

**DOES THE RETURN TO SCHOOLING DEPEND ON THE  
TYPE OF EMPLOYMENT? EVIDENCE FROM THE RURAL  
LABOUR MARKET IN MALAWI**

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Comments and suggestions are welcome

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# DOES THE RETURN TO SCHOOLING DEPEND ON THE TYPE OF EMPLOYMENT? EVIDENCE FROM THE RURAL LABOUR MARKET IN MALAWI

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**Abstract:** This paper reports the results on the rate of return on education using the Mincerian earnings function based on survey data from the rural labour market in Malawi by distinguishing between regular salaried employment and casual or *ganyu* employment. The rural labour market in Malawi typically comprises of regular (monthly salaried) wage employment, casual or *ganyu* employment, tenancy and contract employment. A recent survey of the rural labour market in Malawi shows that casual or *ganyu* employment is a dominant form of employment in terms of the proportion of the rural labour force participating in the labour market. Our econometric results show that the average rate of return on education is 6.0 percent, and average hourly earnings from *ganyu*, short-term and intermittent type of employment, tend to be higher than average hourly earnings from regular salaried employment. However, when we split the sample into regular salaried employment and casual or *ganyu* employment and correcting for selectivity bias, we find that the relationship between earnings and education is weak in the former and the returns to education is lower than observed in regular employment, suggesting that studies that ignore casual or informal employment in developing countries tend to overstate the returns to schooling.

*JEL classification:* I21; J31

*Keywords:* Rate of return, education, rural labour markets, Malawi

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## 1. Introduction

The literature on human capital theory postulates that education by enhancing worker's skills leads to high productivity and consequently higher earnings (Mincer, 1974; Becker, 1975). This is based on the assumption that employers operate in competitive environments and therefore do not pay excessive wages. The human capital theory has been the main drive on the empirical work on the rate of return on education. However, in many developing countries markets are imperfectly competitive and the nature of contracts and type of employment may determine the relationship between human capital variables and earnings. It is widely acknowledged in the development literature that three basic types of labour markets exist in developing countries, namely: rural, urban informal and urban formal (modern sector) with different characteristics such as seasonality and uncertainty of demand, nature of contracts and structure of wages and earnings (Byres et al., 1999; Ray, 1998; and Hess and Ross, 1997; Pal, 1996 and 1997; Adams, 1991). Many studies on return on education in developing countries ignore the fact that different types of employment in the rural and

informal sectors may have different implications on the role of education on the level of earnings. Vijverberg (1995) observes that some types of employment such as self-employment may not be tied to credentials or pay scales and education may have a little role in explaining the level of earnings. Bennell (1996) notes that many studies in developing countries rely on earnings data from wage employment in the formal sector and ignore incomes in the rural and informal sectors in which returns to education are likely to be low. Glewwe (1996) also observes that wage structure in the private sector may reflect more the impact of education on worker productivity than the wage structure in government wage employment. A similar argument can be advanced with respect to casual employment in developing countries, which may be devoid of credentials or pay scales.

Casual employment, popularly known as *ganyu* in Malawi, falls within the informal labour market and labour market analysts usually ignore its importance in the rural areas. This study investigates the determinants of the choice over salaried (formal) employment and *ganyu* (casual) employment, and whether the return on education is different in the two types of employment. We use survey data from four rural districts in Malawi collected from a sample of household members who participate in paid (wage) employment. Comparatively, 72.3 percent of those engaged in salaried employment were employed for a duration of at least 4 months while employment lasted for at most a month for 60.4 percent of those employed on casual basis.

We organise the paper as follows. Section 2 reviews the nature of rural markets and outlines the framework for estimating returns to education. Section 3 describes the data from the rural labour market in Malawi. Section 4 presents the empirical results on the return on education. Our results show that education has a positive and statistically significant relationship on earnings from salaried employment but a positive and a weakly statistically significant relationship on earnings from *ganyu* in rural Malawi. Pooling of regular salaried and *ganyu* employment reduces the average rate of return on education. Section 5 provides concluding remarks.

## 2. Rural Labour Markets and Rates of Return on Education

Rural labour markets in developing countries are characterized by the dominance of agricultural economic activities, with demand and supply of labour being seasonal and uncertain, while the nature of contracts is short and with informal enforcement mechanisms (Pal, 1996 and 1997; Adams, 1991; Byres et al., 1999; Hess and Ross, 1997; Ray, 1998). For instance, periods of peak labour demand tend to be during planting and harvesting seasons and underemployment tends to be high for most part of the year. Most labour tend to be unskilled with education playing an insignificant role in the determination of wages and earnings and the labour markets tend to operate freely from formal institutions and regulations. Ray (1998) distinguishes between casual labour in which employment is offered on a casual basis for some specified short period or pre-determined task from long-term employment where the employee is under some implicit or explicit long-term contract with the employer. Others refer to long-term employment as regular or permanent employment in which remuneration is paid at regular intervals and the employee does not offer labour services to other employers during the period of regular employment. On the other hand, casual employment is non-permanent, daily-paid, time-rated or piece-rated employment performed for a variety of employers.<sup>1</sup>

Similar to other developing countries, different types of employment exist in the rural labour market in Malawi including short or long-term regular salaried work, short or long-term contract work, casual employment, and tenancy with remuneration in money wages or in-kind. Casual employment, known as *ganyu* in Malawi, may be time-rated or piece-rated and emerges as an important type of employment in rural areas as the main source of livelihood or as a coping mechanism in difficult circumstances. Bose and Livingstone (1993) observe that in the rural labour market in Malawi paid employment is dominated by short-term *ganyu* labour on smallholder farms or estates. Mwanza (1999) finds that 15.4 percent of the household heads of the rural sample reported *ganyu* as their main occupation. Zgovu (2000)

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<sup>1</sup> See Adams (1991), Byres et al. (1999), Rogaly (1996), Pal (1996,1997) for the categorization of labour contracts in rural labour markets.

notes that 25.4 percent of labour market participants reported that *ganyu* is their first main source of income and the number of adults participating in *ganyu* is much higher than that participating in formal employment in the rural areas. Other studies such as Mvula et al. (2000) find that at least 34.5 percent of adults in areas implementing the public works programme use *ganyu* as means of livelihood and that its popularity increases in the lean (farming) season. Kutengule (2000) also observes the importance of *ganyu* as a livelihood strategy in rural areas in Malawi.

One feature of rural labour markets in developing countries is the wage differentials between regular employment and casual employment. Studies of the rural labour markets find that wage rates in casual employment are much higher than the prevailing rates in regular or permanent employment. For instance, Pal (1996, 1997) finds that the regular daily wage is substantially lower than the casual daily work even after adjusting for the probability of unemployment in the latter and explains the difference as the premium for employment insurance in regular employment. However, most casual employment is short-lived and it creates less employment in terms of days of employment per annum. Zgovu (2000) in the rural labour market in Malawi, observes that while 56.1 percent of those who participated in the labour market were engaged in casual employment only 10.1 weeks per participants of full time employment equivalent were generated in a year compared to 39.5 weeks per participants among 30.1 percent of participants engaged in regular salaried employment. What is not known in the literature on rural labour markets is the nature of return on education and on how casual employment affects the return to labour services.

The standard methodology for estimating returns to education is provided from the human capital theory through the use of what have become known as Mincerian earnings functions (Psacharopoulos, 1994; Willis, 1986). Thus, private rates of return on additional years of schooling can be estimated from earnings from employment data on individuals with different levels of education. This assumes that employees are paid according to their marginal product that increases with accumulation of more human capital. The standard Mincerian wage function is expressed as follows:

$$\ln W_j = \beta_0 + \beta_1 S_j + \beta_2 EXP_j + \beta_3 EXP_j^2 + \varepsilon_j \quad (1)$$

where for individual  $j$ ,  $W$  is the observed wage rate,  $S$  is the number of years of formal schooling,  $EXP$  is the experience and  $\varepsilon$  is the error term accounting unobservable factors affecting the wages. The coefficient  $\beta_1$  is interpreted as the private rate of return to schooling. If the empirical  $\beta_1$  is multiplied by 100, we get the percentage return to one additional year of schooling. Several estimation procedures have been suggested to address problems such as self-selection and endogeneity associated with the basic Mincerian earnings functions.<sup>2</sup> First, since the standard model assumes that returns to education are flat regardless of the level of education, the basic model has been extended by using the categorical variables for education with respect to different levels of education completed by an individual. Secondly, earnings functions may suffer from selectivity bias and the Heckman (1979) two-step procedure has been used to adjust estimates for selectivity bias. Thirdly, instrumental variables for education using mostly family or parents' background have been used to address the problem of endogeneity of employee's education. Fourth, the earnings equations have also included variables that capture ability and quality of education.

### 3. Data

The data that we use in this study is obtained from a small policy study on the dynamics of the rural labour market in Malawi (Zgovu, 2000) collected through a semi-structured questionnaire in four districts. Four districts - Salima, Mwanza, Mulanje and Mangochi - out of 27 districts were selected and each of the four districts were sub-divided into traditional authorities (TAs). One traditional authority was randomly selected in each district after excluding TAs that cover district towns or urban centres. The selected traditional authorities were stratified into enumeration areas (EAs) and one enumeration area was randomly selected in each selected TA. In each selected EA, after conducting a household listing, a sample of at least 100 employees and 50 employers were randomly selected for the administration of the

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<sup>2</sup> See among others Card (1994), Blackburn and Neumark (1995), Glewwe (1996), Alderman et al. (1996), Johnson and Stafford (1996), Altonji and Dunn (1996), Bennell (1996), Brunello and Miniaci (1999), Uusitalo (1999), Magoula and Psacharopoulos (1999), Appleton et al. (1999) and Siphambe (2000).

questionnaire and for focus group discussions. Employees and employers were defined as those members of the households that had been employed or recruited workers for wages (cash or in-kind) during the 12 months prior to the survey.

This sampling procedure generated a total of 414 employees and 100 employers for the administration of questionnaires.<sup>3</sup> The total 514 employees/employers interviewed were 39.1 percent of the total adult (above 14 years of age) population in the areas. We only use data from the employee survey. The 414 employees interviewed were 63 percent of those who were employed and 38.8 percent of all labour market participants during the 12 months prior to the survey. The questionnaire collected data on the socio-economic characteristics of employees and their households, the structure of the labour markets, determination of wages and work conditions, formal and informal labour market institutions and the impact of government policy on rural labour markets. Obviously, our estimates of the return on schooling are based on a small sample and we are cautious in the generalization of the results.

The dependent variable in the earnings function is the logarithm of the computed hourly earnings from regular salaried employment or from casual employment. The main explanatory variables are education and potential experience but we control for employment in government, estates (large commercial farms), smallholder farms and also account for district variations. Table 1 present descriptive statistics for the variables used in the econometric models. The average years of education is 4.47 years equivalent to middle primary school in the Malawian education system.<sup>4</sup> The sample respondents have 19 years of potential experience in the labour market. Most employees work in smallholder farms and the government only employs about 17.5 percent of the total sample. Those in salaried employment are only 35 percent while those in casual employment are 65 percent of the

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<sup>3</sup> It turned out that the number of employers in all the sample enumeration areas was much smaller than the target number of interviews and hence only half of the target was achieved (for details see Zgovu, 2000).

<sup>4</sup> The Malawi education system has 8 years of primary schooling, 2 years of junior secondary schooling, 2 years of senior secondary schooling and 4-5 years of university schooling.

sample. The gender distribution of those that had been employed for wages in the four sample areas is biased towards the male labour force.

[ Table 1 about here ]

#### 4. Empirical Results

Our empirical analysis uses the standard Mincerian earnings functions in equation (1), and we adjust the estimates for selectivity bias using the two-step Heckman (1979) procedure. In the first stage, we model the choice between regular salaried employment and casual or *ganyu* employment using a probit model:

$$I_j = \beta Z + v_j \quad (2)$$

where for individual  $j$ ,  $I$  is the unobservable variable which corresponds to observable indicators equal to 1 if the individual is employed in the formal sector (salaried employment) and equals 0 if employed in the informal sector (casual or *ganyu* employment),  $Z$  is a vector of exogenous variables including socio-economic characteristics and locational dummies, and  $v$  is the error term. We obtain the inverse Mills ratio from equation (2) and use it as an explanatory variable in estimating equation (1) in the second stage to correct for selectivity bias.

Table 2 reports the estimates for probability of being employed in regular salaried work or casual work. The results show that those with larger land holdings are likely to be employed in salaried work. Public (government) employment is likely to offer regular salaried employment while smallholder farms are likely to offer casual employment. The gender bias in salaried employment is evident in the positive and statistically significant coefficient of male employees. The probability of being employed in regular salaried work increases by 15.7 percent if the labour market participant is male.

[ Table 2 about here ]

Table 3 presents estimates of earnings functions for the pooled sample, regular salaried employment and casual employment in the rural labour market in Malawi. The pooled sample (regular salaried and casual employment) results in model 1 show an average rate of return on education of 6.61 percent per annum, and this is statistically significant at the 1 percent level. The coefficients of years of experience and squared years of experience are statistically significant at the 1 percent level, suggesting that there is a positive relationship between wages and potential experience up to a maximum number of years, thereafter wages are negatively associated with experience. We also find that average earnings in the government sector and smallholder farms are significantly higher than in other sectors at the 1 percent and the 10 percent levels. Average hourly earnings tend to be lower in regular salaried work compared with casual employment, similar to the results in the rural labour market in India (Pal, 1996 and 1997). Although, casual employment is highly rewarding in rural Malawi, its availability is intermittent and often short-term with no long term job security. Bose and Livingstone (1993) observe that *ganyu* employment on peak labour tasks may be well paid, above the daily minimum wage, but is short-lived. Another interesting result is the insignificance of the gender variable, though suggesting that male employees tend to earn more than female employees. Thus, while gender biases exist as regards regular salaried or casual employment, the earnings between males and females are not statistically different.

[ Table 3 about here ]

Turning to results for salaried work in model 2 and model 3, the average rate of return on education rises to 9.44 percent and 9.41 percent, respectively. Model 2 is not corrected for selectivity bias while model 3 corrects for selectivity bias. Correcting for selectivity bias leads to all other variables except the education variable to be statistically insignificant, and the average return on schooling marginally falls. Using model 2, we also find that the coefficient of potential years of experience is statistically significant at the 5 percent level while the coefficient of squared years of experience is negative and statistically significant at the 10 percent level. These results imply that potential years of experience have a positive influence on hourly earnings but up to a maximum level. The positive and statistically significant

coefficient of employment in the government sector imply that average earnings are much higher than in the estate, smallholder farm and private sectors.

Finally, results of average earnings function for casual employment in model 4 and model 5 suggest much lower rates of return on education. Model 4 which does not account for selectivity bias indicates that human capital investment is not significant in casual employment. However, if we correct for selectivity bias in model 5, the coefficient of years of schooling is weakly significant at the 10 percent level and suggesting that the rate of return to education in casual employment is 5.41 percent per annum, about half of that observed in regular salaried employment. The results of model 5 also show that the effect of potential years of experience is positive initially and tends to be negative at a higher level. However, the absolute value of the coefficient of potential years of experience is relatively stable regardless of the type of employment with respect to models 1, 2 and 5. Another interesting result from model 5 is the fact that earnings are higher for those employed in smallholder farms compared to those employed in estates (commercial farms). One possible explanation about this is that estate owners tend to be much aware of the minimum wage regulations and tend to set or bargain the wages for unskilled labour or casual employment towards the minimum wage, using their dominant positions in the rural labour market. For instance, Zgovu (2000) finds that only 5.8 percent of labour market participants were employers against 33.2 percent employees and those seeking employment, and only 42 percent of employees attempt to bargain for wages individually. The fact that most employees bargain over wages individually with employers, the balance of countervailing power is likely to be in favour of estate employers.

## **5. Conclusion**

The paper set out to investigate the rates of return on education from two different types of employment typically found in rural Malawi in particular and rural areas of developing countries. Full-time regular salaried employment in rural areas of developing countries is not readily available and often the major employer is the government. The most common and most readily available type of employment tends to be short-term casual employment based

on time or piece work and the demand for labour tend to be uncertain and seasonal (Ray, 1998; Hess and Ross, 1997).

Using standard Mincerian earnings functions we find the average rate of return on education to be 6.61 percent in the rural areas in a pooled sample of those engaged in regular salaried and casual employment. Decomposition of the sample reveals that the rate of return on education in regular salaried employment is 9.4 percent, nearly twice as high as that observed in casual or *ganyu* employment (5.5 percent). The rates of return for regular salaried employment compare favourably with those observed in other countries in Africa including Ghana ranging from 4 to 8 percent in the government sector and Botswana ranging from 12 to 16 percent (Glewwe, 1996; Siphambe, 2000).

Although this study uses a small sample of the rural population and the labour force, it sheds light on the importance of distinguishing the different types of employment in estimating rates of return on education in rural areas in developing countries. The results support the argument in Bennell (1996) that exclusion of rural labour markets and informal sectors tend to overstate the rates of returns on education observed in many studies in developing countries. Similarly, ignoring casual or *ganyu* employment in rural economies with agriculture as the main economic activity overstates the rate of return on education.

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Table 1 Descriptive Statistics from Sample Respondents

Variable	Description	Mean	SD
	<b>Earnings</b>		
Wages	Natural logarithm of hourly earnings (in Malawi Kwacha) from employment.	1.6508	1.1747
	<b>Employee Characteristics</b>		
Education	Years of education for the employee.	4.4745	3.6617
Experience	Potential years of experience.	19.1496	14.0247
	<b>Households Assets and Wealth Indicators</b>		
Assets	Value of household assets in thousands of Malawi Kwacha.	1.5121	2.8932
Land size	Size of land held by the household in hectares.	0.9292	1.0383
	<b>Other Control Variables</b>		
Government	1 if employed in government, 0 otherwise.	0.1752	
Estates	1 if employed in private estate, 0 otherwise.	0.0584	
Smallholder	1 if employed in smallholder farms, 0 otherwise.	0.3942	
Salaried Work	1 if employed in regular salaried employment, 0 otherwise.	0.3504	
Casual Work	1 if employed in casual employment, 0 otherwise.	0.6496	
Male	1 if employee is male, 0 if female employees.	0.6022	
	<b>Districts</b>		
Salima	1 if the study district is Salima, 0 otherwise.	0.2299	
Mwanza	1 if the study district is Mwanza, 0 otherwise.	0.1898	
Mulanje	1 if the study district is Mulanje, 0 otherwise.	0.3212	
Mangochi	1 if the study district is Mangochi, 0 otherwise.	0.2591	

Table 2 Maximum Likelihood Estimates for Determinants of Choice between Regular Salaried Employment and Casual Employment

Variables	Dependent Variable: <i>Regular Salaried Work = 1,</i> <i>Casual Employment = 0</i>		
	<i>coefficient</i>	<i>t-ratio</i>	<i>slope</i>
Intercept	<b>-1.3851</b> <sup>a</sup>	-5.675	-0.3790
Education	0.0248	1.018	0.0068
Assets	0.0427	1.610	0.0117
Land size	<b>0.1598</b> <sup>c</sup>	1.859	0.0437
Government	<b>1.1021</b> <sup>a</sup>	4.568	0.3016
Estates	0.5622	1.615	0.1538
Smallholder	<b>-0.8198</b> <sup>a</sup>	-4.305	-0.2244
Male	<b>0.5731</b> <sup>a</sup>	3.021	0.1569
Salima	0.1354	0.523	0.0371
Mwanza	0.2151	0.733	0.0589
Mulanje	<b>0.7328</b> <sup>a</sup>	3.192	0.2005
Kullback-Leibler R <sup>2</sup>	0.2318		
Log Likelihood	-153.74		
Prediction	0.7707		
N	314		

Notes: Superscripts *a*, *b* and *c* stand for estimates statistically significant at the 1 percent, 5 percent and 10 percent level, respectively. The slope is the change in the probability of being employed in regular salaried work as a result of the unit change in the explanatory variable.

Table 3 Ordinary Least Square Estimates for Earnings from Regular Salaried and Casual Employment (Models Unadjusted and Adjusted for Selectivity Bias: Dependent Variable is the Natural Logarithm of Wages)

Explanatory Variables	Both Types of Work		Regular Salaried Employment				Casual Employment			
	Model 1		Model 2		Model 3		Model 4		Model 5	
	coefficient	t-ratio	coefficient	t-ratio	coefficient	t-ratio	coefficient	t-ratio	coefficient	t-ratio
Intercept	0.7697 <sup>a</sup>	3.489	-0.0606	-0.216	0.6097	0.622	1.0106 <sup>a</sup>	3.340	0.8704 <sup>a</sup>	2.608
Education	0.0661 <sup>a</sup>	3.402	0.0944 <sup>a</sup>	3.175	0.0941 <sup>a</sup>	2.775	0.0400	1.496	0.0541 <sup>c</sup>	1.782
Experience	0.0346 <sup>a</sup>	2.926	0.0334 <sup>b</sup>	2.121	0.0286	1.481	0.0240	1.444	0.0346 <sup>c</sup>	1.775
Experience squared	-0.0007 <sup>a</sup>	-3.053	-0.0005 <sup>c</sup>	-1.915	-0.0005	-1.224	-0.0006 <sup>b</sup>	-2.031	-0.0009 <sup>b</sup>	-2.189
Government	0.6100 <sup>a</sup>	3.290	0.7897 <sup>a</sup>	3.442	0.5994	1.092	-	-	-	-
Estates	0.2443	0.932	-0.1702	-0.712	-0.3008	-0.892	0.5812	1.466	0.6127	1.375
Smallholder	0.2074 <sup>c</sup>	1.604	-0.2689	-1.304	0.0442	0.105	0.3413 <sup>b</sup>	2.165	0.3633 <sup>c</sup>	1.663
Male	0.0833	0.628	0.2552	1.302	0.0709	0.283	0.0383	0.221	0.0672	0.336
Salima	0.4163 <sup>b</sup>	2.363	0.4822 <sup>c</sup>	1.779	0.4148	1.418	0.4481 <sup>b</sup>	2.050	0.4768 <sup>b</sup>	2.111
Mwanza	0.5997 <sup>a</sup>	3.311	0.5938 <sup>a</sup>	2.796	0.3508	1.112	0.5851 <sup>b</sup>	2.292	0.5660 <sup>b</sup>	2.107
Mulanje	0.0082	0.053	-0.1221	-0.577	-0.3048	-0.768	0.0278	0.136	0.0590	0.237
Inverse Mills Ratio	-	-	-	-	-0.3573	-0.541	-	-	-0.0382	-0.093
Salaried work	-0.5686 <sup>a</sup>	-4.099	-	-	-	-	-	-	-	-
Adjusted R <sup>2</sup>	0.1896		0.4251		0.3613		0.0950		0.1012	
F-test [p-value]	7.70	[0.000]	9.72	[0.000]	5.87	[0.000]	3.29	[0.001]	2.99	[0.002]
N	314		119		96		197		178	

Notes: The t-statistics are based on heteroscedastic-consistent standard errors. Superscripts  $a$ ,  $b$  and  $c$  stand for estimates statistically significant at the 1 percent, 5 percent and 10 percent level, respectively. The inverse Mills ratio is from the equation on choice between regular salaried and casual employment.