized by age and sex. It is at this point that we implement the respective policy simulations. For example, if yb_{kj} is the amount of youth and women labour required to produce one unit of commodity *j*, then change in youth and women labour $\Delta yLab_k$ due to the shock would be captured by:

$$\Delta yLab_k = \sum_{j=1}^{n} yb_{kj}\,\Delta X_j\,, \qquad k = 1, \ldots, s \quad (7)$$

We also estimate youth employees and women employed in economically weak sectors by computing leakages of multipliers from the economic system. Payments from endogenous variables to exogenous variables within the SAM are categorized as leakages since this exit the endogenous framework and thus stop contributing to the multiplicative process. For example, youth workers and women employed in sectors with higher import content on the market; these would be weak in job creation as most job creation efforts are exported through import demand. For example, increases in demand for petroleum products (like PMS and AGO) would result into increased imports of the same products thus exporting most jobs that would result from the initial increase in demand. To compute leakages (Lk_j); let us assume an (M x N) matrix of coefficients ($z_{m,j}$) with exogenous accounts as rows and endogenous accounts as columns.

$$\Delta Lk_j = \sum_{m=1}^{r} z_{m,j}\,\Delta X_j\,, \qquad m = 1, \ldots, r \quad (8)$$

We then correlate the magnitude of leakages per sector with the intensity of youths and women employed in those sectors. This provides us with policy information in regard to where most youths and women are employed and inequalities in their distribution across sectors. Simulations were built with scenarios which switch youths and women across sectors to assess the impacts to their economic welfare and the general impacts to the economy.

Computing backward and forward linkages for youthful labour supported sectors

It is important to identify the drivers of sectors with potential to employ youthful and women employees. Some sectors may not employ a significant portion of youths and women, but may have strong backward and forward linkages with other sectors that employ a larger portion of youths and women. Parra & Wodon (2009) show that, a sector with both strong backward and forward linkages would be key in accelerating economic growth and employment. Thus, expansion of such sectors might generate more employment for women and youths compared to sectors that employ more youths and women but with weak backward and forward linkages. This is key for policy guidance and thus can be demystified through computation of backward and forward linkages for each of the sectors. We use the above multiplier model (Equation 6) to compute the backward (BL_i) and forward linkages (FL_i) following the approach proposed by Parra and Wodon (2009). This is shown in Equation 9 and Equation 10, respectively.

$$BL_j = \frac{\sum_i nB_{i,j}}{\sum_i \sum_j B_{i,j}} \tag{9}$$

$$FL_i = \frac{\sum_j nB_{i,j}}{\sum_i \sum_j B_{i,j}} \tag{10}$$

Where: BL_j denotes the backward linkages and FL_i represents forward linkages, *n* is the number of accounts involved in the multiplier computations; and Σ is the summation notation. We consider a sector to have a strong backward or forward linkage if its linkage index parameter is greater than 1. Thus, we would interpret sectors with backward and forward linkages greater than 1 as key sectors that can spur economic growth and employment across the whole economy. Sectors with backward linkages lower than 1 and forward linkages higher than 1 are *forward-oriented sectors*; whereas sectors with backward linkages larger than 1 and forward linkages lower than 1 are categorized as *backward-oriented sectors*. Lastly, sectors with both backward and forward linkages lower than one are weak sectors in terms of their relevance to create output and employment, especially for youths and women. This classification criterion is shown in Table 1.

Table 1: Classification of strong and weak backward and forward linkages

		Backward Linkages	
		Strong (>1)	**Weak (< 1)**
Forward Linkages	Strong (>1)	(1) Key sectors with strong output and employment multipliers	(2) Forward-oriented
	Weak(< 1)	(3) Backward-oriented	(4) Weak sectors with weak output and employment multipliers

Measuring inequality

To investigate the second objective—identifying inequalities related to gender, spatial or social economic background and their effect on youth's access to employment in the growth sectors—we employed Kernel density estimation and Gini coefficients. Kernel density is a non-parametric density estimation that allows one to stimulate the shape of the distribution and hence helps to visualize how unequal access to employment actually is. The greater the inequality in access, the more spread out the distribution would be.

The Gini coefficient takes on values between 0 and 1. If access to employment is perfectly equally distributed, the Gini coefficient is equal to zero, and it is equal to one in case of a perfectly unequal distribution.

Estimation strategy

We use descriptive analysis and empirical analysis by estimating a probit model and Tobit model. The descriptive analysis will focus on participation in the labour force focusing on employment patterns across regions, gender, and youth versus adults. Also, the shares of FTEs in total employed time by sector by analysing how individuals allocate their time among economic activities by computing the share of total FTEs recorded that were allocated to one type of employment for all individuals in a given group. In addition, we analyse the type of work—on farm vs non-farm, and wages vs self-employed.

Heckman model specification for labour force participation

To account for the potential selection bias caused by the two-step decision process of LFP, a two-stage probit model will be estimated (Heckman, 1979). Sample selection bias can arise if the group of observations for estimation is not taken from a random sample. The hours worked are only observed for the youth who are employed, and those who are employed tend to have characteristics different to those who are not in the labour force or unemployed. Hence, excluding the unemployed results in a non-random sample being used which may bias results. Thus, a formal representation of

the Heckman model is presented below. The selection equation given by the following expression is first estimated;

$$Prob(L = 1|Z) = \Phi(Z\lambda) \tag{11}$$

In Equation 11, L=1 if a youth is in labour force and 0 otherwise, *Z* is a vector of explanatory variables, and λ are the parameters to be estimated. Vector *Z* includes the education variables and other demographic variables (those estimated for the labour force participation models). In Equation 11, it denotes the effect on the likelihood that an individual youth would make the discrete choice to participate in employment.

In the second stage, the actual weekly hours worked by the youth, given by the following expression, is estimated.

$$H^* = X\beta + u_1 \tag{12}$$

From Equation 12, H^* denotes the actual weekly hours worked by an individual, which is observed if a youth is working. The conditional actual weekly hours, given a youth works, is then:

$$E[h|X, L = 1] = X\beta + E|X, L = 1] \tag{13}$$

$$E[h|X, L = 1] = X\beta + \rho\sigma_u\lambda(Z\gamma) \tag{14}$$

From Equation 14, ρ is the correlation between error terms in the first and second equations, σ_u is the standard deviation of u, and λ is the inverse mills ratio. The above equation can be rewritten as in the following expression:

$$E[h|X, L = 1] = X\beta + c\lambda(Z\gamma) \tag{15}$$

From Equation 15, the value of the coefficient *c* (the coefficient of λ), can be tested to see if it is statistically different from zero. If it is different from zero, then we may conclude that there is a 'selection effect' present. By controlling for this, the youth actual weekly hours model estimates are unbiased. However, if it is statistically insignificant, then the sample selection bias would not be a problem. One major problem in estimation Heckman models is finding relevant 'instruments'; that is, variables that affect youth labour force participation, but which do not influence actual weekly hours worked. In this study we employ having a child aged 0-4, child aged 5-14 (including squared and cubic terms). In the second stage, a Tobit model with Full Time Equivalent (FTEs) for each of the growth sector employment categories as dependent variables is used to account for the clustering of zeros due to lower bounded nature of the labour category variables.

In addition, we use the control function approach by including an instrumental variable (IV) in the LFP equation and an inverse mills ratio (IMR) in the second stage

equation. The IV proxies incentive to participate in employment as individuals see others work, and it proxies for capacity as it signals available employment opportunities.

We control for four employment dimensions, i.e., employment types (no wage farm-employment, farm wage employment, nonfarm wage, and self-employment), spatial heterogeneity by controlling for population density (based rural-urban gradient), age cohorts, and gender.

Study variables for youth labour participation

Our main variable of interest is the time spent by a youth on an economic activity that is considered employment (FTEs), which is assumed to be 12 months per year, 21 days per month, and eight hours per day. FTE takes into account actual hours worked, not just participation in a sector/job relative to a standard benchmark of 40 hours per week (FTE=1.0). A youth who is not in the labour force has a FTE=0, while a youth working half-time in a sector/job has a FTE of 0.5 for the job.

Other factors that affect youth labour capacity to reach employment opportunities include: distance and travel time to the nearest business areas (*NBA*), individual variables (*Ind*) such as age groups to control for varying incentives and capacities of individuals in varying life stages, female to control for gender discrimination and difference in expectations to engage in types of labour, school completion time at primary and secondary schools both which increase human capital, increasing capacity to work, marital status (being married can increase or decrease one's incentive to work, depending on spousal income and one's capacity to work due to household responsibilities).

The household factors (*HH*) include type of dwelling (permanent, semi and temporary), the dependency ratio (share of household members less than 15 years or older than 64 years) to proxy for both incentive and capacity as dependants increase one's need to earn income and limit one's time to work, dummy for receiving remittances to capture the incentive to work as they increase non-labour income, and owning farm land, which increases one's capacity to engage in farm labour, and proxies one's wealth status and therefore the incentive to work. Also, we use the standard age range of 15-35 for the potential economically active youth to allow comparative analysis with studies in other countries.

4. Results

Characteristics of Uganda's economy

According to UBoS, in 2016/17, Uganda's total working population was estimated at 15 million people. Of these, 49.1% were male and 50.9% were female. By location, 75.7% were in the rural area while 24.3% in the urban areas. The UNHS survey further showed that in 2016/17 the proportion of male in paid employment was 46%, while 28% of the working female are in paid employment and 57.6% of the women are in own account employment compared to 43.8% of their male counterparts. Regarding sectoral contribution to GDP, the agriculture sector contributed only 24% in 2019/20, while the industry sector accounted for 26% of GDP and the service sector accounted for 43% of the total GDP.

Table 2 shows the distribution of workers by sector and region obtained from UBoS 2016/17 UNHS. The analysis shows that agriculture is the main employer, accounting for 61.1% of the population. In terms of gender, 66.2% of women and 55.9% of men are employed in agriculture. While by residence, about 72.5% of the rural labour is employed in agriculture while 25.25% of urban labour is employed in agriculture-related activities. By region, 74.8% of labour in the eastern region is employed in agriculture, followed by 67.7% of labour in the north, 66.2% in the western region and about 37.9% in the central region. Agriculture is followed by trade which employs 15.05% of women, and 12.4% of men, while the services sector employs only 5.7%, and by gender it employs more men (8%). This shows the dominance of the agriculture sector in the country and hence the need to take appropriate policy actions that may yield more decent jobs in other sectors.

Table 2: Percentage distribution of workers by sector and by region

	Sex		Residence		Region				Total
Sector	**Female**	**Male**	**Rural**	**Urban**	**Central**	**Eastern**	**Northern**	**Western**	
Agriculture	66.23	55.9	72.55	25.25	37.9	74.8	67.7	66.2	61.1
Mining and quarrying	0.34	0.87	0.68	0.34	0.8	0.6	0.7	0.4	0.6
Agro processing	3.52	3.24	3.13	4.17	3.0	2.4	6.1	2.5	3.4
Other manufacturing	0.35	2.07	0.99	1.84	1.8	0.9	0.9	1.1	1.2
Utilities	0.06	0.29	0.1	0.41	0.3	0.0	0.3	0.2	0.2
Construction	0.04	5.62	2.07	5.05	4.5	1.3	2.4	2.8	2.8
Trade	15.05	12.4	10.01	25.49	22.4	8.2	11.1	12.6	13.7
services	3.52	8	3.93	11.37	9.8	4.6	3.6	4.4	5.7
ICT	0.14	0.37	0.1	0.74	0.4	0.1	0.3	0.2	0.3
Finance services	0.5	0.33	0.13	1.32	0.9	0.1	0.3	0.3	0.4
Real estate	1.12	2	0.86	3.74	2.3	2.2	1.0	0.7	1.6
Public administration	0.94	2.17	0.74	4.08	2.4	1.2	1.3	1.3	1.6
Education	2.59	2.82	2.08	4.66	4.0	1.3	1.8	3.5	2.7
Health	0.73	0.69	0.41	1.66	1.0	0.6	0.8	0.5	0.7
Others activities	4.86	3.25	2.22	9.87	8.7	1.6	1.9	3.6	4.1
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2016/17).

Results from the multiplier analysis: Multiplicative analysis of jobs for youths and women in Uganda

In this section, we use multiplier analysis to identify sectors that possess potential for youth and women employment in Uganda. We assess the relationships between output multipliers, commodity multipliers, leakages and employment multipliers. The multipliers are generated using the 2016/17 Uganda Social Accounting Matrix (SAM), and a combination of these with employment data generates the employment coefficients and the employment multipliers in terms of Full Time Equivalent (FTE). The structural and sectoral multiplier analysis is presented below.

Structural analysis of labour by youths, gender and skills

In this section, we present the most recent labour structure of the Ugandan economy using the 2016/17 Social Accounting Matrix (SAM). We categorize this by skill types, youths (18-30 years of age) and gender. The broad categories include; aggregate labour, female labour, aggregate youths, unskilled youths, semi-skilled youths, and skilled youths. Regarding the sectors of the economy, we use three broad sectors, i.e., agriculture, industry, and services. For each labour type, we compute its contribution to value-added of the respective sectors. This aids in assessing the impact of each labour type on economic growth (GDP). The results are shown in Table 3.

National labour aggregates and value-added: Table 3 shows that, on average, labour contributes 27.2% to the national value-added. Out of this contribution, 7.8 percentage points is contributed by the female labour and 10.2 percentage points is contributed by youths. We categorize the youths into three skill categories. The skilled youths contribute more (about 3.6%) to value-added than the rest. This is followed by unskilled youths (2.0%), and lastly the semi-skilled youths (1.0%). This implies that the portion of Uganda's economic growth attributed to the youths is largely driven by the skilled youths, followed by unskilled youths and lastly semi-skilled youths. The contribution of unskilled youths is second largely because of the large number of youths employed in the informal sector such as agriculture, transport services, construction, and agro-processing and the general service sector. The policy insight from this analysis is that, the government needs to adopt policies to improve the skills of youths so as to enhance their capacity to accelerate economic growth as well as improve their earnings and household welfare.

Table 3: Contribution of youths and women to sectoral value-added

Sectors	Aggregate Labour	Of which female and youth labour				
		Female labour	Youth labour	unskilled Youths	Semi-skilled Youths	Skilled Youths
Agriculture	**12.1%**	**4.0%**	**5.3%**	**3.2%**	**0.8%**	**1.3%**
Food crops	10.6%	4.9%	5.1%	3.2%	0.8%	1.1%
Cash crops	18.2%	5.4%	9.2%	4.9%	1.2%	3.1%
Coffee	18.1%	4.8%	9.2%	4.8%	1.1%	3.4%
Tea	19.6%	5.2%	10.0%	5.2%	1.2%	3.7%
Other cash crops	18.1%	7.4%	8.9%	5.2%	1.6%	2.1%
Cattle & animal husbandry	14.5%	1.5%	5.7%	3.5%	0.7%	1.4%
Industry	**18.9%**	**6.4%**	**7.8%**	**1.3%**	**0.7%**	**5.7%**
Agro-processing	12.4%	5.8%	4.7%	2.1%	0.5%	2.1%
Light manufacturing	29.2%	5.5%	11.4%	1.5%	1.4%	8.6%
Heavy manufacturing	19.2%	7.5%	8.7%	0.4%	0.6%	7.8%
Construction	43.0%	0.4%	20.0%	2.2%	2.0%	15.9%
Services	**37.6%**	**11.8%**	**12.7%**	**1.6%**	**1.1%**	**10.%**
Tourism	18.5%	7.7%	7.1%	1.0%	0.7%	5.5%
Transport	54.9%	0.3%	20.8%	4.8%	3.5%	12.5%
Financial & insurance	56.1%	19.2%	26.9%	0.3%	1.6%	25.1%
Wholesale & retail trade	6.6%	1.9%	2.4%	0.7%	0.3%	1.5%
Other services	46.9%	13.2%	16.0%	2.0%	1.3%	12.7%
National Aggregate	**27.2%**	**7.8%**	**10.2%**	**2.0%**	**1.0%**	**7.2%**

Youth employment and value-added: Table 3 shows that youths add more value in the services sector by about 12.7% of the services value-added. This is followed by the industry sector where youths contribute about 7.8% of industrial value-added and lastly agriculture where youths contribute about 5.3% of the agricultural value-added. Within the services sector, the contribution of youths (26.9%) is highest in the financial intermediation and insurance where 25.1 percentage points are attributed to the skilled youths. This is followed by the transport sub-sector. In the industry sector, the contribution of youths is highest in the construction sector (20.0%), and in the agricultural sector youths contribute more to the value-added among the cash crops sub-sector (9.2%). In order to use this information to inform the choice of sectors to be supported, youth employment needs to be complemented with results on the number of youths employed per sector to neutralize the wage effect.

With regard to skill type, in the agricultural sector, the contribution of youths is dominated by the unskilled youths (3.2%) followed by skilled youths (1.3%) and lastly semi-skilled youths (0.8%). This shows that the agricultural sector is dominated by less skilled youths. This could explain why agriculture posts the lowest labour contribution (12.1%) to sectoral value-added. In the industry sector, the contribution of youths is

dominated by skilled youths (5.7%) followed by unskilled youths (1.3%) and lastly semi-skilled youths (0.7%). In the services sector, the contribution of youths to value-added is dominated by skilled youths (10.0%) followed by unskilled youths (1.6%) and lastly semi-skilled youths (1.1%). In summary, services and industry sectors are driven by skilled youths, and the agriculture sector by unskilled youths. This shows that the skilled labour are shunning away from agriculture in search for opportunities in the industry and services sectors. This could explain the productivity challenges in the agriculture sector. Thus, to enhance productivity in the agricultural sector would require skilling of the youths.

Gender and value-added: Table 3 shows that the contribution of female labour to value-added is larger in the services sector (11.8%) followed by the industry sector (6.4%) and lastly in the agricultural sector (4.0%). The low contribution in the agricultural sector could be reflecting the low implied relative wages or returns in the sector. This shows that female youths in Uganda are increasingly participating in economically productive sectors across all entities. Thus, there is need to continue improving the skills of female youths to enable them to increase their participation in sectors like industry and services where value addition rewards to labour are higher. Adoption of this policy option is envisaged to continue advancing the drive of women emancipation and equity in the labour market.

Sectoral multipliers and linkages

In this section, we present and assess the linkages between economically productive sectors of the economy. The analysis uses output multipliers, commodity multipliers and leakages. Commodity multipliers capture the total effect on commodity demand whereas output multipliers are the portion of commodity demand that is supplied through domestic production. The difference between commodity and output multipliers is the leakages or multiplicative capacity lost due to imports. The results in Table 4 show the changes in commodity supply and output resulting from a unit changes in demand for the respective commodity. This captures the quantitative impact of the expansion of demand through backward and forward linkages within the economic system. Sectors with higher leakages export jobs to countries where imports are purchased. Thus, reducing leakages would increase employment opportunities for youths and women, though the magnitude would depend on the size of structural multipliers.

Table 4: Decomposed sectoral output and commodity multipliers

	Output Multiplier	Commodity Multipliers	Leakages	Leakage as % of Commodity Multiplier	Labour Income Multiplier
Agriculture	2.55	3.25	0.70	21.4%	0.38
Cash crop	2.58	3.28	0.70	21.5%	0.42
Coffee	2.68	3.33	0.66	19.7%	0.41
Tea	2.68	3.34	0.65	19.6%	0.42
Other cash crop	2.36	3.17	0.80	25.3%	0.42
Other crops	2.28	2.98	0.70	23.6%	0.35
Animal husbandry	2.75	3.41	0.66	19.4%	0.38
Industry	2.30	3.11	0.81	26.1%	0.40
Agro-processing	2.50	3.31	0.80	24.3%	0.40
Light manufacturing	1.92	2.81	0.88	31.5%	0.46
Heavy manufacturing	1.50	2.40	0.90	37.6%	0.35
Construction	2.87	3.55	0.68	19.1%	0.39
Services	2.61	3.27	0.66	20.1%	0.52
Tourism	2.64	3.32	0.68	20.4%	0.49
Transport	1.63	2.44	0.81	33.2%	0.47
Financial intermediation	2.90	3.51	0.61	17.3%	0.62
Wholesale & retail trade	2.77	3.35	0.58	17.4%	0.33
Other Services	2.72	3.35	0.63	18.8%	0.60
National Aggregate Tourism Multipliers	**2.49**	**3.21**	**0.72**	**22.5%**	**0.43**

Note: *Other cash crops include: cocoa, vanilla, flowers, cotton, tobacco-farm, sunflower and other cash crops.

Table 4 shows that the services sector has the highest output multipliers (2.61) followed by the agricultural sector (2.55) and lastly the industry sector (2.3). In the agricultural sector, the multipliers are higher in animal husbandry (especially dairy farming) and cash crops like coffee and tea. In the industry sector, output multipliers are high in the construction, and agro-processing. These are followed by light manufacturing industries. In the service sector, financial intermediation, wholesale and retail trade and tourism have strong multipliers.

Given the commodity multipliers, the leakages are highest in industry (26.1%) followed by agriculture (21.4%) and lastly services sector (20.1%). The broad sub-sectors with strong leakages include; heavy manufacturing, transport, and light manufacturing. The industrial sector has strong leakages largely because most of the intermediate inputs for light and heavy manufacturing are imported. These results show that sectors with higher leakages have weak output multipliers. This is largely because the productive capacity from additional demand is externalized through imports. Output in these sectors (like manufacturing and transport) can be revamped through import substitution.

In addition, the services sector has relatively strong labour income multipliers followed by industry and lastly agriculture. It should be noted that, agriculture has higher output multiplier (2.55) than industry (2.3) though the industrial sector has higher labour income multiplier (0.4) than agriculture (0.38). This implies that an injection of a uniform amount in industry and agriculture would generate more labour income in industry than agriculture. This provide signals that labour productivity is low in agriculture compared to industry; thus, an inclusive labour-led growth would happen if the economy embraces policies that promote mobility of labour from agriculture to other sectors like industry and services. In regard to youths, labour income multipliers in agriculture are largely driven by unskilled youths, whereas in the industry and service sectors it is dominated by skilled youths (see Table 3). Thus, to facilitate mobility of labour to reduce labour excess capacity in the agricultural sector to more productive sectors like industry and services require skilling of labour especially youths.

Decomposed labour income multipliers by youths, gender and skills types

In this section, we disaggregate the labour income multipliers by gender, youths and skills. This helps in capturing the income rewards to different labour characteristics resulting from a unit increase in demand. This addresses question like, if demand for a given sectoral commodity increases by one billion shillings, by how much in Uganda shillings does labour income increase for different labour types? The results are shown in Table 4.

Table 5: Labour income multipliers categorized by youths, gender and skills

	Labour Income Multiplier	Of which female and youth labour				
		Female labour income Multiplier	Youths labour income Multiplier	unskilled Youths labour	Semi-skilled Youths labour	Skilled Youths labour
Agriculture	**0.396**	**0.126**	**0.183**	**0.066**	**0.022**	**0.047**
Cash crop	0.418	0.131	0.211	0.077	0.026	0.054
Coffee	0.414	0.129	0.211	0.075	0.024	0.056
Tea	0.421	0.133	0.215	0.077	0.024	0.057
Other cash crop	0.420	0.131	0.206	0.078	0.029	0.050
Other crops	0.347	0.113	0.158	0.059	0.021	0.040
Animal husbandry	0.380	0.123	0.122	0.043	0.013	0.034
Industry	**0.401**	**0.102**	**0.161**	**0.039**	**0.018**	**0.052**
Agro-processing	0.401	0.112	0.154	0.048	0.019	0.044
Other industry	0.401	0.092	0.169	0.031	0.017	0.060
Light manufacturing	0.462	0.110	0.181	0.034	0.018	0.064
Heavy manufacturing	0.353	0.079	0.145	0.025	0.014	0.052
Construction	0.388	0.087	0.180	0.033	0.018	0.064

continued next page

Table 5 Continued

	Labour Income Multiplier	Of which female and youth labour				
		Female labour income Multiplier	Youths labour income Multiplier	unskilled Youths labour	Semi-skilled Youths labour	Skilled Youths labour
Services	**0.501**	**0.146**	**0.205**	**0.035**	**0.019**	**0.076**
Tourism	0.489	0.129	0.208	0.033	0.016	0.079
Transport	0.467	0.075	0.179	0.043	0.022	0.057
Financial & Insurance	0.618	0.216	0.301	0.033	0.026	0.121
Wholesale & retail trade	0.330	0.108	0.121	0.028	0.012	0.040
Other services	0.601	0.200	0.214	0.035	0.016	0.081
National Aggregate	**0.433**	**0.125**	**0.183**	**0.047**	**0.020**	**0.058**

National labour income multipliers: Table 5 shows that, on average, a unit increase in demand of any given sector at the national level would result into changes in labour income by 0.433 units. Labour income multiplier in the services sector (0.501) is higher than the national average (0.433). This means the rest of the sectors have lower labour income multipliers like 0.401 for the industry sector and 0.396 for the agricultural sector. This relates both to the number of employees and the wage rates provided in each of these sectors.

Female labour income multipliers: In regard to income earned by the female gender, at national average, a unit increase in demand would generate about 0.125 units of labour incomes for women workers. The female labour income multipliers are higher in the services sector (0.146) followed by agricultural sector (0.126) and lastly industry sector (0.102). Within the agricultural sector, the female labour income multiplier is higher among the cash crops especially the tea sub-sector. In the industry sector, the labour income multiplier for women is higher in the agro-processing followed by light manufacturing in Uganda. In the services sector, the female labour income multiplier is higher in the financial and insurance sector and the tourism sector. Thus, policies designed to enhance female labour income earnings should focus on expansion of production in sectors like cash crops (especially tea), agro-processing, light manufacturing, financial and insurance, and tourism sectors.

Youth labour income multipliers: In regard to the youths, an average national unit increase in aggregate demand for any commodity would increase youth labour income by 0.183 units. In comparison, the services sector would provide more labour income (0.205 units) from a unit of expansion in demand. This is followed by agriculture sector (0.183) and lastly the industry sector (0.161). In the agriculture sector, youth labour income multipliers are higher among cash crop sub-sectors like tea and coffee. Among cash crops, tea sub-sector has the highest youth labour

income multipliers largely because more than half of contribution of labour to value-added in the tea sector is attributed to youth. In the industry sector, youths labour income multiplier is high in the light manufacturing followed by construction and agro-processing. In the services sector, youth labour income multipliers are higher in the financial and insurance and tourism. These results indicate that policies intended to enhance labour incomes for youths should focus on supporting; cash-crop production, light manufacturing, construction, agro-processing, financial and insurance, and tourism sectors.

Regarding labour skills for youths, we find that within the services sector the skilled youths (0.076) are the main beneficiaries of expansion of demand for general service commodities in Uganda. This is followed by unskilled youths (0.035) and lastly semi-skilled youths (0.019). Thus, any policy designed to increase youth employment in the services sector should also focus on improving the skills of youths. In the agriculture sector, the main beneficiaries in terms of youth labour income multipliers are the unskilled youths whereas in the industry sector are the skilled youths. However, within the industry sector the unskilled youths are the main beneficiaries in the agro-processing sub-sector. This implies that policies that are aimed at improving the welfare of unskilled youths should focus on increasing investments in the productivity of agriculture and agro-processing. Thus, as government embarks on skilling of youths in the long term, in the medium term complementary policies could be adopted to provide employment for the unskilled youths through supporting sectors like agro-processing and agriculture (especially cash crops).

Sectoral backward and forward linkage analysis

In this section, we assess the strength of each of the sub-sectors in terms of the backward and forward linkages with other sectors. We consider sectors with backward and forward linkages greater than 1 as strong sectors. Thus, their expansion would relatively accelerate economic output and growth faster. Sectors with backward linkages greater than 1 but forward linkages less than 1 are backward-oriented sectors. Those with forward linkages greater than 1 and backward linkages less than 1 are forward-oriented sectors. Sectors with both forward and backward linkages less than 1 are weak sectors in terms of accelerating economic output from marginal demand. Economic output and growth would be strengthened through policies aimed at structurally transforming weak, backward-oriented and forward-oriented sectors into strong (key) sectors. The results are shown in Figure 1.

Figure 1: Backward and forward linkages

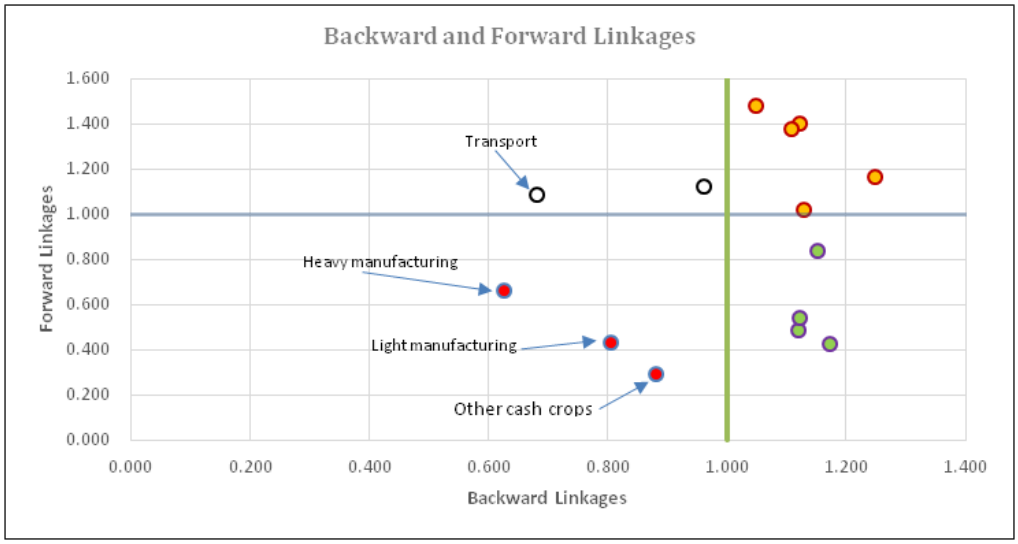


Figure 1 shows that the key sectors with strong forward and backward linkages are: agro-processing, tourism, financial intermediation and insurance, other agriculture (i.e., forestry), and other services. These are the sectors that would accelerate economic output and growth if supported in terms of enhancing aggregate demand for their products. A unit increase in demand for each of these sectors (i.e., agro-processing) would ignite an increase in output of the sector of incidence (i.e., agro-processing), and also generate ripple effects in terms of increasing output for sectors that supply inputs (i.e., agricultural sector) and those that purchase the outputs of the sector (i.e., sectors that use agro-processed products as inputs).

The backward-oriented sectors include: coffee, tea and construction. Coffee and tea are backward-oriented because they largely source inputs from the domestic market (local sectors) and have weak forward linkages because they are largely exported with less value addition and most of them in their raw form. Accelerating the contribution of these sectors to economic output and growth would require transforming them into strong sectors through strengthening their forward linkages. Their forward linkages would be strengthened through supporting value addition to these products especially before they are exported.

The forward-oriented sectors are transport and food crops. Transport is forward-oriented largely because it is integrated in all products supplied in the domestic market and yet its inputs (petroleum products) are totally imported. Food crops are forward-oriented because food crops in Uganda are largely cultivated using traditional tools (like hoes) and also with minimal or no industrial inputs (like fertiliser) which is attributed to the general fertility of the land. Food crops are used as inputs to other sectors like agro-processing industries, hotels and restaurants and more; thus making them forward-oriented. Accelerating the contribution of these sectors to economic

output and growth would require transforming them into strong sectors through strengthening their backward linkages. This would be done through encouraging the use of domestic inputs. For example, cash crops like tobacco, cotton, cocoa, and vanilla are produced with minimal costs and exported with less or no value addition. Expanding the value chain of these cash crops (through value addition) would accelerate their impact on economic output and growth.

The weak sector include, light and heavy manufacturing and also other cash crops. The manufacturing sector has weak forward and backward linkages largely because they are capital intensive, their inputs are largely imported, and the outputs are produced for final consumption. The main contribution of these sectors to economic output and growth is largely through the import substitution channel. To accelerate the capacity of the manufacturing sector in generating economic output and minimizing leakages, there is need for use of locally procured intermediate inputs. The petroleum products are a special case; these would be sourced domestically when Uganda begins to commercially produce refined oil products.

Employment and output multipliers for youths and female workers

This section is aimed at identifying sectors with strong output and youth employment multipliers. A sector with both strong output multiplier and youth employment multipliers (in FTE terms) would simultaneously boost economic growth and youth employment given the current government policies. We use the median of multipliers as the relative cut-off points for strong and weak multipliers. The classification criterion is shown in Table 6.

Table 6: Classification of weak and strong sectors in creating youth jobs and sectoral output

		Sectoral Output Multipliers	
		High (>median)	**Low (< median)**
Employment Multipliers	High (>median)	(2) Strong output and employment multipliers	(3) Strong employment multiplier and weak output multipliers
	Low (< median)	(3) Strong output multiplier and weak employment multipliers	(4) Weak sector output and employment multipliers

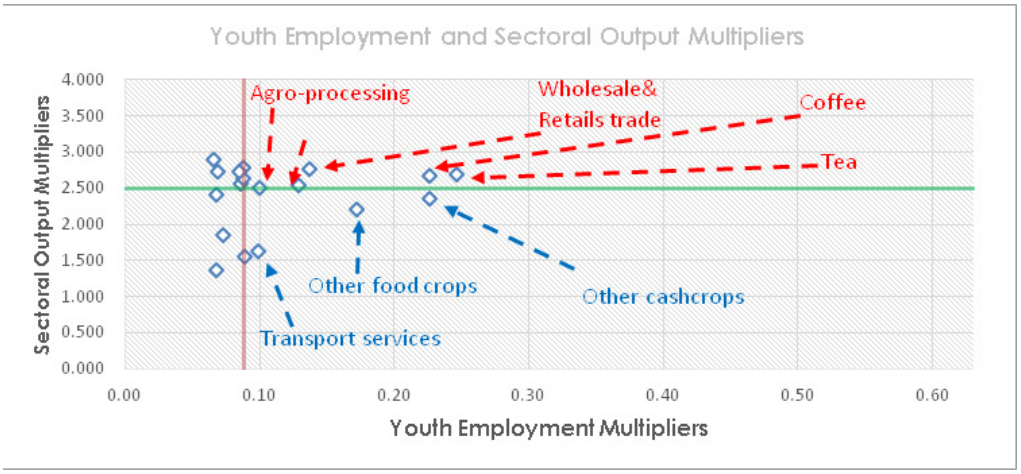
Based on the above classification, we categorize all sectors into four quadrants, namely: (1) sectors with both strong output and employment multipliers. (2) Sectors with strong output multipliers but weak employment multipliers. (3) Sectors with strong employment multipliers and weak output multipliers. (4) Sectors with weak output and weak employment multipliers. The results of this categorization of sectors are discussed in the subsections hereunder on youth employment multipliers and female employment multipliers.

Youth employment and output multipliers by sector

We categorize labour employment multipliers by sector and output. The aim of this section is to identify sectors that have potential to increase the number of youths and women employed in Uganda. We categorize sectors with high output multipliers and high employment multipliers as those with the highest potential to generate jobs in the Uganda. Then, sectors with high employment multipliers and weak output multipliers are considered to have potential to increase employment opportunities if output is enhanced.

We find that sectors with strong output and youth employment multipliers are: tea, coffee, wholesale and retail trade, agro-processing and animal husbandry. These have great potential to accelerate general job creation for youths in Uganda. Also transport services, other cash crops and other food crops have strong youth employment multipliers and weak output multipliers. Since these sectors had higher multiplicative leakages, embracing import substitution to these sectors and their intermediate inputs, particularly petroleum to the transport sector, would boost output multipliers and employment multipliers. Among the identified sectors cash crops, agro-processing, transport infrastructure, and energy are listed as priority sectors in the 3rd National Development Plan (NDP III). The results are shown in Figure 2.

Figure 2: Youth employment and output multiplier

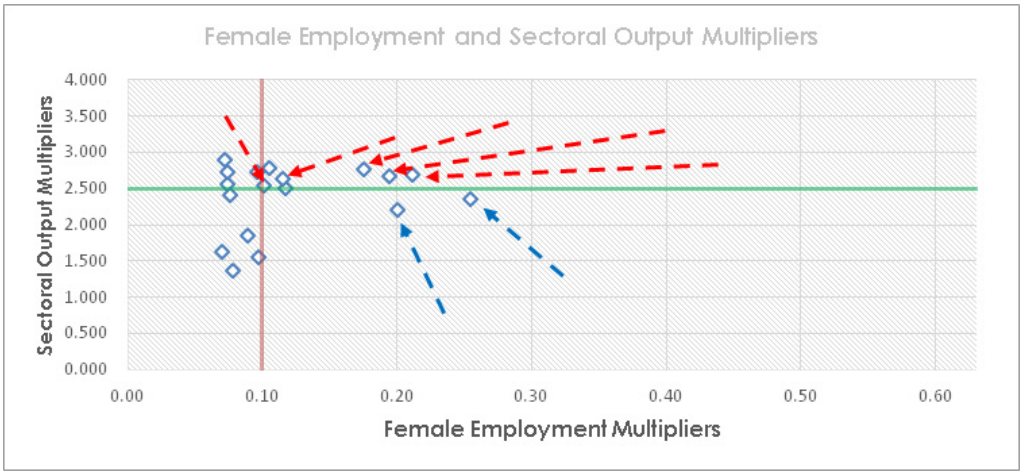


Female employment and output multipliers by sector

We find that sectors with strong output and women employment multipliers are: tea, coffee, wholesale and retail trade, agro-processing, tourism, and forestry. These have great potential to accelerate general job creation for women in Uganda. Of these, cash crops (coffee and tea), agro-processing, tourism, transport infrastructure, and energy are listed as priority sectors in the 3rd National Development Plan (NDP III). Supporting

productivity in these sectors would increase their ability to increase employment for women in Uganda. Then some like other cash crops and other food crops have strong women employment multipliers and weak output multipliers. To increase the ability of these sectors to employ more women would require policies that can increase their backward and forward linkages with the rest of the economy, for example, supporting agro-processing firms that require their outputs as intermediate inputs. The results are shown in Figure 3.

Figure 3: Female employment and output multiplier



Impact of sector expansion on youth and women employment and economic growth

In this section, we assess the impacts of increased aggregate demand for commodity of a given sector on the number of youth and women new jobs created as well as the resulting impact on economic growth (GDP). We simulate an increase in demand worth Ush10 billion. We provide impact on the general employment in the economy which we split into direct jobs, indirect jobs and total jobs. Direct jobs refer to new jobs created in the sector to which the additional demand is made. Indirect jobs refer to new jobs created in other sectors other than the immediate sector. Indirect jobs emerge in situations like when demand for a given sector expands it would create more demand for other commodities like intermediate inputs or supply inputs to other sector thus creating more jobs in other sectors other than the initial sector of the shock incidence. Then total jobs created are a summation of direct and indirect jobs. In addition to this, we also identify the number of new jobs allocated to the youths (18-30 years of age). These are also categorized into direct, indirect, and total jobs. Of the new jobs for youths, we compute the jobs attained by female youths. Lastly, we compute the impact on GDP. This helps in relating youth job creation to the economic growth of the general economy. The results are shown in Table 7.

Table 7: Impact on GDP, youth and female FTE employment as a result of Ush10 billion expansions in demand

	TOTAL JOBS CREATED				OF WHICH JOBS FOR YOUTHS			GDP
	Direct Jobs	Indirect Jobs	Total jobs created	o/w Female jobs	Total Youth jobs	o/w Direct Youth jobs	o/w Female youth jobs	Impact on GDP
1. Agriculture	**2,075**	**1,428**	**3,502**	**1,646**	**1,556**	**984**	**733**	**0.021%**
Coffee	3,089	1,643	4,731	1,938	2,264	1,578	911	0.020%
Tea	3,439	1,708	5,146	2,109	2,468	1,756	993	0.020%
Other cash crop	3,033	1,862	4,896	2,547	2,262	1,495	1,190	0.020%
Other crops	2,626	1,194	3,819	1,998	1,724	1,267	906	0.021%
Animal husbandry	1,395	1,638	3,033	1,009	1,294	614	418	0.021%
Forestry	411	1,811	2,223	1,048	880	126	423	0.021%
2. Industry	**301**	**1,770**	**2,071**	**933**	**868**	**127**	**392**	**0.017%**
Mining	459	1,700	2,158	973	889	195	395	0.017%
Agro-processing	258	2,105	2,363	1,172	1,002	96	498	0.017%
Light manuf.	197	1,622	1,819	887	732	73	363	0.016%
Heavy manuf.	109	1,556	1,666	784	679	45	328	0.015%
Construction	461	1,552	2,013	739	856	214	311	0.017%
3. Services	**888**	**1,403**	**2,291**	**1,061**	**924**	**326**	**452**	**0.019%**
Tourism	472	1,652	2,124	1,145	875	175	467	0.019%
Transport	977	1,477	2,454	699	987	370	302	0.017%
Utilities	90	1,536	1,625	741	692	43	325	0.021%
Financial interm. & insurance	106	1,459	1,565	718	662	51	315	0.018%
Wholesale & retail trade	2,276	1,233	3,508	1,755	1,371	833	714	0.020%
Telecommunication	49	1,589	1,637	754	679	23	327	0.016%
Other services	707	1,377	2,085	955	845	255	419	0.019%

Source: Computed using 2016/17 SAM Multiplier Model.

Table 7 shows that expansion of demand worth Ush10 billion would generate 3,502 FTE jobs in the agriculture sector, of which 1,428 FTE jobs are indirect jobs generated through backward and forward linkages. Of the total jobs created, 1,646 FTE jobs would be for women and the rest for men (1,859 FTE jobs). A total of about 1,556 FTE jobs would be for youths of which 733 jobs would be for female youths. Within the agriculture sector, cash crops (especially tea) have greater potential to generate more jobs for youths and female workers. The resulting GDP for the agricultural sector from the same demand shock is about 0.021 percentage points. Therefore, there is need for government intervention in terms of targeted training, mentoring and skills development of the youth to promote the agriculture sector.

In the industry sector, increased demand of Ush10 billion would generate 2,071 FTE jobs. Of these 1,770 FTE jobs are indirect jobs and 933 FTE jobs are for women. The jobs for youths would be 868 FTE jobs, of which 392 FTE jobs are for female youths. Within industry, agro-processing would generate the largest number of jobs for the youths. Thus, expansion of agro-processing sector would be key for job creation for youths and women. The resulting GDP for the industrial sector from the same demand shock is about 0.017 percentage points.

Expansion of demand for the service commodities worth Ush10 billion would generate about 2,291 FTE jobs of which 1,403 FTE jobs are indirect jobs and 1,061 FTE jobs are for women. The youths would account for about 924 FTE jobs for which 452 FET jobs are for female youths. Within the service sector, the whole sale and retail trade would generate the largest number of jobs for the youth and women followed by transport and tourism sectors. The resulting GDP for the industrial sector from the same demand shock is about 0.019 percentage points.

In general, the agriculture sector would generate more jobs for youths and women. This is followed by services sector and lastly industry sector. It is important to note that agro-processing would generate more jobs for the youths and women more than average for the services sector. Thus, to accelerate jobs for youths and women, there is need to support sectors like agriculture (especially cash crops), agro-processing, wholesale and retail trade, tourism, and transport services. Since agricultural sector posts the highest impact on economic growth (GDP), the supporting policies should be holistic in that the whole value chain of key sectors is supported. For example, supporting agriculture sector to unlock employment potential for youths and women would require complementary efforts of investing in agro-processing to create market and add value for the agricultural products. This would expound the efforts of job creation for youths and women in Uganda.

Correlation analysis of factors affecting youth and women employment multipliers

In this section, we use correlations between employment multipliers, output multipliers, and leakages to identify the direction and magnitude of the economy-wide factors affecting the capacity of the economy to generate output and employment for youths and women. The correlation ranges between -1 and +1. The -1 is the extreme negative correlation or relationship between multipliers, whereas +1 coefficient is the maximum positive correlation or relationship between multipliers. We assess the correlations between the following variables: output multipliers, total employment multipliers, youth employment multipliers, female employment multipliers, import penetration ratio (IPR), multiplicative leakages, and labour income multipliers. The results are shown in Box 1.

Box 1: Correlations between multipliers based on 2016/17 SAM

There is a strong positive correlation between output multiplier and total employment multipliers across all sectors. This implies that increasing output has an increasing effect on job creation. In spite of this, the correlation between output and total employment multiplier is stronger than that between output multipliers with youth and women employment. This shows that, the productive sectors are still dominated by the male gender and the non-youth age group. There is also a strong negative correlation between output multipliers and import penetration and multiplier leakages at national level and agricultural sector. However, at sectoral level, there is a weakly positive relationship between output multipliers and multiplier leakages for the industry and services sector. This shows that, agricultural imports are largely for final consumption, whereas industrial and services sector imports are largely intermediate inputs and are complementary to domestic output. Thus, to enhance output as well as youth and women employment there is a need to reduce leakages through adopting import substitution policies like agro-processing. This would improve agricultural productivity as well as accelerate value addition to Uganda's raw products.

Youth and women employment multipliers have a negative correlation with import penetration and multiplicative leakages. This is because imports externalize potential jobs that would result from the additional demand shocks. Thus, multiplicative leakages through stronger import penetration are the key economy-wide factors affecting the capacity of the economy to expand output and accelerate the job creation for the youths and women in Uganda.

Barriers to stimulating employment in identified sectors

The results show that the services sector followed by the industrial sector has the highest labour income multipliers both for youths and female workers. In addition, value-added attributed to youths in these sectors is largely driven by skilled youths. Based on the 2019/20 UNHS, about 50.4% of the youths are employed in agriculture and 54% of these are unskilled. The industry sector employs about 36.8% of the youths, of which 53.3% are skilled and 14.2% are semi-skilled. The services sector employs about 12.9% of the youths, of which 68.4% are skilled, 10.7% are semi-skilled, and 20.9% are unskilled. This shows that limited skills among the youths is a barrier to migrating youth labour force from sectors with low income multiplier (like agriculture) to sectors with higher labour income multiplier (like services and industry). Thus, there is need of a deliberate policy to equip youths with skills so as to ease migration and productivity across sectors.

The industry sector, especially agro-processing, was found to have both strong output and employment multipliers for youths and female workers. However, about 24.3% of the commodity multiplier from an additional demand in agro-processing sector leaks out of the economy thus externalizing potential jobs. And about 37.6% of commodity multiplier in the heavy manufacturing sub-sector does not translate into output expansion due to leakages. Lastly, about 31.5% of multipliers generated in the light manufacturing leaks output of the economic system. These high rates of leakages of potential output form an implied barrier for expansion of job opportunities in the industry sector. The second and third National Development Plan (NDP II and NDP III) identified expansion of industrialization as the main avenue for job creation for the youths. As a result, policies like development of industrial parks, tax incentives and other incentives like provision of free industrial land were adopted. Despite of these measures, the higher rates of leakages in the industrial sector form a silent barrier for government efforts to generate jobs for youths and female workers through industrialization. The solution to this would be to focus more on the chapter of industrialization that require raw materials be produced locally, and also embrace import substitution for industrial goods that are largely imported. Such measures will expand the ability of the industrial sector to avail more jobs for youths and female workers per unit of demand that emerges.

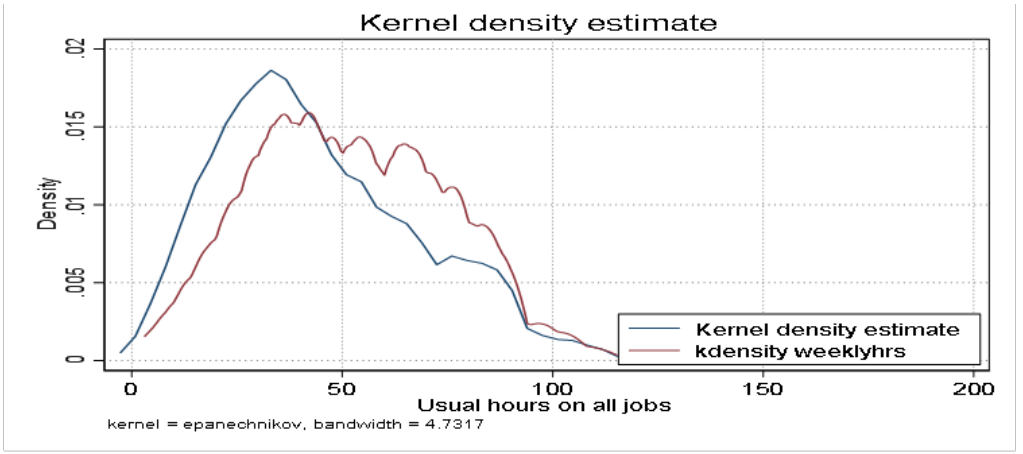
In the preceding analysis, we have established that there are differences between male and female youth regarding access to employment in the different sectors. In addition, there are differences in their contribution towards total output or value

addition. In the next section, we analyse whether indeed there exists inequalities related to gender. Further, we attempt to identify the causes of the inequalities and establish whether they arise from youth's socioeconomic background, and their effects on youth's access to employment in the growth sectors. We used the UNHS 2019/20 survey data to undertake the analysis and estimations.

Measuring inequality

We used Kernel density estimation and Gini coefficients to measure inequality access to employment related by gender, spatial and socioeconomic factors among the youth. The findings are shown in Figure 4. Kernel density is a non-parametric density estimation that allows one to stimulate the shape of the distribution and hence helps to visualize how unequal access to employment actually is. The greater the inequality in access, the more spread out the distribution will be.

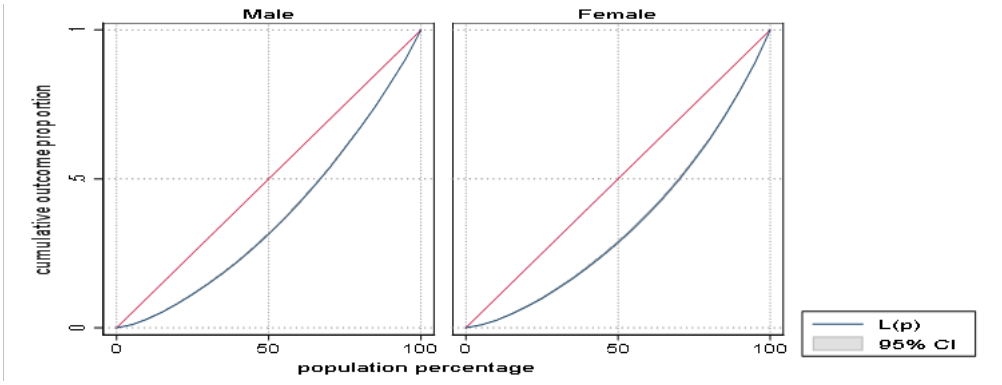
Figure 4: Kernel density estimation of inequality access to employment by gender and actual hours worked per week



Source: UNHS (2019/20).

The Gini coefficient takes the values between 0 and 1. If access to employment is perfectly equally distributed, the Gini coefficient would be equal to zero, and it is equal to 1 when it is perfectly unequally distributed. Figure 5 shows that there is an observable more inequality to employment among female youth than their male counterparts.

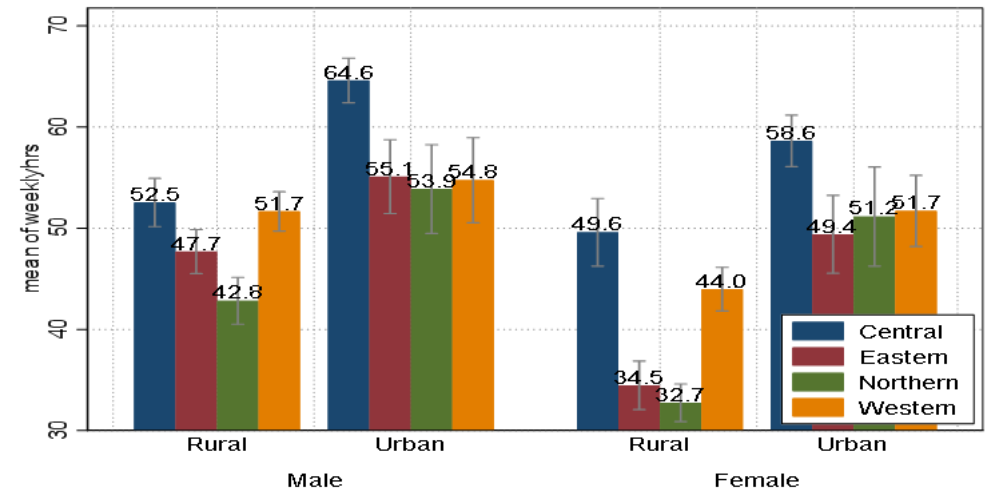
Figure 5: Gini coefficient inequality measure in weekly hours worked by gender



Source: UNHS (2019/20).

Figure 6 shows the average weekly hours worked by male and female youth. A quick glance at this graph shows that male youth work more hours compared to their female counterparts in urban areas of all regions. Surprisingly, female youth in all rural areas work fewer weekly hours than their male counterparts.

Figure 6: Mean weekly hours worked by the youth by region and residence



Source: UNHS (2019/20)

Table 8 provides the background characteristics of the youth for the whole sample and by gender. In terms of residence, the data shows that more youth (60.5%) are based in rural areas compared to 39.5% in urban areas. By gender, more male youth (63.7%) are in rural areas than female youth (56.6%), while more female youth (43.4%) are in urban areas than male youth (36.3%). In terms of education, only 14.2% of youth have post-secondary education with no big difference between male and female youth. By regional distribution, a large proportion of youth (44.1%) are based in the Central region with few youths (15.9%) in the Northern region.

Table 8: Background characteristics of the youth by gender

	Male	Female	Full Sample
Residence			
Rural	63.7	56.6	60.5
Urban	36.3	43.4	39.5
Education level			
No formal education	4.9	8.8	6.7
Some primary	33	28.1	30.7
Completed primary	13.4	12.7	13.1
Some secondary	19.2	21.4	20.2
Completed secondary	15.4	14.5	15
Post-secondary plus	14.1	14.3	14.2
Region			
Central	44	44.3	44.1
Eastern	20.3	17	18.8
Northern	12.7	19.8	15.9
Western	23	19	21.2
Total	100	100	100

Source: Authors own tabulation from UNHS (2019/20),

Labour characteristics and distribution

Table 9 presents percentage of labour by sex, residence, and region. Table 9 indicates that there are more highly skilled employed male (6.2%) as compared to 4.8% of their female counterparts. Also, for all levels of labour skills (quality) male workers have better skills than female workers apart from unskilled workers which comprise more female (54.5%) than unskilled male workers (46.9%). In terms of residence, urban workers (12.2%) are highly skilled compared to 2.8% in rural areas, while 58.5% of the rural workers are unskilled compared to 31.3% of their urban counterparts. Skills analysis by the four main administrative regions indicate that Central region accounts for 9.4% of skilled workers, followed by 5% in the Western region, while Northern region ranks highly (65.9%) with unskilled labour, followed by Eastern by 57.6%, Western by 53.6% and central with 32.8%.

Table 9: Percentage Distribution of labour skill level by gender, residence and region

	Sex		Residence		Region				Total
	Female	Male	Rural	Urban	Central	Eastern	Northern	Western	
Unskilled	54.5	46.9	58.5	31.3	32.8	57.6	65.9	53.6	50.9
Skilled	28.2	33.2	25.1	44.7	43.3	27.5	20.4	26.8	30.6
Semi-skilled	12.5	13.8	13.6	11.8	14.5	11.8	10.8	14.5	13.1
Highly skilled	4.8	6.2	2.8	12.2	9.4	3.2	3.0	5.0	5.5
Total	100	100	100	100	100	100	100	100	100

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20)

Table 10 explores the extent to which youth employment differ by gender across different sectors. Overall, more youth are employed in the agriculture sector (34.4%). By gender, more male youth (36.1%) compared to 32.4% female youth are employed in agriculture sector. The results show that other services (21.4%) followed by trade (20.7%) employ more youth in Uganda than other sectors.

Table 10: Percentage distribution of sector of employment by gender

	Male	Female	Full sample
Agriculture	36.1	32.4	34.4
Mining	1.3	0.8	1.1
Manufacturing	8.1	9.9	8.9
Utilities	0.5	0.1	0.3
Construction	10.9	0.4	6.1
Trade	15.5	27	20.7
Transport	11.1	0.2	6.2
Finance	0.8	1	0.9
Other services	15.6	28.4	21.4

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20)

Even at the most aggregated level, descriptive analysis shows substantially different labour transition patterns across regions, gender, and residence. Table 11 presents youth transition stage in their employment status. The results show that 38.5% of male youth transited into stable jobs compared to 25.4% of their female counterparts, while more female youth (39.4%) transited to satisfactory jobs than male youth (32.3%) and more female youth (35.2%) are in transition than male youth (29.2%). Also, more urban youth (36.5%) transited to stable jobs than their rural counterparts (30%), while rural youth (37.5%) transited to satisfactory jobs than urban youth (32.5%), and more rural youth (32.5%) were in transition than urban youth (31%). By region, the Eastern (35.8%) followed by Western (35.7%) had the highest youth transition to stable jobs, while the Western (39.7%) had the highest transition to satisfactory job and Northern had the highest youth (39.2%) in transition.

Table 11: Percentage distribution of youth transition stages by background variables

	Transited stable job	Transited satisfactory job	In transition	Total
Sex				
Male	38.5	32.3	29.2	100
Female	25.4	39.4	35.2	100
Residence				
Rural	30	37.5	32.5	100
Urban	36.5	32.5	31	100
Region				
Central	33.3	36.5	30.3	100
Eastern	35.8	26.3	37.9	100
Northern	22.6	38.2	39.2	100
Western	35.7	39.7	24.6	100
Total	32.6	35.5	31.9	100

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Table 12 presents the employment categories for the full sample and by gender. Table 12 indicates that there are more female youth (22.5%) compared to male (20.5%) employed on-farm employment. However, more male youth (17.1%) than female youth (11.1%) are employed in farm wage employment. Interestingly, more female youth (40%) compared to male youth (27%) are engaged in non-wage self-employment, with an overall 32.9% of the youth employed in non-farm self-employment nationally. Also, data shows that more male youth (35.5%) compared to 26.4% of female youth are engaged in non-farm wage employment.

Table 12: Employment, occupation of the youth by gender

Status in Employment	Male	Female	Full Sample
On-farm employment	20.5	22.5	21.4
Farm wage employment	17.1	11.1	14.4
Non-farm self-employment	27	40	32.9
Non-farm wage employment	35.5	26.4	31.4

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Analysis of proportion of youth by employment status and background characteristics is presented in Table 13. It can be observed that there are almost 93% of both male and female youth employed in the informal sector in Uganda, with only about 7% in the formal sector of the economy. In terms of education, just about 23.9% of youth with post-secondary education are employed in formal sectors of the economy, while for the lower education categories the data show that less than 10% of youth are engaged in formal economic activities. In terms of regional youth

employment, the youth are dominantly employed in informal economic activities. Interesting, the data shows that, by industry employment main job, only finance (37.8%) followed by other services (16.1%) employ a big proportion of the youth, while other sectors dominantly employ the youth in informal activities.

Table 13: Proportion of youth by employment status and by background variables (%)

	Formal employment	Informal employment
Sex		
Male	7.1	92.9
Female	7.0	93.0
Education level		
No formal education	0.9	99.1
Some primary	0.8	99.2
Completed primary	1.3	98.7
Some secondary	9.1	90.9
Completed secondary	6.0	94.0
Post-secondary plus	23.9	76.1
Residence		
Rural	4.4	95.6
Urban	10.6	89.4
Region		
Central	9.6	90.4
Eastern	5.2	94.8
Northern	4.9	95.1
Western	5.8	94.2
Industry of employment for main job		
Agriculture	0.0	100.0
Mining	0.0	100.0
Manufacturing	3.8	96.2
Utilities	7.7	92.3
Construction	2.8	97.2
Trade	5.8	94.2
Transport	3.1	96.9
Finance	37.8	62.2
Others Services	16.1	83.9
Total	7.1	92.9

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20)

Analysis of the status of employment and background characteristics is presented in Table 14. By gender, more male youth (17.4%) compared to female youth (14.2%) are employed in permanent wage/salary employment, while a big number of male

youth (33.4%) compared to 21.8% of female youth are engaged in casual employment. In addition, female youth (46.3%) compared to 41.1% of male youth work in income generating activities, while 17.8% of female youth compared to only 8% work as family workers. Interesting, the data show that education is a key requirement for youth entry in the formal labour markets, whereby about 45.5% of youth with post-secondary education are employed in wage employment while very few youth with less than secondary education are employed in wage employment. Also, the data show that majority of the youth with less than secondary education are in casual and other income generating activities. Contrary, very few educated youth with secondary education and above are engaged in contributing to family work, while some reasonable proportion of the youth with lower education are engaged in contributing to family activities. We observe that youth wage employment is higher in urban areas (24.8%) compared to rural areas (10.8%), while income generating employs more youth in rural areas (44%) compared to 42.3% in urban areas. In addition, more youth in rural areas (14.9%) compared to 7.8% of urban youth contribute to family work. Regional distribution of youth wage employment reveals that the Central region is the highest with 20.8% and causal employment of 22.8%, and youth income generating enterprises (45.7%), while the Eastern region has the lowest wage employment (11.1) but dominates in terms of causal youth employment (41.9%). Disaggregation of youth employment by industry reveals that utilities industry provides more youth wage employment (65.4%) followed by the finance industry (55.1%), the other services industry (44.2%), and lowest in the mining industry (2.2). Regarding casual youth employment, it is highest in the mining industry (51.2%), followed by agriculture industry (35.9%), other services industry (28.6%), and lowest in the finance industry (6.1%). Interestingly, youth employment in income generating enterprises is highest in trade (73.1%), followed by manufacturing (62.6%), transport industry (53%), mining (39%), and lowest in construction industry (17.3%). As expected, contribution to family work is highest in agriculture (24%), and lowest in utilities and construction.

Table 14: Status in Employment by background variables

	Wage/Salary Earner	Casual Employee	Income Generating Enterprise	Contributing family worker
Sex				
Male	17.4	33.4	41.1	8.0
Female	14.2	21.8	46.3	17.8
Education level				
No formal education	7.1	29.6	44.3	19.0
Some primary	6.3	38.7	41.4	13.7
Completed primary	7.7	25.9	52.7	13.6
Some secondary	18.7	24.1	45.0	12.3
Completed secondary	16.9	27.7	45.6	9.8
Post-secondary plus	45.5	12.9	36.1	5.5

continued next page

Table 14 Continued

	Wage/Salary Earner	Casual Employee	Income Generating Enterprise	Contributing family worker
Residence				
Rural	10.8	30.3	44.0	14.9
Urban	24.8	25.0	42.3	7.8
Region				
Central	20.8	22.8	45.7	10.6
Eastern	11.1	41.9	35.6	11.4
Northern	10.4	20.4	53.8	15.5
Western	15.4	32.8	38.1	13.7
Industry of employment for main job)				
Agriculture	3.8	35.9	36.3	24.0
Mining	2.2	51.2	39.0	7.6
Manufacturing	11.7	16.9	62.6	8.8
Utilities	65.4	8.7	25.9	0.0
Construction	11.4	71.3	17.3	0.0
Trade	8.5	9.2	73.1	9.3
Transport	22.8	23.5	53.2	0.5
Finance	55.1	6.1	35.3	3.5
Others service sector	44.2	28.6	23.7	3.5
Total	16.0	28.4	43.4	12.2

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Table 15 presents the analysis on youth unemployment and potential labour force by gender and at national level. It can be observed from Table 15 that, overall in Uganda, 25.2% of youth in urban areas are unemployed, compared to 37.4% in rural areas. In terms of gender, more rural male youth (38%) compared to urban male youth (25.1%) are employed, while urban female youth (32.3%) and rural female youth (36.6%) are unemployed irrespective of level of education. It can be observed that there are almost 26% and 32.1% male and female youth in urban and rural areas with post-secondary education that are unemployed in Uganda, and by gender, urban male youth (23%) and rural male youth (30.7%) with post-secondary education are unemployed, while urban female youth (29.5%) and rural female youth (34.3%) with post-secondary education are unemployed. In terms of low education, there is a big proportion of both male and female youth unemployed in rural and urban areas. This confirms that job opportunities are quite rare in rural areas of the country. Interestingly, the data show that urban male youth (22.5%) compared to urban female youth (30.2%) are unemployed, while rural male youth (35.1%) compared to rural female youth (44.4%) are unemployed among youth who completed secondary education. But on average, more youth (38.6%) in rural areas compared to urban youth (26.2%) with secondary education are unemployed.

Table 15: Unemployment and inequality potential of labour force (%)

Educational Attainment	Male			Female			Total		
	Rural	Urban	All	Rural	Urban	All	Rural	Urban	All
No formal education	36.0	41.0	37.1	35.8	24.8	33.4	35.9	31.6	34.9
Some primary	44.1	37.2	43.0	54.1	43.4	52.0	48.7	40.5	47.2
Completed primary	43.2	29.8	39.9	49.7	39.9	46.7	46.1	35.0	43.1
Some secondary	43.2	27.2	37.5	51.5	40.8	46.8	47.1	34.7	42.2
Completed secondary	35.1	22.5	29.6	44.4	30.2	36.7	38.6	26.2	32.7
Post-secondary plus	30.7	23.0	25.9	34.3	29.5	31.0	32.1	26.0	28.1
Total	38.0	25.1	33.9	36.5	25.2	32.3	37.4	25.2	33.2

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Table 16 shows youth skills distribution for the youth employed in the different sectors in the country. It can be observed that the agriculture sector dominantly employ both male youth (52.1%) and female youth (52%) who are unskilled, male (41.8%) and female (39.2%) semi-skilled and proportionately skilled male (24.5%) and female youth (18.1%). Other services employ about 25.5% male skilled youth and 39.4% skilled female youth. Also, trade sector employs about 17.9% skilled male youth compared to 31.6% skilled female youth. This shows more potential for absorbing skilled female youth in terms of employment. Interestingly, the transport sector is dominated by male skilled youth (11.3%) compared to only 0.4% female skilled youth. Additional observation reveal high skilled male is dominant in the construction sector (10.6%) compared to only 0.4% of the skilled female counterparts. Surprisingly, key sectors like mining and utilities employ very few proportions of skilled youth. However, more semi-skilled male and female youth are employed in trade and construction sectors as compared to skilled youth. Also, interestingly, a reasonable number of unskilled male and female youth are employed in trade and construction. This could be attributed to the fact that they provide manual work that requires no specific skills and that is poorly paid.

Analysis of youth labour force participation by level of education attainment in Table 17 shows that, overall in Uganda, 55.5% of youth in urban areas are employed compared to 45.9% in rural areas. In terms of gender, more urban male youth (65.9%) compared to rural male youth (57.2%) are employed, while urban female youth (47.2%) and rural female youth (36%) participate in labour force irrespective of level of education. It can be observed that there are almost 74.8% and 67.3% of male and female youth employed in urban and rural areas with post-secondary education that are employed in Uganda, and by gender, urban male youth (82.8%) and rural male youth (76.4%) with post-secondary education are employed, while urban female

youth (66.9%) and rural female youth (55.7%) with post-secondary education are employed. In terms of education, just about 63.8% and 58.1% of urban and rural youth who completed secondary education are employed, while for the lower education categories, the data show that about 66.4% urban male youth and 62.4% rural male youth are employed, compared to 53.5% urban female and 40.6% rural female youth employed.

Table 16: Sector of employment by skill level

	Unskilled		Semi-Skilled		Skilled	
Sector	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Agriculture	52.1	52.0	41.8	39.2	24.5	18.1
Mining	2.3	1.0	0.9	1.1	0.6	0.5
Manufacturing	7.0	12.1	7.1	9.6	7.2	8.3
Utilities	0.0	0.0	0.0	0.0	1.0	0.1
Construction	7.3	0.4	10.9	0.6	10.6	0.2
Trade	12.7	18.7	16.3	28.7	17.9	31.6
Transport	10.3	0.0	13.3	0.0	11.3	0.4
Finance	0.0	0.2	0.0	0.0	1.4	1.3
Others services	8.2	15.6	9.7	20.7	25.5	39.4
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Table 17: Labour force participation rate by educational attainment

	Male			Female			Total		
	Rural	**Urban**	**All**	**Rural**	**Urban**	**All**	**Rural**	**Urban**	**All**
No formal education	62.4	66.4	63.3	40.6	53.5	43.1	48.2	58.3	50.2
Some primary	53.1	56.6	53.7	33.9	39.4	34.9	43.0	46.9	43.7
Completed primary	64.4	66.1	64.8	35.6	45.8	38.3	48.7	54.5	50.1
Some secondary	49.7	54.0	51.2	32.1	39.5	35.0	40.3	45.3	42.2
Completed secondary	68.3	76.5	71.7	45.6	53.4	49.5	58.1	63.8	60.7
Post-secondary plus	76.4	82.8	80.2	55.7	66.9	63.0	67.3	74.9	72.1
Total	**57.2**	**65.9**	**59.6**	**36**	**47.2**	**39.5**	**45.9**	**55.4**	**48.8**

Source: Authors' tabulation from Uganda National Household Survey (UBoS, 2019/20).

Determinants of youth participation in the labour force

To test whether youth self-select into labour force participation, we estimated a Heckman two-stage selection model by using a rich set of variables aimed at capturing observable differences in youth labour force participation rate. The first-stage selection equation is estimated via a probit model (column 1, Table 18). Subsequently, we compute the inverse Mills ratio (IMR, also termed Lambda), which takes account of the possible selection bias, which is insignificant at conventional levels. This implies that there is no significant selection bias into labour force participation. As such, we use a Type-1 Tobit model. We report both coefficients in Table 18 and marginal effects (ME) in Table 19 of the respective models. The marginal effects, quantifies the actual effect of each predictor of the estimated probabilities.

The estimates reported in Table 19 and the summary of key findings in Table 20 suggests that increase in household size raises the probability of engaging in labour force participation (LFP) and employment. Table 19 reports the coefficients for the labour force participation and Full Time Equivalent (FTE). First, we note that being in school lowers LFP and FTE levels in all occupational classifications except for own-farm work. These results are particularly strong for female youth. Being in school has a strong negative effect on LFP, due to scarcity of time. It also has a negative effect on FTEs. School programmes in Uganda have been set so that individual can participate in own-farming, and own-farming provides flexibility that allows individuals to farm during the period that they are not in class. In contrast, wage employment requires full-time activity and occurs throughout the year. This finding is similar to that of van den Broaeck & Kilic (2019) who found that being enrolled in school has its biggest negative impact on off-farm employment in urban areas where it is dominated by wage jobs.

Interestingly, the findings show that female youth do not have a significant effect on labour force participation and FTE compared to their male counterparts. But, completion of school, either primary or secondary and postsecondary by female has a significant effect on LFP and FTE. This finding also mirrors findings in Filmer & Fox (2014) who found that completion of primary, secondary, and post-secondary education raises the probability of engaging in labour market and it influences FTE by the youth. In addition, youth in urban areas show some incentive to engage in labour force participation, and the impact on FTE is positive. This variable, except for location, is also found to be one of the potential predictors that could affect youth's labour force participation and raises the probability of FTE among the youth. This finding agrees with our earlier SAM multiplier model findings that, on average, skilled/educated youth add more value to total output than their unskilled counterparts. Albeit, being a female youth living in an urban area does not influence their labour force participation and FTE.

Table 18: Determinants of labour force participation and full time employment

Variables	Participation Equations				Heckman Selection Equations			
	Coef	P-vale	Coef	P-vale	Coef	P-vale	Coef	P-vale
Education (RC: No education)					0.189**	(0.032)	0.303**	(0.027)
					0.189**	(0.032)	0.303**	(0.027)
					0.189**	(0.032)	0.303**	(0.027)
Education (RC: No education)								
	Primary	0.127*	(0.095)	0.151	(0.222)	0.128	(0.128)	0.256**
Secondary	0.191**	(0.015)	0.179	(0.167)	0.189**	(0.032)	0.303**	(0.027)
Post-secondary	0.129	(0.155)	0.305*	(0.064)	0.120	(0.255)	0.559***	(0.002)
Female	-0.023	(0.908)	-0.355	(0.266)	-0.031	(0.880)	-0.347	(0.305)
Female education (RC: No education)								
Female with primary	0.224**	(0.015)	-0.770***	(0.000)	0.243*	(0.091)	-0.877***	(0.000)
Female with secondary	0.181*	(0.061)	0.591***	(0.000)	0.192	(0.134)	0.731***	(0.000)
Female with post-secondary	0.141	(0.225)	0.476**	(0.017)	0.155	(0.249)	0.717***	(0.001)
Urban area	0.003	(0.963)	0.163	(0.126)	-0.001	(0.989)	0.308***	(0.008)
Female in urban area	-0.002	(0.969)	-0.014	(0.880)	0.001	(0.988)	-0.117	(0.231)
Rural household size	-0.013	(0.132)	-0.003	(0.847)	-0.013	(0.163)	-0.005	(0.740)
Urban household size	0.005	(0.705)	-0.022	(0.280)	0.005	(0.710)	-0.036	(0.102)
In school	-0.588***	(0.000)	-1.288***	(0.000)	-0.586***	(0.008)	-1.465***	(0.000)
Male age	0.008	(0.113)	-0.017*	(0.077)	0.009	(0.115)	-0.015	(0.146)
Female age	0.008*	(0.067)	-0.012**	(0.044)	0.009*	(0.054)	-0.011*	(0.092)

continued next page

Table 18 Continued

Variables	Participation Equations				Heckman Selection Equations			
	Coef	P-vale	Coef	P-vale	Coef	P-vale	Coef	P-vale
Poor	0.089**	(0.041)	0.053	(0.396)	0.096**	(0.045)	0.091	(0.166)
Non-Poor	0.118***	(0.007)	0.144**	(0.025)	0.138**	(0.015)	0.232***	(0.001)
Rich	0.158***	(0.000)	0.231***	(0.000)	0.173***	(0.007)	0.325***	(0.000)
Very rich	0.159***	(0.000)	0.374***	(0.000)	0.170**	(0.032)	0.490***	(0.000)
After COVID-19 outbreak	0.050**	(0.039)	-0.136***	(0.000)	0.053*	(0.071)	-0.150***	(0.000)
Received remittances	-0.173***	(0.000)	0.234***	(0.000)	-0.174***	(0.000)	0.255***	(0.000)
Has farmland	-0.129***	(0.000)	-0.155***	(0.000)	-0.131***	(0.000)	-0.195***	(0.000)
Digital registered			0.150***	(0.000)			0.162***	(0.000)
Member of agriculture group			0.094	(0.288)			0.108	(0.341)
Constant	3.669***	(0.000)	0.775***	(0.004)	3.683***	(0.000)	0.647**	(0.027)
lambda							-0.704***	(0.001)
Observations	5,005		5,005		5,005		5,005	

Note: p-values are in parentheses: *** p<.01, ** p<.05, * p<.1.

As expected, being in school reduces both youth labour participation and FTE across the models estimated. The results indicate that age of the youth shows a positive link with youth LFP, but a negative link with youths' FTE for both male and females. In addition, youths' wealth status has a positive significant effect on both LFP and FTE. The results show that as one's wealth status increases, the higher the effect of their participation in the labour force, with those of the youth from the richest households showing a higher effect compared to counterparts from other categories.

Table 19 presents the marginal effects for the estimated labour participation using maximum likelihood and two-step Heckman. The findings in Table 19 suggest that education has a significant effect on youth labour force participation. All education levels have a positive probability of youths' engagement in the labour force. Having primary education raises the probability of youth's labour force participation by between 27 and 28 percentage points, secondary education between 30 and 31 percentage point, and post-secondary by between 21 and 23 percentage points compared to youth with no education. Also, living in urban areas shows a positive probability of engaging in the labour force compared to counterparts living in rural areas. Living in an urban area increases the probability of youths' labour participation by between 7 and 10 percentage points, while being in school reduces youth labour participation by between 59 and 75 percentage points. The household size of the youth shows a negative association between labour force participation and employment. The results show that one additional member of the household reduces the probability of being in work by 0.8 percentage points. In addition, results show that age still influence the youth's likelihood in labour force participation. The results show that one additional year in the age of the youth raises the probability of being in work by 9 percentage points.

As expected, wealth status has a significant effect on youths' labour force participation. The results show that being poor raises the probability of youth's labour force participation by 10 percentage points, non-poor by 14 percentage points, rich and very rich by 17 percentage points compared to counterparts that are very poor. The findings are a true reflection of what is on ground in Uganda. Usually, it is the children of the rich who get employed faster than their poor counterparts, probably due to their parent's networks, let alone going to better schools. Findings also show that post COVID-19 outbreak show a negative probability of engaging in labour force participation than before COVID-19 outbreak. Indeed COVID-19 outbreak has reduced the probability of the youth being in work by 5 percentage points. Surprisingly, receiving remittances reduces the probability of youth participation in the labour force by between 12 and 17 percentage points. This is similar to unemployment benefits in the developed countries. Beneficiaries of such benefits tend to sit back and wait instead of joining the labour force. However, owning farmland raises the probability of youths' participation in the labour force by 13 percentage points.

Table 19: Marginal effect for labour force participation

	MLE		Heckman	
	ME	**Pval**	**ME**	**Pval**
Education (RC: No education)				
Primary	0.283***	(0.000)	0.273***	(0.000)
Secondary	0.305***	(0.000)	0.303***	(0.000)
Post-secondary	0.232***	(0.001)	0.213***	(0.001)
Female	0.174	(0.151)	0.170	(0.150)
Urban	0.104***	(0.002)	0.070**	(0.034)
Household size	-0.012	(0.181)	-0.008**	(0.035)
In School	-0.745***	(0.005)	-0.586***	(0.008)
Age in years	0.009**	(0.044)	0.009***	(0.020)
Wealth index (RC: Very poor)				
Poor	0.028	(0.652)	0.096*	(0.045)
Non-poor	0.069	(0.352)	0.138**	(0.015)
Rich	0.054	(0.569)	0.173***	(0.007)
Richest	0.024	(0.838)	0.170**	(0.032)
After COVID-19	-0.036	(0.225)	-0.053*	(0.071)
Received remittance	-0.124***	(0.001)	-0.174***	(0.000)
Has farmland	-0.061	(0.255)	-0.131***	(0.000)
Observations	5,736		235.13	
Wald Chi(2)	156.6	(0.000)	235.13	(0.000)

Note: p-values are in parentheses: *** p<.01, ** p<.05, * p<.1.

The multinomial logit results for youth participation in the different types of employment are shown in Table 20, and their corresponding marginal effects are shown in Table 21.

Table 20: Determinants of Full Time Equivalent of hours worked per week

	Female	Male
Education (RC: No education)		
Primary	.665***	.391***
	(0.000)	(.007)
Secondary	.648***	.771***
	(0.000)	(0.000)
postsecondary	.874***	.875***
	(0.000)	(0.000)
Urban area	-.026	-.017
	(.219)	(.384)
Household size	-.007	.054**
	(.769)	(.033)
In school	.378	.766***
	(.349)	(.005)
Age in years	.005	.009
	(.549)	(.375)
Wealth Index (RC: Poorest)		
Quintile 2	.214**	-.085
	(.038)	(.463)
Quintile 3	.007	-.298***
	(.951)	(.01)
Quintile 4	.091	-.312***
	(.393)	(.006)
Quintile 5	.013	-.263**
	(.914)	(.029)
After COVID-19	.161**	.207***
	(.011)	(.001)
Received any remittances	-.282***	.093
	(0.000)	(.283)
Own farmland (yes)	.729***	-.006
	(0.000)	(.932)
Registered mobile user	.006	-.037
	(.926)	(.58)
Member of agriculture group	-.248	-.143
	(.124)	(.466)
Constant	2.485***	2.353***
F-stat	14.92 (0.000)	7.69 (0.000)
Observations	2057	1769
R-squared	0.105	0.066

Note: p-values are in parentheses: *** p<.01, ** p<.05, * p<.1.

Youth participation in the different types of employment

From Table 21, we note that the estimated marginal effects provide mixed results on the association between education levels and participation in the different types of employment. The findings suggest that having primary education reduces the likelihood of youth's labour force participation in on-farm employment by 8.6 percentage points, while it increases the probability to participate in subsistence farming by 6.7 percentage points. Also, the results show that having secondary education reduces participation by 7.5 and 6.7 percentage points in on-farm employment and farm wage employment, respectively; while it increase the probability by 5.6 and 6.3 percentage points of participation in non-wage and subsistence employment, respectively. Our finding also show that having post-secondary education reduces the probability of participating in on-farm employment and farm wage employment by 8 and 9.3 percentage points, respectively; while it increases the probability of participating in non-farm wage employment by 18.5 percentage points.

Interestingly, our results show that being male reduces the probability of participating in on-farm employment and farm wage employment by 5 and 6.7 percentage points, respectively; while it increases the probability of participating in non-farm self-employment and subsistence employment by 3.2 and 18.6 percentage points, respectively. Also, living in urban areas shows a reduction in participation in farm employment by three percentage points, while it increases youth participation in self-employment by 3.1 percentage points compared to their counterparts living in rural areas. The results further show that an additional household member reduces probability of youths' labour participation in on-farm employment by 0.6 percentage points, while being in school reduces youth labour participation by 17.8 percentage points. In addition, the empirical results show that age still influences the youth's likelihood in labour force participation. The results show that one additional year in the age of the youth reduces the probability of participating in subsistence employment by 4.4 percentage points.

As expected, wealth status has a significant effect on youths' labour force participation in the different types of employment. As expected, being poor raises the probability of youth's labour force participation in non-farm wage employment and in subsistence employment by 9.2 and 4.8 percentage points, respectively. Also, being non-rich increase participation in non-farm employment by 3.3 percentage points, and in non-farm wage employment and in subsistence employment by 6.9 and 8.8 percentage points, respectively. But being from a rich household reduces the likelihood of participating in on-farm wage employment by 4.4 percentage point, and increases the likelihood of participating in in non-farm wage employment by 6.1percentage points, while it reduces the likelihood of participating in subsistence employment by 10.3 percentage points. Also, post COVID-19 shows a positive

probability of youth engaging in farm wage employment by 5.2 percentage points, non-farm wage employment by 2.4 percentage points, and subsistence employment by 6 percentage points than before COVID-19 outbreak.

The estimated regional effects reveal interesting relationship between regional residence and youth participation in the different types of employment. Compared to youth in the Central region, living in the Eastern region reduces the probability of youth participation in on-farm employment by 16.7 percentage points, while it increases the probability of youth participation by 3.1 and 14.6 percentage points in farm wage and subsistence employment, respectively. Also, living in Northern Uganda reduces the probability of youth participation in on-farm and farm wage employment by 9.8 and 5.3 percentage points, respectively; while it increases the probability of youth participation by 6.9 in farm self-employment. This finding supports of our earlier findings, which showed that the greatest proportion of the population that is engaged in agriculture is in the Northern region. Table 21 further shows that youth in the Western region are 10.2 and 7.2 percentage points likely not to participate in on-farm and non-farm employment compared to counterparts in the Central region.

Table 21: Marginal effects for employment type

	On-farm Employment	Farm Wage Employment	Non-farm Self -employment	Non-farm Wage Employment	Subsistence On-farm Employment
Education (RC: No education)					
Primary	-0.0864***	-0.0129	0.0465	-0.014	0.0668***
	(0.0235)	(0.0197)	(0.0286)	(0.0283)	(0.0209)
Secondary	-0.0753***	-0.0669***	0.0229	0.0559*	0.0634**
	(0.0256)	(0.0204)	(0.0302)	(0.0295)	(0.023)
Post-secondary	-0.0803**	-0.0932***	-0.0331	0.1847***	0.0219
	(0.0329)	(0.0227)	(0.0344)	(0.0368)	(0.0325)
Male	-0.0498***	-0.0669***	0.0316**	-0.1007***	0.1858***
	(0.0093)	(0.0082)	(0.0115)	(0.011)	(0.0097)
Residence (base rural)	-0.0298*	-0.0002	0.0121	0.0306**	-0.0127
	(0.015)	(0.0118)	(0.0139)	(0.0124)	(0.0149)
Household size	-0.0048*	-0.0023	-0.0028	0.0033	0.0067***
	(0.0023)	(0.0018)	(0.0027)	(0.0023)	(0.0021)
Schooling status	-0.0006	-0.0032	-0.0266	-0.1477	0.1781***
	(0.0229)	(0.0181)	(0.0367)	(0.0351)	(0.0213)
Age	0.0243	0.0265	0.0254	-0.0326	-0.0437***
	(0.02)	(0.0161)	(0.0268)	(0.0237)	(0.0212)
Age2	-0.3772	-0.5112	-0.3281	0.5296	0.6868
	(0.409)7	(0.3325)	(0.5427)	(0.4845)	(0.4376)

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Table 21 Continued

	On-farm Employment	Farm Wage Employment	Non-farm Self -employment	Non-farm Wage Employment	Subsistence On-farm Employment
Wealth index (RC: Very poor)					
Poor Quintile	-0.0074	-0.001	-0.0357	0.0922***	-0.048**
	(0.0159)	(0.0136)	(0.0238)	(0.0237)	(0.0193)
Neutral Quintile	0.0379	-0.0328**	0.0135	0.0694***	-0.0879***
	0.0172	(0.014)	(0.0245)	(0.0238)	(0.0199)
Rich Quintile	0.0278	-0.0404***	0.0579**	0.061**	-0.1063**
	(0.017)	(0.0138)	(0.0245)	(0.0236)	(0.0203)
Richest Quintile	0.0378	-0.0099	0.0623**	0.0743***	-0.1645***
	(0.0197)	(0.0172)	(0.0266)	(0.0248)	(0.0224)
During COVID-19	-0.0524***	0.0104	-0.0235*	0.0059	0.0596***
	(0.0107)	(0.0087)	(0.0127)	(0.0121)	(0.0111)
Region(RC: Central)					
Eastern	-0.1625***	0.031**	-0.0203	0.0057	0.1461***
	(0.0157)	(0.0126)	(0.0159)	(0.0148)	(0.0174)
Northern	-0.098***	-0.0531***	0.0686***	-0.0026	0.0851
	(0.0174)	(0.0118)	(0.0194	(0.0171)	(0.0178)
Western	-0.102***	0.013	-0.072***	0.0406**	0.1199***
	(0.0165)	(0.013)	(0.016)	(0.0164)	(0.0175)
Sector of Employment					
Production	-0.1797***	-0.1036***	0.2225***	0.1977***	-0.1368***
	(0.0173)	(0.0149)	(0.0229)	(0.0221)	(0.0182)
Services	-0.214***	-0.1343***	0.2337***	0.1632***	-0.0486***
	(0.0134)	(0.011)	(0.0156)	(0.014)	(0.0135)
Received remittance	-0.0147	0.0335***	-0.0024	0.0478***	-0.0642***
	(0.0126)	(0.0098)	(0.0136)	(0.0128)	()0.0131
Own farmland (yes)	0.0575***	-0.0642***	-0.0745***	-0.1358***	0.2169***
	(0.0106)	(0.0071)	(0.0134)	(0.0131)	(0.0097)
Registered mobile money user	0.0175	-0.0191**	0.0223*	-0.0071	-0.0137
	(0.0111)	(0.0089)	(0.0135)	(0.0129)	(0.0119)
Member of agriculture group	0.0635**	-0.0314	0.0141	-0.0353	-0.011
	(0.0284)	(0.0225)	(0.038)	(0.0308)	(0.0256)
Observations	5,879	5,879	5,879	5,879	5,879
Chi-square	595.21 (0.000)				
Log likelihood	5980.48				

Note: p-values are in parentheses: *** p<.01, ** p<.05, * p<.1.

The results further show that the sector of the economy matters for youth employment. For example, the results show that the production sector reduces the likelihood of youth participation in employment by 18 and 10.4 percentage points in on-farm and farm wage employment, respectively; while it increases the likelihood of youth participation in employment by 22.3, 19.8, and 13.7 percentage points in non-farm employment, non-wage employment, and subsistence employment, respectively. The results show that, being in the services sector reduces the probability of youth's labour force participation by 21.4, 13.4, and 4.9 percentage points in the on-farm and farm wage employment and subsistence employment, respective; while it increases youth labour force participation by 23.4 and 16.3 percentage points in non-farm employment and non-wage employment, respectively. Also, the results show that owning land has a negative probability of youth participating in the labour force by 6.4 and 13.8 percentage points in on-farm and farm wage employment, respectively; while it increase the probability of the youth being in work by 5.7, 7.5 and 21.7 percentage points in on-farm employment, non-farm self-employment and subsistence employment.

5. Conclusion and policy recommendations

The major aim of this study was to undertake an in-depth analysis to inform policy makers and development practitioners on the economic sectors with the highest multipliers and potential to create employment opportunities. The study used data from UNHS (2019/20) and SAM (2016/17). The study used descriptive analysis and multiplier approach together with regression analysis. First, using the UNHS (2019/20), and employing the multiplier analysis, the study examined the employment potential and linkages across the different sectors that create decent jobs for the youth. Secondly, the study analyses youth employment using actual hours worked rather than simply participation in sectors taking into account gender using Probit and Tobit models and the Heckman two-stage regression analysis.

The multiplier analysis show that, sectors with strong backward and forward linkages are: agro-processing, cash crops, tourism, financial intermediation and insurance, and other agriculture (like forestry). These are the sectors that would accelerate economic output and growth if supported in terms of enhancing aggregate demand for their products. Accelerating economic output and growth would involve adoption of policies that would structurally transform the weak, backward- and forward-oriented sectors into strong sectors. The backward-oriented sectors like coffee and tea would be transformed into strong sectors through supporting value addition to their products, especially before they are exported. Forward-oriented sectors like transport and food crops would be transformed into strong sectors through encouraging the use of domestic inputs. The weak sectors like manufacturing would be transformed into strong sectors through supporting the use of domestic inputs accompanied with production of intermediate inputs for other sectors. It should be noted that, sectors such as agro-processing was found to have strong output multipliers, strong employment multipliers for youths and female workers, and strong backward and forward linkages with other sectors. Thus, supporting this sector would accelerate inclusive economic output and growth as it has strong capacity to increase output of other sectors and also create numerous jobs for both male and female youth workers.

The results also show that female youth work less hours, on average, than their male counterparts per week. Also, we find that more women are employed in non-farm self-employment based activities, while male youth are mainly employed in non-farm wage activities. Also, the results indicate that farm agricultural work employs most of the youth than other sectors. Furthermore, the results show that off-farm self-work is a significant source of youth employment in all regions of Uganda.

We found that approximately one-third of the national value-added is attributed to labour and youths accounts. The contribution of youths is largely driven by the skilled youths. The youths add more value-added to services sector, followed by industry and lastly agriculture. The results also show that services sector has the highest labour income multipliers followed by industry and agriculture, respectively. The Vision 2040 for Uganda projects growth to be largely driven by services sector followed by the industry sector. This implies that, to accelerate economic growth and the contribution of youths to value-added, there is need for the government to adopt policies that improve the relevant skills of youths in the given sectors.

The results further showed that the contribution of female labour to value-added is larger in the services sector, followed by the industry sector and lastly in the agricultural sector. This shows that female workers in Uganda are increasingly participating in economically productive sectors. Thus, there is need to continue improving the skills of female workers to enable them to increase their participation in sectors such as industry and services where value addition rewards to labour are higher.

Regarding labour income multipliers, female workers income multipliers are higher in the services sector, followed by agriculture, and lastly industry. To support enhancement of earnings of female workers specifically, there is need to design policies such as skilling female workers and also encourage expansion of production in sectors such as cash crop (especially tea and coffee), agro-processing, light manufacturing, financial and insurance, and tourism sector. On the other hand, regarding youth in general, enhancement of their earnings requires focussing on skilling and increased productivity in sectors such as cash crop production, light manufacturing, construction, agro-processing, financial and insurance, and tourism sectors. However, as government plans to skill youths in the long term, in the medium term complementary policies could be adopted to provide employment for the unskilled youths through supporting sectors such as agro-processing and increased cash crops production.

Overall, the policies should be holistic to encompass the whole value chain of the identified sectors. For example, supporting agriculture sector to unlock employment potential for youths and women would require complementary efforts of investing in agro-processing to create market and add value to the agricultural products. Similarly, industrialization would require complementary investments in sectors that would provide inputs.

In addition, our empirical results are thus indicative of the potential value of five broad intervention areas that may greatly promote decent job creation and youth participation in the labour markets in the country:

I. First, controlling for personal characteristics, occupational choice of the youth is strongly related to education attainment and residence of the youth. The findings indicate that youth labour force participation is strongly related to urbanization and therefore this highlight the need for policy makers to be cognizant of the rural-urban gradient in the development of labour policies.

II. Support to skilling and reskilling of the youth in skills required by high potential job creation sectors through practical skills, creation of incubation centres and supporting youth who start business.

III. Promotion of agriculture modernization and making the sector appealing to the youth by supporting agro-processing, which in turn will increase demand for the agricultural produces hence provide market for youths' agricultural produces.

IV. "Equitable regional development" for both the urban and rural areas in terms of roads, health and education infrastructure, electricity provision in order to limit rural–urban migration that could in turn exacerbate the employment problem, but instead provide employment opportunities even in the rural areas.

V. Policies intended to enhance labour incomes for youths should focus on supporting: cash crop production, light manufacturing, construction, agro-processing, financial and insurance, and tourism sectors.

One other key barrier for youths and female workers in accessing job opportunities is high leakages in some of the identified sectors. For example, about a third of the potential output from an additional demand for industrial goods, and approximately, one-fifth of the potential output in the services sector leaks out of the economy thus exporting jobs. This barrier could be removed through supporting import substitution by subsidizing firms that use local raw materials. This, in turn, would increase value addition which, through the multiplier effect and backward and forward linkages, would increase employment opportunities for the youth.

Notes

1. In some cases, six-digit HS products are grouped to maintain consistency over time in the face of revisions to the HS.

2. Follow this link for a description of the UNHS Methodology: www.ubos.org

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Appendix: Detailed multiplier model derivations for SAMs

Let us assume that the amount of sector *i's* output required for the production of sector *j's* output X_{ij} is proportional to sector j's output X_j. This assumption allows us to generate the Leontief technical coefficients a_{ij}. The relationship between these coefficients and sector *j's* output X_j is:

$$X_{ij} = a_{ij} X_j \qquad i, j = 1, \dots, n \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \text{(A1)}$$

We now equate total demand to total supply at equilibrium as follows:

$$X_i = \sum_{j=1}^{n} X_{ij} + F_i, \qquad i = 1, \dots, n \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \text{(A2)}$$

X_{ij} Represents intermediate demand
F_i Denotes final demand

We now substitute (A1) into (A2) to get Equation A3.

$$X_i = \sum_{j=1}^{n} a_{ij} X_j + F_i, \qquad i = 1, \dots, n \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \text{(A3)}$$

Equation A3 shows the relationship between final demand and production. This also holds when we consider changes; thus enabling us to assess the impact of an exogenous change to the endogenous variables. This is shown as follows:

$$\Delta X_i = \sum_{j=1}^{n} a_{ij} \Delta X_j + \Delta F_i, \qquad i = 1, \dots, n \quad \dots\dots\dots\dots\dots\dots\dots\dots \quad \text{(A4)}$$

ΔX_j Represents change in output of sector *i*

ΔF_i Denotes change in final demand

To generate the multiplier model, let's first simplify Equation A3 and display it in a matrix format as follows:

$$X = AX + F \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \text{(A5)}$$

Thus, the multiplier model would be derived as shown by Equation A6.

$$(I - A)X = F \rightarrow X = (I - A)^{-1}F \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \text{(A6)}$$

Where:

F is a vector of final demands

X is a vector of outputs

I is an identity matrix with ones on the diagonal and zeros elsewhere.

$(I - A)^{-1}$ is the multiplier matrix we use to calculate the changes in sectoral outputs following changes in final demand. Once we have derived the changes in the endogenous accounts, then we use them to derive other accounts like employment. For example, if b_kj is the amount of labour required to produce one unit of commodity j, then change in labour due to the shock would be captured by:

$$\Delta L_k = \sum_{j=1}^{n} b_{kj}\,\Delta X_j\,, \qquad k = 1, \ldots, s \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \text{(A7)}$$

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