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Health and Labour Market Participation in Uganda

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Abstract

The paucity of non-agricultural paid employment, and under utilization of female labour in Uganda, and other sub-Saharan African countries, is often seen to be the next major obstacle to further poverty reduction and development in the region. Despite this there have been few empirical investigations that examine the key determinants of labour market participation for the region. By using nationally representative household data from Uganda this paper identifies some of the key supply side determinants of participation. Here we instrument for self-reported health and find that conditional on participation ill health lowers the likelihood of being in the formal labour market. In addition and perhaps more worryingly, these negative effects are stronger for women than men.

Keywords: labour market participation, health, fertility, gender, Uganda

JEL classification: D13, J22

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1 Introduction

Countries in sub-Saharan Africa (SSA) are often characterized by an underutilization of labour, of which human capital, and health in particular, plays a major role. Although there is some prior evidence on labour supply issues for this region,[1] these studies tend to provide only a partial analysis of the labour market, despite supporting the intuition that a high level of sickness results in low labour participation. For example, given the often huge gender differences associated with human capital, they often lack a gendered focus.

In addition, as mentioned in Bridges and Lawson (2008) the lack of detailed labour force data for the region means that the findings of many of these studies are based on data for the mid-1990s or earlier. However labour markets in SSA have undoubtedly changed considerably since then, especially with respect to the role of females and in relation to the growing HIV/AIDS epidemic.

For this analysis we focus on Uganda, a country that provides a particularly interesting focus owing to the decrease in HIV/AIDS prevalence over the past decade (from 15 per cent in the early 1990s to approximately 6.7 per cent in 2005). Although economic growth and poverty reduction performance have excelled, labour market participation is still limited. In addition, for Uganda, there is a wealth of household-level data, which enables us to focus on the impact of health, relative to other human capital issues, has on participation decisions.

The theoretical basis of this analysis originates from a household production framework similar to that developed by Becker (1965), with health and labour market outcomes having a long tradition of theoretical focus, primarily through the efficiency wage models developed by Leibenstein (1957). Most of this literature focuses upon the association between better nutrition and higher productivity.[2] However, in this case we focus on how health and human capital affect the labour supply of an individual.

Ultimately an individual's stock of human capital may be influenced by his/her health status, and other factors such as education. In the case of health, extended periods of illness are clearly likely to erode work capacity and the ability to participate in the labour market. Prior empirical evidence supports this view; for example, poor health has been found to have a negative effect on hours of labour supply (Pitt and Rosenweig 1986; Schultz and Tansel 1997) and participation (Lavy, Palumbo, and Stern 1995; Handa and Neitzert 1999).[3] However, the fact that a person ultimately starts life with a health endowment, therefore, means that an individual's stock of health depends upon prior decisions. This contrasts with other human capital components, such as education, which is often treated as predetermined with most investment occurring in the early part of the lifecycle (Currie and Madrian 1999: 3,312).

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1 See Bridges and Lawson (2008) for a review of the literature.

2 In addition, those with poor health might be rationed out of the employment market as they become too expensive to hire (Rosenweig 1988).

3 Theoretically we should however also note that health may reduce wages and effective time endowment. Therefore the marginal rate of substitution between goods and leisure. Thus potentially contradicting the axiom of ill health reducing labour participation.

Given this, it is therefore necessary to recognize the endogeneity problem of health and the supply of labour. For instance, increased health status might result in higher employment potential/productivity and an increased ability to raise income which, in turn, could result in increased health investment (Currie and Madrian 1999).

Such health/human capital and labour market foundations provide an appropriate analytical basis for SSA countries, particularly for Uganda where, despite impressive reductions in the prevalence of HIV/AIDS, there has been an increase in the proportion of adults reporting ill health over the past decade and a half (from 17 per cent in 1992 to just under 30 per cent in 2002). However, there are now large gender differences in the incidence of morbidity, with females having a higher incidence than males.[4] Combined with facts such as the rates of paid employment participation for females being nearly half those for males, then we can see that the results and implications from earlier studies are far from understood in the context of a labour participation framework. Our analysis considers this gender dimension.

As noted, there is a lot of support concerning the negative influence that ill health has on labour participation. However, it is also worth noting the literature that has expanded on this, as well as the broader human capital literature. For example, as noted in Currie and Madrian (1999), the empirical evidence on this issue shows that there is commonly a wide range in the estimated impact, an effect that is likely to be highly socially determined. Currie and Madrian (1999) also note the potentially unknown effect of mental illness, owing to relatively few datasets that collect such data with confidence.

From a broader human capital focus, specifically education, the general consensus of the literature supports intuition and human capital models that suggest that greater levels of education would imply greater participation, *ceteris paribus*. For example, this was found to be the case for a recent Kenya-based study. Evidence from Atieno and Teal (2006) notes that labour force participation rises more for women than for men as education increases. In general, there is notably limited evidence that is contrary to this.

Among the few econometric studies that look at labour market issues for Uganda, Canagarajah, Newman, and Bhattamishra (2001) examine gender differences in employment, and find that non-agricultural opportunities for female-headed households are often constrained. Again this provides further support for the view that the apparent underutilization of women in formal sector employment has negative implications for growth. Mugume and Canagarajagh (2005), although focusing largely on issues concerning labour productivity and wages, find human capital to have a positive effect (through education) on participation.

2 Insights into labour market participation: data and descriptive statistics

This paper uses the Ugandan national household survey (UNHS) for 2002-03, which is a multi-purpose study designed to elicit information on individual and household-level characteristics, health status, and the economic position of a representative sample of households. Data were collected at the individual, household, and community levels,

[4] However, the proportion of sick individuals seeking health care is lower for females than males (Lawson 2003).

therefore allowing for community-level identification of certain health information (in particular, the local health infrastructure). Given the labour market participation focus of this paper, we restrict our sample to working aged adults, that is, those aged between 16 and 65 at the date of interview, which gives 21,083 individuals (9,915 men and 11,168 women).

The 2002-03 UNHS is a rich dataset for examining labour participation decisions. In particular, respondents are asked detailed questions concerning their usual economic activity including, 'What is your employment status?' As in Bridges and Lawson (2008) we define self-employment (informal employment) as comprising those who classify their usual economic status as an employer or own account worker, while our definition of paid employment (formal employment) includes permanent and temporary government or private sector workers.

The UNHS also provides a self-reported measure of the respondent's health status. In the health section, interviewees are asked:

- 'Did you fall sick or get injured during the last 30 days?' This is followed up with:
- 'What sort of sickness/injury did you suffer?' and
- 'How many days were lost (suffered) by you due to the illness/injury?'[5]

Focusing on the descriptive statistics, we can see that Uganda is characterized by particularly large gender differences in labour market participation. Only 49 per cent of women participate in the labour market, compared with approximately 70 per cent for men (with an overall participation rate of 76 per cent). In addition, females who participate in the labour market are predominately engaged in some form of self-employment (83.6 per cent), compared with 69.5 per cent for males.[6] For both sexes, this self-employment usually takes the form of agricultural work. Of the labour market employees, only 16.4 per cent (30.5 per cent) of the women (men) are in paid employment, and of these the government employs a similar proportion of males and females (approximately 30 per cent).

Ill health appears to be widespread throughout our sample; approximately 27 per cent of respondents report having been sick in the past 30 days (an increase from 17 per cent in 1992), and of these almost 60 per cent are women. Looking more closely at the effects of health status across occupation categories (Table 1), we see that a higher proportion of healthy individuals are concentrated in paid employment, relative to those who report being sick; 7.0 per cent (21.4 per cent) of sick females (males) participate in paid employment, compared with 8.5 per cent (22.5 per cent) for those who report being

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5 In selecting the measure of ill health, we recognize the extensive debate around the use of a self-reported health measure. For example, despite certain limitations, a large amount of empirical work validates the usage of self-reported health measures and has found it to be a favourable method of analysing sickness. For instance, Idler and Kasl (1991), Idler and Benyamini (1997), and Ferraro and Farmer (1999) all find the self-reported health status to be a reliable indicator of future mortality. However, contrary to this, Pitt and Rosenweig (1986) and Schultz and Tansel (1997) suggest that one interpretation could be that the increased educational levels might increase illness recognition because of heightened awareness of symptoms. If this is the case, then the self-reported illness data are subject to systematic reporting bias.

6 Authors' calculations.

healthy. In contrast, for both men and women a higher proportion of those who report being sick participate in self-employment, relative to those who report being healthy; 46.9 per cent (56.3 per cent) of sick females (males) participate in self-employment, compared with 38.9 per cent (49.0 per cent) for those who report being healthy. In line with these findings the average number of days lost owing to illness is also lowest for those in paid employment.

For the other main human capital variable, education, we find the highest education levels among those who participate in the formal sector (Tables 1 and 2). Important gender differences also emerge in this context. Although on average men and women have similar levels of education (see the Appendix), we find that females in paid employment have, on average, higher levels of education than males. In this setting it is impossible to separate the demand and supply effects. This finding may arise from discrimination on the part of the employer, with employers requiring that females have a higher level of qualifications than their male counterparts in order to participate in

Table 1
Percentage of individuals in each activity
disaggregated by gender, health status, education, and household demographics

	Female			Male			All		
	Paid employment	Self-employment	None*	Paid employment	Self-employment	None*	Paid employment	Self-employment	None*
Health status									
(By row – %)									
Healthy	8.54	38.86	52.60	22.49	49.01	28.49	15.42	43.87	40.71
Sick	6.98	46.91	46.10	21.39	56.26	22.35	12.84	50.71	36.45
All	8.08	41.26	50.67	22.24	50.68	27.08	14.74	45.69	39.57
(By column – %)									
Healthy	74.23	66.11	72.88	77.87	74.46	81.01	76.81	70.47	75.50
Sick	25.77	33.89	27.12	22.13	25.54	18.99	23.19	29.53	24.50
Avg no. of days sick	1.87	2.68	2.25	1.50	1.81	1.80	1.61	2.23	2.10
Education									
Avg no. of primary yrs completed	4.33	3.41	3.54	3.87	3.32	3.59	4.01	3.36	3.56
Avg no. of secondary yrs completed	0.95	0.47	0.52	0.77	0.43	0.60	0.82	0.45	0.55
Has university education (%)	2.43	0.41	0.26	1.45	0.28	0.45	1.73	0.34	0.32
Household demographics									
Household size	5.66	5.81	7.04	5.60	5.84	8.03	5.62	5.83	7.36
No. of children in household (%)									
0	23.13	15.07	11.27	26.83	17.57	10.74	25.75	16.37	11.10
1	16.59	15.01	13.07	13.89	12.94	8.18	14.68	13.93	11.49
2	17.04	16.61	14.37	13.85	15.21	10.11	14.77	15.88	13.00
3	14.49	14.70	13.88	14.52	13.44	11.22	14.52	14.04	13.02
4	10.84	13.36	13.07	10.72	13.48	12.89	10.76	13.42	13.01
5	8.85	9.72	10.72	6.65	9.35	12.86	7.29	9.53	11.41
>=6	9.06	15.53	23.63	13.54	18.01	34.00	12.23	16.82	26.97

Note: * None = unpaid family worker plus individuals who are not usually economically active.

Table 2
Proportion of men and women participating in the labour force
(% sick, number of days lost) disaggregated by education

	Participating in formal labour market, %	Not participating in formal labour market, %
	Females	
No education	18.7 (26%, 7.8)	27.0 (29.7%, 8.3)
Some primary	31.3 (27.9%, 6.9)	37.9 (31.6%, 8.4)
Completed primary	22.3 (21.8%, 7.2)	18.3 (29.3%, 7.8)
Some secondary	11.6 (27.8%, 8.5)	9.8 (29%, 7.3)
Completed secondary	16.0 (25.5%, 6.3)	6.9 (26.4%, 7.0)
Overall average	8.1 (25.8%, 7.3)	91.9 (30.1%, 8.1)
	Males	
No education	22.7 (23.1%, 6.6)	27.0 (23.3%, 7.8)
Some primary	33.9 (23.1%, 7.0)	37.8 (23.2%, 7.9)
Completed primary	19.6 (21.5%, 7.2)	18.1 (24.1%, 8.0)
Some secondary	11.8 (20.6%, 6.2)	10.0 (23.3%, 7.5)
Completed secondary	12.0 (18.1%, 5.2)	6.9 (20.5%, 6.3)
Overall average	22.37 (22.1%, 6.8)	77.7 (20.5%, 7.8)

comparable jobs. However, it could also reflect cultural norms (either their own or their families') against female participation in market work, supporting the view that education is needed to help improve economic opportunities for women.

Interestingly, those who are not in the labour market have similar levels of education (on average) to those in self-employment. This result is more pronounced for females than for males, which again helps to reinforce the view that, for Uganda at least, it is not necessarily the lack of education that prevents individuals (especially women) from entering the labour market.

Disaggregating participation in paid employment further by education (Table 2), we see that, as education levels increase for both males and females, both the incidence of sickness and the number of days lost owing to sickness decrease. Again for both genders, not surprisingly, the trend in non-participation in paid employment also decreases as further education levels are completed.

3 Modelling and estimation

3.1 Modelling

We now examine the effect our key variables of interest (notably health status, and education) have on participation in a multivariate setting and explicitly examine the choice workers main between paid employment and self-employment. Since in practice we only observe the employment decision for those who participate we model the probability that an individual is in paid employment (relative to self-employment) using a variant of Heckman's (1979) two-step selection model, in which a first stage probit is estimated to capture the participation decision. We thus allow for the possibility that unobservable individual characteristics that affect the employment decision are correlated in some way with the decision to participate.

Following Van de Ven and Van Praag (1981) our model consists of two latent propensities. Here the probability that individual i is in paid employment ($y_{i1}=1$) is written as a latent variable model of the form:

$$y_{i1}^{*} = \beta_1' Z_{i1} + u_{i2} \tag{1}$$

such that we only observe the binary outcome:

$$y_{i1} = 1(y_{i1}^{*} > 0) \tag{2}$$

However, now we only observe y_{i1} for individual i if s/he participates. In other words if:

$$y_{i0} = (\alpha \hat{H}_{i0} + \beta_0' X_{i0} + u_{i0} > 0) \tag{3}$$

where u_{i2} and u_{i0} are jointly normally distributed with correlation coefficient ρ.

Like Heckman's (1979) selectivity procedure, the model relies on exclusion restrictions for model identification. Here we argue that age and the general composition of the household affect the decision to participate, but have no effect on the subsequent employment decision.

3.2 Estimation results: participation

Maximum likelihood estimates of the probability of being in paid employment are presented in Table 3, disaggregated by gender. For each regression the table reports the marginal effects (evaluated at the means of the regressor variables) and levels of significance. Note that here we report the marginal effects for the probability of being in paid employment conditional on participation, that is, $\Pr(y_{i1}=1 \mid y_{i0}=1)$.

The first thing to note is that we find statistical evidence of a correlation in the disturbance terms between the two propensity equations; for both men and women the correlation coefficient ρ is significantly different from zero. This highlights the importance of correcting the results for selectivity bias; ignoring this would have clearly produced biased results.

Turning now to look at some of the parameter estimates associated with participation in paid employment we again find that health has an important role to play. Here we instrument for health as in Bridges and Lawson (2008) and find that our measure of ill health (for the 'average' worker) has a positive and significant effect on the probability of being in self-employment, which is stronger for females than males. This may arise because self-employment is by its very nature less formal than paid employment making it easier for individuals to take time off work when ill. It could also be reflective of the type of jobs that are open to people in poor health, which may be limited in the formal sector.

Examining how the probability of participation (in paid employment) varies for different values of ill health we find that conditional on participation the 'average' woman (man) has a 12 per cent (28 per cent) chance of being in paid employment. For

Table 3
Maximum likelihood estimates of the probability of being in paid employment – selection correction

Variable	Female (marginal effect)	Male (marginal effect)
Personal/household demographics		
Health stock (ill health)	-0.062***	-0.039***
Number of individuals aged less than (or equal to) 5 in household	-0.024***	-0.011
Number of individuals aged 6-14 in household	0.001	0.002
Number of individuals aged 60 or more in household	-0.024	-0.010
1 child in household	-0.044***	-0.016
2 children in household	-0.058***	-0.023
3 children in household	-0.051***	0.013
4 children in household	-0.051***	-0.051**
5 or more children in household	-0.068***	-0.053**
No education	-0.001	-0.031*
Number of primary years	0.002	-0.006
Number of secondary years	0.006	0.016***
Educated to university	0.047	0.134*
= 1 if married	-0.242***	-0.160***
= 1 if divorced	-0.087***	0.012
= 1 if widowed	-0.059***	-0.034
Regional dummies		
Rural north	-0.090***	-0.197***
Urban north	-0.005	0.064***
Rural west	-0.087***	-0.141***
Urban west	0.0001	-0.0001
Rural east	-0.091***	-0.226***
Urban east	0.077***	-0.018
Rural central	-0.083***	-0.170***
Number of observations	11,168	9,915

Note: * significant at 10%; ** significant at 5%; *** significant at 1%

the healthiest individual this probability rises to just below 45 per cent, but is only 39 per cent for men. However, for those in the poorest health the probability of participation falls to just 1 per cent for females, compared with 12 per cent for males.

So not only are those in the poorest health less likely to participate (as we saw in Section 2), conditional on participation they are also less likely to be in the formal labour market. In addition and perhaps more worryingly, these negative effects are stronger for women than men. Ill health clearly represents a substantial gender disadvantage to women.

Demographic variables also influence the 'choice' workers make between self-employment and paid employment, particularly for females, who are often required to balance family responsibilities with the need to generate an income. Fertility (approximated here by the number of children) also has a role to play in this setting. Lundberg (1988), for example, observes a very different pattern to participation among couples with and without children, and between young and older children. Controlling for both the number and age of children in the household, for women, conditional on participation, the number of children has an increasingly negative effect on their likelihood of being in paid employment. In addition, the number of 0-5 year olds in the household lowers the likelihood of participating in this sector even further (but is insignificant for older children).

Previous studies for SSA find that education is important in determining whether individuals work in the formal or informal sector. Here we find that for men increasing years of secondary education have a positive effect on their likelihood of being in paid employment (Vijverberg 1993 finds a similar result for Côte d'Ivoire, as do Atieno and Teal 2006 for Kenya). In contrast for women, education has no effect on their probability of participation in this sector. Although as outlined in Section 2 females who participate in paid employment have, on average, higher levels of education than that of males, in this setting education is clearly not a requirement for entry as it is for men. One interpretation of this finding (as outlined in Glick and Sahn 1997) is that the type of jobs open to, or chosen by, women in the formal sector are different from those of men. Prior evidence for Uganda would support this. Evidence from the Uganda Bureau of Statistics (2001) suggests that females are particularly under represented in professional, managerial, and technical jobs compared to that of males.

For females although being married is not a constraint on participation, it appears to be incompatible with paid work. Similarly for females being divorced or widowed also appears to be incompatible with paid employment. Again this could arise due to the presence of dependents; women who are married, divorced, or widowed are likely to have greater family responsibilities than those that are single.

Finally important regional differences also emerge. Living in the rural regions has a negative effect on the likelihood of being in paid employment. This may reflect not only the fact that fewer jobs tend to be available in these areas, but also that travel to work costs are likely to be higher in the rural regions making it prohibitively costly for some individuals to participate in paid employment.

4 Conclusions and policy implications

This paper focuses on an area of development analysis that has so far been deeply lacking, namely furthering our understanding of how labour markets function in SSA. Given the importance of employment as a source of income for the poor, getting individuals, and notably women, into the labour market to participate in sustainable jobs is seen as being vital for poverty reduction.

Although many studies for Uganda have looked at the simple determinants of sickness, no research has advanced the analysis econometrically beyond this to examine labour market outcomes and the role of women in this. Given the high prevalence of ill health in both Uganda and many other SSA countries, understanding the influence of these issues, especially relative to other major human capital issues such as education, is extremely important in guiding policy.

In line with prior empirical evidence we find that health is highly significant and has a strong effect on labour market participation. Not only are those in the poorest health less likely to participate, conditional on participation they are also less likely to be in the formal labour market. In addition and perhaps more worryingly, these negative effects are stronger for women than men. Ill health clearly represents a substantial gender disadvantage to women. Extending the human capital perspective to consider education, and in contrast to the findings for other countries in SSA, the role of education interestingly appears to be limited. We find that for men increasing years of secondary

education have a positive effect on their likelihood of being in paid employment (conditional on participation).

In conclusion, the results of this paper clearly continue to highlight the need to focus on health as a priority for achieving further formalization and labour market participation decisions. This is increasingly becoming recognized as a key to promoting economic growth in SSA countries.

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Appendix

Table A1
Summary statistics

	Females		Males		All	
	Mean	Std dev.	Mean	Std dev.	Mean	Std dev.
Personal/household demographics						
Age	30.36	11.71	31.21	12.18	30.76	11.94
Age squared	1059.08	853.76	1122.80	896.85	1089.04	874.85
Sick	0.30	0.46	0.23	0.42	0.27	0.44
Single	0.22	0.42	0.35	0.48	0.28	0.45
Married	0.61	0.49	0.61	0.49	0.61	0.49
Divorced	0.09	0.28	0.03	0.16	0.06	0.23
Widowed	0.08	0.27	0.01	0.09	0.05	0.21
No education	0.26	0.44	0.26	0.21	0.26	0.44
Primary education	3.55	2.81	3.52	2.82	3.53	2.82
Secondary education	0.53	1.33	0.55	1.37	0.54	1.35
Sex of household head	1.32	0.47	1.12	0.32	1.22	0.42
Age of household head	40.45	13.33	39.86	13.18	40.17	13.26
Household size	6.42	3.40	6.38	3.51	6.40	3.46
Dependency ratio	1.27	1.03	1.07	0.88	1.17	0.97
No. of individuals aged 60 or more in household	0.18	0.46	0.16	0.44	0.17	0.45
No. of individuals aged less than (or equal to) 5 in household	1.28	1.18	1.17	1.17	1.23	1.18
No. of individuals aged 6-14 in household	1.85	1.73	1.78	1.75	1.81	1.74
No children in households	0.14	0.35	0.17	0.38	0.16	0.46
1 child in household	0.14	0.35	0.12	0.32	0.13	0.34
2 children in household	0.16	0.36	0.14	0.34	0.15	0.35
3 children in household	0.14	0.35	0.13	0.34	0.13	0.34
4 children in household	0.13	0.34	0.13	0.33	0.13	0.33
5 or more children in household	0.29	0.46	0.31	0.46	0.30	0.46
Urban west	0.11	0.31	0.11	0.31	0.11	0.31
Urban east	0.11	0.31	0.11	0.31	0.11	0.31
Rural east	0.17	0.37	0.17	0.38	0.17	0.38
Rural central	0.15	0.36	0.16	0.36	0.15	0.36
Urban central	0.13	0.33	0.12	0.32	0.12	0.33
Urban north	0.07	0.26	0.07	0.25	0.07	0.26
Rural north	0.11	0.31	0.10	0.30	0.11	0.31
Flush toilet	0.04	0.20	0.04	0.18	0.04	0.19
Covered latrine	0.77	0.42	0.78	0.42	0.77	0.42
Uncovered latrine	0.08	0.28	0.09	0.28	0.09	0.28
No. of doctors at local health unit	2.82	5.23	2.70	5.04	2.76	5.14
Distance to local health unit (metres)	348.51	398.21	347.75	350.99	348.15	376.73
Malaria drugs available at health unit	0.98	0.14	0.98	0.14	0.98	0.14
Oral rehydration available at health unit	0.91	0.28	0.92	0.28	0.92	0.28