

African Development Bank Group

# Working paper series

N° 110 - June 2010

## Education and Employment in Malawi

Vincent Castel, Martha Phiri and Marco Stampini



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# Education and Employment in Malawi

Vincent Castel, Martha Phiri and Marco Stampini <sup>(1)</sup>

Working Paper No. 110

June 2010

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## Abstract

Vincent Castel, Martha Phiri and Marco Stampini

*This paper analyzes the relationship between education and employment in Malawi, using data from the 2004-05 Integrated Household Survey (IHS-2). For both men and women, education is the passport to formal employment and leads to higher hourly earnings. Within regular wage employment, secondary education is associated with a 123 percent wage premium, and university education with a 234 percent wage premium (relative to illiteracy). In both rural and urban areas, income is positively correlated with specialization in regular wage employment. For example, in urban areas 60 percent of the households who derive at least 75 percent of*

*their income from regular wage employment belong to the highest quartile of the income distribution. This reflects the relative scarcity of human capital. Among prime age males (25 to 39 years old), only 10 percent have completed secondary education. For women in the same age group, the situation is even worse, with the rate of completion of secondary schooling as low as 3 percent. The analysis of school enrolment highlights that teenage women experience high drop-out rates, which prevent greater female enrollment in higher education, and therefore constrain future participation in the best forms of employment.*

**Keywords:** labor market, returns to education, Malawi.

**JEL Classification:** J24, J31, I21.

## **1. Introduction**

Malawi is one of the least developed countries in the world. According to the UNDP Human Development Index, it ranked 162<sup>nd</sup> out of 179 countries in 2008. Adult literacy rate (70.9 percent – 112<sup>th</sup> position), combined primary-secondary-tertiary gross enrolment ratio (61.9 percent – 131<sup>st</sup> position) and life expectancy at birth (47 years – 167<sup>th</sup> position) are extremely low (UNDP, 2008). The country is also one of the poorest in the world in monetary terms, with a GDP per capita of USD 212 and PPP-USD 602 in 2008 (African Economic Outlook, 2009).

However, the recent macro-economic performance has been encouraging, with yearly GDP growth rates in excess of 7 percent between 2006 and 2008 (African Economic Outlook, 2009). Agriculture is a key sector, accounting for 14 percent of the national budget, one third of GDP, 90 percent of export revenues and employment (African Economic Outlook, 2009). Agricultural GDP grew by 10.1 percent in real terms in 2008.

During the current international crisis, GDP growth was estimated at 7 percent in 2009 and is forecast at 6 percent in 2010 (African Economic Outlook, 2010). Exports are expected to face a contraction, and the development of the private sector may be impacted by reduced foreign direct investments. In the medium term, the mining and service sectors are expected to emerge as key growth drivers (African Economic Outlook, 2009). The availability of skilled labor is a necessary precondition, for these sectors to develop their growth potential.

The 2007 Business Climate Survey of the Malawi Chamber of Commerce and Industry (MCCI, 2007) and the 2006 Investment Climate Assessment (World Bank, 2006) rate “availability of local skilled workforce” as a major obstacle to doing business. 62 percent of large companies and 58 percent of foreign owned companies identify lack of skilled labor as a constraint. AfDB (2009) finds that specific skills in engineering and sciences requested by the private sector are particularly scarce.

This paper focuses on the relationship between education and employment in Malawi, with the aim to identify potential shortages in human capital and the incentives to be put in place for the country to satisfy its labor needs. The analysis is based on micro data from the Integrated Household Survey (IHS-2) conducted by the National Statistical Office of Malawi between March 2004 and March 2005.

The literature on employment in Malawi is relatively narrow. Relative to the existing work, this paper is novel in several respects. First, it adopts a three-dimensional approach covering: a) equality in access to schooling; b) relationship between educational achievements and labor market status, and; c) relationship between labor market outcomes and income. Second, we exploit household income data to analyze the monetary returns to different forms of wage and self employment. Third, when analyzing the returns to education for wage employees, we control for selection into wage employment through a Heckman regression.

The remainder of the paper is organized as follows. Section 2 provides background information on the education system and reviews the literature on the relationship between education and employment in Malawi. Section 3 describes the data set, defines the key variables, and outlines the methodology for the analysis. Section 4 reports and discusses the results of both descriptive and econometric analysis. Section 5 concludes with some policy recommendations.

## **2. Background**

### ***2.1 Education policies***

Malawi's education strategy evolved over the last four decades. The first education development plan (1973-80) prioritized secondary and tertiary education. This was revised in the second education development plan (1985-95) which focused on universal primary education. The objective was not achieved. In particular, girls were left behind, recording lower performance and higher drop out rates (Swainson, 2000), in particular in the Muslim and non-religious groups (Doctor, 2005).

In 1994, the government of Malawi implemented a new ambitious program aimed at delivering free primary education for all. This policy led to an important increase in the enrolment rate all over the country (Kadzamira and Rose, 2003), also because it was accompanied by an integrated in-service teacher education programme (MIITEP) introduced in 1997, which trained 18,000 teachers to meet the increasing demand (Kunje, 2002; Kunje and Stuart, 1999).

The Liberalization reforms adopted in the 1990s led to increased participation of the private sector in education service delivery from primary to university levels. However public institutions remain the main providers of education, enrolling about 99 percent of pupils in primary and 77 percent in secondary school.

Education is currently strong on the development agenda. The 2020 vision initiated by the government identifies human resource development as critical for the country's future welfare and prosperity. Nominal spending on education increased by 12 percent in the 2009-10 budget, reaching about 5 percent of GDP. Education budget requirements are expected to increase sharply in the coming years due to the young demographic profile (in 2003, the median age of the population was 16.8 years).

### ***2.2 Structure and performance of the education system***

The formal education system in Malawi is currently structured around primary education (8 years), secondary education (4 years) and university education (in general 4 years). The Primary School Leaving Certificate Examination (PSLCE) qualifies pupils for secondary education. Junior Certificate Examination (JCE) is awarded after completing two years of secondary education while the Malawi School Certificate Examination (MSCE) is awarded after completing four years. Tertiary education providers include primary and secondary teacher training colleges, technical and vocational training schools, and university colleges. An MSCE is required for entrance into the university

and secondary teacher colleges. Entrance into primary teacher training colleges and technical and vocational training colleges require either a JCE or a MSCE.

The performance of the educational system fairs poorly on the sub-regional scale. The gross enrolment rate is the lowest in the region. In primary school, pupil to teacher ratio at 80:1, repetition rates at 20 percent, and the internal efficiency coefficient<sup>i</sup> at 35 percent are all worse than the Sub-Saharan averages. This may explain why Malawi is at the bottom of all the SACMEQ<sup>ii</sup> countries in English reading and next to last in mathematics (SACMEQII, 2005). At 9 percent, the percentage of children reaching a minimum level of mastery in reading in English has halved over the 1998-2004 period. In Mathematics, 98 percent of the students do not possess skills beyond basic numeracy and none of them has skills beyond competent numeracy.

The low internal efficiency coefficient also reflects the high drop-out rates. 2008 data from the Education Information Management System (EIMS) show that in lower primary education the dropout rate is low and roughly the same for boys and girls. However, the dropout rate for girls rises sharply from about 10% in standard 5 to 20% in standard 8.

There is a serious shortage of learning materials in primary education and lack of relevant infrastructure for secondary education. In primary school, mathematics, and science books are scarce. In 2008, an average of 30 pupils were sharing a mathematics text book and over 200 pupils were sharing a science or agriculture text book in lower primary school. In upper primary school, availability relatively improved, with an average of 3 pupils sharing a text book. In secondary education, more than five hundred schools did not have a library and/or a science laboratory and over four hundred schools did not have a computer laboratory.

Performance in the national examinations for primary and secondary pupils is poor. The pass rate for national examinations falls dramatically with higher certificate levels. On average only about 73 percent of those who sat for the Primary School Certificate of Education between 2003 and 2007 passed the exam. The pass rates for Junior Secondary Certificate Examination and Malawi School Certificate Examination during the same period, averaged even lower at about 66 percent and 39 percent respectively. High failure rates, particularly for higher level national examinations, reflect a general problem with the education system. More than 60 percent of secondary teachers do not have teaching certificates. The situation is worst in the Community Day Secondary Schools, that enroll about 47 percent of the students and where 81 percent of the teachers do not have teaching certificates compared to 27 percent in Conventional Secondary Schools (Government of Malawi, 2009).

Outdated legal framework and inadequate infrastructure limit enrollment and affect efficiency in higher education (AfDB, 2009). Public financing to universities and Technical, Entrepreneurial Vocational Education and Training (TEVET) is high and covers recurrent transactions including personal emoluments, security, maintenance,

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<sup>i</sup> Calculated by dividing the optimal number of pupil-years in an education system by the number of pupil-years actually spent by a cohort of pupils. In a 'perfectly efficient' system with no drop-out and repetition rates, the coefficient would equal 100 percent.

<sup>ii</sup> Southern and Eastern African Consortium for Monitoring Education Quality (SACMEQ) conducts comparative analysis of the quality of education in 15 Southern and Eastern African countries.

boarding and catering services. On the other hand, the Acts that provide for the establishment of the two public universities in the country and the TEVETA Act limit student enrollment to bed space in the institutions and give the authority for the review of tuition fees to the Government.

The cost sharing structure for higher education suggests a heavy government subsidy, with 92 percent of the financing coming from public resources (Government of Malawi, 2009). An assessment carried out by the University of Malawi (UNIMA) in 2006 concluded that the cost of operations for UNIMA and Mzuzu University (MZUNI) amounted to MWK 1.3 million<sup>iii</sup> and MWK 1.1 million per student per year respectively. However, a regular student pays a much lower combined tuition and accommodation fee of MWK 25,000 per year for UNIMA and MWK 55,000 per year for MZUNI. In private universities similar fees range from MWK 230,000 to MWK 390,000 per student per year.

As more than 90 percent of the students in higher education come from households in the highest income quintile (Government of Malawi, 2006), the Government is providing a high level of subsidy to individuals who are already well to do and have ability to pay. The subsidy is also going towards a sub sector that exhibits high inefficiencies as evidenced by low student to lecturer ratio (11 to 1) and high unit cost, which are half and seven times the Sub-Saharan average respectively (Government of Malawi, 2009).

The increase in enrollment of non residential students<sup>iv</sup> over the years shows willingness and ability to meet the cost of higher education. Data from the University Office show that non-residential students comprised 51.9 percent of the total enrolment at the Polytechnic in 2006 and 57.7 percent at MZUNI in 2008.

### ***2.3 Returns to Education***

The linkages between education, employment and earnings in Malawi are the subject of a recent stream of literature, focusing on the returns to education and on skill mismatch.

Chirwa and Matita (2008) estimate the returns to education through extended Mincerian earning functions, using data from the integrated household surveys (IHS-1 & IHS-2) implemented nationwide in 1998 and 2004-05. The study focuses on individuals aged 15 years and over engaged in wage employment. In urban areas in 2005, primary education increases wages by 4.9 percent, secondary education by 14.9 percent, technical education by 29.1 percent, and higher education by 67.2 percent (in all cases relative to no schooling or incomplete primary education, which is the omitted category).

The matching between graduates' skills and demand from employers was recently analyzed by Jimat consultant (2008), Kadzamira (2003) and Pfeifer and Chiunda (2008). These find that graduates are more likely than others to find a job, and that there is excess of demand for skilled labor by the private sector.

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<sup>iii</sup> Equivalent to EUR 6405. Malawian Kwacha, MWK 205 = EUR 1 (March 2010).

<sup>iv</sup> Also known as parallel students, these do not follow the regular admission process. They pay much higher fees and cater for their own accommodation and food. Their admission is controlled by the individual colleges which have used this as an opportunity to raise extra resources for the institutions.



Jimat consultant (2008) looks at the demand for technical skills using data from an ad-hoc survey conducted in 2007-08. Out of 100 graduates with technical skills, 85 find a job within six months from the completion of the training, and 76 hold a wage earning job. On the other hand, firms do not manage to satisfy their needs for skills. Distance, funding limitations and lack of supply are identified as the bottlenecks that determine an excess of demand for skills.

Kadzamira (2003) focuses on secondary school and university graduates using data from standard tracing surveys. Unemployment is found to be low among secondary school graduates (8 percent in 2001 for graduates in 1990 and 1995), and close to zero among university graduates. Secondary school graduates are typically located in urban areas, and engaged in skilled wage employment: 70 percent of them are involved in wage employment, and 58 percent hold a professional and skilled non-manual job. The private sector is the main employer (69 percent), followed by the education system (mostly primary school teachers). Employment opportunities for university graduates increased considerably over the last three decades: 70 percent of 1999 graduates found a job within two years from graduation, while the same share for the 1980 cohort was less than 30 percent. Also for university graduates, the private sector is found to be the main employer. This contrasts with findings in other African countries, where graduates are experiencing increasing difficulties in finding jobs at their skills level.

Pfeifer and Chiunda (2008) find that education is the main field of specialization. In terms of employability, however, law fares best, bringing all graduates into regular full-time employment, followed by business and economics. Outcomes below average are recorded for social sciences, agriculture, pure sciences and ICT. ICT also shows the highest unemployment rate, pointing to possible saturation in the relevant labor market.

### 3. Data and Methodology

Our analysis is based on primary data from the Integrated Household Survey (IHS-2) conducted by the National Statistical Office of Malawi between March 2004 and March 2005. The survey included 25 interrelated modules covering income and expenditure, assets, education, health and employment, and aimed at providing data for the analysis of poverty in support of policy formulation. The sample is made of 11,280 households and is nationally representative.

We focus in turn on schooling, employment and earnings. For schooling, we first analyze enrolment for individuals aged 6-23 years. After the descriptive analysis, we run the following probit regression:

$$P(Enrol_i = 1) = \Phi(X_i\beta) \quad (1)$$

where  $Enrol_i$  is a dummy measuring individual  $i$  school enrolment, the vector  $X$  measures individual and household characteristics,  $\beta$  is a vector of parameters to be estimated, and  $\Phi$  is the standard normal cumulative distribution function. Most individual characteristics are defined as dichotomous variables. Age is captured by a set of dummy variables, interacted with a female dummy variable to assess the existence of a gender gap. Residence is captured by three dummy variables expressing location in rural areas, and in

the Central and Southern region (omitted category Northern region). We also control for yearly household income<sup>v</sup> to study inequality in access to schooling.

Then, we look at educational achievements for working age individuals (age 15-64). Individuals are classified as follows: a) *illiterates*, who cannot read and write in any language (including Chichewa and English); b) *literate with no degree*, who can both read and write in any one language but did not complete primary education; c) *PSLC graduates*, holding a Primary School Leaving Certificate (having completed Standard 1 to Standard 8); d) *JCE graduates*, who completed the junior cycle of secondary education (Forms one and two); e) *MSCE graduates*, who completed the senior cycle of secondary education (Forms three and four); f) *higher education graduates*, holding university, technical or vocational degrees.

In terms of labor market outcomes, working age individuals are classified as inactive, unemployed or employed. The **inactive** did not work over the previous seven days and did not look for a job over the last four weeks. Respondents who did not work over the previous seven days and who had either closed temporarily their business or put on hold their agricultural activities due to weather pattern constraints are included in this category. The **unemployed** did not work over the previous seven days, and looked actively for an income generating activity over the last four weeks. The **employed** worked at least one hour over the previous seven days, or did not work over the previous seven days because either on personal or on sick leave.

Employed individuals are then classified as *farmers, self-employed, casual employees* (defined as those employed in ganyu<sup>vi</sup> labor) and *wage employees*<sup>vii</sup>, based on the numbers of hours spent on the different activities during the last seven days. For example, a respondent is considered as a farmer if the time she allocated to agricultural self-employment was higher than the number of hours allocated to non-agricultural self-employment, casual and wage employment.

After the descriptive analysis, we analyze the effect of education on the likelihood to hold a certain labor market status by estimating the following set of probit regressions on the sample of working age individuals (aged 15-64):

$$P(S_i = 1) = \Phi(X_i\beta) \quad (2)$$

where  $S_i$  is a set of dummies measuring worker  $i$  labor market status, the vector  $X_i$  denotes individual and household characteristics,  $\beta$  is a vector of parameters to be estimated, and  $\Phi$  is the standard normal cumulative distribution function. Most individual characteristics are defined as dichotomous variables. Education is captured by five

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<sup>v</sup> Income variables were calculated in the context of the Rural Income Generating Activities (RIGA) project. See: <http://www.fao.org/es/ESA/riga/>

<sup>vi</sup> Ganyu is agriculture related work and is widespread in Malawi. Ganyu laborers are employed by better endowed smallholders or by estate owners and wages are paid in cash or in kind. Ganyu is one of the most important coping strategies for most poor households in Malawi. While ganyu can simply refer to casual labor in other people's farms that is paid in cash or in kind, it also traditionally conveys a social obligation whereby better off farmers make this type of work available to their less fortunate neighbors.

<sup>vii</sup> Wage employment includes workers in the public and the private sectors. Public sector (Government employees, state-owned enterprise, public works programs) accounts for 25.8 % of the wages employees.

dummy variables for literacy, primary education, JCE, MSCE and university education (the omitted category is illiteracy). These dummies are allowed to vary by gender through the interaction with the female dummy variable. Age is captured by four dummy variables for age 20-24, 25-39, 40-54 and 55-64 (omitted category 15-19). Residence is captured by three dummy variables expressing location in rural areas, and in the Central and Southern region (omitted category Northern region). We also control for two household characteristics, size and number of children, as these may affect work behavior.

A multinomial logit regression would be technically more appropriate than a set of probit regressions, as the likelihood to be in each status would be estimated relative to a constant reference (for example farming). All statuses would be jointly considered in one single regression. When we run several probit regressions, on the contrary, the reference case changes for each equation (being all statuses minus the one captured by the dependent variable). We nonetheless choose to estimate and discuss the probit regressions because the results are broadly consistent, and more intuitive and easy to explain.<sup>viii</sup>

We then focus on wage employment, which is the only labor market state for which earnings are recorded thoroughly at the individual level. We estimate the returns to education, defined as changes in hourly wages –a measure of workers productivity. As the dependent variable is measured only for a subsample of individuals, we estimate an Heckman regression. This is a two-stage procedure. In a first stage, selection into wage employment is estimated as a function of individual and household characteristics. The first-stage regression is used to generate an Inverse Mills Ratio, which is included among the regressors of the second stage, i.e. as one of the explanatory variables for hourly wages. The Inverse Mills Ratio aims to correct the selection bias due to the fact that regular wage employees are different from other individuals. We use household agricultural assets as selection variables in the first stage. These are assumed to affect the likelihood of holding a regular wage job, but to be uncorrelated with hourly wages once wage employed.

Wages are calculated including salary payments, allowances, gratuities, in-kind payments (such as uniforms, housing, food, and transport). Hourly values are obtained by dividing the last payments received by the number of hours worked during the period of reference. The regression can be written as follows:

$$\ln w_i = X_i\beta + \lambda_i\delta + u_i \quad (3)$$

where  $w_i$  is the hourly wage earned by worker  $i$ , the vector  $X_i$  denotes individual characteristics,  $\lambda_i$  is the Inverse-Mills-Ratio,  $\beta$  and  $\delta$  are parameters to be estimated and  $u_i$  is a random disturbance. The vector  $X$  contains all the variables listed for equation 2. In addition, it contains the number of working hours and a set of dummy variables capturing the sector of activity and the type of employer. Estimation is performed using the Heckman command in STATA.

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<sup>viii</sup> Multinomial logit results are available upon request.

To analyze the relationship between living standards and labor market statuses for which data on earning was not collected at the individual level<sup>ix</sup>, we classify households based on the relative contribution of the different activities to total yearly income. Four types of specialization are defined: farming, when agricultural activities account for 75 percent or more of the household income; wage employment, when wages account for 75 percent or more of the household income; self-employment, when non-agricultural business net incomes account for 75 percent or more of the household income, and; diversified, when no activity accounts for 75 percent or more of the household income. No household is found to be specialized in casual labor. Using this categorization, we look at the effect of specialization on income.

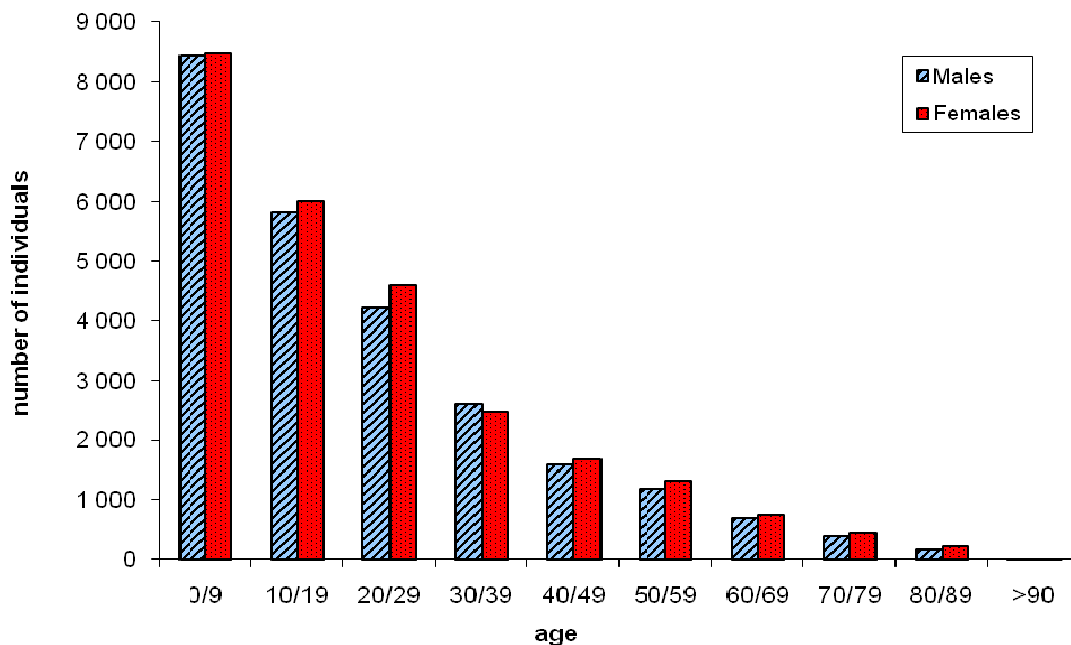
With the set of tools described above, we can now move to presenting the findings.

## 4. Findings

### 4.1 Educational achievements

The age structure of the population is bound to put pressure on both the education system and the labor market in the near future: 56 percent of the population is less than 19 years old, and 73 percent less than 30 (Figure 1). The challenge will be to absorb the increasing workforce by providing adequate skills matching the requirements of private sector enterprises.

**Figure 1. Age structure in the sample**



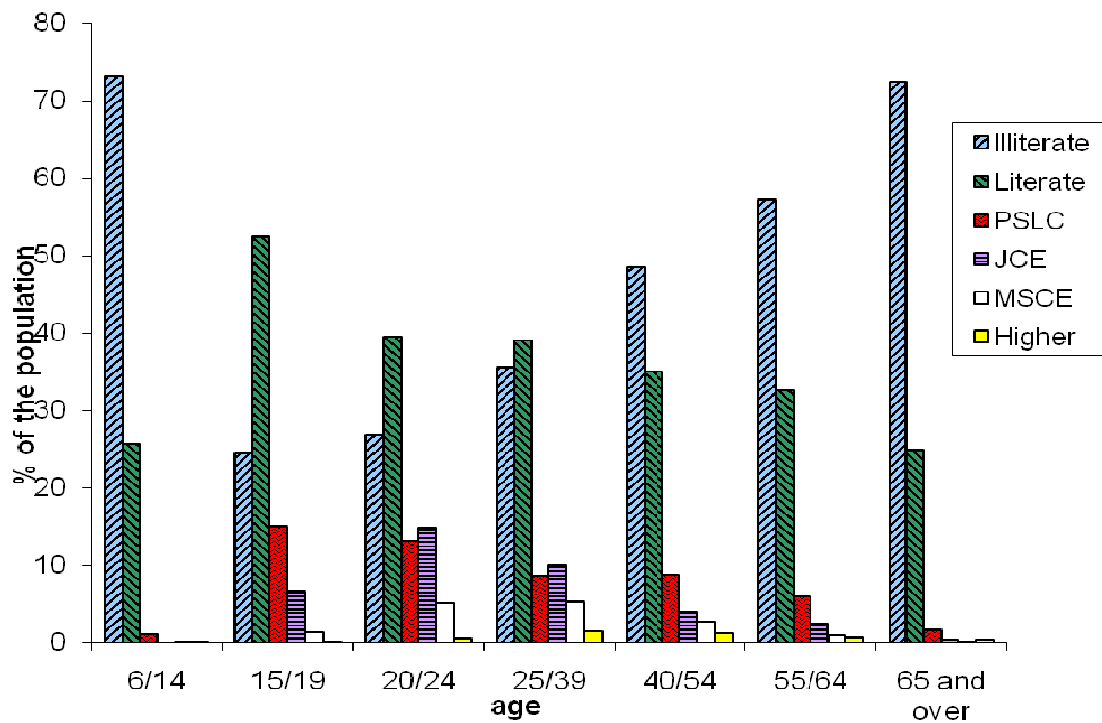
Source: Authors' elaborations based on IHS-2

<sup>ix</sup> The data allow calculating the net yearly income from farming and non-agricultural businesses. Unfortunately, this cannot be attributed to the individuals because labor inputs are not recorded.

Illiteracy is sharply declining, with an incidence of 72 percent in the “over 65” age class versus 24.5 percent in the 15-19 years group (Figure 2). Even if much remains to be done, the observed trend is encouraging.

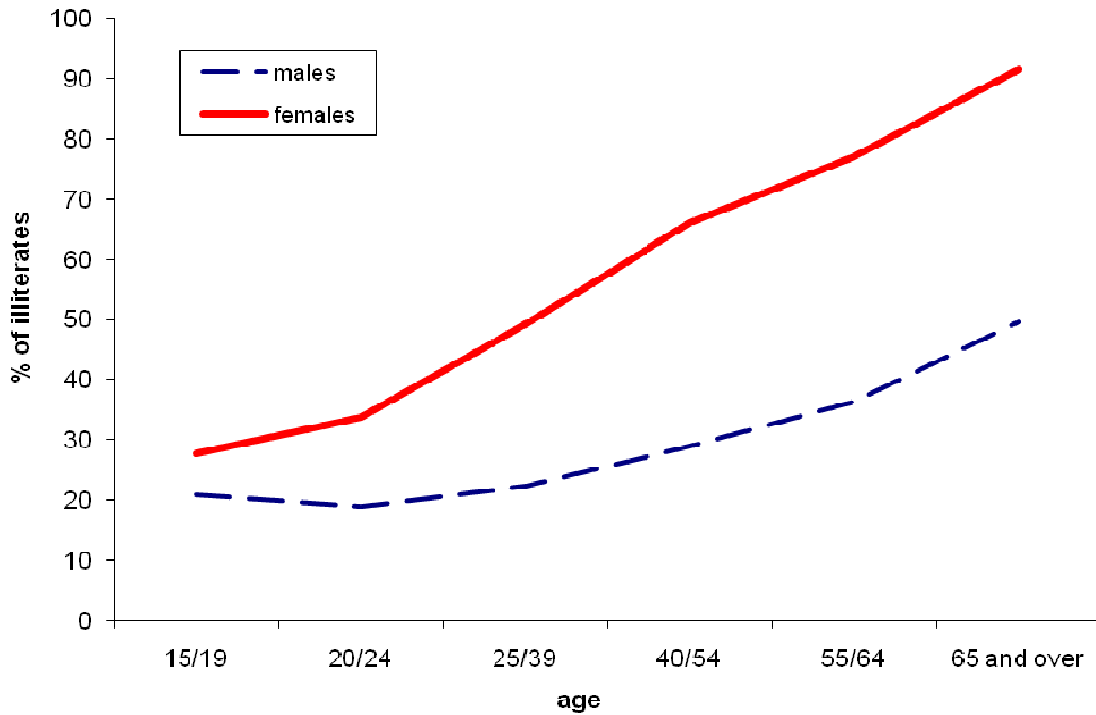
Literacy is being achieved for both genders, reducing the pre-existing gender gap. In fact, the literacy gender gap amounts to 7 percent for individuals aged 15 to 19 (with an illiteracy rate of 21 percent for males and 28 percent for females), against 41 percent in the ‘over 65’ age group (where the illiteracy rates are 50 percent for males and 91 percent for females) (Figure 3).

**Figure 2. Relationship between education and age**



Source: Authors’ elaborations based on IHS-2

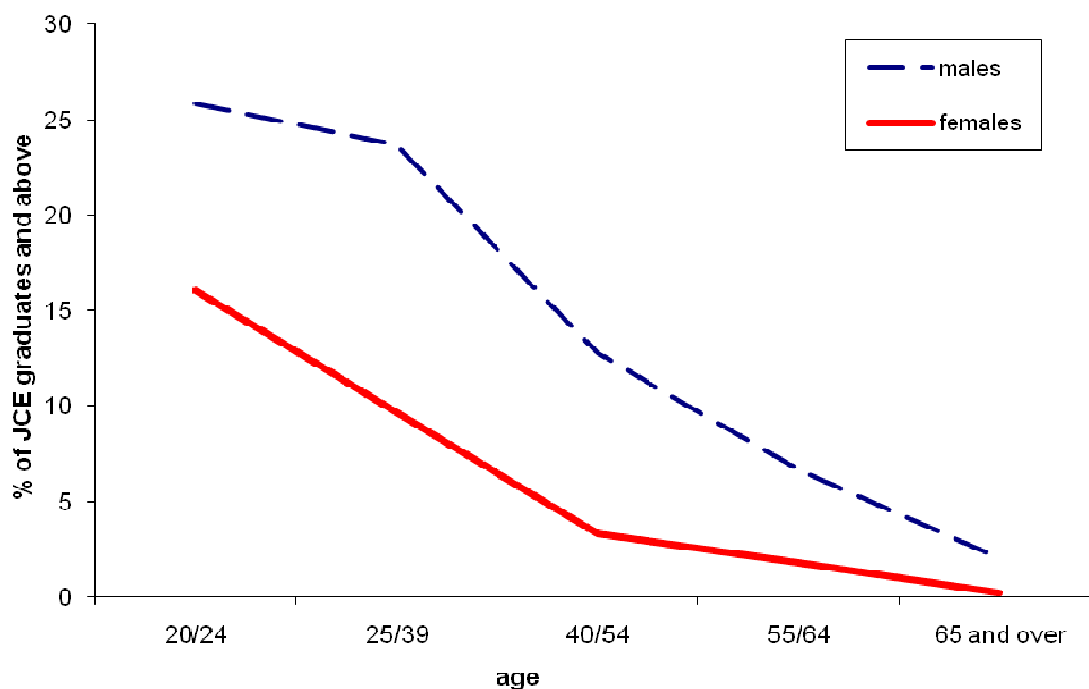
**Figure 3. Gender gap in literacy**



Source: Authors' elaborations based on IHS-2

Unfortunately, the gender gap remains large for secondary and higher education. In the 20-24 age class 26 percent of the males hold at least a JCE against 16 percent of the females, and the proportion of males holding at least a MSCE is twice as high as for females (Figure 4, Tables 1 and 2).

**Figure 4. Gender gap in secondary education**



Source: Authors' elaborations based on IHS-2

**Table 1. Relationship between education and age, male population**

Age	Illiterate	Literate	PSLC	JCE	MSCE	Higher	Total
15/19	20.83%	53.68%	16.72%	7.36%	1.34%	0.07%	100%
20/24	18.92%	39.97%	15.26%	17.90%	7.10%	0.84%	100%
25/39	22.24%	42.98%	11.09%	13.66%	8.13%	1.90%	100%
40/54	28.92%	44.85%	13.48%	6.40%	4.44%	1.91%	100%
55/64	36.39%	47.01%	9.92%	3.96%	1.61%	1.10%	100%
>65	49.53%	45.31%	3.15%	0.87%	0.47%	0.68%	100%

Source: Authors' elaborations based on IHS-2

**Table 2. Relationship between education and age, female population**

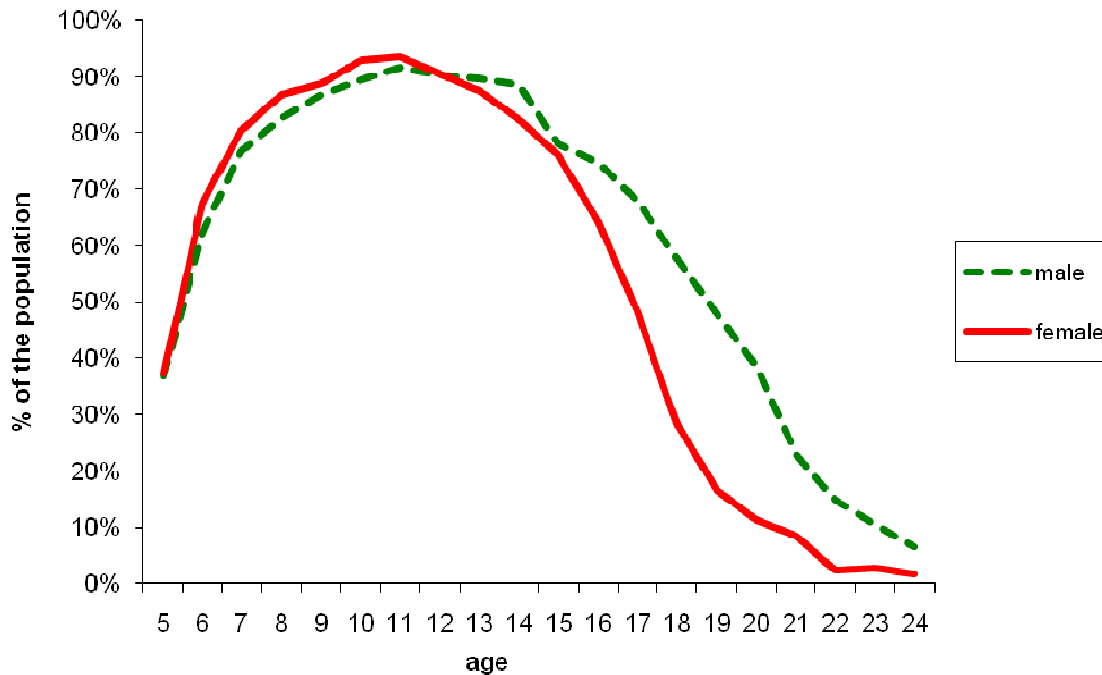
Age	Illiterate	Literate	PSLC	JCE	MSCE	Higher	Total
15/19	27.84%	51.41%	13.28%	6.07%	1.36%	0.04%	100%
20/24	33.83%	38.98%	11.11%	12.28%	3.50%	0.30%	100%
25/39	49.27%	35.00%	6.05%	6.32%	2.34%	1.02%	100%
40/54	66.13%	26.05%	4.51%	1.56%	1.12%	0.62%	100%
55/64	77.08%	18.84%	2.26%	1.04%	0.35%	0.43%	100%
>65	91.50%	7.85%	0.42%	0.05%	0.00%	0.18%	100%

Source: Authors' elaborations based on IHS-2

#### 4.2 School enrolment

Evidence on school enrolment confirms the existence of a gender gap in education (Figure 5). Schooling starts late: only 78.5 percent of the children aged 7 are enrolled. Enrolment peaks at 90 percent for children aged 10 to 12, then drops sharply after age 14. Secondary and tertiary enrolment is likely to be constrained from both demand factors (households' ability and willingness to send children to school) and supply factors (lack of capacity in terms of infrastructure, learning materials and teachers). An important finding is that a gender gap is noticeable after age 14, with enrolment dropping faster for females than for males. It is practitioners' knowledge that lack of proper sanitation leads to females' drop out at sexual maturity. Early pregnancies may also play a role. Whatever the reason, the finding reflects different investments in human capital for sons and daughters, with important consequences for gender balance in adult life.

**Figure 5. Enrolment rate, 5-24 age group**



Source: Authors' elaborations based on IHS-2



The existence of a gender gap is confirmed by the multivariate analysis. The results of the estimation of equation 1 are presented in Table 3. Males' probability of enrolment is highest at 11 years, and generally high and stable from 8 to 14 years. After age 15, the likelihood of enrolment drops sharply, and males aged 18 and over are less likely to be in school than 6 years old ones. The coefficient on the female dummy variable measures the gender gap at age 6. Six years old girls are more likely to be enrolled than boys of the same age, by 5 percent. From age 7 up, the gender gap is measured by the sum of the coefficients on the female dummy variable and on the interaction between the female and the age dummies. For example, a 7 years old girl is 4 percent ( $0.0545-0.0111$ ) more likely to be enrolled than a boy of the same age. No significant gender gap in the probability of school enrolment is found between age 9 and 13. However, females aged 14, and 16 and over, are significantly less likely to be enrolled than males of the same age. For females aged 18 to 20, the gap exceeds a striking 30 percent.

Household income is positively correlated with school enrolment. This suggests that inequality may not drop in the future, as children from low-income households will have lower educational achievements, and this will negatively affect their employment opportunities and incomes.

Finally, the likelihood of enrolment is lower in rural areas (by 12 percent, relative to urban areas), and in the Central and Southern regions (by about 15 percent, relative to the North). This may be mainly due to supply side factors. In fact, rural areas are short of qualified teacher (Government of Malawi, 2009), who are more often posted/found in urban areas.

**Table 3. Multivariate analysis of the determinants of school enrolment, 6-23 age group**

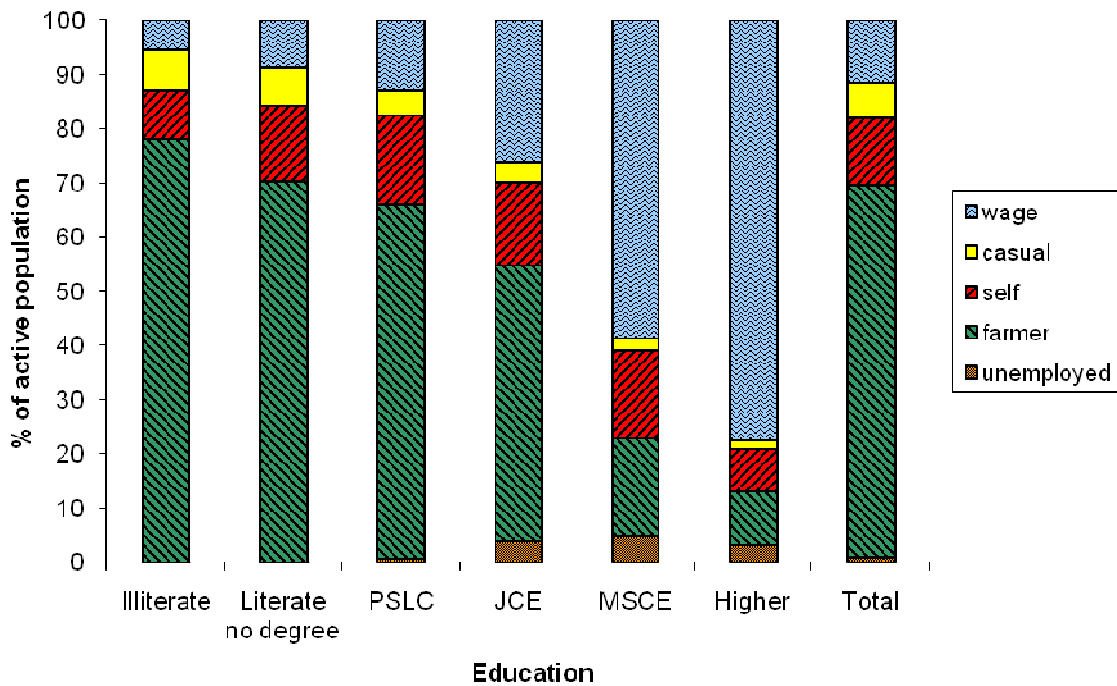
	Variable	dY/dX
Age effect for males	Age 7 (omitted 6)	.1490***
	Age 8	.2037***
	Age 9	.2333***
	Age 10	.2545***
	Age 11	.2778***
	Age 12	.2650***
	Age 13	.2534***
	Age 14	.2458***
	Age 15	.1448***
	Age 16	.1184***
	Age 17	.0501*
	Age 18	-.0572**
	Age 19	-.1605***
	Age 20	-.2408***
Age 21	-.4262***	
Age 22	-.5076***	
Age 23	-.5760***	
Gender gap	Female	.0545**
	Age 7 * Female	-.0111
	Age 8 * Female	.0089
	Age 9 * Female	-.0099
	Age 10 * Female	.0315
	Age 11 * Female	-.0213
	Age 12 * Female	-.0629
	Age 13 * Female	-.0881**
	Age 14 * Female	-.1797***
	Age 15 * Female	-.0900**
	Age 16 * Female	-.1901***
	Age 17 * Female	-.2777***
	Age 18 * Female	-.3502***
	Age 19 * Female	-.4036***
Age 20 * Female	-.4188***	
Age 21 * Female	-.3133***	
Age 22 * Female	-.4507***	
Age 23 * Female	-.3265***	
Location	rural areas	-.1247***
	central region	-.1558***
	southern region	-.1610***
	Log of household income	.0271***
	Number of observations	20997
	Pseudo-R2	0.34

Source: Authors' elaborations based on IHS-2. Labels: \* p<0.1; \*\* p<.05; \*\*\* p<.01

### 4.3 Education and employment

When looking at the relationship between education and employment among working age individuals, a few clear patterns emerge (Figure 6, Table 4). First, inactivity is highest among the individuals with intermediate levels of education, and lowest among the illiterate and the university graduates. Second, unemployment is positively correlated with the level of education. The unemployment rate is below 1 percent for individuals with less than a JCE, and varies between 3 percent and 5 percent for individuals with a JCE or more. This may be partially due to the nature of the sectors employing skilled labor. The third finding is that farming is inversely correlated with the level of education. 78 percent of active illiterates are farmers, against 10 percent of the active individuals holding a higher education degree. This underlines the role of education when implementing exit strategies from the agricultural sector. In parallel, regular wage employment is positively correlated with education while casual employment is inversely correlated with it. While only 5 percent of active illiterates hold a regular wage earning job, the share is as high as 77 percent among those holding a higher-education degree.

**Figure 6. Relationship between education and employment status, active population**



Source: Authors' elaborations based on IHS-2

**Table 4. Relationship between education and labor market status**

Education	Inactive	Active	Total	Unemployed	Farmer	Self employment	Casual	Wage	Total
Illiterate	10,53%	89,47%	100%	0,42%	77,77%	8,95%	7,51%	5,34%	100%
Literate	13,66%	86,35%	100%	0,37%	69,97%	14,01%	6,88%	8,77%	100%
PSLC	20,87%	79,12%	100%	0,83%	65,32%	16,28%	4,78%	12,79%	100%
JCE	24,08%	75,92%	100%	3,99%	50,96%	15,24%	3,70%	26,11%	100%
MSCE	18,85%	81,15%	100%	4,95%	18,11%	16,12%	2,29%	58,52%	100%
Higher degree	6,69%	93,30%	100%	3,14%	10,01%	7,81%	1,65%	77,38%	100%
Total	14,25%	85,75%	100%	0,87%	68,78%	12,43%	6,48%	11,43%	100%

Source: Authors' elaborations based on IHS-2.

Gender is another key characteristic determining the labor market status (Tables 5 and 6). First, women are less likely to be active, no matter the level of education. This is also affected by the standard definition of inactivity, which does not capture women's household work. Second, when employed, women are more likely than men to engage in farming, and less likely to be self-employed or wage earners. The gap is particularly large for regular wage employment, which concerns 18 percent of active men and only 5 percent of active women. This may be partially explained by the fact that women are generally less educated, as the gap disappears among highly educated individuals.

**Table 5. Relationship between education and labor market status, males**

Education	Inactive	Active	Total	Unemploy ed	Farmer	Self employment	Casual	Wage	Total
Illiterate	7,6%	92,4%	100 %	0.72%	66.77%	10.51%	10.49%	11.51%	100 %
Literate no degree	9,1%	91,9%	100 %	0.47%	61.72%	15.50%	8.69%	13.60%	100 %
PSLC	15,4%	84,6%	100 %	0.86%	58.90%	16.89%	6.52%	16.83%	100 %
JCE	18,4%	81,6%	100 %	2.84%	49.52%	14.35%	4.59%	28.69%	100 %
MSCE	14,5%	85,5%	100 %	4.65%	18.74%	15.91%	2.47%	58.24%	100 %
Higher degree	5,7%	94,3%	100 %	2.53%	9.41%	7.02%	2.39%	78.66%	100 %
Total	10,8%	89,2%	100 %	1.05%	58.60%	14.24%	8.08%	18.03%	100 %

Source: Authors' elaborations based on IHS-2.

**Table 6. Relationship between education and labor market status, females**

Education	Inactive	Active	Total	Unem ployed	Farmer	Self employment	Casual	Wage	Total
Illiterate	12,0%	88.0%	100 %	0.28%	83.30%	8.16%	6.01%	2.25%	100 %
Literate no degree	19,1%	91.9%	100 %	0.24%	80.91%	12.04%	4.47%	2.34%	100 %
PSLC	29,6%	70.4%	100 %	0.78%	77.50%	15.11%	1.48%	5.13%	100 %
JCE	34,0%	66%	100 %	6.44%	54.06%	17.16%	1.79%	20.54%	100 %
MSCE	30,3%	69.7%	100 %	5.93%	16.11%	16.80%	1.73%	59.43%	100 %
Higher degree	9,0%	91%	100 %	4.52%	11.39%	9.62%	0.00%	74.48%	100 %
Total	17,5%	83.5%	100 %	0.70%	79.20%	10.59%	4.85%	4.66%	100 %

Source: Authors' elaborations based on IHS-2.

To disentangle the effect of different individual characteristics, we estimate equations 2, one probit regression for each labor market status. The marginal effect of each variable on the probability to hold a certain type of status (relative to the alternative to be in any other) is reported in Table 7.

We discuss the effect of education on labor market outcomes separately for males and females. Among males, the higher the education the higher the probability to hold a regular wage earning job, and the lower the likelihood to engage in farming and casual wage employment. More specifically, males with a university degree are 44 percent more likely to be regular wage employees than if they were illiterate. We may have expected the relationship to be stronger. However, it must be kept in mind that wage employment is an aggregate category, which covers a broad range of jobs, including some in the agricultural sector.

Symmetrically, males holding a university degree are 37 percent less likely to engage in farming than if they were illiterate. The magnitude of our finding may be mitigated by the fact that university educated men can seize profitable opportunities within the agro-business industry, working in the estate sector as technicians or managers.

**Table 7. Multivariate analysis of the determinants of the labor market status.**

Dependent variable		Inactive	Unemployed	Farmer	Self-employed	Wage	Casual (a)
		dY/dX	dY/dX	dY/dX	dY/dX	dY/dX	dY/dX
Education effect for males	Literate no degree	-0.0067	-0.0026 **	-0.0128	0.0419 ***	0.0108 **	-0.0344 ***
	PSLC	0.0350 ***	-0.0016	-0.0632 ***	0.0271 **	0.0248 ***	-0.0576 ***
	JCE	0.0571 ***	0.0031	-0.1293 ***	-0.0146	0.0572 ***	-0.0754 ***
	MSCE	0.0008	0.0061 **	-0.3096 ***	-0.0180	0.2184 ***	-0.0927 ***
	Higher	-0.0722 ***	-0.0005	-0.3661 ***	-0.0744 ***	0.4358 ***	-0.0803 ***
	Female	0.0766 ***	-0.0041 ***	0.0409 ***	-0.0397 ***	-0.1094 ***	-0.0751 ***
Gender gap	Literate no-degree Female	0.0137	0.0013	-0.0144	0.0021	0.0012	-0.0115
	PSLC - Female	0.0004	0.0015	-0.0261	0.0338 **	0.0179	-0.0195
	JCE - Female	-0.0033	0.0143 ***	-0.1278 ***	0.0354	0.0938 ***	-0.0573 ***
	MSCE - Female	-0.0259	0.0096 *	-0.1440 **	0.0569 *	0.1338 ***	-0.0157
	Higher - Female	-0.0406	0.0200 ***	0.0079	0.0343	0.1002 ***	
Age	20 - 24	-0.0727 ***	0.0075 ***	0.0875 ***	0.0865 ***	0.0509 ***	0.0393 ***
	25 - 39	-0.1403 ***	0.0025	0.0875 ***	0.1471 ***	0.1005 ***	0.0241 ***
	40 - 54	-0.1211 ***	-0.0004	0.1308 ***	0.1473 ***	0.1460 ***	-0.0005
	55 - 64	-0.0944 ***	0.0002	0.1614 ***	0.0868 ***	0.0972 ***	-0.0316 ***
Location	Rural	-0.2448 ***	-0.0111 ***	0.5243 ***	-0.0399 ***	-0.0817 ***	0.0295 ***
	Central region	0.0347 **	0.0001	-0.1115 ***	0.0305 *	0.0278 ***	0.0502 ***
	Southern region	0.0422 ***	0.0002	-0.1425 ***	0.0156	0.0432 ***	0.0099
Size of the household		-0.0157 ***	-0.0004	0.0121	0.0079 ***	0.0116 ***	0.0107 ***
Number of children		0.0143 ***	0.0004	-0.0021 **	-0.0087 **	-0.0120 ***	-0.0126 ***
Number of observations		25385	25385	25385	25385	25385	25318

Source: Authors' elaborations based on IHS-2. Number of obs = 25385. Legend: \* p<.1; \*\* p<.05; \*\*\* p<.01. Note: (a) Coefficient for Higher-female missing because the sample does not include any woman with university education in casual employment.

The relationship between education and engagement in self-employment is more complicated. Literate males and males with a PSLC are more likely to run a non-agricultural business than if they were illiterate. This is in line with the idea that basic education provides basic entrepreneurial skills, which are necessary to manage a petty business activity. The effect of education on the likelihood to be self employed is however non-linear, so that males holding a university degree are less likely to run a non agricultural business than if they were illiterate. This is in line with the findings of Kadzamura (2003), who indicates that self-employment is considered by most as a

temporary and less profitable alternative to wage employment. The majority of self employed individuals are in the informal sector, which is estimated to account for about 70 percent of the urban labor force (Todaro and Smith 2006).

The relationship between education and unemployment suggested by the descriptive analysis is not confirmed when controlling for other individual and household characteristics. Only males with a MSCE are more likely to be unemployed than illiterates. Finally, among males holding a university degree reduces the probability to be inactive.

Females are more likely than men to be inactive, no matter the level of education. The only exception is for women with a university degree, who have the same likelihood to be out of the labor force than males with the same education. Illiterate females are less likely to be unemployed than illiterate males. This is probably the related with the high probability of inactivity.

Illiterate women are more likely than illiterate men to be engaged in farming, and less likely to run a non-agricultural business. No significant gender effect is found for women with higher levels of education.

An important gender gap is found for regular wage employment. In general, women are less likely than men to hold this labor market status. The only exception regards women holding a MSCE, who are more likely to be wage employed than men with the same degree. Finally, women are less likely than men to engage in casual wage employment. This holds for all levels of education.

Aging is associated with an increased likelihood of engaging in farming. This is in line with a society that was traditionally based on agriculture and has moved towards non-agricultural labor alternatives in recent times. The relationship between age and regular wage employment is u-shaped, with highest likelihood of engagement for individuals aged 40 to 54. The same holds for non-agricultural self-employment, with the highest likelihood of engagement between 25 and 54 years. The likelihood of unemployment is highest in the 20-24 age class. This suggests the presence of frictions in the school-to-work transition. Finally, engagement in casual wage jobs is most likely between 20 and 39 years, and least likely for individuals aged 55 to 64.

Unsurprisingly, rural populations are significantly more involved in agricultural activities. Symmetrically, they are significantly less likely to be inactive and unemployed than their urban peers. This is consistent with agriculture performing the role of a buffer which absorbs part of the unemployed and the inactive in rural areas. Moreover, the rural population is less likely to be engaged in self or wage employment, hinting to lack of non-agricultural work opportunities in rural areas.

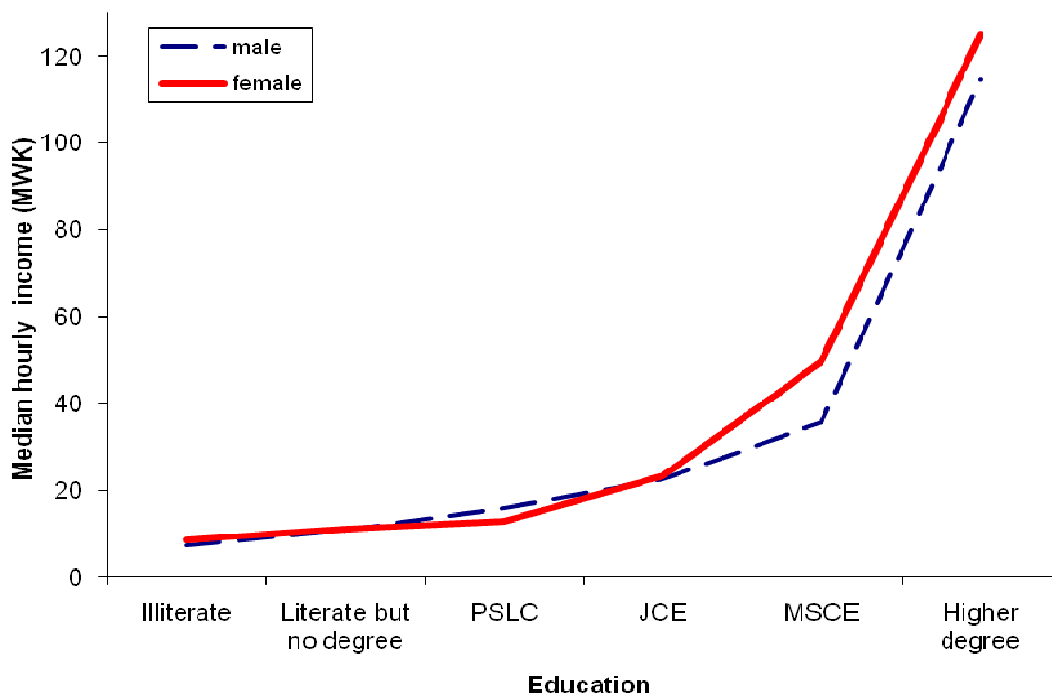
After assessing the determinants of the different labor market states, we are now interested in establishing a link between employment and income.

#### ***4.4 Returns to education in regular wage employment***

Individual earnings are available only for wage employees. Data is not comparable for casual workers, so we focus here on regular wage employment only, and measure earning

with hourly wages. Education strongly affects hourly wages (Figures 7 and 8, Table 8). Figure 8 shows the full distribution of hourly earnings for illiterate individuals and for those holding a university degree. It can be noticed that the overlapping is minimal, with graduates earning considerably more. Focusing on male workers, illiterate individuals earn a median salary of 7.2 Malawian kwacha per hour. At the other end of the distribution, individuals with higher education earn 115 kwacha per hour. Up to the MSCE, each degree is associated with an increase in median hourly wages ranging from 42 percent to 58 percent, relative to the immediately lower level of education. The returns to university and higher education are 200 percent higher than those to an MSCE degree. Interestingly, a reversed gender gap can be noted. Females have a higher median hourly income than males when holding at least a JCE degree.

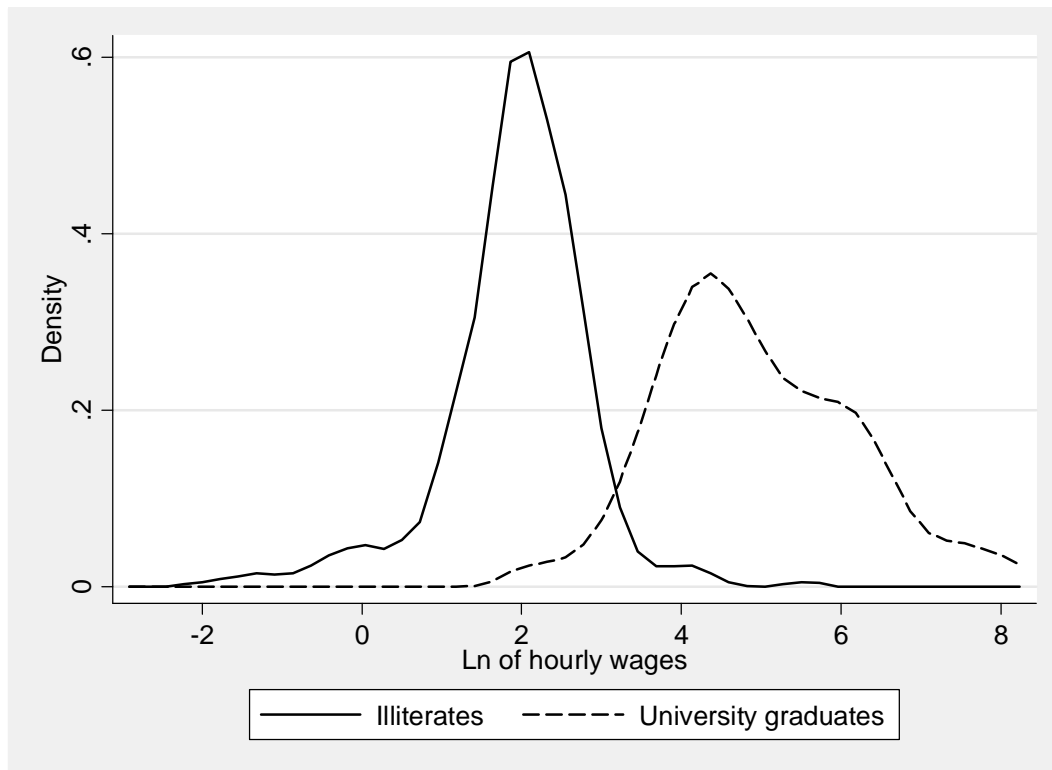
**Figure 7. Relationship between education and median hourly income**



Source: Authors' elaborations based on IHS-2



**Figure 8. Hourly income distribution for illiterates and university graduates**



Source: Authors’ elaborations based on IHS-2

**Table 8. Relationship between education and median hourly income (in Malawian kwacha)**

	Male	Female	Total
Illiterate	7.2	8.6	7.2
Literate no degree	10.8	11.1	10.9
PSLC	15.9	13.0	15.7
JCE	22.7	23.3	22.7
MSCE	35.8	49.6	38.5
Higher degree	114.6	125	115.4
Total	14.8	16.5	15.0

Source: Authors’ elaborations based on IHS-2.

To estimate the return to education while properly controlling for other individual and job characteristics, we estimate equation 3. The results are presented in Table 9.

The finding of increasing returns to education, i.e. hourly wages growing more than linearly with the level of education, is confirmed. However, their magnitude is lower than in the descriptive analysis. Returns are fairly linear up to a JCE degree (with literate males earning 28 percent more than illiterates, males with primary education earning 54 percent more than illiterates, and males with a JCE earning 78 percent more than illiterates). Then, hourly wages grow exponentially. Males holding an MSCE earn 123

percent more per hour than illiterates, and those holding a university degree earn 235 percent more per hour. These results are in line with the findings of the literature on the returns to schooling in Africa. For example, Schultz (2004) finds that in 1998 in Ghana secondary education was associated with a wage premium of about 110 percent relative to no education. The premium for university education was estimated at 210 percent for men and 114 percent for women. In Malawi, we find no evidence of difference across genders. When controlling for other characteristics, we find that the returns to schooling for women are not statistically different from those for men.

Age -a proxy for professional experience- affects hourly wage positively, the maximum effect being observed for the 40-54 age class. The hourly wage is significantly lower (by 34 percent) in rural areas than in urban areas.

Hourly wages are significantly higher in the manufacturing industry, in transport services and in finance, than in the agricultural sector. Finally, private companies pay 15 percent less per hour of work than public employers, and private individual employers pay a striking 50 percent less per hour than public employers.

**Table 9. Multivariate analysis of the determinants of hourly wages and working hours**

Dependent variable		Ln(wage per hour)	
		Coef.	.
Education	Literate no degree	0.276	***
	PSLC	0.537	***
	JCE	0.775	***
	MSCE	1.238	***
	Higher	2.348	***
Gender gap	Female	-0.020	
	Literate no-degree	-0.111	
	PSLC – Female	-0.218	
	JCE – Female	0.020	
	MSCE – Female	0.227	
	Higher – Female	-0.069	
Age	20-24	0.447	***
	25-39	0.658	***
	40-54	0.815	***
	55-64	0.735	***
Location	Rural	-0.341	***
	Central region	0.224	***
	Southern region	0.097	
Household	Number of children	0.039	
	Household size	-0.020	
Sector of Activity	Mining	0.821	*
	Manufacturing	0.121	**
	Electricity and utilities	0.115	
	Construction	0.152	*
	Commerce	0.017	
	Transport, storage and communication	0.355	***
	Finance, insurance and real estate	0.695	***
	Services	0.096	
Unknown	0.168		
Employer	Private individual	-0.352	***
	Public and other	0,1 60	***
	Constant	1,5 39	***

Source: Authors' elaborations based on IHS-2. Number of observations = 25376 (23016 censored, 2360 uncensored). Legend: \*  $p < .1$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ .

#### ***4.5 Employment and household income***

As data on individual earnings is only available for wage employment, we classify households on the base of the dominating source of income and look at the relationship with the level of income (Table 10).

In rural areas, the farming category logically dominates the picture accounting for 37 percent of the households. In line with what is observed in other rural regions in Africa, rural households often diversify their sources of income, probably as a risk mitigation strategy, or when access to land and/or inputs is constrained (Stampini and Davis, 2009).

Logically in urban areas, wage employment is the dominant category accounting for 58 percent of the total. Self-employment opportunities are reflected in the category accounting for 22 percent of the households.

**Table 10. Household specialization in different forms of labor**

Specialization	Urban	Rural	Total
Farming	6.26%	36.90%	33.24%
Wage employment	58.48%	18.74%	23.49%
Self-employment	22.43%	8.50%	10.16%
Diversified	12.83%	35.87%	33.11%
Total	100.00%	100.00%	100.00%

Source: Authors' elaborations based on IHS-2.

When looking at income levels, we first notice that urban households are much better off than rural ones (Tables 11 and 12). Rural median household income amounts to 8515 Malawian kwacha per year. This is 27 percent less than the upper limit of the first income quartile in urban areas (amounting to 11684 kwacha). Not surprisingly, farming households are the poorest in urban areas: 84 percent of them belong to the first income quartile. Similarly, self employed are relatively poor: 63 percent of them are below the urban median income. This underscores the fact that self-employment is often made of petty businesses. Households specialized in wage employment are the best off, with only 10 percent belonging to the first quartile and over 65 percent above the median.

**Table 11. Income distribution, by type of labor specialization – urban households**

Specialization	income quartiles - urban			
	<11684	<31200	<67000	>=67000
Farming	83.60%	13.48%	2.92%	0.00%
Wage employment	9.67%	24.81%	32.44%	33.08%
Self-employment	38.81%	24.10%	18.11%	18.98%
Diversified	36.03%	23.41%	20.90%	19.66%
Total	24.22%	23.76%	25.90%	26.12%

Source: Authors' elaborations based on IHS-2.

In rural areas, households specialized in farming are still relatively poor: 50 percent of them are in the lowest quartile, and only 22 percent are above the median. Households specializing in wage and self employment are clearly better off, respectively with 60 percent and 49 percent in the highest income quartile, and with 84 and 73 percent above the median.

**Table 12. Income distribution, by type of labor specialization – rural households**

Specialization	income quartiles – rural			
	<3250	<8515	<20200	>=20200
Farming	50.30%	27.70%	16.23%	5.78%
Wage employment	4.76%	10.84%	24.64%	59.76%
Self-employment	14.40%	12.17%	24.27%	49.16%
Diversified	12.58%	32.53%	35.37%	19.52%
Total	25.19%	24.95%	25.35%	24.51%

Source: Authors' elaborations based on IHS-2.

Overall, we find that education is associated with non-agricultural work, in particular with regular wage employment, and within this category it leads to higher hourly earnings. Moreover, households specializing in wage employment are the best off both in urban and in rural areas.

## 5. Conclusions and Policy Recommendations

The literature review and results from this study suggest that human capital in Malawi is scarce and that a reform of the education sector may be needed to support the country's economic development. Employment patterns and labor market participation mirror an education system that has very low enrollment in higher education and sharp gender disparities.

We find that education is positively correlated with wage employment, and that wage employment is associated with higher levels of household income. At the same time, in higher education the share of the poor is only 0.7 percent compared to 91 percent for the richest 20 percent (Government of Malawi, 2006 and 2009). This suggests that the education system in its current status may not be helping reduce income disparities.

To ensure an equitable access to higher education and improved living standards, there is need to address problems that cause high failure, repetition and drop-out rates for school children from poor households. Cash transfers programs that condition payments to regular school attendance may help sustain demand for education, reducing the opportunity cost of schooling. For such programs to be effective, however, supply side constraints should also be addressed. For example, the provision of monetary incentives aimed at increasing the number of qualified teachers in rural areas, where the majority of the poor live, may help reduce a student to qualified primary teacher ratio among the highest in the SADC region, and may lead to improved quality of learning and pass rates.

We show that key gender disparities in the labor market disappear with the attainment of higher education. However, analyses of schooling patterns show that high drop-out rates among teenage women prevent greater female enrollment in higher education, and therefore constrain participation in wage employment. Data show that the share of women in the public universities between 2003 and 2007 averaged 30 percent of the total admissions, mirroring similar low enrollment rates for girls in secondary education. There may be a need to review the current gender policy to ensure that it addresses issues that affect girls and women education. Improved access of girls and women to higher

education should help improve their participation in wage employment to facilitate progress towards greater equality, improved household incomes and economic growth.

The caveat to the strength of any policy recommendation is that serious challenges exist with labor market data in Malawi, with most surveys being *ad hoc*. The last systematic labor force survey was conducted in 1983 and its results were disputed. AfDB (2009) finds that the different institutions involved in the collection of labor market data have limited resources, lack coordination, and often have overlapping mandates.

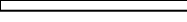
The use of the 2005 Integrated Household Survey (IHS) data constrained our ability to analyze the relationship between education, employment and earnings. In fact, the IHS is not designed for the evaluation of employment outcomes. The first problem is that most information on revenues is collected at the household level, in line with the objective of measuring poverty. The second is that the IHS is a one-off survey, which does not follow individuals across time. It therefore does not allow analyzing mobility across labor market states in response to the evolving demands of a growing private sector.

In the absence of more refined labor market data to inform education and training policies, skills development efforts for the labor market will continue facing challenges. More importantly the impact of global and internal shocks on the welfare of the work force cannot be fully measured and understood. In moving forward it would be useful to invest to build capacity for the development and sustainable management of a comprehensive labor market information system.

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