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Youth Engagement in Agriculture in Uganda: Challenges and Prospects



GEMMA AHAIBWE
SWAIBU MBOWA
AND
MUSA MAYANJA LWANGA

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Any enquiries can be addressed in writing to the Executive Director on the following address:

Economic Policy Research Centre
Plot 51, Pool Road, Makerere University Campus
P.O. Box 7841, Kampala, Uganda
Tel: +256-414-541023/4
Fax: +256-414-541022
Email: eprc@eprc.or.ug
Web: www.eprc.or.ug

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ABSTRACT

The Ugandan population is to a large extent comprised of a high and increasing cohort of young people, close to 78 percent of the population is below the age of thirty. Evidence reveals that youth engagement in agriculture is declining amidst rising youth unemployment yet the services and industrial sectors despite growing at considerably faster rates have not created enough jobs for the burgeoning youthful labour force. This may have implications on food security, unemployment, and underemployment and may undermine the government efforts to drive economic growth through agriculture. Using data from the Uganda National Panel Survey data of 2005/6 and 2009/10, we examine youth employment dynamics across the different sectors and further provide insights into the determinants of youth participation in agriculture. Using the Uganda Census of Agriculture 2008/09, we further document the challenges and constraints inherent to the youth in agricultural production relative to adults.

The findings reveal that youthful farmers are concentrated more in agricultural production. Furthermore, a relatively lower percentage of youth use improved inputs (such as improved seeds, fertilizers, agricultural chemicals and veterinary drugs). With this poor rate of adoption of appropriate inputs, productivity is likely to remain low and constrain the youth to subsistence farming. Furthermore, the youth are disenfranchised in the ownership and management of critical assets in agricultural production, especially land. Land tenure issues continue to impede many youths from engaging in agriculture, with the majority of youth using land without exclusive ownership rights. In addition, the results point to the fact that the youth are less likely to access credit, extension services and social capital (farmer group membership), all key factors in agricultural transformation. The in-depth analysis results seem to suggest that the youth with at least secondary education, males (both married and unmarried) and those youth residing in households with a large share of adults are less likely to engage in agriculture.

Key words: Youth, Agriculture, Employment, Occupation choice

1. INTRODUCTION

Although Uganda has enjoyed relatively high economic growth rates over the past decade, formal job creation has been lower than the rate at which the labour force is growing. Challenges still remain on bridging the gap between economic growth and jobs creation and in turn address the growing unemployment¹ especially among the youth (Page, 2012). With a high population growth rate of 3.2 percent per annum, Uganda is going through a young population bulge with close to 78 percent of its population below the age of thirty. The youth² (18-30 years) represent approximately 21 percent (close to 7 million) of the population and they comprise about 64 percent of the unemployed persons in Uganda (Uganda Bureau of Statistics (UBoS) 2012). In 2011/12, youth unemployment rate stood at 5.1 percent, above the unemployment rate of 1.9 percent amongst those aged 31-64 years and was even higher among the youth in greater Kampala areas at 15 percent (UBoS 2012). Levels of underemployment, vulnerable employment are even higher than the above levels of unemployment since only a few youth can afford to remain unemployed – they often engage in part time work even for a few hours just to make ends meet. It is thus not surprising that there are high levels of working poor i.e. those who are employed but they live below the poverty line. Creating decent employment opportunities for this rapidly increasing youthful labour force as MDG 1 target 1B³ stipulates is a challenge that has reached a level of priority for Uganda’s development agenda.

It is also evident from the Uganda National Household Survey (UNHS) data that the youth are more at a disadvantage in securing gainful employment today compared to six years ago. While many still view formal job creation in the formal wage sector as the solution to youth unemployment, prospects of finding this kind of employment is limited as the number of people entering the labour force far outweighs the number of jobs available in the formal wage sector. Brooks et al., (2012) and Kararach et al., (2011) reveal that creation of non-agricultural jobs may not happen in the short run; as such agriculture is likely to continue being a source of employment and livelihood in the medium to long term especially for countries that heavily depend on agriculture. The 2008 World Bank “Agriculture for development report” further points out the enormous potential of agriculture in offering employment (World Bank 2008). Nationally, the agricultural sector is being prioritised, indeed the current five-year National Development Plan (NDP) 2010-2015 identifies agriculture as one of the core growth sectors. Despite the recognition of employment creation within the sector, youth participation in agriculture especially as farmers is declining not only in Uganda but in other African countries alike (FAC, 2010). Apparently, the agriculture sector is not looked at as a viable sector of

1 The standard method of collecting employment and unemployment data uses a reference period of one week. According to the 1982 ILO Resolution, a person who worked for at least one hour in the reference week is regarded as employed, while a person who was “without work”, “available for work”, and “actively seeking work” is counted as unemployed.

2 While the UN and ILO define youth as those aged 15-24, the study adopts the national definition of youth as those aged 18 -30 years.

3 Millennium Development Goals (MDGs): Target 1B ‘to achieve full and productive employment and decent work for all including women and young people’.

employment and remains highly unattractive to the youth due to the risks, intensive nature and low profitability (FAO, 2012). Most of the youth engaged in agriculture are vulnerably employed as own account workers and contributing family workers with little or no income accruing to them. While the exodus of the youth from the agriculture sector (of 9.0 percent) might seem to be higher than that of the prime age group (of 3.4 percent), the majority of the youth continue to derive their livelihood from agriculture. Some would argue that this movement away from agriculture is a sign of structural transformation of the economy; but the pattern has not brought with it the required job growth needed to absorb the increasing young labour force and as such high levels of underemployment are being experienced in the services and industrial sectors (UBoS 2009).

Despite its low growth rates and declining share in terms of contribution to GDP, agriculture remains the mainstay for both skilled and unskilled labour, at least in the short- and medium-term and could be a viable solution to tackling Uganda's rising youth unemployment as the industrial sector picks pace. Thus attracting and maintaining the youth in agriculture does not only mean improvements in the on-going unemployment levels but will enhance exploiting their capabilities for national development in terms of increased agricultural outputs and productivity. Achieving this would require critical understanding of the challenges faced by the youth at the production node of the agricultural value chain and the prospects of youth engagement in agriculture which this paper attempts to do⁴.

Motivation and objectives of the study

Presently, one of the major challenges faced by Uganda's youthful population is to find decent and productive employment. Indeed, the government has identified youth unemployment as a key challenge to be addressed over the medium term (Ministry of Finance, Planning and Economic Development (MoFPED) (2011). Kararach *et al.* (2011) point out that Africa is going through a youth bulge (with more people under 25 years than above 50 years of age in all its countries). As alluded to earlier, countries that depend heavily on agriculture may not readily create sufficient jobs for the youth in non-agricultural sectors in the medium term (Brooks *et al.*, (2012); Kararach *et al.*, (2011)). Uganda is no exception in this regard - about 66 percent of Uganda's labour force is engaged in agriculture (UBoS 2009) though the participation of the youth is on a decline. The rural youth in agriculture are migrating to cities/towns with little success of finding remunerative/gainful and decent employment but instead to add on the already serious unemployment. This raises questions such as: what constrains the youth from active engagement in the agricultural sector? will the government's efforts to enhance agricultural productivity be achieved with a poorly educated rural population since the rural urban migration is biased towards the educated? What will be the implications for Uganda's

⁴ The second paper arising out of the broad "Youth and employment in Agriculture " project will focus on other nodes of the agricultural value chain with specific focus on the maize and coffee value chains

food security given the rather high population growth rate? Who are going to be the future leaders in Agriculture?

Given agriculture's major role in the rural economy, it has significant potential to provide medium-term solutions to the current problems of youth unemployment in Uganda (MoFPED 2011). Furthermore, the MoFPED underscores governments' keenness to undertake investments that will make agriculture and rural non-farm economic activities more attractive and profitable (MoFPED 2011). To this effect, government devoted Ushs 25 billion towards creating jobs for the youth in FY 2011/12 and agriculture is one of the targeted sectors under the Youth Venture Capital Fund. Despite these incentives aimed at making agriculture and rural non-farm economic activities more attractive and profitable for the youth to engage in, the involvement of the youth in agricultural activities has steadily declined in recent years. There is recognition from policy circles that the agriculture sector can contribute to productive future youth employment in Uganda (MoFPED 2011). However, this recognition is not backed by empirical evidence on the extent of the challenges faced by the young people in agriculture and innovative ways on how to solve them.

Although issues of youth employment are not new on both the international and national policy agendas, most agendas have focused on formal and non-agricultural sectors as avenues of job creation. Studies on youth employment in agriculture on the Ugandan front are scanty and most literature is basically opinion based and not empirically ascertained. Generally, studies on Uganda's agriculture do reveal that the sector is left to the less educated; and that farmers have low access to technologies, credit and extension services (UBoS 2012; Okoboi et al. 2012). Yet this analysis is done at aggregate level and conceals policy relevant information. For instance, with such analysis, it is difficult to understand whether the youth engaged in agricultural related activities are at a disadvantage relative to their adult counterparts; and where exactly they are concentrated along the agricultural value chain. In order to address this gap, the main emphasis of this paper is on youth engagement/employment in agriculture which to a great extent is informal.

It is against this background that this study sought to analyse the underlying constraints faced by the youth in agricultural production. The paper explores whether these constraints are similar to those faced by the prime age group (aged between 31 to 59 years) and elderly (above 60 years). The postulated causes of youth employment instability in the agricultural sector are analysed to inform the formulation of sound youth employment policies and programs. The paper further analyses a set of individual and household characteristics that determine the likelihood of youth engagement in agriculture. The findings in the paper would contribute to the current government efforts of finding more innovative ways of creating decent youth employment in particular informing the design of targeted interventions for more effective

involvement of the youth in the agricultural sector.

The rest of the paper is organized as follows: The next section gives an overview of studies on youth employment in agriculture. The data and methods used in the study are presented in section 3. Section 4 discusses the study findings prior to conclusions and policy options in Section 5.

2. LITERATURE REVIEW

Available literature points to the fact that agriculture remains a key sector where the surplus unemployed youthful labour force can be employed in Africa. Agriculture currently plays a major role in the lives of the many young people and it is projected to remain so even in the next few decades (FAC 2010). Indeed the World Bank agriculture for development report of 2008 stresses that employment creation in agriculture is likely to happen in countries with large agricultural sectors - Uganda fits this description. With improved agricultural productivity, more and better jobs are likely to be created (World Bank 2008). Not only does a modern and productive agricultural sector have the potential to overcome food insecurity, it can offer employment opportunities to young people (Vale, 2012). Decent livelihoods/employment in agriculture can be created through upgrading the existing jobs in agriculture or by creating new ones (FAO, 2010).

Most commentators tend to agree that given the high and volatile food prices that have been experienced since 2010, producing food locally by encouraging young people to join or remain in the sector could be a worthwhile investment (Brooks 2012, Vale 2012). The ever increasing demand for agricultural products both regionally and internationally creates yet another opportunity for the youth to actively engage themselves in agriculture and earn income from agricultural activities. Furthermore, most African countries are producing below the potential yields implying that more improvements are possible with increased labour and land productivity (Brooks 2012).

Despite the recognition of the potential of the agriculture sector internationally and nationally, literature points to the decline of youth interest and engagement in farming. Yet, most point out that the young people should be at the forefront of revitalising agriculture since they tend to be more innovative (Vale 2012, FAC 2010). Indeed, if their contribution is matched with the right skills and capital, the much needed youth dividend might be realised (Brooks, 2012). Lack of incentives and drudgery are some of the reasons why the youth are disinterested in agriculture (IFAD, 2011). FAC (2010) underscores the current limited effort by most governments to engage the youth in agriculture and target the youth specifically with a view to understanding the constraints they face and devise plausible solutions to overcome them. The specific factors affecting youth employment in agriculture have received little research attention nationally. Empirical studies to explain the relative exodus of Ugandan youth from the agricultural sector are scanty. The current trend however is that so many youth are leaving agriculture even with the increased government support due to various reasons: Young people perceive agriculture as a profession of intense labour, not profitable and unable to support their livelihood compared to what white collar jobs offer (Youth in Farming 2011). Therefore, the decline in participation of the youth in agricultural production is linked to the rural-urban

migration phenomenon. The decision to migrate involves both “push” and “pull” factors (Lewis 1954; Harris and Todaro 1970). The ‘push factors’ include among others - declining national resources; increasing cost of social amenities; loss of employment; and lack of opportunities for personal development. Among the listed ‘pull factors’ is the likelihood of better employment opportunities (Bogue 1969). However, Akpan (2010) points out that some empirical studies found that economic push factors (such as, the lack of rural credit, unemployment, and rural poverty among others) are most important; while economic pull factors (such as, perception of high wages from urban employment) are dominant. This predisposition is used to help explain why there is a declining involvement of the youth in agriculture in Uganda.

Among the farm specific characteristics, it is found that an increase in average farm-size significantly reduces the tendency to close down farms or leave agriculture (Glauben *et al.* 2003; Goetz and Debertin 2001). The justification being that large farm sizes make farming much more economically viable for the farmers by enabling them to reap economies of scale and use of better and cost-effective technologies (Sharma 2009). Adekunle *et al.* (2006) point out inadequate credit facility, lack of agricultural insurance, poor returns to agricultural investment, lack of basic farming knowledge and lack of access to tractors and other farm inputs as the major constraints hindering youth participation in agriculture.

Considering the individual characteristics, some of the authors e.g Sharma (2007) have found higher education and greater number of skills to lead to greater probability to leave agriculture with exceptions such as Zhao (1999) and (Nnadi *et al.*, 2008). Sharma (2009) found that possession of non-farm skills seems to be an important factor in determining out-migration of Indian youth from agriculture with the odds of a farmer moving out of farming increasing with skill attainment. On the other hand, Weiss (1999) reveals several other farmer associated and significant characteristics such as gender, age, family size, succession information and attitude towards risk that explain the withdrawal of the youth out of agriculture. Indeed, a number of policy makers and academicians have expressed serious concerns over the “graying of farm sector” because of increased exit and dropping rates of entry into farming by the rural youth (Gale 2002).

The youth with a rural background cope easily with professional and technical work in agriculture (Aphunu and Atoma, 2010). The majority (80 percent) of Ugandans live in rural areas where agriculture forms the main source of livelihood. This type of setting exposes the majority of Ugandan youths to agricultural activities. However, Adebayo *et al.* (2006) notes that despite their (youths) rich rural life, farming background and experience, rural youth’s effective participation in agriculture can be curtailed in the absence of viable institutional framework for mobilizing, developing and channelling the unique abilities, experiences and aspirations of rural youths towards agriculture. In the same vein, because traditional agriculture is based on

the hand hoe and other rudimentary tools, subsistence agriculture holds no interest or appeal for young people. Unimproved conditions in Ugandan agriculture have rendered agriculture unattractive to the youth (Youth in Farming, 2011). In circumstances where willingness to contribute is matched with opportunity, the youth have made a big contribution to economic growth and social development (Brooks *et al.*, 2012). Suriname (2011) further points out that the poor image of persons involved in agriculture needs to be changed and the young people are the ideal catalysts for such change given their greater propensity and willingness to adopt new ideas, concepts and technology which are all critical to changing the way agriculture is practiced and perceived. To further attract the youth into agriculture, deliberate efforts by agri-support agencies to make inputs such as good seed, fertilizers, basic mechanization and agricultural market information available and affordable should be undertaken (Mbeine 2012).

Jong-Dae (2012) argues that the very high population growth and growing percentage of the youth in the population need not be seen as liabilities but rather as assets for transforming Ugandan agriculture. The youth possess unique capabilities (dynamism, strength, adventure, ambition), and these are assets for agriculture (Nnadi and Akwiwu 2008). Youths represent the most active segment of the population and the engine that do most productive work of the society (Adesope 1996). The youth have also been identified as constituting the major resource base for any country which wishes to embark on any meaningful agricultural and rural development projects (Onuekwusi 2005). Youths are a formidable force in the agricultural production process, constituting a sizeable proportion of future progressive farmers and better citizens, especially in rural areas (Aphunu and Atoma 2010). Therefore the youth present an opportunity for a sustained effort to participate in Uganda's development process because they possess greater energy, workforce and potential and have the capacity to drive positive change. Stimulating growth of employment in the agricultural sector remains paramount in countries with a large agricultural sector, and improvements in agricultural productivity can generate more and better jobs in most developing countries (World Bank 2008).

In recognition of this potential, Uganda's government has attempted to stimulate youth's interest in agricultural production and processing through targeted interventions. Some of these interventions include: first, the National Agricultural Advisory Services (NAADS) pillar of the Plan for Modernisation of Agriculture (PMA), was established with a mandate to develop a demand driven, farmer-led agricultural service delivery system targeting the poor subsistence farmers with emphasis to women, youth and people living with disabilities. Second, the Uganda Industrial Research Institute (UIRI) was set up with special approaches to cater for young people engaged in agriculture activities.

A number of policy initiatives to improve youth employment place agriculture at the forefront as one of the promising sectors for the youth employment in Uganda, but are quick to point out

the limited and declining trends in youth participation in agriculture. For example the 2011-2014 Agricultural Sector Development Strategy and Investment Plan (DSIP) of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) identifies agriculture as the main stay for both skilled and non-skilled labour, but points out that youth involvement in agriculture is quite limited partly due to issues related to ownership and control of productive resources (land and capital), limited knowledge and skills in modern farming techniques (MAAIF 2010). It is further noted in the National Employment Plan – NEP (2011) that for the agriculture sector to contribute significantly to employment creation there is need to transform the sector from subsistence to market oriented agriculture. Emphasis should be put on production of high value products including value addition, strengthening agricultural marketing and minimizing costs. The Ministry of Gender Labour and Social Development (MoGLSD) (2001) Youth Policy ascertains poverty, unemployment and underemployment as the main problems affecting the youth. The policy singles out lack of access to resources like land and capital, lack of focus by the existing programmes on the informal sector and agriculture and negative attitudes by the youth towards work especially in agriculture as some of the main causes of the problems.

Furthermore, there is recognition in the Youth Map authored by the International Youth Foundation (2011) that agriculture is one of the promising sectors for the youth employment in Uganda. The Youth Map further stressed that the role of youth in the agriculture value chains can be optimized if youth are provided with agriculture inputs coupled with career guidance and enterprise development support. Through capacity building, youth can be introduced to farming as a business and various activities they can engage in both at farm level and off-farm level. They can directly engage in production, processing, marketing, transportation and warehousing of produce.

3. DATA AND METHODS

3.1 Data

This study employed quantitative data from the nationally representative datasets collected by UBoS. These included the 2008/2009 Uganda Census of Agriculture (UCA) and the two wave Uganda National Panel Survey of 2009/10 and 2005/6.

Uganda Census of Agriculture data: The UCA was conducted by UBoS in collaboration with the MAAIF from September 2008 to August 2009 covering agricultural households in 80 districts in the country. A two stage sampling technique was used to identify households. At stage one, 3,606 Enumeration Areas (EA) from the four statistical administrative regions namely Western, Central, Eastern and Northern were selected. At stage two, 10 households were randomly selected from each selected EA, resulting into 31,340 households. The data were collected both at individual and household levels. Among the individual data variables collected and relevant for this paper include: education in years of schooling, gender, age in completed years at the time of the interview, etc; while at household level data included asset ownership, credit use, use of agricultural inputs & equipment among others.

Uganda National Panel Survey data: This study employs the panel survey based on 2005/06 Uganda National Household Survey (UNHS III) conducted by the UBoS and 2009/10 re-survey—the panel followed households. The UNHS III survey covered 7,421 households with 42,111 individuals from May 2005 to April 2006. The survey was based on a two-stage stratified random sampling design. In the first stage, EAs were selected from the four statistical administrative regions. In the second stage, 10 households were randomly selected from each of the EA. The seven-year Uganda National Panel Programme that was first implemented in 2009/10 by UBoS targeted to re-survey 3,123 households from the 2005/6 UNHS III sample. In 2009/10 re-survey, UBoS was able to track 2,888 households out of the targeted 3,123 households. The panel followed the same households in both waves and it provides an opportunity to understand the nature and patterns of the sector of employment with a dynamic perspective.

Qualitative data: The paper complimented the quantitative data with qualitative data through focus group discussions. The main purpose was to pick the “youth voices” on why the youth are leaving agriculture and the constraints faced in agricultural production. Due to budgetary constraints, the focus group discussions were done in one district (Luweero) in June 2011.

3.2 Methods

Descriptive approach: This paper defines the youth as an individual aged between 18-30 years; prime age as an individual aged between 31-59 years and the elderly as those aged 60 and

above. Using a descriptive approach, we endeavour to provide insights into extent of the youth involvement in agriculture and the major constraints that they face. It should be pointed out that access to production technologies, credit and extension services among others were collected at household level. And for this reason, the paper endeavours to link the youth to their household level characteristics. We further define household types based on the life cycle of the household head – youthful, prime age and elderly; and household composition – all youth, all generations and no youth.

Econometric approach: Using the UNPS 09/10, the paper further employs a probit model to analyse a set of individual, farm level and community factors that determine youth involvement in agriculture. The UNPS 09/10 socio economic module captures the individual level variables (e.g. age, sex, marital status, education levels) while income earned from agricultural enterprises is captured at household level.

Probit Model: Studies involving binary choice dependent variables generally use discrete regression models such as logit or probit models, with little consideration of the choice between the two models because they more-or-less yield similar results (Gujarat 2003, Wooldridge 2009). In this paper, we focus more on the probit model to examine factors that are likely to influence the decision of youth to or not to undertake agriculture, although the three models (LPM, probit and logit) were estimated and results presented for comparison purposes.

$$P(Y_i = 1|X_i) = Z(\alpha + \beta_i X_i + \varepsilon_i) \quad (1)$$

When the function Z takes on a linear function, it is known as a linear probability model (LPM). Although LPM could be appropriate for capturing the expected values of youth involvement in Agriculture, it has two major disadvantages such as producing predicted probabilities that are less than zero or greater than one, and constant partial effects of the explanatory variables appearing in their original form (Wooldridge 2009). To ensure that the explanatory variables take on the values between zero and one, the function in equation (1) above is either normally distributed for a probit model or with a logistic distribution for a Logit model.

$Y = 1$ if the youth is engaged in agriculture as the main sector of employment and P_i is the probability that the i^{th} youth engages in agriculture. The explanatory variables that include individual youth characteristics, farm level and community factors are represented by X_i . The parameters to be estimated in equation (1) are α and β . The error term ε_i is included in the equation to take care of any other factors that might have not been included in the model but may influence youth to get involved or not to get involved in agriculture as the primary source of employment (unobservable determinants of agriculture as the main sector of employment).

The explanatory variables in equation (1) are individual characteristics, which include age,

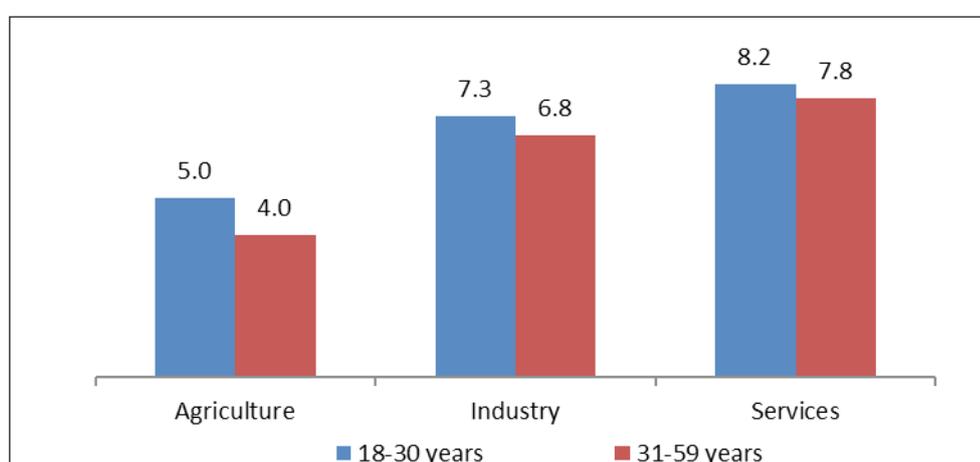
education level and an interaction factor for gender and marital status. Household level characteristics include household size, share of adults and income from agricultural enterprises. Other variables included location (rural or urban) and region. Based on the above factors, we postulate that a youth seeks to maximize his/her welfare by making a choice between agriculture and the other sectors (services and industry).

4. RESULTS AND DISCUSSION

4.1.1 Socio-economic characteristics

Education attainment: The youth are generally better educated compared to their counterparts in the prime age irrespective of the sector of employment that they are engaged in. The agriculture sector employs the least educated labour force with an average of five years of schooling for the youth and four (4) years for the non- youth category. This is not surprising given the fact that agriculture in its current form is more of a subsistence nature with very limited use of technology and may not necessarily require highly educated personnel. On the other hand, those in the services and industry sectors have mean years of education ranging from 6.8 to 8.2 years (Figure 1).

Figure 1: Mean years of schooling by sector



Source: Author's calculations based on UNPS, 2009/10

Source of livelihood: Table 1 presents the nature and pattern of employment during the panel period. In 2005/6, 73.2 percent of the youth population at that time was engaged in agriculture but following the same cohort in 2009/10 reveals a reduction to about 64 percent. It is evident that agriculture remains a source of livelihood to the majority of the youth though marked with a declining trend. Instead, there is an increasing share of the youth joining the services sector (from 19.5 percent in 2005/6 to 27.3 percent in 2009/10) and this increase seems to be faster than that of their counterparts in prime age. With these findings one might argue that the move from agriculture to either services or industry is the way to go, and in particular a reflection of a transforming economy from an agrarian to industrial and service based one. However, evidence from the recently concluded 2009 urban labour survey by UBoS reveals that the level of underemployment in the services sector (13 percent) and manufacturing sector (9.3 percent) is well above that in the primary sector (3.6 percent). It is also true that agriculture still suffers from low productivity. Indeed, a study in Liberia (FAO/ILO/Ministry of Agriculture 2007) demonstrated that modern agriculture has considerable potential for job

and wealth creation and may absorb large numbers of would-be youth migrants or youths who currently crowd the cities with underemployment.

Table 1: Employment sector dynamics by age group and year – cohort analysis (%)

Broad Sector	2005/06			2009/10		
	Age group		Both	Age group		Both
	18-30	31-59		22-34	35-63	
Agriculture	73.2	71.6	72.3	64.2	68.2	66.6
Industry	7.3	5.8	6.5	8.5	6.8	7.5
Services	19.5	22.5	21.3	27.3	25.0	26.0
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Notes: The dynamics are based on the same cohort of youth i.e. those who were aged 18-30 in 2005/6 and four years later 2009/10 these same youth were aged 22-34 years.

Source: Authors calculations based on UNHS, 2005/6 and UNPS 2009/10 individual level data

Disaggregated analysis by background characteristics (see Table 2) reveals that by 2009/10, a huge 74.3 percent of the rural youth were involved in agriculture compared to 13 percent in urban areas. The contrary holds in the urban areas where most of the youths were engaged in the service sector, accounting for almost the same proportion of the youths employed in the agriculture sector in the rural areas (71 percent). The two sectors of agriculture and services accounted for more than 90 percent of youth employment. However, when the two periods 2005/6 and 2009/10 are compared, it turns out that the rate at which the rural youth are leaving agriculture is higher than that of the urban youth.

The statistics in Table 2 further confirm that the more educated youth are less involved in agriculture. For example, while 73.1 percent of the youth with secondary and post-secondary education were involved in agriculture in 2005/6, about 33 percent of these youth moved to services as their main sector of employment leaving about 40 percent in agriculture by 2009/10. The outward shift of the educated youth is mainly to the services sectors.

Table 2: Youth employment by sector and background characteristics – cohort analysis (%)

Characteristic	2005/06			2009/10		
	Agriculture	Industry	Services	Agriculture	Industry	Services
Location						
Rural	82.4	5.6	12.0	74.3	7.0	18.2
Urban	19.5	17.7	62.7	12.9	16.1	70.9
Region						
Central	49.6	13.1	37.3	42.1	10.4	47.4
Eastern	83.2	3.1	13.6	69.7	6.2	24.1
Northern	80.9	8.5	10.6	73.9	9.7	16.3
Western	86.0	3.6	10.3	77.0	7.5	15.5
Sex						
Female	80.7	3.8	15.5	73.7	4.4	21.7
Male	63.9	11.7	24.3	52.7	13.4	33.9
Education						
No education	89.4	5.4	5.2	82.4	6.9	10.6
Primary	79.1	5.3	15.5	73.7	5.7	20.6
Secondary and above	73.1	7.4	19.5	39.7	13.8	46.5
Total	73.2	7.4	19.5	64.2	8.5	27.3

Source: Author's calculation based on UNHS, 2005/6 and UNPS 2009/10

At regional level, the central region had the least share of youth involved in agriculture in both periods. This is probably because Kampala is included in the central region. However the eastern region had the highest percentage of youth leaving agriculture. In 2005/6, about 83 percent of the youth in the eastern region were in agriculture compared to 70 percent in 2009/10. Furthermore, male youth are less involved in agriculture and the rate at which they are leaving the sector is higher than that of female youth. Overall, it is clearly evident that the services sector has gained importance in terms of employment in the country. This finding mirrors the contribution of each of these sectors to the national GDP. Nonetheless, the service sector also includes many less skilled occupations such as petty trade and personal services. While such jobs are important for absorbing surplus labour, they do not necessarily drive economic growth.

Next we consider the type of economic activity that the youth residing in agricultural households are engaged (see Table 3). Nearly about 75 percent of these youth are engaged in crop agriculture as the main activity, a figure lower than that of their counterparts in prime age, elderly and national average. It is worth noting that a higher proportion of the youth relative to the prime age group and elderly is engaged in the high value sub-sector of horticulture. It is also evident from Table 3 that the youth were more likely to report being unemployed (2 percent) relative to their prime age and elderly counterparts (0.5 percent and 0.4 respectively). Similar patterns are observed for unpaid work.

Table 3: Main activity of the youth in Agricultural households, %

Main activity	18-30	31-59	60+	All	Estimated population
Crop Production	74.5	79.3	80.0	77.5	6,014,998
Livestock	1.8	1.9	2.4	1.9	147,730
Fisheries	0.5	0.5	0.2	0.5	36,893
Forestry	0.2	0.2	0.2	0.2	15,151
Horticulture	0.6	0.2	0.4	0.4	31,537
Trader	2.9	4.0	1.6	3.3	254,742
Artisan	0.5	0.6	0.5	0.6	44,248
Agricultural paid job	0.8	0.7	0.4	0.7	56,069
Non-agricultural paid job	6.4	6.6	2.7	6.1	470,259
No activity-looking	2.1	0.5	0.4	1.1	85,478
No activity-not looking	1.8	0.9	5.8	1.8	139,604
Household work	7.8	4.7	5.4	6.0	464,252
Total	100	100	100	100	7,760,961

Source: Authors calculation based on UCA 2008/09.

Broadly speaking, nearly two-thirds of the youth are still employed in the agricultural sector and remain concentrated more at the production stage of the agricultural value chain. The youthful farmers exhibit high inclination to take up high value agricultural ventures like horticulture, therefore there is need to refocus their energies in enterprises of their interest. In this way the youth might take agriculture as a business. A key factor in improving the quality of employment in rural areas would be to increase investments in agricultural value chains and high value enterprises.

4.1.2 Level of use of appropriate technologies in agricultural production

We further analyse how the youth fair as far as ownership and use of agricultural inputs like land, capital, improved seeds and fertilizer that are vital for effective participation in agricultural production is concerned. The literature reveals that young people encounter significant constraints and are disadvantaged in their attempt to engage in agriculture compared to the prime age group. This section gives a comparative analysis of some perceived constraints from literature as far as the youth and non-youth are concerned.

Table 4 shows the difference in use of different agricultural inputs between the youth and non-youths, ranging from improved seeds, fertilizer, agricultural chemicals among others. In 2008, about 31 percent of the youth headed households, and 38 percent of the prime age group used improved seeds whereas 7.0 percent of the youth headed households used inorganic fertilizer compared to 10 percent of farmers in the prime age group and about 9.0 percent for the elderly headed households. Similar patterns are observed for other inputs. Further analysis that looks at the presence of adult members in the households confirms that the youth are less likely to use appropriate technologies in production. Indeed households

composed of only youth are less likely to use appropriate technologies compared to those with no youth or those with all generations. For example, only 20 percent of households with only youth used improved seeds in 2008 compared to 33 percent for households with no youth.

The chi-square test shows that the difference in access and use of the different inputs is statistically significant between the youthful and non-youthful farmers. Further evidence on use of livestock inputs mirrors the same result that the youth headed households used less of veterinary drugs (30 percent compared to 37 percent for the prime age and elderly headed households). The usage is even worse among households with only youth at 13 percent. The difference in input utilization between the different age groups could be due to the low financial capacity (ability to purchase) and knowledge of youths on inputs. As Morris *et al.* (2007), point out that even if farmers believe that use of improved inputs and fertiliser are profitable, they may be unable to purchase them if they lack cash and/or cannot obtain credit. Indeed one of the youth captured under youth voices below points out the increased occurrences of pests and diseases plus weather changes as the reasons why he quit full time farming yet these challenges could partly be offset by use of improved agricultural technologies.

Poor harvests due to pests and diseases/ weather changes

“While I initially used to get enough income from agriculture to cater for my family needs, it is no longer possible because for example the banana/matooke species that we used to grow has been affected by banana wilt and droughts and we do not harvest much that is why I am engaging in bodaboda riding to supplement my income”

_____ *Youth Bodaboda rider /Farmer in Luwero district*

Table 4 provides extended information on the reasons why households do not use some of the agricultural technologies (case of inorganic fertilizers) and lack of knowledge and the high cost of inputs featured as the most common reasons inhibiting the use of improved agricultural inputs. There seems to be no substantial differences between the youth and non-youth as far the reasons for non-use of inorganic fertiliser are concerned.

Table 4: Use of agricultural inputs by household type (%)

Agricultural input	Household head life cycle			All	P -Value
	Youthful	Prime age	Elderly		
Improved/Hybrid seeds	31.2	37.7	31	35.7	0.00
Organic fertilizer	21.2	28.5	29.1	27.5	0.00
Inorganic fertilizer	6.8	10	8.7	9.3	0.00
Local seeds	94.2	93.6	94.5	93.8	0.11
Agric Chemicals: Herbicides	8.8	11.7	10.4	11.1	0.00
Fungicides	6.5	7.5	6	7.1	0.00
Pesticides	18.6	22.2	19.7	21.3	0.00
Veterinary drugs	30.02	37.1	37.5	36.1	0.00

	Presence of adult members			All
	Only youth	No youth	All generations	
Improved/Hybrid seeds	20.6	33.2	38.2	35.7
Organic fertilizer	15.4	25.1	32.5	27.6
Inorganic fertilizer	7.3	8.0	10.7	9.4
Local seeds	91.7	94.4	93.8	93.8
Agric Chemicals: Herbicides	10.7	9.2	13.1	11.1
Fungicides	5.3	5.7	8.3	7.1
Pesticides	10.3	18.7	24.7	21.3
Veterinary drugs	12.5	31.2	48.5	36.1

Reasons for non-use (%)	Household head life cycle			All
	Youthful	Prime age	Elderly	
Inorganic fertilizer				
No Knowledge	24.9	24.0	24.6	24.3
Too expensive	51.5	49.9	50.3	50.2
Not available	14.3	15.3	14.1	14.9
Cannot see the usefulness	8.4	9.6	9.6	9.5
Others	0.6	1.2	1.2	1.1

Inorganic fertilizer	Presence of adult members			All
	Only youth	No youth	All generation	
No Knowledge	24.3	25.9	21.5	24.3
Too expensive	47.7	49.6	48.8	50.1
Not available	11.9	13.4	18.4	14.9
Cannot see the usefulness	13.0	9.9	9.8	9.5
Others	2.8	1.0	1.3	1.1

Source: Authors calculation based on UCA 2008/09.

Good storage facilities are important in maintaining the quality of harvested crops and postponement of immediate sale. Table 5 reveals that most farmers in Uganda mainly use their houses and unimproved granaries to store harvested agricultural products. But the youth headed households and those composed of only youth are less likely to use improved storage facilities, putting them at a higher risk of selling off their harvests early, at even lower

prices to avoid losses. In relation to storage, most farmers in Uganda store for short periods of time, mainly in their houses and in unimproved granaries.

Table 5: Storage facilities used by household type (%)

Storage facilities	Household head life cycle			All	P -Value
	Youthful	Prime age	Elderly		
Improved granary	2.7	2.9	2.9	2.89	0.84
unimproved granary	16.3	18.2	23.4	18.0	0.15
In the house	62.8	56.8	56.4	57.5	0.00
Specific house/room	15	22.7	22.9	21.6	0.00

Storage facilities	Presence of adult members			All
	Only youth	No youth	All generation	
Improved granary	1.2	2.2	4.2	2.8
unimproved granary	13.7	16.4	21.5	18.0
In the house	70.3	59.5	53.1	57.6
Specific house/room	6.6	20.1	24.5	21.6

Source: Authors calculation based on UCA 2008/09.

Further analysis shows that Uganda's agriculture is still highly traditional with no significant difference between the youthful and older farmers in the level of application of the hand hoe. The ox-plough provides the second most important technology used in agricultural production with no difference in rate of application between the youth and older farmers. However, the use of equipment like tractors remains largely low (1 percent) across all farmers, but the youth feature even poorly (0.5 percentage point) as regards mechanization (see, annex 2). Generally, the rate of application of basic equipment (i.e. watering can; wheelbarrows; ploughs; sprayer; and fork hoes) is significantly lower among the youthful farmers. Moreover one of the youth captured under youth voices points out the labour intensification nature of agriculture as one of the reasons why he quit.

Labour intensiveness and Unprofitability

"I left farming because it was not profitable, market prices for agricultural produce are very low, agriculture is very labour intensive, I put in a lot of hard work into maize production only to be offered US\$ 150 per kilo, It was a total loss"

_____ Youth Bodaboda rider in Luwero town who quit farming

In all, there is evidence from national data that a relatively lower percentage of households with a head who is a youth use improved inputs. With this poor rate of adoption of appropriate inputs, farm level outputs are likely to be decimally low and will thus discourage the youth from agriculture.

Agriculture remains a profession of intense labour that could be unattractive to the youth. Agricultural mechanization is still low, and the youth remain disadvantaged in the use of basic equipment in agricultural production. The low level of technological advancement in agricultural applications provides no inspirations to the more adventurous youth; therefore increased use of appropriate mechanization is vital to enhancing production and productivity from a youthful group of farmers. The youth are less likely to hold on surplus agricultural outputs in waiting for high off season commodity prices, given that the majority lack appropriate post-harvest handling facilities.

4.1.3 Ownership and control of key assets in agricultural production

Land size and tenure system: Having access to land is a major constraint when youth consider venturing into agriculture. Results in Table 6 show that 42 percent of the youth reported to be managers of a plot of land compared to 77 percent of the prime age group and 79 percent for the elderly. The mean land holding size owned by the youth headed households is smaller (0.89 hectares) compared to 1.1 hectares and 1.25 hectares for the prime age and elderly headed households respectively. Some previous studies by (Glauben *et al.* 2003; Goetz and Debertin 2001) show that large farm sizes make farming much more economically viable for the farmers by enabling them to reap economies of scale and bring in use better and cost-effective technologies. The meagre land ownership coupled with low crop intensification methods amongst the youth could be one of the push factors of the youth out of agriculture.

The results in Table 6 further show that the majority (67 percent) of land owned by farmers in Uganda is under customary tenure system, and about 70 percent of the youth headed households use land under this tenure system. The customary tenure is associated with some problems: it does not provide security of tenure for land owners; it impedes development because it does not allow the advancement of land markets, through which, those who need land for development can acquire it. Only a few youth headed households (19 percent) have exclusive ownership rights to the land they possess (i.e. under freehold and mailo type of land tenure system). This not only limits their investment on the land but also their access to loans secured against land title deeds.

Livestock and Poultry: Generally the youth own fewer animals (exotic and indigenous cattle, goats, sheep, pigs, local and exotic chicken) than farmers in the prime age group (Table 6). In terms of numbers, Table 6 further reveals that the average number of exotic chicken owned by the youth is 18 significantly lower than that of the counterparts in the prime age (of 94). The exotic breeds yield more milk, hold a relatively high intrinsic sale value (Mbowe *et al.* 2012). Quality livestock breeds and livestock products play a significant role in raising incomes of households, and can be a quick source of income to households in developing countries (FAO 2009). The inability to own high value livestock heads, is bound to put the youth farmers

at a disadvantage, with negative consequences on the perception on agriculture in general.

Table 6: Land owned and plot management by age group

	Individual level			All	P-value
	Youthful	Prime age	Elderly		
Plot management	41.9	76.6	79.3	61.0	0.00
Household head life cycle					
	Youthful	Prime age	Elderly	All	
<i>a) Land ownership in hectares</i>					
	0.89	1.1	1.25	1.1	
Central	0.68	1.0	1.1	1.0	
Eastern	0.8	1.1	1.2	1.0	
Northern	1.3	1.5	1.8	1.5	
Western	0.7	0.9	1	0.9	
<i>b) Land tenure</i>					
Customary	69.8	66.6	63.4	66.5	
Freehold	15	16.8	19	16.9	
Mailo	4	5.8	8.0	5.9	
leasehold	2	2.5	1.9	2.4	
Squatter	4.4	4.11	3.7	4.1	
Other	4.5	4	3.7	4.0	
<i>c) Livestock ownership (#s)</i>					
Indigenous cattle	4.5	6.1	8.1	6.2	
Exotic /Cross	3.4	4.6	5.7	4.7	
Goats	4.1	5.3	5.7	5.2	
Sheep	3.4	4.3	5.4	4.5	
Pigs	2.5	3.08	3.4	3.1	
Local chicken	9.3	11.1	11.0	10.9	
Exotic chicken	18.5	94.5	72.3	84.1	

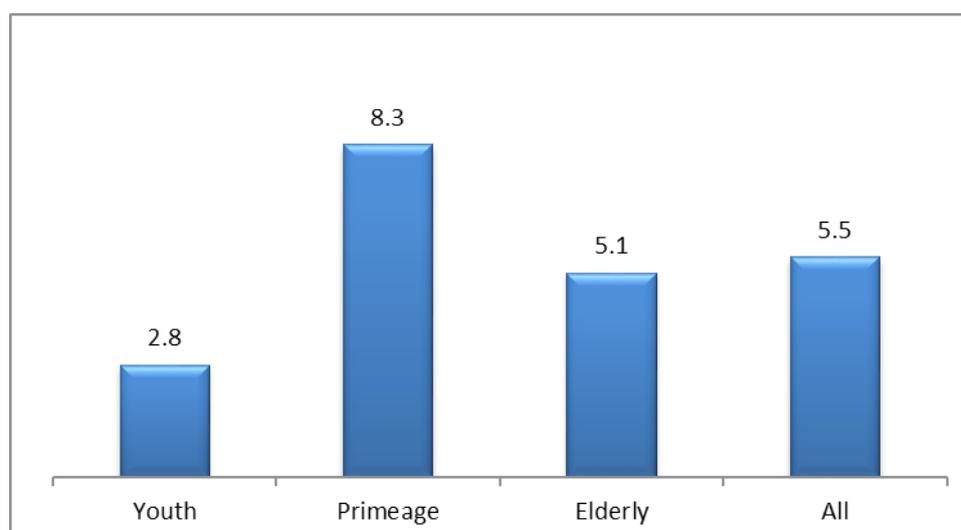
Source: Authors calculation based on UCA 2008/09.

In conclusion, the youth are disenfranchised in the ownership and management of critical assets in agricultural production, especially land. Land ownership and management particularly agricultural land is an important asset in the rural setting. It plays a special role in the daily livelihood and the general social structure of the majority of the households. Land serves more than just a productive asset and is often used as preferred collateral in the credit market. Land tenure issues continue to impede many youths from engaging in agriculture, with the majority of youth using land without exclusive ownership rights. This not only limits their investment on the land but also their access to loans secured against land title deeds. The inability by the youth to strengthen their investment position in the agricultural production processes is a catalyst to the push factors of the youth out of agriculture.

4.1.4 Access to credit and extension services

Credit: The poor agricultural asset base elaborated in Section 4.1.3 provides young farmers with limited chances to access credit in rural financial institutions, often tied to availability of collateral (usually land) that young people do not adequately have/own. It is thus not surprising that only 2.8 percent of the youth headed households in agricultural households reported to have accessed credit compared to 8.3 percent of the prime age group and 5.1 percent for the elderly (Figure 2). The chi square test shows that the difference in credit accessibility is statistically significant between the youth and their prime age counterparts.

Figure 2: Received credit in past five years (%)



Source: Authors calculation based on UCA 2008/09

Credit availability increases the ability to invest and improve access to productive inputs and critical agricultural assets important for improving farm productivity and returns (AVRDC 2007). Credit programs may enable farmers to purchase inputs or acquire physical capital, needed for technology adoption. To address the low access to credit for agricultural purposes, government introduced the Agriculture Credit Facility Scheme in 2009 and the recently introduced Youth Venture Capital Fund in 2011/12. Although there is need to continuously monitor the extent to which the youth are benefiting from these interventions. Indeed, the youth in the western region were more likely to report access to credit relative to their counterparts in other regions as illustrated in Annex 2. Anecdotal evidence confirms this finding, as the people in the western region are believed to be more integrated in terms of loaning out credit amongst themselves.

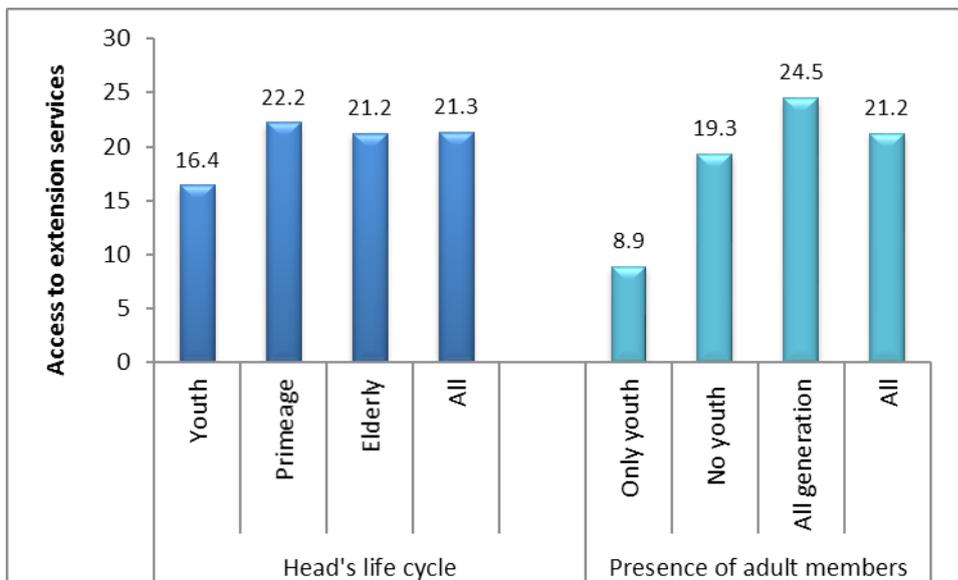
In conclusion, the above findings illustrate that the youth are disenfranchised in accessibility of credit (this could be due to lack of collateral). Credit availability increases the ability to invest and improve access to productive inputs and critical agricultural assets important for

improving farm productivity and returns. The inability by the youth to borrow and strengthen their investment position in the agricultural production processes could be a catalyst to the push factors of the youth out of agriculture.

Extension services: Extension is assistance given to farmers to help them identify and analyse their production problems and become aware of the opportunities for improvement. Extension provides agricultural and vocational training on the use of fertilizer, insecticides, improved seeds, veterinary drugs, land use practices, and market information among others.

More prime age headed households were visited by extension workers (22.2 percent) compared to 16.4 percent of the youth headed households. Furthermore, a much smaller percentage (8.9 percent) of households composed of only youth had access to extension services compared to 19.3 percent for households with no youth (Figure 3).

Figure 3: Access to extension services, %



Source: Authors calculation based on UCA 2008/09.

For example a smaller percentage (28 percent) of the youth headed households reported to have received information on market information compared to 32 percent for the non- youth headed households. It is thus not surprising that one of the youth voices captured pointed out inadequate markets as one of the constraints they face as youth farmers. This finding calls for improvement in the accessibility to extension services by the concerned government and non-governmental organisations.

Inadequate markets

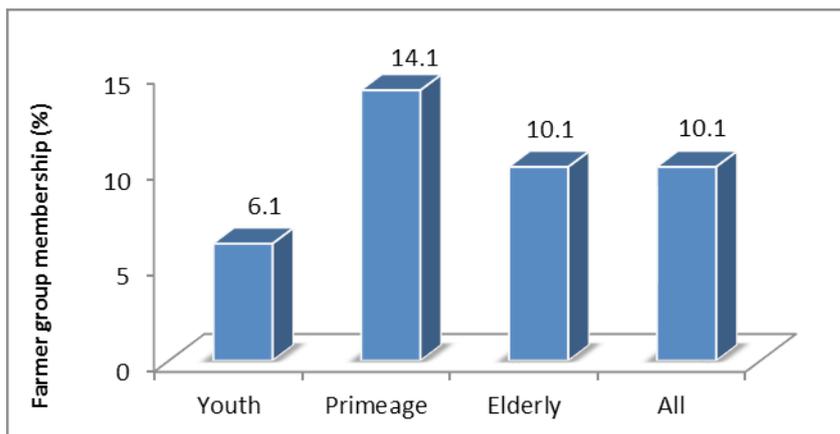
Yusufu, a youthful farmer thinks the youth are leaving agriculture because of lack of markets.” As I speak, I have an acre of tomatoes but there is no market for them and they are just there in the garden”

_____ *Youth Farmer in Luwero district*

4.1.5 Social capital through membership to farmers’ groups

According to the MAAIF, the use of farmer groups remains central to the agriculture transformation process. It is envisioned that these groups will be important in improving produce marketing, increasing access to financing and produce value addition and ultimately leading to agricultural transformation. Though farmer group membership is still low at 10.1 percent, it is significantly ($P=0.00$) lower among the youths at 6.1 percent relative to the counterparts in the prime age (of 14.1 percent) (Figure 4).

Figure 4: Membership to farmer groups (%)



Note: Analysis is at individual level

Source: Authors calculations based on UCA2008/09

One of the programmes in Uganda largely supporting farmer groups is the NAADS programme. NAADS is a 25 year programme under the PMA in charge of commercialization of agriculture through provision of extension services to farmers in the country. Implementation of NAADS uses the farmer group approach. Farmers in the village are meant to get into existing farmer groups or form new ones as a pre-requisite to accessibility of NAADs services. There are studies (such as Davis *et al.* 2010; Benin *et al.* 2011) that have provided insights into why farmers do not join groups. The most cited reasons include lack of information, membership fees, lack of time and commitments.

The regional comparison findings (Annex 2) reveal that the youth in the northern region of the country are more likely to be members of farmer groups compared to the other regions with membership at 10 percent compared to the a mere 2.6 percent for the central region. This could partly be attributed to the presence of the Northern Uganda Action Fund (NUSAF) which puts farmer group formation at the centre of its operations.

The evidence from national data reveals that farmer group membership is significantly lower among the youths. This raises concern on whether government programmes such as NAADS which directly target farmers in groups are able to reach the majority of the population who may actually not be members of any farmer groups. The youth are thus likely to miss out on the advantages of farmer group formation like improving produce marketing, increasing access to financing and produce value addition alluded to earlier.

4.2 Determinants of youth engagement in agriculture

Results of the Logit, Linear Probability model and Probit models are presented in Appendix 3 for comparison purposes. As expected, the coefficients of the models differ in magnitude, but the direction/signs of the different variables are similar across the three models. We focus on the probit regression results as presented in Table 7. The Chi-square statistic suggests that the overall model was statistically significant at 1% level of significance. The variables lifecycle of youth, share of adults, log of income from agricultural enterprises, level of education attainment, location and regional variables, were significant at 1 percent and 5 percent level of significance.

Table 7: Probit estimation results

Dependent variable: Involvement in Agriculture=1				
Explanatory variable	Marginal effect	Robust Standard error	Z	P>Z
Life cycle of youth (cf: 18-23 yrs)	-0.129***	0.033	-3.820	0.000
Log of household size	0.058*	0.035	1.660	0.097
Share of adults	-0.148*	0.089	-1.670	0.094
log of household income from agricultural enterprises	0.019***	0.003	7.150	0.000
Urban dummy	-0.400***	0.042	-9.690	0.000
Regional dummies (cf: Central)				
Eastern	0.064*	0.036	1.730	0.083
Northern	0.096**	0.035	2.560	0.010
Western	0.114***	0.033	3.230	0.001
Marital status and gender (cf: Unmarried/divorced/widowed female):				
Married female	0.089**	0.043	1.970	0.049
Married males	-0.124**	0.059	-2.210	0.027
Unmarried/divorced/widowed male	-0.032	0.038	-0.850	0.395
Education attainment dummy (cf: None):				
Primary school	-0.084	0.052	-1.580	0.113
Secondary and above	-0.208***	0.062	-3.430	0.001
Number of obs	1416			
Wald chi2(14)	391.20			
Prob > chi2	0.00			
Pseudo R2	0.28			
Pred. P at x-bar	0.76			

Source: Author's calculations based on UNPS, 2009/10: ***, ** and * represent 1%, 5% and 10% level of significance respectively

There is a positive and significant relationship between agricultural involvement by the youth and agricultural income. This means that the probability of youth getting involved in agriculture increases as the amount of income derived from agricultural enterprises increases. This finding affirms the proposition that if agriculture is made more remunerative and rewarding in terms of incomes and profitability, the youth would indeed be attracted to the sector.

Marital status and gender influence the probability of youth's participation in agriculture. Compared to the unmarried female youth, the married female youths are more likely to participate in agriculture. The probability of taking up agriculture by the married female youths increases by close to 9.0 percent, this could be attributed to the cultural tendencies where married women are inclined to providing food for their families as their husbands engage in non-agricultural activities to earn cash income. Compared to the unmarried female youths, the probability of participating in agriculture reduces by 12.0 percent and 3.0 percent for the married and unmarried male youth respectively.

Compared to youth with no formal education, those who have studied up to some level of secondary education are less likely to get involved in agriculture. The probability of taking up agriculture reduces with the level of education attained. For example, while attainment of primary education reduced the probability of agriculture uptake by 3.2 percent (not significant), attainment of at least secondary education significantly reduced the same probability by 20 percent. Education increases the marketability of youths and they are more likely to get employed in other sectors. This implies that agriculture is and will remain to be dominated by the low educated youth. This is not surprising given the fact that agriculture in its current form is more of a subsistence nature with very limited use of technology and may not necessarily require highly educated personnel.

Compared to the rural youth, the urban youth are less likely to undertake agricultural activities. For example in comparison to the rural youth, the probability of the urban youth taking up agriculture reduces by about 40.0 percent. This is not surprising given the fact that the youth in the urban areas are exposed to a range of other opportunities in the service and industrial sectors which are to large extent urban based. From a regional perspective, the youth in the northern, eastern and western regions are likely to engage in agricultural activities compared to their counterparts in the central region and the probability is highest in the western region.

The youth (18-30 years) are divided into two cohorts, those aged 18-23 years and those aged 24-30 years to capture life cycle effects. In comparison to the 18-23 years cohort, those in the 24-30 years cohort are less likely to undertake agriculture. Occupational mobility is generally higher among this cohort since most youth tend to complete their education at this age and are thus more mobile, sensitive to farm and non-farm earning differentials and farm prices

compared to the younger farmers aged 18-23 years. On another note, an increase in the proportion of adults in the households where the youth are residing (i.e. persons aged at least 14 years) reduces youth likelihood of undertaking agriculture. This could be explained by the fact that in a typical rural setting, most youth tend to inherit agricultural related assets (e.g. land) from their parents. As the proportion of adults' increases, assets like land are divided amongst the many family members and the resulting small farm sizes may not be viable and hence the reduction in the probability of undertaking agriculture. Finally, a unit increase in household size increases the probability of participating in agriculture by about 5.8 percent. Households with bigger family sizes have higher food security needs to overcome and more mouths to feed. The positive relationship with participation could be explained by the need to meet the enormous family and food security needs.

5. CONCLUSIONS AND POLICY OPTIONS

5.1 Conclusions

The key conclusions arising out of the study are; the youth withdrawal from agriculture is higher than that of the older cohorts although a significant proportion of the youth still derive their livelihood from agriculture. The shift from agriculture is biased towards the services sector and more prominent among the educated youth. The probit estimation reveals that the youth with at least secondary education are less likely to engage in agriculture – more so the male youth (both married and unmarried). On the other hand, factors like increased agricultural income tend to attract the youth towards farming, this is an indication that if agriculture is transformed from its current largely subsistence nature to a form where the youth are able to sell their output and earn some income, they would not only be gainfully employed but also cut down on the current levels of underemployment being experienced in the sector.

There is evidence from national data that a relatively lower percentage of youth use improved inputs (improved seed, fertilizers, agricultural chemicals, supplementary feeds, and veterinary drugs). With this low rate of adoption of appropriate inputs, farm level outputs are likely to remain decimally low and constrain the youth to subsistence farming. Furthermore, the youth are disenfranchised in the ownership and management of critical assets in agricultural production, especially land. The majority of the youth are using land without exclusive ownership rights. This might not only limit their investment on the land but also the access to loans secured against land title deeds. Indeed, the percentage of the youth who reported to have accessed credit in the last five years before the survey was significantly lower than their prime age counterparts. The inability by the youth to strengthen their investment position in the agricultural production processes could be a catalyst to the push factors of the youth out of agriculture. The farmer group membership is significantly lower among the youths compared to their prime age counterparts. The use of farmer groups remains central to the agriculture transformation process through produce marketing, increasing access to financing and produce value addition and ultimately leading to agricultural transformation thus the youth are likely to miss out on the these advantages.

In light of the study results, Uganda might be faced with an uneducated and ageing farming population sooner than later if the current constraints faced by the youth in agriculture are not addressed and the notion of youth being future farmers might be a myth. However, with targeted interventions, the youth can still be at the forefront of revitalizing the agricultural sector and the sector could be a potential source of gainful employment for the vast unemployed and under employed youth.

5.2 Policy Options

We believe that for the youth to be gainfully employed in the agriculture sector, they should be targeted depending on their aspirations and resource accessibility. A large number of young people are likely to remain on the family land holdings. Such a category have access to land, but need skills and capital to invest in high-valued agricultural enterprises like coffee as pointed out by Mbowe *et al.*, (2013) and Brooks *et al.*, (2012).

There is a group of young people who need assistance to leave their childhood farms, and set-up new and relatively larger farms. Identifying new holdings for occupation in localities where the young people are presently leaving can be an option in regions like mid-Northern Uganda, with vast unoccupied fertile land. But the operationalization of this option requires careful consultations with all stakeholders; having effective support services and adequate investment in infrastructure.

The remaining category would engage in off-farm agricultural activities, and job outturns from primary marketing of agricultural products, and formal or informal wage employment on large commercial farms or on small farms during labour peak seasons ; in processing and services sectors; resulting from expanded agricultural activities in the rural areas and growth in the rural private sector.

For the on farm youth: *Promote youth groups/farmer associations* for the youth to be able to access, agricultural extension and advisory services, financial services and agricultural inputs such as demand driven improved seeds, fertilisers and for ease of marketing their produce. These services are aimed at enhancing agricultural productivity. High productivity is associated with improved farmers' incomes; key in attracting and maintaining the youth in agriculture. Government programs like NAADS should be refocused with a strong youth component; other organisations like National Farmers Federation can provide support in form of technical skills and knowledge, new technology and managerial skills.

For the off farm youth: *Build/support youth entrepreneurs for agribusiness*, Input markets (sale of improved seeds, fertilizer and agricultural chemicals), storage and processing, and produce marketing can offer new employment opportunities for the youth who are currently exiting farming. Emphasis should be put into understanding where employment opportunities exist along the different nodes of the agricultural value chain. Indeed our next study under the 'Youth and employment in Agriculture project' focuses on identifying opportunities for youth employment in agricultural value chains. Agricultural and vocational training will be critical so as to equip the youth with requisite skills and overall sensitization on agricultural technologies.

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APPENDIX 1: DESCRIPTION OF VARIABLES USED IN THE PROBIT MODEL

Variable	Measure	Proportion (%)	No. of observations
Dependent variable			
Agriculture sector Involvement	Yes=1, No=0	71.1	1469
Independent variables			
<i>Youth characteristics</i>			
Education level of youth	1= No formal education, 0=others 1= Primary, 0=others	7.5 46.6	1955 1955
	1=At least secondary , 0=others	45.8	1955
Marital status and Gender	1=unmarried/divorced/widowed female head, 0=others	27.8	2033
	1=Married female, 0=others	22.6	2033
	1=unmarried/divorced/widowed male head, 0=Others	37.1	2033
	1=Married male, 0=Others	12.4	2035
Life cycle of youth	1= Age =(18-23) years, 0=others	53.6	2042
	1= Age =(24-30) years, 0=others	46.4	2042
<i>Household characteristics</i>			
Household size	Household size (number)	Mean 5.2	2042
Share of adults	Proportion of persons in household aged at-least 14 years	0.72	2042
Household agricultural income	Income from Agricultural enterprises		1959
<i>Geographical characteristics</i>			
Substratum	1= Urban, 0=others	Proportion (%) 21.0	2042
Region	1=Central, 0=others	34.0	2042
	1=Eastern, 0=others	20.7	2042
	1=Northern, 0=others	17.1	2042
	1=Western, 0=others	28.1	2042

APPENDIX 2: YOUTH AND USE OF AGRICULTURAL INPUTS BY REGION

	Youth and use of agricultural inputs by region (%)					
	Central	Eastern	Northern	Western	Total	P value
Individual level variables						
Farmer groups	2.6	5.8	10.8	4.8	6.1	0.00
Received credit	2.5	2.3	2.5	3.9	2.9	0.00
Management of land	36.7	41.8	48.4	39.9	41.9	0.00
Youth headed households						
Use of improved seeds	32.1	42.5	33.5	14.1	31.2	0.00
Use of inorganic	8.6	7.7	4.6	6.7	6.8	0.05
Use of pesticides	12.2	29.8	10.3	13.4	18.6	0.00
Used tractor	0.07	0.6	0.4	0.6	0.5	0.45
Used plough	0.05	2.8	2.7	0.3	1.7	0.00
Used ox plough	0.6	27.3	15.9	0.2	13.8	0.00

Source: Authors calculation based on UCA 2008/09

APPENDIX 3: LINEAR PROBABILITY, PROBIT AND LOGIT MODEL ESTIMATES

Dependent variable: Involvement in Agriculture=1			
Explanatory variable	LPM	Probit	Logit
Life cycle of youth (cf: 18-23 yrs)	-0.111	-0.420***	-0.752***
Log of household size	0.054	0.185	0.338
Share of adults	-0.114	-0.475	-0.844
log of household income from agricultural enterprises	0.018***	0.060***	0.101***
Regional dummies (cf: Central)			
urban	-0.347***	-1.100***	-1.847***
Eastern	0.066*	0.215	0.382
Northern	0.095**	0.331*	0.589**
Western	0.103**	0.387**	0.665**
Marital status and gender (cf: Unmarried/divorced/widowed female):			
Married female	0.069	0.300*	0.484
Married males	-0.101*	-0.366*	-0.633*
Unmarried/divorced/widowed male	-0.022	-0.101	-0.152
Education attainment dummy (cf: None):			
Primary school	-0.054	-0.27	-0.38
Secondary and above	-0.156***	-0.635***	-1.069**
Constant	0.679***	0.71	1.18
Number of observations	1416	1416	1416

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Plot 51, Pool Road, Makerere University Campus

P.O. Box 7841, Kampala, Uganda

Tel: +256-414-541023/4, Fax: +256-414-541022

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