Adolescent Employment and Schooling Outcomes in Malawi

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Introduction

In less developed countries, research have found that many students engage in labor activity at some point during the school year, and these working students tend to do worse in school than their counterparts who do not work (Bass 2004; Cockburn and Dostie 2007; Ersado 2005; Lloyd 2005; Moyi 2006; Post and Pong 2009). Yet, there is still a considerable research gap related to the relationship between work and education. First, relying on cross-sectional data, prior studies have provided only limited evidence on the causal link between work and education. Second, while more is known about the effects of labor activity on proximal schooling outcomes, it seems that no clear evidence has been found on whether students' employment influences school dropout. Last but not least, previous research has often focused on children under the age of 15, which is conventionally seen as the legal working age (Lloyd 2006). As an increasing number of youth remain in school at older ages in less developed countries, it is crucial to explore the impact of *adolescent employment* on educational outcomes.

There is not a clear consensus in the adolescent employment literature from the United States about whether students' labor force participation negatively affects their academic progress, particularly school dropout (Apel et al. 2008; Entwisle, Alexander, and Olson 2005; Lee and Staff 2007; Warren and Lee 2003). Some studies suggest that adolescent employment is harmful to academic progress because employed students lack time and effort to devote to activities that foster academic engagement and achievement (i.e., zero-sum model of time use). On the other hands, others argue that the association between work and education is spurious, due to selection rather than any causal link (Schoenhals, Tienda, and Schneider 1998; Warren, LePore, and Mare 2000). Despite some recent efforts to address this important selection issue using fixed-effects models, propensity score matching, and instrumental variables, evidence is mixed on whether the relationship between work and education is spurious (Apel et al. 2008; Rothstein 2007). Furthermore, less is known about the impact of adolescent employment on economically disadvantaged students since few past studies have looked beyond the average effects of student employment. Entwisle and colleagues (2005) found that paid work for economically disadvantaged boys decreased the probability of dropping out of school.

This study aims to examine how adolescent employment affects schooling outcomes in Malawi, one of the poorest countries in the world, which has high levels of school participation but relatively low rates of primary completion. We hypothesize that the extra income provided by student employment will decrease school dropout in this context. However, we also believe that work will interfere with the quality of school participation, leading to worse learning outcomes, higher absenteeism and grade repetition, and lower school engagement. Using the five waves of longitudinal data and student fixed effects model, we intend to examine the effects of student employment on these educational outcomes. Given the huge gender bias in labor market in less developed countries, we will also explore the gender heterogeneity in the effects of different job types (paid or unpaid) on educational outcomes.

Data & Setting

In 1994, Malawi introduced a policy of free primary education, which removed all school fees for children through the end of the eighth grade. This policy led to a rapid increase in school enrollment rates, and by 2009 Malawi had the tenth highest net enrolment rate in sub-Saharan Africa, despite remaining one of the poorest countries. Despite high school participation rates, in 2009 only 35% of students in Malawi completed primary school (Brossard, Coury, and Mambo 2010).

We use data from the first five rounds of the Malawi Schooling and Adolescent Survey (MSAS), a longitudinal dataset collected in southern Malawi from 2007 to 2011. The original sample consisted of 1,764 primary school students who were randomly chosen from the enrollment rosters of 59 primary schools in two adjacent districts in southern Malawi. Sample attrition is low; approximately 94 percent of respondents who were enrolled in school at the previous survey round were successfully re-interviewed at the next survey round, and the follow-up rates are even higher if they include respondents who were successfully located and re-interviewed in subsequent rounds. This paper will examine the transition to school dropout in this sample of students. School enrollment status is measured at the time of each survey; school dropout is measured amongst current students by examining their enrollment status at the subsequent survey round. In addition to school dropout, we will also examine the impact of employment on a range of educational outcomes, including grade repetition, annual exam scores (math, English, and Chichewa), number of days student attend school during the past one week prior to the survey day, and an index of school engagement/attachment. Our key independent variable is student employment, which is coded 1 if a student does any paid or unpaid work on a regular basis. We also examine the effects of paid and unpaid employment separately. In most cases, the independent variables are lagged one survey round behind the dependent variable.

Analytic Strategy

In the first part of the study, using discrete-time logistic regression analysis, we examine whether the relationship between adolescent employment and school dropout is due to the pre-existing individual differences in household-level socioeconomic background (parental death, parental education, and wealth index) and school performance (grade repetition, absenteeism, and academic skills). The key interest of this analysis is to examine whether the inclusion of these potentially confounding variables reduce the estimated coefficient for student employment. We employ Karlson, Holm, and Breen's procedure to decompose the differences in the coefficient of interest across models into the percent attributable to confounding and rescaling (Karlson, Holm, and Breen 2012). This analysis offers an understanding of how much these confounding factors explain the relationship between student employment and dropout.

The second part of our study uses fixed effects event history models to minimize potential bias due to unobserved individual differences and estimate the relationships of within-individual changes in educational measures to changes in labor force participation. The fixed effects model may be suitable for this particular study because there appears to be considerable within-variation in students' labor force participation. Malawian students seem to change their employment status across survey rounds. These changes in employment status may be dependent upon the changes in family circumstances, local labor market, and so on. Because fixed effects regression is not feasible when analyzing non-repeatable events or first events only like our study, we employ special techniques known as the case-crossover design (Allison and Christakis 2006; Andreß, Golsch, and Schmidt 2013). We also use the fixed effects model to estimate the effects of adolescent employment on other educational outcomes, such as grade repetition, annual exam scores (math, English, and Chichewa), number of days student attend school during the past one week prior to the survey day, and school engagement/attachment index.

Preliminary Findings

Approximately one-third of sampled students had either paid or unpaid work during the school year. By Round 5 in 2011, only 33.2 percent of respondents remained in school. Table 1 presents the results from the time-discrete logistic regression model, suggesting that the effects of labor participation on dropout are confounded by several key factors. Students who do any work other than household chores are more likely to drop out of school than those who do not work, with a 20% increase in the odds of dropout

(Model 1). Parental death does not change the coefficient for adolescent employment (Model 2) whereas the addition of parental education marginally reduces the coefficient (by 6.2 percent, Model 3). Models 4 and 5 show that household-level wealth and students' schooling progress are significant confounders of the association between employment and school dropout; the association becomes non-significant in Model 5. The inclusion of household-level wealth accounted for 18.4% of the reduction in the coefficient for employment, and the schooling progress variables reduced the coefficient by 28.5%.

Table 2 presents the results from the fixed effects event history model with a case-crossover design, run separately for male and female students. These models demonstrate that gender differences obviously exist in the effects of job types on school dropout. Boys are less likely to drop out of school when they are engaged in paid work, whereas girls are less likely to drop out when they are involved in unpaid work. Given that only students who have dropped out of school contribute to the fixed-effects estimate and it is reasonable to believe that these students differ in important ways from the rest, the positive effects of labor participation are plausible. Controlling for all time-constant, student-specific sources of spuriousness, whether observed or unobserved, the fixed effects model yields consistent and unbiased estimates.

In the full paper, we will examine the association between student employment experiences and other school outcomes, including grade repetition, academic performance, absenteeism, and school engagement. Preliminary analyses (not shown) provide evidence that student employment is significantly associated with higher grade repetition and absenteeism and lower levels of school engagement and math performance.

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Table 1. Discrete-Time Logistic Regression Models of School Dropout on Employment Status

	Model 1	Model 2	Model 3	Model 4	Model 5
Employed	0.181*	0.181*	0.171*	0.142+	0.101
	(0.081)	(0.081)	(0.081)	(0.082)	(0.083)
Difference in coefficient (labor participation)		-0.000	0.011*	0.032***	0.040**
Percent of change due to confounding		-0.027	6.213	18.395	28.474
Number of person-years	5010	5010	5010	5010	5010

Note: Logit coefficients with standard errors in parentheses
Model 1: Controls for age, ethnicity, and gender
Model 2: Controls for the variables in Model 1 plus parent survival status
Model 3: Controls for the variables in Model 2 plus parent educational attainment
Model 4: Controls for the variables in Model 3 plus household wealth
Model 5: Controls for the variables in Model 4 plus school absenteeism, academic skills, and grade enrolled
All models contain school and survey round fixed effects.
+ p<0.10; *p<.05; **p<.01; ***p<.001

Table 2. Fixed Effects Event History Models of School Dropout on Employment Status, By Gender

	Boys				Girls			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Employed	-0.237				-0.486**			
	(0.153)				(0.181)			
Employed for paid work		-0.512**		-0.594***		-0.072		-0.019
		(0.167)		(0.174)		(0.223)		(0.227)
Employed for unpaid work			0.201	0.346*			-1.008***	-1.007***
			(0.167)	(0.174)			(0.267)	(0.267)
Number of person-years	931	931	931	931	1117	1117	1117	1117

Note: Logit coefficients with standard errors in parentheses
All models control for parent survival status, household wealth, repeated previous grade, absenteeism, academic skills, and enrolled in standard eight.
+ p<0.10; *p<.05; **p<.01; ***p<.001