



MALAWI

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MALAWI'S CHALLENGING EMPLOYMENT LANDSCAPE

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TABLE OF CONTENTS

ABSTRACT	3
ABBREVIATIONS AND ACRONYMS	4
1 INTRODUCTION	5
2 STRUCTURE OF AND TRENDS IN EMPLOYMENT IN MALAWI, 2004 TO 2016	6
2.1 Data	6
2.2 Methods	7
2.3 Results	8
2.3.1 Structure of employment in Malawi in 2016.....	8
2.3.2 Evidence of structural shifts in employment in Malawi, 2004 to 2016	8
2.3.3 Analysis of employment in Malawi in full-time equivalent jobs	11
3 ANALYSIS OF THE DETERMINANTS OF EMPLOYMENT CATEGORY	12
3.1 Results of logit analysis of determinants of participants in employment	15
3.2 Results of multinomial logit analysis of category of employment for those employed	17
4 SUMMARY AND CONCLUSIONS	19
5 REFERENCES	20

LIST OF FIGURES

Figure 1. Size of employment categories by age cohort, percentage share of population, 2016-17	8
Figure 2. Venn diagram of the relative sizes of the employment categories for IHS4 working-age sample ..	13

LIST OF TABLES

Table 1. Sample size and period of administration of Malawi Integrated Household Surveys used	7
Table 2. Change in size of employment categories by age cohort, for national and rural working age populations	10
Table 3. Changes in educational attainment among working-age individuals in Malawi, 2004-2016	11
Table 4. Trends in the FTE Jobs by Sector, 2004-2016	12
Table 5. Descriptive statistics of variables used for logit analysis and multinomial logit analysis of determinants of employment status and type of employment	14
Table 6. Results of logit and multinomial logit analysis of determinants of employment status/type	16

ABSTRACT

Using three rounds of the Integrated Household Survey conducted between 2004 and 2016, this paper examines Malawi's challenging employment landscape, focusing on its rapidly growing youth. It finds little evidence of a structural transformation in Malawi's economy or of youth being in the vanguard of any changes in cross-sectoral patterns of employment. Most Malawians spend all of their working years in the agricultural sector – indeed, the share of employment in agriculture in Malawi rose slightly between 2004 and 2016, though the share of full-time jobs inside agriculture declined during this period. Tabular analysis and multivariate modelling of employment choices show that youth are not participating in the limited growth that has occurred in services. Agriculture remains the sector in which most Malawians first obtain employment, and it is only later in their working lives that Malawian workers, particularly males, are in a position to obtain employment outside of agriculture alone. Malawi's challenging employment landscape for youth is characterized by a scarcity of jobs outside agriculture and insufficient work hours within agriculture.

Keywords: employment, Malawi, structural transformation, youth

JEL codes: J21; O12

ABBREVIATIONS AND ACRONYMS

EA	Enumeration Area
FISP	Farm Input Subsidy Program
FTE	Full-Time Equivalent Job
GDP	Gross Domestic Product
IHS	Integrated Household Survey
IRR	Irrelevant Alternatives
MNL	Multinomial Logit
NSO	National Statistical Office
RRR	Relative Risk Ratio

1 INTRODUCTION

Since Malawi attained independence in 1964, the country's population has more than quadrupled to 17.6 million people in late 2018. Most of the population continues to reside in rural areas and pursue agricultural livelihoods. In the 2018 Census, only 16 percent of the population lived in urban areas. Malawi also has one of the youngest age structures in the world with 44 percent of its population under the age of 15, and 34 percent being between 15 and 35 years old (NSO 2019).

In 2015, the agricultural sector contributed 28 percent to the total Gross Domestic Product (GDP) of Malawi's economy (World Bank 2018). While the significance of agriculture has dropped from 50 years ago when the sector provided one-half of total economic output, Malawi's economy remains among the 15 economies most dependent on agriculture in the world. Although the services sector has grown significantly over the past 20 years, with a small manufacturing sector and limited non-agricultural natural resources to exploit, agricultural production remains at the center of most economic production. This is most evident in how the work force of the country is allocated across sectors. Estimates from the fourth Malawi Integrated Household Survey (IHS4) conducted in 2016-17 show that 88 percent of the employed working age (15 to 64 years) population work in agriculture.¹

Building on the broad model of economic development in countries with a large subsistence agricultural sector and relatively large populations initially proposed by Lewis (1954), it is now widely accepted, if not unchallenged, that the typical pattern of development will involve a significant share of workers moving out of agriculture (Gollin 2014). As more workers find remunerative employment outside of agriculture in the manufacturing or service sectors, underemployment in the sector declines and prospects for more profitable agricultural production that fosters increased productivity rise for those remaining on-farm (Ranis and Fei 1961; Dabalen et al. 2017). In this paper, we investigate what indications there are of such a process of structural transformation being underway in Malawi. We give specific attention to whether youth as new entrants into the workforce are finding employment inside or outside of agriculture.

The factors that might push Malawians out of agriculture and into employment in other sectors have intensified with time. Although falling fertility rates may result in a decline of the annual population growth rate, the latest estimates show that the population growth rate increased from 2.8 percent to 2.9 percent per annum between 2008 and 2018 (NSO 2019). Projections from the 2008 Census estimate that the population, which was 17.5 million in late 2018, will be close to 43.2 million by mid-2050. As a consequence, land scarcity continues to build. Mean farm size in Malawi now is around 0.6 hectares per household, although half of the population cultivates 0.45 hectares or less (IFPRI 2018; NSO 2010). The low-input, low-output smallholder farming systems that dominate agriculture in Malawi call into question whether most Malawians will be able to sustain agricultural livelihoods for much longer.

In parallel, the factors that might attract Malawians to seek employment outside of agriculture have also intensified. Economic growth since 2000 has been positive overall, but erratic from year to year. Average annual growth in GDP between 2000 and 2016 was 4.4 percent but with some years of negative growth. The services sector has expanded significantly over this period rising from a 38 percent share of GDP in 2000 to 52 percent in 2016, while manufacturing declined slightly, from 12 to 10 percent over the same period (World Bank 2018). At the same time, stocks of human capital have improved since the introduction of free primary education in 1994. While problems related to the quality of instruction and facilities continue to affect education in Malawi, improved access to schooling has increased average educational attainments for youth. The average years of education successfully completed for the 15 to 24-year age-cohort increased from 5.0 to 6.2 years between the 1998 and 2008 censuses (analysis by authors). Tracer studies done as part of a World Bank study demonstrated strong improvements in the rates of return to education, particularly from primary education (World Bank, 2010).

The Government of Malawi has also invested significant resources to enhance agricultural productivity through the Farm Input Subsidy Program (FISP). While various antecedents (e.g. starter packs) have been in place since 1998, FISP began formally in 2005. In recent years, FISP has benefitted around half of all smallholder farming households in the country each year, providing beneficiaries with fertilizer and maize

¹ Using a stricter definition of employment, estimates from the 2013 Malawi Labor Force Survey are that 64.1 percent of those who are of working age and are employed worked in agriculture (NSO 2014).

and legume seed.² The increased maize production resulting from FISP contributed to strong agricultural sector growth between 2006 and 2014. There is also evidence that reasonably significant second-round benefits have been achieved through FISP linked to increased economic activity, lower food prices, and increased demand for labor (Arndt, Pauw, and Thurlow 2016). Although independent assessments conclude that the program could be implemented more efficiently and achieve significantly broader impact (Lunduka, Ricker-Gilbert, and Fisher 2013), FISP has the potential to propel the sector towards sustained improvements in agricultural productivity. This in turn should allow for increased investment in other areas of the economy and release considerable labor to work elsewhere than in agriculture. However, despite continuing public investment to improve the education system and to increase the productivity of the agriculture sector, there is little evidence to show that there has been any growth in employment in higher productivity jobs in Malawi.

Using data from the three national representative household surveys, this paper examines what changes have occurred in the patterns of employment among those of working age in Malawi, focusing on its rapidly growing youth. Section 2 examines whether there have been movements of labor out of agriculture into other sectors and whether youth are central to the changes that have occurred. Section 3 then extends the analysis to investigate the extent to which people work in different sectors simultaneously, and the determinants of the employment patterns observed, again with a focus on youth. Section 4 concludes by summarizing our findings and proposing some implications for youth and economic growth within Malawi's challenging employment landscape.

2 STRUCTURE OF AND TRENDS IN EMPLOYMENT IN MALAWI, 2004 TO 2016

We analyze three rounds of data from the Malawi Integrated Household Surveys for individuals of working age (ages 15–64 years). After describing the data sets and the methods used, we first examine the structure of employment among this population from the most recent survey round of 2016. Thereafter, we examine how employment patterns have changed over the previous 12 years by bringing into the analysis information from two earlier survey rounds. In these analyses we also seek to identify any emerging trends on how Malawi's youth choose to engage in employment.

2.1 Data

Malawi has a number of nationally representative data sets that include information on employment. For the purpose of this analysis we used data from the second, third, and fourth Integrated Household Surveys conducted by the Government of Malawi's National Statistical Office (NSO) with technical assistance of the World Bank. As shown in Table 1, the second Integrated Household Survey (IHS2) was conducted between March 2004 and 2005 with a sample of 11,280 households containing 25,144 working age (15–64 years of age) individuals. The third Integrated Household Survey (IHS3) was conducted between March 2010 and March 2011 with a sample of 12,271 households containing 27,842 working age individuals. Finally, the fourth Integrated Household Survey (IHS4) of 2016 was conducted between April 2015 and April 2016 with a sample of 12,447 households containing 27,475 working age individuals. Once appropriately weighted, the IHS surveys are representative at the national, district, and urban/rural levels. As these three household surveys had very similar household, agriculture, fisheries and community questionnaires, we were able to categorize individuals of working age in the survey samples into comparable employment categories across years.³

The nationally representative samples for the surveys were selected using a two-stage cluster sampling approach. Using the districts of Malawi and the four major urban centers as strata, enumeration areas (EA) within each stratum were randomly selected with the probability of selection being proportional to the population of the EA. Either 16 or 20 households, depending on the survey round, were then randomly selected in each selected EA to make up the survey sample. The IHS surveys were administered over 12 to 13 months to capture annual seasonal variation in household consumption and expenditures. Table 1 provides selected descriptive statistics on the three IHS surveys.

² The coverage of FISP has been scaled back since 2014 from targeting between 50 and 70 percent of farming households to about 30 percent of households, e.g., 900,000 households for the 2016/17 and 2017/18 FISP programs.

³ The 1998 IHS1 questionnaire differs significantly from those of the other IHS survey rounds, so this survey was excluded from our analysis.

Table 1. Sample size and period of administration of Malawi Integrated Household Surveys used

	IHS2	IHS3	IHS4
Number of households	11,280	12,271	12,447
Working age individuals (15–64 years)	25,144	27,842	27,475
Survey administration period	03/2004 to 03/2005	03/2010 to 03/2011	04/2016 to 04/2017

Source: Analysis by authors of IHS2, IHS3, and IHS4.

2.2 Methods

The employment categories used in this paper are based on those used by the International Labour Organisation (ILO) and summarized in Box 1.

The employed can be further disaggregated into the economic sector of employment – *agriculture* (comprising crop and animal production, forestry, and fisheries including aquaculture), *industry* (construction, manufacturing, and mining), or *services* (accommodation and food services, communications, education and health, transportation, retailing and wholesaling, transportation, etc.). Similarly, the not economically active can be disaggregated into students, homemakers, retired or ill individuals, or otherwise not economically active. In the analysis here, for the not economically active category we focus on *students* and all *other not economically active*. Given our interest in youth employment patterns we further distinguish between *younger youth* ages 15–24 years, *older youth* ages 25–34 years, and *adults* ages 35–64 years.

Box 1 Employment and Age Categories

Economically active

Employed: persons working for pay or self-employed during the reference period (usually the last week).

Unemployed: persons lacking employment, but actively seeking opportunities for employment and currently available to start work during the reference period.

Underemployed: persons employed, but who are willing and available to work additional hours and have worked less than a selected number of hours (usually 35 to 40 hours per week) during the reference period.

Not economically active

Persons not engaged in economic activities nor actively seeking employment during the reference period.

Working age: 15–64 years
 Younger youth: 15–24 years
 Older youth: 25–34 years
 Adults: 35–64 years

We used information from both the household and the agricultural questionnaires of the IHS to assign an individual to one employment category only. In doing so, we gave priority to certain information in assigning an individual to a primary employment category. Individuals stating that they were students, not working, but actively seeking work, or formally employed (primarily for a wage) were assigned to the respective student, unemployed, and employed categories, even if the individual also reported that he or she had also engaged in agricultural production. Similarly, individuals who worked in a non-agricultural household enterprise, even if also engaged in agriculture, were considered to be employed in either the industrial or services sector, depending on the nature of the household enterprise. However, in our subsequent analysis we compiled information on individuals who reported working in more than one sector to create the outcome variable for the multivariate analysis discussed later.

Our analysis is not comparable to those typically done with labor force survey data. Such surveys usually involve strict recall periods of the previous one week to determine the employment status of survey respondents. The data used here from the IHS surveys, however, involved varying recall periods such as the previous twelve months for farming activities. As working age individuals are much more likely to report having worked sometime over the past year than over the past week, our approach results in a larger share of individuals being categorized as employed, rather than ‘not economically active’. Given these differences, our results should not be considered comparable to results on employment from the 2013 Labour Force Survey (NSO 2014) or population censuses for Malawi. However, we are confident that our approach to assigning working age members of the IHS samples to employment categories allows for valid comparisons to be made over the three rounds of the IHS examined.

2.3 Results

2.3.1 Structure of employment in Malawi in 2016

The share of the population by working age cohort (younger youth, older youth, and adults) assigned to each employment category estimated from the 2016 IHS4 data is presented in Figure 1 as 100 percent bar charts. The dominance of agricultural employment in Malawi is apparent. Of all older youth and adults, over 60 percent work in agriculture. Students form the largest part for the younger youth group and most members of this age group who are not students work in agriculture. Across all age groups, women are slightly more likely than men to work on-farm. Agriculture is the default employment category for all, including for many individuals residing in urban centers.

Figure 1. Size of employment categories by age cohort, percentage share of population, 2016-17



Source: Analysis by authors of IHS4. Weighted analysis.

The share of each population group employed in industry and services is relatively small compared to agriculture. Even in urban areas, where shares of those employed in the non-farm sectors are higher, the share of those working in industry or services does not exceed 15 percent of the employed. Moreover, the share of older youth and adults working in industry and services is somewhat higher than it is for the younger youth. This suggests that younger youth are unable to readily obtain work outside of agriculture when they enter the labor force.

Any individual of working age in the survey sample who reported not having worked over the past four weeks, but who was actively looking for work, was categorized as unemployed. The unemployed represent just 2.5 percent of the working age population and constitute a much higher share of this population in urban than in rural areas (5.3 percent and 1.7 percent, respectively). Within urban areas, unemployment is higher at 7.2 percent in the older youth category, suggesting that many younger youths choose to stay in school rather than being unemployed. In rural areas, with broad access to agricultural land provided through the dominant customary land tenure system, most individuals can engage in some farming and are therefore less likely to be unemployed according to the definition used here. However, given small agricultural landholdings and the strongly seasonal pattern of rain-fed agricultural production, underemployment is high in rural areas. Across all age groups, more females are unemployed than males.

Over a third of Malawi's working age population is not economically active. However, there are strong age-specific patterns to those who fall into this category. Given that so many are students, more than two-thirds of younger youth are not economically active. Most students end their education at the age of 20. Only a relatively small share of older youth and adults, is not economically active, reflecting in part the long recall period used to define employment in this analysis. Nonetheless, in these age groups, women are more likely than men to be not economically active, likely reflecting maternal responsibilities, particularly for older youth. More urban dwellers are economically inactive than rural residents. This could reflect the greater barriers to employment in towns and cities, where opportunities for obtaining work (particularly formal employment) remain quite restricted.

2.3.2 Evidence of structural shifts in employment in Malawi, 2004 to 2016

While Figure 1 provides a static, cross-sectoral overview of working age employment in Malawi in 2016, Table 2 shows changes in employment patterns between 2004, 2010, and 2016. While information is

presented for the three years of the IHS series, our discussion here primarily focuses on differences in the annual compound growth rate of employment between 2004 and 2016 in the number of individuals per employment category.

Growth in the number of employed is less than growth in the working age population for all age groups (Table 2). This is because of higher growth in the share of the population that is not economically active across all age groups and increasing numbers of students among younger youth.

For the employed, the share working in the agriculture sector, is by far the largest sector of employment and is relatively stable across the three surveys. There is little evidence of labor exiting the agriculture sector in Malawi. While the small changes in employment patterns might encourage one to see the start of such a process of structural transformation, particularly with the growth of employment in services, these changes are not yet large enough to demonstrate that a process of structural change is gaining momentum.

Growth in employment is seen in services among older youth and adults. The younger youth category experienced a reduction in employment across all sectors, as increasing numbers maintained their student status. Growth rates for all sectors of employment for younger youth are negative, reflecting increasing delays in entering the work force. Nationally, agriculture is the dominant sector for those younger youth who enter into employment. Two factors likely account for this. First, many of the younger youth, particularly males, are still dependents in their households – analysis of the IHS4 shows that 62 percent of females and 82 percent of males in the younger youth age category are not the household head or spouse of the household head. These dependent household members often have to contribute farm labor to the household. Second, most younger youth will not have sufficient capital to engage in petty trading or non-farm businesses in the service sector. While there are barriers to participation in non-agricultural employment for all individuals of working age in sub-Saharan Africa (McCullough 2017), these barriers are highest for younger youth. The non-farm employment sectors are not absorbing their labor and this pattern did not change over the period examined.

It is among the older youth (25–34 years) that growth in employment in services is observed, even if the absolute numbers involved are dwarfed by those working in agriculture. The national growth rate for employment of older youth in services, but not agriculture and industry, is higher than the rate of population growth for this age group. Older youth tend to live independently – 88 percent are either a household head or the spouse of a household head— and have experience and skills that can be used for employment in the services sector.

Nonetheless, the largest growth in employment in the services sector is among adults. This higher growth suggests that accumulation of physical and financial capital over time may be a more important factor than education in enabling individuals to find employment in the services sector.

In contrast to growing employment in services and a high and relatively constant share of the employed in agriculture, employment in the industrial sector in Malawi declined between 2004 and 2016. Malawi's national accounts indicate that the recent performance of the industrial sector has been positive but erratic, with a mean annual growth rate in production of 4 percent between 2000 and 2014. However, this growth is not reflected in the data, which shows a decline in the share of employment in the industry sector. This may be a result of labor-intensive operations in manufacturing being replaced by more capital-intensive operations.

During the period under study, the share of students in the younger youth group rose from 35 to 45 percent (Table 2).⁴ The highest growth rates are seen in rural areas and among women. However, educational attainment levels differ between rural and urban younger youth. As shown in Table 3, years of schooling completed increased from 4.4 to 5.9 years in rural areas between 2004 and 2016 compared to 7.5 to 9 years in urban areas. While the gender gap in years of schooling completed is narrowing particularly for younger youth, the rural-urban gap in education attainment is declining more slowly. Analysis of the IHS4 shows that two-thirds of younger youth students were still in primary school in rural areas albeit in the higher grades. Only one-third of younger youth students in rural areas attended secondary school, and hardly any attended university or training colleges. In contrast, for urban younger youth who are students, one-third attended primary school, 60 percent attended secondary school, and 7 percent enrolled in university or training colleges.

⁴ The highest growth rates for the student category are seen among older youth and the adults. However, note that the absolute number of students in these older groups remains very small. The increase in student numbers in these age groups likely reflects the recent expansion in tertiary education opportunities from about 8,400 places nationally in 2008 to 11,600 in 2011 (Mambo et al. 2016).

Table 2. Change in size of employment categories by age cohort, for national and rural working age populations

	Ages 15 to 64 years				Younger youth, ages 15 to 24				Older youth, ages 25 to 34				Adults, ages 35 to 64			
	2004	2010	2016	Annual growth, 2004-16, %	2004	2010	2016	Annual growth, 2004-16, %	2004	2010	2016	Annual growth, 2004-16, %	2004	2010	2016	Annual growth, 2004-16, %
NATIONAL Working age population, '000s	5.975 (42,5)	6.871 (120,4)	8.264 (150,0)	2,7	2.338 (30,9)	2.556 (51,6)	3.185 (56,8)	2,6	1.603 (19,1)	1.980 (47,3)	2.066 (47,6)	2,4	2.034 (23,9)	2.335 (45,1)	3.013 (61,8)	3,3
Employed, % share of working age population	76,7 (0,4)	72,8 (0,5)	60,71 (0,1)	0,8	53,7 (0,8)	46,6 (0,8)	35,5 (0,8)	-0,9	90 (0,5)	85,6 (0,7)	75,2 (0,8)	0,6	92,7 (0,4)	90,6 (0,5)	77,4 (0,7)	1,8
Agriculture, % share of employed	85,3 (0,6)	87,1 (0,6)	87,8 (0,1)	0,7	89,8 (0,6)	93,1 (0,6)	95,1 (0,4)	-0,6	82 (0,8)	83,8 (0,9)	84,7 (1,0)	0,6	84,7 (0,7)	86,3 (0,6)	86,2 (0,7)	1,6
Industry, % share of employed	5,8 (0,4)	3,2 (0,3)	2,3 (0,0)	(6,8)	4,0 (0,4)	1,6 (0,3)	1,0 (0,2)	(11,7)	7,3 (0,5)	4,3 (0,4)	3,3 (0,4)	(6,1)	5,9 (0,4)	3,4 (0,3)	2,3 (0,3)	-5,9
Services, % share of employed	8,9 (0,5)	9,7 (0,5)	9,9 (0,5)	1,3	6,1 (0,5)	5,3 (0,5)	3,9 (0,4)	-4,7	10,7 (0,6)	11,9 (0,7)	12,0 (0,8)	1,3	9,4 (0,6)	10,3 (0,5)	11,4 (0,6)	3,0
Unemployed, % share of working age pop.	0,7 (0,1)	1,3 (0,2)	2,4 (0,0)	13,8	0,9 (0,1)	1,4 (0,2)	2,2 (0,2)	10,7	0,9 (0,2)	2 (0,3)	3,1 (0,3)	13,6	0,4 (0,1)	0,8 (0,1)	2,1 (0,2)	19,8
Not economically active and not students, % share of working age pop.	8,6 (0,3)	10,1 (0,4)	19,2 (0,1)	9,8	10,5 (0,4)	11,3 (0,5)	17,7 (0,6)	7,2	8,2 (0,4)	10,7 (0,5)	20 (0,7)	10,1	6,8 (0,4)	8,3 (0,5)	20,2 (0,6)	13,1
Students, % share of working age pop.	13,9 (0,3)	15,7 (0,3)	17,7 (0,0)	4,8	34,9 (0,7)	40,7 (0,7)	44,6 (0,7)	4,7	1 (0,1)	1,8 (0,2)	1,6 (0,2)	24,7	0,1 (0,0)	0,3 (0,1)	0,3 (0,1)	19,0
RURAL Working age population, '000s	4.804 (69,9)	5.683 (99,5)	6.501 (137,8)	2,6	1.855 (35,0)	2.118 (45,4)	2.546 (61,3)	2,7	1.249 (23,0)	1.570 (33,5)	1.534 (39,9)	1,7	1.700 (29,6)	1.995 (40,8)	2.421 (57,5)	3,0
Employed, % share of working age population	80,4 (0,5)	75,9 (0,5)	61,9 (0,1)	0,3	58,8 (0,9)	50,4 (0,9)	38,4 (0,9)	-0,9	93,4 (0,4)	89,6 (0,7)	77,4 (0,9)	0,2	94,3 (0,4)	92,4 (0,5)	76,8 (0,8)	1,2
Agriculture, % share of employed	89,9 (0,5)	92,3 (0,5)	94,6 (0,1)	0,7	93,3 (0,5)	96,3 (0,5)	97,8 (0,6)	-0,6	88,1 (0,7)	90,3 (0,7)	93,8 (0,6)	0,5	89 (0,6)	91,4 (0,5)	93,5 (0,4)	1,6
Industry, % share of employed	5,1 (0,4)	2,3 (0,3)	1,1 (0,0)	-11,9	3,4 (0,4)	1 (0,3)	0,5 (0,1)	-16,1	6,4 (0,6)	3,1 (0,4)	1,4 (0,3)	-11,7	5,2 (0,5)	2,3 (0,3)	1,1 (0,2)	-10,8
Services, % share of employed	5 (0,3)	5,5 (0,3)	4,3 (0,3)	1	3,3 (0,4)	2,7 (0,4)	1,8 (0,3)	-6,1	5,5 (0,5)	6,7 (0,5)	4,7 (0,5)	-1,1	5,8 (0,5)	6,2 (0,5)	5,4 (0,4)	0,5
Unemployed, % share of working age pop.	0,2 (0,0)	0,8 (0,1)	1,7 (0,0)	20,9	0,3 (0,1)	0,7 (0,1)	1,6 (0,2)	16,6	0,2 (0,1)	1,1 (0,2)	2,1 (0,3)	16,1	0,2 (0,1)	0,7 (0,1)	1,8 (0,2)	24,8
Not economically active and not students, % share of working age pop.	6,2 (0,3)	7,9 (0,4)	19,2 (0,1)	9,8	7,4 (0,5)	9 (0,5)	17,1 (0,6)	10,2	5,5 (0,4)	8 (0,6)	19,5 (0,9)	13,0	5,5 (0,4)	6,7 (0,5)	21,3 (0,7)	15,4
Students, % share of working age pop.	13,2 (0,3)	15,3 (0,3)	17 (0,0)	4,8	33,5 (0,7)	40 (0,8)	42,8 (0,9)	4,8	0,9 (0,2)	1,3 (0,2)	0,98 (0,2)	2,9	0 (0,0)	0,2 (0,1)	0,1 (0,0)	14,7
<i>Observations (national)</i>	25.144	27.842	27.447		9.844	10.427	10.637		6.772	8.026	6.844		8.528	9.389	9.995	

Source: Analysis by authors of IHS2, IHS3, and IHS4.

Note: Annual growth' is the compound annual growth rate in the number of individuals that fall in the employment category in question between 2004 and 2016. Standard errors corrected for sampling design are reported in parentheses.

Finally, the growth rates computed for the base working population presented in Table 2 pose some puzzles. Overall, the working age population grew at 2.7 percent per year, about 0.2 percent lower than the growth of the population as a whole over the period examined. Emigration out of Malawi may be a factor in this, as emigration for wage labor, whether temporary or permanent, has been an important economic strategy for many Malawians since early in the colonial period (Coleman 1979; Vail 1983). In the 2008 census, heads of household were asked about household members that had left Malawi in the past ten years. Of the almost 130,000 emigrants enumerated, 61 percent were men ages 20–39 years (NSO 2011b). This pattern of age-specific male emigration is consistent with the pattern of working age population growth seen in Table 3.

Table 3. Changes in educational attainment among working-age individuals in Malawi, 2004-2016

	Working age, ages 15 to 64			Younger youth, ages 15 to 24			Older youth, ages 25 to 34			Adults, ages 35 to 64		
	2004	2010	2016	2004	2010	2016	2004	2010	2016	2004	2010	2016
NATIONAL – Years of schooling completed, avg.	5	5.8	6.5	6.1	6.7	7.3	5.2	6.3	7.1	3.7	4.5	5.2
<i>Completed primary school, percent</i>	23.2	27.3	31.7	27.1	30.4	34.1	26.3	32.7	38.7	16.3	19.5	24.4
<i>Completed secondary school, percent</i>	4.4	7.1	9.4	3.1	4.9	6.8	6.8	10.5	14	4.1	6.8	9
Rural – Years of schooling completed, avg.	4.4	5.3	5.9	5.6	6.3	6.8	4.5	5.7	6.2	3.2	3.9	4.4
Urban – Years of schooling completed, avg.	7.5	8.6	9.04	8	8.9	9.3	7.9	8.8	9.6	6.4	8	8.3
Female – Years of schooling completed, avg.	4.1	5.1	5.7	5.6	6.5	7.2	4	5.4	6.5	2.5	3.2	4
Male – Years of schooling completed, avg.	6.0	6.6	7.1	6.6	6.9	7.4	6.4	7.3	7.7	5	5.8	6.4
<i>Observations (national)</i>	25,098	27,736	27,475	9,839	10,370	10,637	6,762	7,998	6,844	8,497	9,368	9,994

Source: Analysis by authors of data from the Integrated Household Survey (IHS) series for 2004 (IHS2), 2010 (IHS3), and 2016 (IHPS).

Note: Sample design corrected standard errors are not reported here but are available upon request.

2.3.3 Analysis of employment in Malawi in full-time equivalent jobs

The analysis of changes in the structure of employment in this sub-section is based on individuals' primary occupation. However, many individuals have multiple jobs and underemployment is prevalent in agriculture and the informal sectors. Building on the results in Table 2, we therefore explore the extent to which changes in employment structure have occurred using the Full-Time Equivalent jobs (FTEs) approach. Following Yeboah and Jayne (2018), we assume that an individual working for 40 hours a week, four weeks per month for a 12-month year period is equivalent to one FTE job. The FTE of any one job is then computed as the actual number of hours worked as a share of this 1920-hour work year benchmark. Because work in agriculture tends to be more seasonal than in manufacturing or services and some workers have jobs in more than one sector, calculating employment in agriculture in terms of FTE jobs usually results in lower numbers of jobs and employment shares in agriculture than when the primary occupation method is used.

Table 4 presents the results of the FTE employment analysis in terms of the percentage of FTE jobs in each sector and age group for IHS2, 3, and 4. Employment changes based on FTE jobs show a decline in agricultural employment between 2004 and 2016. For all workers ages 15–64, the share of FTE jobs in the agricultural sector declined from 74.7 to 69.9 percent between 2004 and 2016. This decrease is driven by younger youth, whose work time in agriculture has declined by almost a third. In contrast, there is a small (3.5) percentage point increase in the share of FTE jobs for adults in the agricultural sector.

For the industrial sector, FTE jobs decrease from 9.4 percent to 4.8 percent. This decrease happens across all age groups but with younger youth seeing the biggest decline. These declines are consistent with both the declining trends in the share of industrial employment noted in Table 2, and the tendency of younger youth to delay their entry into employment by staying in education.

Table 4. Trends in the FTE Jobs by Sector, 2004-2016

	Year	Agriculture %	Industry %	Services %	Total FTE Jobs '000s	SE
Working age (15-64)	2004	74.7	9.4	15.9	3,344	(20)
	2010	72.1	6.2	21.7	2,509	(11)
	2016	69.9	4.8	25.3	2,024	(11)
of which:						
Younger youth (15-24)	2004	20.1	1.6	2.4	902	(13)
	2010	15.3	0.6	2.2	555	(5)
	2016	13.5	0.5	1.8	361	(4)
Older youth (25-34)	2004	23.0	3.6	6.0	1,072	(11)
	2010	24.1	2.6	8.6	853	(6)
	2016	21.4	1.8	9.4	659	(6)
Adults (35-64)	2004	31.6	4.1	7.5	1,369	(8)
	2010	32.8	3.0	10.9	1,100	(7)
	2016	35.1	2.6	14.0	1,003	(7)

Note: Standard errors (SE) corrected for sampling design reported in parentheses

Most of the decline in the share of FTE jobs in agriculture and industry is accounted for by a rise in the share of FTE jobs in the service sector. At the aggregate level, the share of FTE service sector jobs increases from 15.9 percent in 2004 to 25.3 percent in 2016. Adults' share of FTE service sector jobs almost doubles over this period, with older youth's share increasing by more than a half. However, younger youth's share in FTE employment declines from an already low 2.4 percent to just 1.8 percent. This provides further evidence that it is older workers, who have had time to build-up working capital, work experience, and networks, who are the main beneficiaries of growth in the service sector.

Finally, the penultimate column of Table 4 shows a substantial decline in the total number of FTE jobs, especially among youth. This is consistent with the increasing numbers of younger youth remaining in education as discussed in the previous section as well as rising levels of underemployment of youth, especially in agriculture and services. A rise in underemployment is also suggested by the contrast between the rising number of total employees implied by the first two rows of Table 3, and the decline in the number of FTE jobs shown in Table 4. Malawi's challenging employment landscape is characterized not only by a scarcity of jobs outside of agriculture, but also insufficiency of work hours for those who do have jobs in the agriculture and service sectors.

The key finding from this tabular analysis of the IHS is that there was little movement of labor out of the agricultural sector into the industry or services sectors between 2004 and 2016. The share of working age individuals employed in agriculture even increased slightly over this period, from 85 to 88 percent. The analysis also finds some growth in employment in the services sector, particularly among older youth and adults. However, when analyzed in terms of FTE jobs, both the share of full-time jobs in agriculture and the number of those full-time jobs declined. Younger youth ages 15–24 years are seen to be extending their period of schooling and generally enter into employment in the agriculture sector after they complete their schooling. Older workers are more likely to be employed in the services sector, suggesting that broad capital accumulation, work experience, and the development of personal social and economic networks over time may be more important factors than education in enabling individuals to find employment outside of agriculture in Malawi.

3 ANALYSIS OF THE DETERMINANTS OF EMPLOYMENT CATEGORY

The tabular analyses on the structure and trends in employment in Malawi presented in the previous section allow the consideration of only a few factors at the same time. In this section, a multivariate analysis is conducted of the factors associated with the decision by an individual to participate in employment along with the type of employment pursued. We use an analytical sequence of a logit regression model followed by multinomial (MNL) logit model (Amemiya 1985, Greene 1997). The first stage of the analysis is a simple logit model to examine the determinants of the choice by individuals to engage in employment rather than to not

be economically active. The second stage focuses on those individuals who are employed and involves an MNL logit model to examine the determinants of their decision to engage in five employment categories outlined below. We use a similar set of explanatory variables for both stages of the analysis.

It should be noted that the employment categories that we use as the dependent variable for the MNL model are different from those used in the analyses presented earlier. While the categorization scheme in sections 2.3.1 and 2.3.2 does not allow for individuals to work in more than one sector, the two-stage model used here allows for employment in more than one sector, e. g. an individual can work in both agriculture and services. Such diversification of livelihoods is relatively common in Malawi. In consequence, for the MNL analysis to identify factors associated with the employment choice of an individual, we developed five broad employment categories for individuals who are employed:

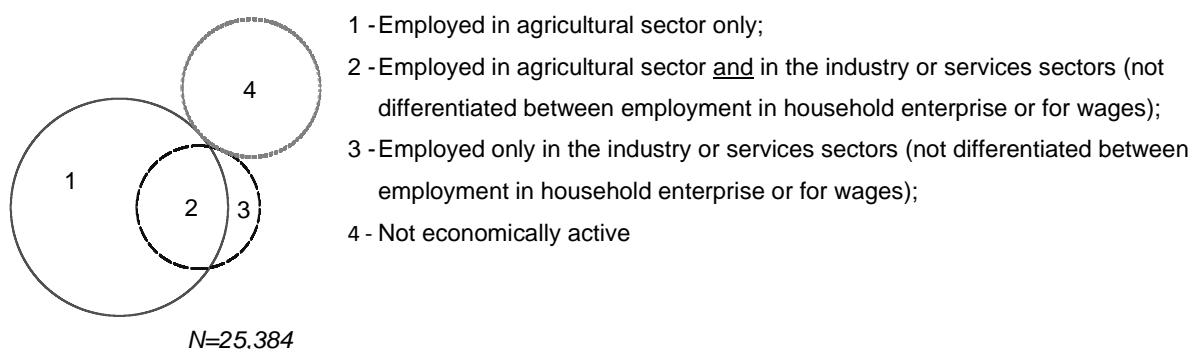
- i. In agricultural sector only;
- ii. Both in agricultural sector and in household enterprise(s) in the industry or services sectors;
- iii. Both in agricultural sector and in wage employment in the industry or services sectors;
- iv. Only in household enterprise(s) in the industry or services sectors; or
- v. Only in wage employment in the industry or services sector.

In these employment categories, we maintain a distinction between informal (categories ii and iv above) and formal (iii and v) employment in the industry and services sectors (e.g., Hart 1973; Fox, Senbet, and Simbanegavi 2016). Informal employment is centered on the operations of generally small-scale, minimally-capitalized enterprises within the household that make use primarily of household labor. In contrast, formal employment generally involves an individual having some type of working agreement with an employer with salary and benefits, a specific work location outside the household residence, and regular hours, with payroll taxes and social security payments being made to government agencies as part of the formal working arrangement. Obtaining informal employment is generally easier than obtaining formal wage employment, but the nature of informal employment is less stable. Also, the returns to informal employment are usually lower than those to formal employment. In most developing countries including Malawi, youth have the greatest opportunities for entering the non-agricultural work force through informal employment, something they do generally with ambitions to obtain formal employment as soon as possible (ILO 2015).

Note that sample size considerations dictate that we cannot differentiate employment in the industrial sector from employment in the services sector in the second analysis. We also exclude from our analysis the small number of unemployed, as defined in Box 1.

The Venn diagram in Figure 2 shows the relationship and overlaps between categories for the working age sample of the IHS4 as a whole. The diagram, however, does not differentiate those who are employed for wages in the industry or services sectors (formal employment) from those employed in household enterprises (informal employment) in these sectors. The dominance of exclusive agricultural sector employment is apparent in Figure 2.

Figure 2. Venn diagram of the relative sizes of the employment categories for IHS4 working-age sample



Source: Analysis by authors of IHS4.

The potential factors associated with an individual pursuing employment or, if employed, being a member of a particular employment category that we consider include demographic characteristics, educational attainment, household assets, physical access to markets, and recent experiences of economic shocks. These variables are described in more detail in the third column of Table 5. Means and standard errors are provided both for the entire working age sample (that is the basis for the first stage Logit analysis on choosing to be economically active or not) and for the employed working age sample (that is the basis for the second

MNL analysis on the types of employment pursued). The explanatory variables included in the model have been selected based on a review of the literature assessing the determinants of employment, including being economically inactive, in developing countries.

Table 5. Descriptive statistics of variables used for logit analysis and multinomial logit analysis of determinants of employment status and type of employment

Variable		Variable definition	Logit analysis mean (s.e.)	MNL analysis mean (s.e.)
Dependent categorical variable components:				
<u>Logit analysis of determinants of engagement in employment</u>				
econ_active		Economically active, 0/1	0.654 (0.0052)	na
<u>Multinomial logit analysis of determinants of type of employment for those engaged in employment</u>				
farm_only		Employed in agricultural sector only, 0/1	na	0.663 (0.0084)
farm_NFent		Employed both in agriculture and in household enterprise(s) in the industry or services sectors, 0/1	na	0.143 (0.0043)
farm_NFwage		Employed both in agricultural sector and in wage employment in the industry or services sectors, 0/1	na	0.094 (0.044)
NFent_only		Only employed in household enterprise(s) in the industry or services sectors, 0/1	na	0.035 (0.0026)
NFwage_only		Only employed for wages in the industry or services sector, 0/1	na	0.066 (0.0041)
Explanatory variables:				
<u>Demographic</u>				
male		male, 0/1	0.477 (0.0027)	0.492 (0.0035)
youth15_24		age 15 to 24 years, 0/1	0.371 (0.0039)	0.226 (0.0046)
youth25_34		age 30 to 34 years, 0/1	0.250 (0.0039)	0.308 (0.0049)
dependent		Individual is a dependent within household (not head or spouse of head), 0/1	0.298 (0.0042)	0.135 (0.0038)
<u>Ethnicity</u>				
Chewa_Nyanja		Chewa or Nyanja ethnicity, 0/1	0.726 (0.0100)	0.731 (0.0097)
Yao_Lomwe		Yao or Lomwe ethnicity, 0/1	0.095 (0.0071)	0.087 (0.0061)
Tmbka_Ngoni_Tnga		Tumbuka, Ngoni, or Tonga ethnicity, 0/1	0.111 (0.0064)	0.107 (0.0069)
Other_north		Other northern ethnic groups, 0/1	0.018 (0.0021)	0.020 (0.0024)
Other_ethncty		Other ethnic groups, 0/1	0.050 (0.0033)	0.055 (0.0040)
<u>Education Completed</u>				
ed_not_fin_prmry		Did not complete primary school, 0/1	0.703 (0.0063)	0.702 (0.0067)
ed_prmry_cmplt		Completed primary school, 0/1	0.210 (0.0050)	0.195 (0.0048)
ed_scndry_cmplt		Completed secondary school, 0/1	0.061 (0.0025)	0.071 (0.0029)
ed_tertiary		Received tertiary level education - university or vocational, 0/1	0.025 (0.0027)	0.033 (0.0035)
<u>Household wealth</u>				
house_perm_mtrl		Lives in house constructed with some permanent materials, e.g., metal roofing sheets, cement, 0/1	0.656 (0.0077)	0.645 (0.0080)
<u>Agriculture</u>				
land_cap_ha		Household agricultural landholding per capita, ha	0.178 (0.0013)	0.018 (0.0015)
FISP_hh		Household benefiting from Farm Input Subsidy Program, 0/1	0.167 (0.0063)	0.164 (0.0060)
mid_alt_plt		Resident in Mid-altitude Plateau and Highlands agro-ecological zone, 0/1	0.749 (0.0068)	0.759 (0.0065)
Lower_Shire_Valley		Resident in Lower Shire Valley agro-ecological zone, 0/1	0.053 (0.0027)	0.061 (0.0029)
Lakeshore		Resident in Lakeshore and Upper Shire Valley agro-ecological zone, 0/1	0.198 (0.0123)	0.203 (0.0130)
<u>Access to markets</u>				
trvl_5k_town_hr		Travel time to nearest urban center with population above 5,000, hours	0.088 (0.4062)	0.088 (0.4027)
trvl_50k_town_hr		Travel time to nearest urban center with population above 50,000, hours	0.912 (0.4097)	0.910 (0.4064)
<u>Shocks</u>				
shock_idiosync		Household experienced idiosyncratic shock in past 12 months, 0/1	0.352 (0.008)	0.359 (0.0082)
Shock_cov		Drought or floods in community in past five years, 0/1	0.472 (0.0206)	0.474 (0.0209)
			<i>Observations</i>	
			25, 384	16,107

Source: Analysis by authors of IHS4.

Notes: Weighted estimates. Standard errors corrected for sampling design reported in parentheses. 0/1 denotes indicator (dummy) variable and *na* means not applicable.

Broadly, individuals may choose to engage in non-farm activities because of the potential benefits, such as high returns or to diversify risk (Lucas and Stark 1985). External shocks and risks associated with agricultural production may also lead to individuals being forced to move away from agriculture and into other sectors. Factors associated with these two distinct scenarios are referred to as 'pull' and 'push' factors.

In both scenarios, an individual's labor allocation – both in amount and across sectors – is a function of incentives and capacity variables (Reardon et al. 2007).

Specifically, the demographic variables included in the MNL model are linked to the broader question of how youth in Malawi enter the work force. We also include two factors that may be associated with an individual not being economically active: whether an individual is a dependent within the household and the individual's gender. Gender plays a key role in employment status and is an important determinant of access to land, labor, technology, and other productive assets that will affect the propensity of an individual to obtain employment within different category (Andersson et al. 2013).

We include several dummy variables on ethnicity based on language spoken in the household. Ethnicity tends to be correlated with other economic and social disadvantages that impact employment choices. As has been shown in other countries, ethnic disadvantage tends to increase cumulatively over the life course, beginning in conception and continuing through to adulthood, and results from the interplay of overlapping layers of disadvantage (Hall and Patrinos 2014).

In addition, we include a range of educational attainment variables to assess the importance of human capital accumulation by an individual on the type of employment obtained. Education is expressed in terms of education levels, as educational attainment credentials play an important role in screening for formal wage jobs in Malawi and many other African countries (Lewin 2009). In order to capture the effect of household capital stocks on employment choice, we include a dummy variable of whether the individual lived in a house that was at least partly constructed of modern, permanent building materials as a proxy identifier of households that are likely to be able to offer a member financial resources to establish a business. Several dimensions of agricultural production that might affect employment choice are also included, including agricultural landholding size and whether an individual was a member of a FISP beneficiary household, as well as the broad agro-ecological potential of the area where the individual resided.

Physical access to markets may be expected to influence the extent to which individuals work outside of agriculture (Jonasson and Helfand 2010; Deichmann et. al 2009). We include travel time to the nearest populated area with greater than 5,000 persons and greater than 50,000 persons, respectively, as proxies for access to markets at different ends of the market size distribution in Malawi.

Important factors affecting incentives to diversify away from agriculture include volatile variables such as exogenous shocks (Ellis 2000). We include variables indicating if the household of which the individual is a member experienced an idiosyncratic shock (illness, child birth, death, etc.) in the last year and whether the community in which the individual resided experienced drought or floods over the last five years.

3.1 Results of logit analysis of determinants of participates in employment

The results of the logit model of the determinants of whether a working age individual participates in employment are presented in column 3 of Table 6. As the majority of our explanatory variables are indicator (dummy) variables, the results are presented as odds ratios.

Among the demographic characteristics considered, men of working age are significantly more likely to be economically active than women. Younger youth ages 15–24 are significantly less likely to be working than adults (individuals ages 35–64 years). This is expected, given that younger youth are still completing their education. However, for older youth ages 29–34 years, the likelihood for economic activity is higher than for adults, except for those working in the household enterprises. Individuals who are dependents of a household are significantly less likely to be economically active than household heads or their spouses. A similar analysis for IHS3 (Benson et al, forthcoming) found that a woman having given birth in the past two years was a significant determinant of engaging in work, rather than withdrawing from employment. This result likely reflects that the pressing economic needs for many Malawian women. Unfortunately, this variable was not retained in the IHS4 household questionnaire.

The study also analyzed ethnic affiliation. Apart from the “other Northern ethnic groups” category of the IHS, most ethnic groups are not significantly different from the dominant Chewa/Nyanja base category in terms of their engagement in employment. Further investigation of the result for the other Northern ethnic groups shows that members of this ethnic sub-sample are slightly more likely to be students than is the full sample.

Table 6. Results of logit and multinomial logit analysis of determinants of employment status/type

Explanatory variable category	Explanatory variable (potential determinants)	Logit Analysis (odds ratios)	Multinomial logit (MNL) analysis of type of employment (relative risk ratios; reference category: agricultural employment only)			
		Employed	Agriculture and in household enterprise in industry or service sectors	In agriculture and in wage employment in industry or services sectors	Only in household enterprise in industry or services sectors	Only in wage employment in industry or services sectors
Demography	male	1.519*** (0.06)	1.246*** (0.075)	3.818*** (0.338)	1.399** (0.180)	1.630*** (0.160)
	Younger youth	0.553*** (0.035)	0.791** (0.075)	0.631*** (0.078)	0.790* (0.168)	0.461*** (0.091)
	Older youth	1.264** (0.085)	1.202** (0.074)	0.884* (0.084)	1.137* (0.170)	1.333** (0.166)
	dependent	0.147*** (0.009)	0.222*** (0.030)	0.412*** (0.065)	0.174*** (0.049)	1.004 (0.222)
Ethnicity	Yao_Lomwe	0.832 (0.091)	0.986 (0.129)	0.869 (0.153)	0.586 (0.184)	0.532* (0.145)
	Tumbuka_Ngoni_T nga	1.085 (0.088)	0.940 (0.097)	0.997 (0.151)	0.957 (0.305)	0.992 (0.243)
	Other_north	1.912*** (0.309)	1.502 (0.399)	0.577 (0.178)	5.161** (3.158)	1.216 (0.718)
	Other_ethncty	1.014 (0.138)	1.180 (0.177)	1.085 (0.259)	1.397 (0.635)	1.454 (0.683)
Education	ed_primary_complt	0.931 (0.041)	1.788*** (0.133)	2.301*** (0.199)	2.211*** (0.362)	1.721*** (0.233)
	ed_scndry_complt	1.849*** (0.202)	1.598*** (0.212)	5.956*** (0.701)	5.346*** (1.100)	9.368*** (1.272)
	ed_tertiary	2.257*** (0.523)	1.400 (1.391)	29.292*** (13.543)	18.739*** (8.927)	112.626*** (50.579)
Household Wealth	house_perm_mtrl	0.963 (0.053)	1.538*** (0.106)	2.466*** (0.270)	8.431*** (3.170)	8.415*** (2.252)
Agriculture	land_cap_ha	1.370 (0.412)	0.473 (0.181)	0.069** (0.054)	0.000*** (0.0000)	0.000** (0.0000)
	FISP_hh	1.020 (0.066)	1.121 (0.084)	0.617*** (0.070)	0.000*** (0.0000)	0.057*** (0.024)
	Lower_Shire_Valley	1.805*** (0.197)	1.064 (0.144)	0.870 (0.257)	1.629 (0.879)	0.907 (0.479)
	Lakeshore	0.734*** (0.056)	0.926 (0.099)	0.704* (0.101)	0.683 (0.176)	0.927 (0.210)
Access to markets	trvl_t5k_town_hr	0.963 (0.042)	1.130* (0.066)	1.217* (0.104)	2.496*** (0.360)	2.098*** (0.215)
	trvl_t50k_town_hr	1.039 (0.045)	0.883* (0.052)	0.819* (0.070)	0.45*** (0.058)	0.478*** (0.049)
Shocks	shock_idiosync	1.100 (0.060)	1.709*** (0.103)	0855 (0.110)	2.732*** (0.443)	1.536** (0.189)
	shock_covarnt	1.162* (0.087)	0.906 (0.078)	1.247 (0.101)	0.562* (0.146)	1.007 (0.236)
	Constant	3.363*** (0.260)	0.134*** (0.013)	0.039*** (0.006)	0.011*** (0.005)	0.015*** (0.005)
	Observations	23,829	2,422	1,650	564	1,022

Total observations in analytical data set: 23,829; Employed: 16,634; Employed in agricultural sector only (MNL base category): 10,976.

Logit analysis: pseudo-R²: 0.2466; F(22, 681) = 142.20, Prob > F= 0.0000

MNL analysis: pseudo-R²: 0.1590; F(88, 615) = 1685.43, Prob > F= 0.0000

Source: Analysis by authors of IHS4.

Notes to Table 6: Weighted estimates. Statistical significance of relative risk ratios denoted by * for $p < .05$, ** for $p < .01$, and *** for $p < .001$. Standard errors corrected for sampling design reported in parentheses. Reference employment category for the MNL is 'Agricultural sector employment only'. For the categorical explanatory variables, the base case for age cohort is those ages 35 to 64 years, for ethnicity is 'Chewa or Nyanja'; for educational attainment is 'Did not complete primary school'; and for agro-ecological zones is 'Mid-altitude Plateau and Highlands'. Pseudo- R^2 should be considered indicative, as they are estimated from unweighted logit and multinomial logit analyses with the same specifications.

The results for education completed show that higher levels of education are generally associated with higher probabilities of engaging in employment. Those who have completed secondary school or have some tertiary level education are considerably more likely to be employed than those who did not complete primary school. However, we find that those who have completed primary but not secondary school are less likely to be employed than those who have not completed primary school. This is because a large number of the younger youth who have completed primary school are still continuing their education in secondary schools or tertiary education institutions.

The housing materials variable, a rough proxy for household wealth, shows that households that live in houses made of permanent materials are no more likely to have their members employed. Similarly, those living in households with more agricultural land per capita are also no more likely to have their members working. Since these asset variables are to some extent endogenous, these associations should not be treated as structural.

The model results also show that individuals residing in the Lower Shire Valley are more likely to be economically active than are those found elsewhere in Malawi. With regards to location relative to urban centers, distance to smaller or larger urban centers is not associated with employment. Finally, neither idiosyncratic shocks in the past year nor covariant shocks (such as drought and floods) in the past five years appear as factors that push individuals to seek employment.

3.2 Results of multinomial logit analysis of category of employment for those employed

The results of the MNL model for type of employment of the employed working age population in the IHS4 sample are presented in columns 4 to 7 in Table 6. Again, as the majority of the explanatory variables are indicator variables, the results are presented as relative risk ratios (RRRs).⁵ The base category for the MNL model is being employed in the agriculture sector only, so all the relative risk ratios are expressed relative to this category.

The validity of MNL results is predicated on the assumption of the independence of irrelevant alternatives (IIA). The IIA assumption states that the RRRs obtained in the MNL model are independent of the other states (Greene 1997). The validity of the IIA assumption is often questionable in the application of an MNL model to discrete choice issues as in the analysis of the choice of employment category here. However, we are unable to reject the IIA assumption for our preferred MNL model in Table 6 using the Small-Hsiao post-estimation test (Small and Hsiao 1985).

Examining the results of our MNL analysis, we find that men are more likely than women to combine agricultural employment with home enterprise or wage employment or to be employed exclusively in wage employment. Men are also more likely to work solely in a household enterprise.

Examining the youth variables our results confirm the findings from our tabular analysis: younger youth either work in agriculture or are not economically active, as evidenced by the relative risk ratios for younger youth all being significantly less than 1.0 for any employment categories that include non-farm work. In contrast, a clearer pattern of employment is established in later years, during which we find older youth more likely to be employed both in agriculture and household enterprises.

We expected from the earlier tabular analysis that dependent household members who are working are likely to work solely in agriculture and less likely to find work in the industry or services sectors. This expectation is confirmed in the model results, where the relative risk ratios are less than 1.0 except for wage employment outside of agriculture.

With regards to employment patterns and ethnicity, the larger ethnic groups of the South (Yao and Lomwe) are less likely than the reference ethnic group of the Chewa/Nyanja to work for wages out of agriculture. Only workers who are members of the other Northern ethnic groups show any significantly greater likelihood

⁵ Relative risk ratios show how a one-unit change in an explanatory variable will change the relative probability of an individual being in one employment category relative to the base category (Long and Freese 2014). An RRR less than 1.0 indicates a decrease in the relative probability of being in a particular employment category, while an RRR greater than 1.0 indicates an increase.

of diversifying their employment out of agriculture alone than the Chewa/Nyanja, and then primarily in household enterprises rather than in wage employment.

The important role of education in moving people out of farming and into non-farm sectors is consistently and strongly seen in the association between educational attainment and the employment category of an individual – greater educational attainment results in much higher probabilities of working outside of agriculture and in formal, wage-based employment. Workers who have completed primary education are about twice as likely to work outside of agriculture as those who have not completed primary school. Having completed secondary or tertiary education increases the probability of working outside of agriculture, in particular the likelihood of a wage job, more than five-fold.

In contrast to the logit model, the multinomial logit shows a strong association between the level of household wealth and engagement in any non-farm employment, with somewhat stronger associations for purely non-farm employment. This points to capital or other financial hurdles restricting working-age individuals from poorer households engaging in non-farm employment.

Turning to the results for the agriculture-related determinants, larger landholdings are associated with a lower propensity to be in all categories of non-farm employment.⁶ The relative risk ratio in column 4 and 5 of Table 6 shows that household enterprises in the industry and service sectors and wage employment are strongly associated with smaller landholdings. This is evidence that declining landholding size may be a significant push factor propelling working age individuals to seek a portion of their livelihoods off-farm.

Our MNL results provide some evidence that the receipt of Farm Input Subsidy Program (FISP) benefits in the cropping season prior to the IHS4 survey discouraged individuals working outside of agriculture. The results show a significant association between a household having received FISP benefits and working age individuals in these beneficiary households being less likely to be employed both in non-farm enterprises and in non-farm wage labor (column 4 and 5 in Table 6). This can be interpreted in two ways: On the one hand, the receipt of FISP benefits may forestall the need for an individual to engage in wage labor off-farm. Alternatively, this may reflect the FISP eligibility criteria, which stipulate that beneficiary households be full-time 'productive' farmers.

We do not find many effects of broad agro-ecological potential on employment choice. The base category is the relatively productive mid-altitude Plateau and Highland agro-ecological zone. However, residence in the Lakeshore zone, which experiences more erratic or lower rainfall and is subject to more weather-related shocks does result in a lower likelihood of combining agriculture with wage employment in the industry and service sectors.

The variables on market access (travel time) to small (population of at least 5,000) and large (more than 50,000 people) urban centers provide contrasting results. While the overall pattern for small population centers is that the longer it takes for an individual to travel to a small urban center, the more likely they are to engage in non-farm activities, travel time to large urban centers reduces the probability of non-farm employment. Given that most non-farm employment opportunities are concentrated in larger urban centers, this result is not surprising, although many urban households in Malawi still have their own farms or garden plots for growing some food for their own consumption. The association that travel time to smaller population centers has on the employment choices of individuals located close to them calls into question whether these smaller towns have much of a role to play in changing employment patterns in Malawi.

Finally, with regards to an individual experiencing a recent economic shock, we find that idiosyncratic shocks are positively associated with engaging in non-farm employment. This may be a result of the economic costs of such shocks (in particular ill-health) driving household members to seek non-farm employment (Kochar, 1995). In contrast, workers resident in communities that experienced drought in the last five years are no more likely to engage in non-farm employment either exclusively or in combination with farming. This result reflects the limited employment opportunities and general economic downturn following the poor harvests of 2015/16 and 2016/17.

To summarize the findings from our multivariate modelling of employment choice in Malawi, we find further confirmation that younger youth are not involved in any shift in the sectoral composition of employment in Malawi. Older youth and adults, particularly males, are more central to such shifts. Educational attainment is strongly associated with employment outside of agriculture. This suggests that there are incentives

⁶ The results on the landholding size and the FISP variables for the two exclusively non-farm employment categories (columns 6 and 7 in) should be disregarded, as these individuals principally will come from non-agricultural households.

associated with employment in the industry and services sectors operating to 'pull' people out of agriculture. However, the model results also show that small agricultural landholdings and experience of idiosyncratic shocks are factors 'pushing' people out of agriculture to seek non-farm employment, whether on a part-time or exclusive basis or under formal (wage-labor) or informal (household enterprise) working arrangements.

4 SUMMARY AND CONCLUSIONS

Our analysis of the patterns and trends in the sectoral composition of employment in Malawi using the Integrated Household Surveys provides little evidence of structural transformation of the economy. Despite some movement of labor into services, particularly by older workers, the historical pattern of agriculture as the principal sector of engagement for those entering the work force remains in place. The share of those working in agriculture rose slightly between 2004 and 2016, while the share of those who work in the industrial sector declined. However, when analyzed in terms of FTE jobs, both the share of full-time jobs in agriculture and the number of full-time jobs has declined, suggesting rising levels of underemployment.

Our study finds a strong association between educational attainment and engagement in wage employment in the non-farm sector. Free primary education over the past two decades has played a role in the increasing share of older youth employed outside of agriculture. Nevertheless, it remains the case that for most workers, education alone is not sufficient to enable them to obtain non-farm employment. There are relatively few high-quality jobs in Malawi in which well-trained Malawians can use their skills productively. We find that working in the non-farm sectors is a step that a small number of workers will take later in their work lives after they have built the financial capital, experience, and social networks needed to succeed outside of agriculture. Malawi's challenging employment landscape for youth is characterized not only by a scarcity of jobs outside the agriculture sector but also an insufficiency of work hours for those employed in that sector.

Designing programs and incentives to supply high quality jobs in which better educated Malawians can use their skills more productively should be a pressing concern for the Government of Malawi. Unfortunately, many of the jobs created in the non-farm sectors today are of relatively low productivity and offer little more in terms of economic output than can be achieved in smallholder farming (McMillan and Harttgen 2014). Increased levels of foreign direct investment may help to create some higher productivity jobs in industry and services, as foreign investors provide greater access to new technology and foreign markets. However, the number of jobs generated by foreign direct investment is likely to be relatively limited. Efforts to upgrade energy and transport infrastructure are also needed, as most new jobs will require reliable power and better connections to regional and global markets (Dabalén et al. 2017).

Consequently, while government needs to put in place adequate incentives for Malawians to find and engage in remunerative work in all three sectors of the economy, agriculture will remain the sector in which most Malawians are employed for the foreseeable future. Therefore, it is important that public investments supporting growth and change in the structure of the economy of Malawi do not neglect agriculture nor the role of youth within agriculture. New agricultural technologies combined with better extension to equip farmers to adopt these technologies are essential if agriculture is to become more productive. Investments that strengthen agriculture's linkages with the industry and services sectors and reduce the drudgery of farm work are also vital. Increased value-addition for agricultural products (in particular, those involving more complex processing techniques and an expansion in the range of commodities used and products manufactured) are likely to be central components in any structural transformation of the Malawian economy. We should expect that any growth in employment in the non-farm sectors will find its origins in a more vibrant, diverse, and productive agriculture sector.

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