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Introduction

Twenty-four of the 25 countries with the world's highest levels of HIV/AIDS prevalence rates are in sub-Saharan Africa (SSA). This is reflected in the current number of orphaned children. According to a joint report by UNAIDS, UNICEF, and USAID (2004), at least 12.3 percent of all children in sub-Saharan Africa, or 43 million children, are orphans (have lost one or both parents). Moreover, although the numbers of orphans in other regions of the world are decreasing, the numbers in sub-Saharan Africa are increasing, mainly because sub-Saharan Africa, as a region, has been hit hardest by HIV/AIDS. ⁱ

UNAIDS, et al. (2004) notes that even across countries within sub-Saharan Africa, there are differences in the rate of orphaning, with the highest percentage of orphans living in countries with high HIV/AIDS prevalence levels and/or countries that have recently been involved in armed conflicts. Uganda is one of the sub-Saharan African countries that have gone through a combination of armed conflicts and high HIV/AIDS prevalence rates in the last decade. As a result, two million children in the country are orphaned (USAID, 2003). Indeed, as a result of the civil wars and the HIV/AIDS pandemic, Uganda now has an entire *generation of orphaned children*. Estimates indicate that 1 of every 4 households in Uganda are providing care to an orphaned child (see Cheng et al., 2004; Deininger, Garcia, and Subbarao, 2003). The country is going through what one may call a *child welfare crisis*. There is an increasing gap between the demand for child welfare services and the available support from the governments and local and international institutions.

In view of the current level of orphanhood in sub-Saharan region, the two key questions, are: (1) how will the increasing numbers of orphaned children be cared for? (2) Overall, how can we improve the life chances of children in sub-Saharan Africa, including the orphaned child? These are some of the

questions that have preoccupied policy makers, program practitioners, and local, national and international organizations working with children in Africa.

The future of orphaned children in sub-Saharan Africa

Traditionally, the burden of raising orphans in sub-Saharan Africa falls primarily to the surviving extended family members comprised of grandparents, uncles, aunts and family friends. Unfortunately, the steady increase in the number of orphans especially in the last two decades, coupled with the increase in poverty in the region, have overwhelmed the traditional extended family systems. As a result, a considerable number of orphans who would otherwise have been cared for within the extended family systems have either dropped out of school in order to farm the land to take care of themselves and their siblings or, in desperation, migrated to large urban areas in search of employment opportunities. Since the majority of the orphans who migrate to the urban areas have no employable skills, they often end up on the streets where they live as street children. While on the streets, these children beg, engage in petty theft, begin drug and substance abuse, and prostitute themselves for money, exposing them to health risks including HIV infection and other sexually transmitted diseases (STDs).

Commonly used formal intervention policies and programs for poor orphaned children in the region include reactive policy strategies and institutionalization. Reactive strategies involve governments and non-governmental organizations providing “aid” mainly for physical needs including recreation services, peer education and counseling, and provision of food aid (Drew, Makufa, and Foster, 1998; UNICEF, 2004a; 2004b). Some reactive services include home visits by community volunteers—including religious leaders—to help caregivers and children learn to cope and promote good care and healthy practices. On the other hand, institutionalization involves placing children into orphanages or institutions. Although each of these approaches is a

response of well meaning governmental and non-governmental organizations to reduce the problems faced by poor orphaned children, they have each attracted some criticism. For example, reactive services of “aid” tend to encourage perpetual over dependency, especially on foreign donations, without necessarily empowering the families with economic resources which would help these families to begin to realistically plan for their future.

On the other hand, while institutionalization may be appealing because it provides children with food, clothing, and education, it tends to be expensive to operate. Its cost per child is substantially higher than family-based care, yet it may not allow children to feel like they belong to any specific community; it generally fails to meet the children’s emotional and psychological needs; and it tends to promote dependency and discourage autonomy (UNAIDS, et al., 2004). Moreover, for infants, institutionalization as a form of care is particularly inappropriate because the healthy emotional, cognitive, and even physical development of children in this age group requires that they have at least one consistent and loving caregiver with whom they can form a bond (UNAIDS, et al., 2004). The United Nations Convention on the Rights of the child reminds us that a child, for the full and harmonious development of his or her personality, should grow up in a family environment (United Nations, 1989).

Using data from Uganda National Household Survey (1999-2000), this paper answers two questions:

- 1) Are orphan-caretaking households different from non-orphan-caretaking households on measurable socio-economic (including income) and asset-ownership characteristics? This question is addressed through bivariate statistics to determine whether there are any observable differences between orphan-caretaking households and non-orphan caretaking households. Exploring this question is important for policy and program designs. Specifically, as the

numbers for orphaned children continue to grow, there may be a need for government and non-governmental organizations to start exploring caretaking options for these children. Specifically, how and where should these children be cared for? Would it be better to design programs and/or policy interventions that specifically encourage and/or incentivize households willing to care of orphaned children, within a family environment (as advocated for by the United Nations Convention on the Rights of the child)? Or should programs and policies be ‘orphan blind’ and give all children the same opportunity regardless of the child’s socio-economic and orphanhood status? In other words, in a poor African country like Uganda, should we advocate for policies and programs that discriminate in the provision of assistance on the basis of a child’s socio-economic and orphanhood status?

(2) What is the impact of family or caregivers assets on children’s educational outcomes?

This is the primary question being addressed by this paper. This question is important because while there are a number of studies focused on income and child wellbeing (see, e.g., Aber, Bennett, Conley, & Li, 1997; Corcoran, 1995; Duncan & Brooks-Gunn, 1997; Duncan, Brooks-Gunn, & Klebanov, 1994; Guo, 1998; Guo & Harris, 2000; Hill & Sandfort, 1995; Duncan, Yeung, Brooks-Gunn, & Smith, 1998), there are very few studies explicitly focused on the impact of asset-ownership or wealth on child wellbeing, including educational outcomes. This is even more true for studies on poor developing countries like the ones in sub-Saharan Africa. Moreover, asset theory (Sherraden, 1990, 1991) posits important psychological, social and economic benefits for individuals and families as a result of owning assets (for example economic opportunities or financial wealth in the form of microenterprises, savings and homeownership). Given the premise of asset theory we offer the following primary hypothesis:

Controlling for income and several socio-economic characteristics, children in households with assets are more likely to stay in school.

Specifically, we offer the following hypotheses

- I. *Children in households with independent permanent housing are more likely to be in school compared to children in rented houses (muzigo) or huts.*
- II. *Children in households that own land are more likely to stay in school.*
- III. *Children in households with electricity are more likely to stay in school.*
- IV. *Children in households with a “viable” microenterprise are more likely to stay in school.*
- V. *Children in households that participate in savings groups are more likely to stay in school.*
- VI. *Children in households that own at least some form of transportation (for example a bicycle) are more likely to stay in school.*

Theory

As mentioned above, the research question and hypothesis guiding this paper are grounded in asset theory (Sherraden, 1990; 1991). Asset theory states that assets (for example, economic opportunities in the form of income generating activities (IGAs) or microentrepreneurship, savings, and homeownership) have important psychological, social and economic benefits for individuals and families. Assets are more than a flow of income for current or deferred consumption. They (assets) provide people with a stake in the system and produce psychological and social benefits for individuals (e.g., increased personal well-being, future orientation and aspirations, and personal efficacy and self-esteem) (Sherraden, 1990; 1991). These life opportunities, whether structurally limited or enhanced, are then internalized and shape

individual behavior (Sherraden, 1991). Put another way, promoting asset-ownership opportunities is not only a means of fighting poverty, but also of generating socially desirable behavior. Indeed, asset-building, which refers to the efforts that enable people with limited economic resources or opportunities to acquire and accumulate long-term productive assets, is increasingly viewed as a critical factor for reducing poverty, positively impacting attitudes and behaviors, and promoting overall well being of people. It is what some have called an empowerment strategy that allows individuals to gain influence over events and outcomes of importance to their own lives, a process of increasing personal and interpersonal power so that individuals can take action to improve their life situation (Gutierrez, 1990). When people acquire assets, they are more likely to think about investing in and planning for their future as well as their family. In other words, promoting asset-ownership opportunities increases the life chances of a population. Evidence from the literature generally confirms this assertion (see Celia, 1994; Page-Adams & Sherraden, 1997; Yadama & Sherraden, 1996; Zhan & Sherraden, 2003).

To illustrate, asset theory would predict that a child in primary school with no belief that he/she has the economic means to afford post-primary education is more likely to drop out of school. However, provided with the economic means or a stake in the system, this child may think and behave differently. Envisioning a concrete possibility for his/her future, this child may act as if he/she will have a future worth living (see Sherraden, 1986). This child would more likely stay in school, strive to get good grades, and may become a productive member of society. A policy intervention aimed at promoting asset-ownership would more likely create a reciprocal cycle in which asset accumulation and positive social behaviors will be mutually reinforcing.

It is against this background that this paper proposes—in its primary question—to specifically examine the impact of family or caregiver’s assets on children’s life chances, measured by educational outcomes.

Measure of Life Chances

This paper uses school attendance as the measure of life chances. School attendance is of utmost importance for children to be able to reach their potential and become economically productive and engaged citizens. School attendance is not merely an issue of fairness and equality. It is an issue of practicality, the pathway to economic and social development. Children are the country’s next generation of adults. If they are not educated, future generations are undermined. Moreover, education is a fundamental human right provided for in articles 28 and 29 of the United Nations Convention on the Rights of the Child. Indeed, article 28 of the UN convention on the Rights of the child explicitly states that all children should have equal access to education, including primary, secondary and higher education.

In this paper, the use of school attendance as a measure of life chances is also based on the premise of human capital theory which prizes capital invested in human beings as “the most valuable of all capital” (Alfred Marshall, cited by Becker, 1993, p.27). Human capital is often conceptualized in terms of individual’s overall skills, educational experience and intellectual potential (see Barker, 1995; Becker 1993; Beverly & Sherraden, 1997).

Based on the premises of human capital theory, it would be logical to use school attendance, which may be a proxy for educational attainment, as a measure of life chances. All else constant, educational attainment is not only crucial for individual wellbeing and development, but it also conveys information about the underlying abilities and life opportunities of people. Moreover, since education attainment is individual specific, using such a construct in

research, especially on children’s individual life chances helps one to “sidestep the problems associated with attributing expenditures that are recorded at the household level to the consumption of particular members (such as orphans that may be residing in these households)” (Case, Paxson, and Ableidinger, 2004: 484). Hence, the use of individual-level data on educational attainment may allow us to predict the life chances of these particular individuals.

A Review of Related Literature

As mentioned earlier, whereas there are a number of studies focused on income and child wellbeing, there are very few explicitly focused on the impact of asset-ownership or financial wealth on child wellbeing, including educational outcomes. This is even more true for studies on poor developing countries like the ones in sub-Saharan Africa. This imbalance could be attributed to several reasons, one being the fact that income, as a variable in research, is clearly defined by national and international standards—hence making it easy for its statistics to be corrected in most studies (see country census data, UN development reports, World Bank reports). Yet, few research projects—be it at national or international level—have clearly defined and/or incorporated asset-ownership or wealth measures. Hence, there are fewer published studies that explicitly connect asset-ownership with child outcomes. Moreover, almost all the published studies on the subject have been focused on western industrialized countries. For example, Hill and Duncan (1987) tested the effects of asset income on the children’s educational attainment, controlling for other factors. Using data from 845 participants involved in the Panel Study of Income Dynamics (PSID), findings reveal that parental income from assets impacts educational outcomes of the children. In addition, Moore and colleagues found that Individual Development Accounts (IDAs), which are subsidized savings programs for poor families, are associated with parents’ being more likely to make educational plans for their

children (Moore, et al., 2001). A longitudinal study of 600 high-risk youths conducted by Stiffman, Dore, Cunningham & Earls (1995) found that the more limited youths' life opportunities are, the less likely they are to change their behavior in a positive direction.

A study by Slonim-Nevo, Auslander, & Ozawa (1995) found that children, in United States, with educational plans for the future and the resources necessary to continue their education are more likely to have clear future orientation and aspirations, personal efficacy and self-esteem, and are more likely to avoid engaging in risky behaviors than those with no aspirations or plans.

Using data from the National Survey of Families and Households (NSFH), Zhan and Sherraden (2003) examined the relationship of mothers' assets (specified as homeownership and savings) to the expectations and children's educational achievement in female-headed households. The study found that single mothers' assets are positively associated with children's educational achievement (including high school graduation), and that this relationship is partially mediated through expectations. The study also found that regression models that simply included income but not assets are underspecified. Green and White (1997) found that controlling for education and income, children (17-18 years of age) whose families owned assets (measured in the form of homeownership), are less likely to drop out of school and to have children out of the wedlock than children whose families are renters.

Although we were able to locate some published studies that connect asset ownership to children's educational outcomes in the western developed countries, we were unable to locate any studies that explicitly connect asset-ownership (combining productive assets and financial wealth) and children's educational outcomes in Africa. It is important to mention that we found one study by Case and colleagues (2004) which attempts to connect orphans, household wealth

and school enrollment. In that particular study, however, Case and colleagues acknowledge that the data set used (the DHS surveys) contain no information on income or financial wealth. ⁱⁱ

This paper explicitly includes income, financial wealth, and assets in its measure of household assets. Throughout the paper, possession of financial wealth and assets will be referred to as “asset-ownership”.

Data Set

The data set used in this study comes from the socio-economic module of the Uganda National Household Survey (UNHS) 1999-2000 collected by the Uganda Bureau of Statistics (UBoS). The UBoS began gathering annual household data in 1992/93 with the Integrated Household Survey (IHS). Trained interviewers at selected households administered questionnaires. The core module consisted of a crop survey with additional modules added, a socio-economic survey and a community survey. Lack of funds forced a scaled down version of the original survey in 1997 and in 1998 the survey was not conducted at all. However, the project was reinstated in 1999 incorporating a larger sample size, which included district level data, and was renamed to its current title (UNHS).

The primary interest of this study is in the socio-economic module. The module provides demographic, financial, and health information at the household level to agencies and organizations to assist them in the monitoring of certain project activities and interventions and to identify factors that may affect the social and economic development objectives of the country. According to UNHS, a household is defined as a group of people who occupy the same living space and share meals together. Many times, households are families, but they do not necessarily have to be, sometimes they consist of other relatives, visitors or individuals living alone. The household level data collects information on each person in the household. The

sample examined in this paper is a subset of the socio-economic household data. Because this study is specifically looking at children's educational outcomes, the sample only includes children ages 13 through 18, the age range during which children in poor households are more likely to drop out of school to help with caretaking activities in the household. Moreover, this age range reflects the period when families are expected to start paying tuition for their children after attending the seven years of free universal primary education in Uganda. The sample size is 9,042.

Dependent Variable

Educational outcomes

To measure the educational outcomes of Ugandan children, a dichotomous variable, school attendance, which determines whether a child is currently attending school or not, is used. Respondents were asked to identify their current school status which included never attended, attended earlier, waiting for results, dropped out and currently attending. Those who chose currently attending and waiting for results, an indication that the child is waiting for national examination results to continue his/her education, are in the currently attending category. Those who chose the other three responses (never attended, attended earlier or dropped out) are in the not currently attending category.

Independent Variables

Socio-economic characteristics

The socio-economic characteristics included in this study are gender of the child, age of the child, father's highest level of education, mother's highest level of education, survival of parents: (i) both parents living; (ii) only one living parent—hereafter referred to as *single orphan*; (iii) no living parent—hereafter referred to as *double orphan*. Other socio-economic characteristics

include total yearly income received (enterprise and employment), receipt of employment income (Does household receive income from employment in addition to or other than enterprise income?). Dummy variables for each of the four regions (Northern, Eastern, Western and Southern) are included to control for location, as is a variable on whether a child lives in rural or urban area.

Asset-ownership

In addition to the above characteristics, several indicators (or measures) of asset-ownership are included in the study and are gathered at the household level. The variables are as follows: inherited land (used as a proxy for land ownership) (Has household head inherited land in his lifetime?), bicycle ownership (Does the household own a bicycle?), ownership of other modes of transportation (Does household own any other modes of transportation? - included in this category may be a motorcycle, motor scooter or a car), ownership of a “viable/income making” micro-enterprise (Does the household have an enterprise?—re-coded in this study to include an enterprise which makes US\$300 or higher in annual sales—the country’s annual per capita income, see World Bank, 2000), participation in savings group (Does household participate in a savings group?), presence of electricity in the household (Does household have electricity?), and type of dwelling (independent house, muzigo, hut, or other).

It should be noted that for this study, asset-ownership is being measured by the possession of assets (specifically, bicycle ownership, ownership of other forms of transportation, ownership of a micro-enterprise and participation in a savings group) in addition to the type of dwelling and the presence of electricity. In Uganda, a bicycle is a common means of transportation, yet many poor households cannot afford them. For those households that do own one, a bicycle is considered an asset. This assessment also holds true for other forms of

transportation. Furthermore, because the type of structure and the presence of electricity in a household, in part, determine the value of a dwelling, these variables may be used as a proxy for the level of household wealth. For example, comparing types of dwellings, overall, a hut and a muzigo is of a lower quality compared to an independent house, suggesting a lower value and thus, less household financial wealth. Moreover, all else constant, a household with electricity would be considered wealthier than a household with no electricity.

Statistical Analysis

As mentioned above, the sample size consists of 9,042 children of which 26 percent (n=2,370) are orphans, defined as children who have lost one or both parents. To address the first question, that is, whether orphan-caretaking households differ from non-orphans-caretaking households on measurable socio-economic (including income) and asset-ownership characteristics, the sample data is subdivided into three groups, non-orphans (n=6,661), single orphans (n=1,784), and double orphans (n=586) and a one-way analysis of variance (ANOVA) is conducted comparing the means of the three groups on the dependent variable as well as the income and asset variables in this study. If any significant differences exist, a Scheffe post hoc test is performed to identify which of the three groups vary.

For research question 2, which constitutes the main analysis of this paper, logistic regression is utilized to determine the relationship between asset-ownership and children's educational outcomes. Logistic regression is a variation of multiple regression used when the dependent variable is dichotomous or categorical (George & Mallery, 2000). The dependent variable in this study is dichotomous with the results of the analysis providing the probability of membership in one of the two dependent variable groups, currently attending school or not currently attending school. Moreover, to distinguish the individual effects of asset-ownership on

children's educational outcomes, the independent variables are entered in two blocks. The first block consists of the socio-economic characteristics including income. These are entered into the model as control variables. The second block introduces the asset variables to the model. This method of analysis allows the combined contribution of the asset variables to be evaluated as well as the individual/socio-economic factors' contributions.

The sequence of this regression is guided by the theoretical context of this study. According to asset theory (Sherraden, 1990:1991), asset-ownership, beyond income, generates positive outcomes for individuals and families, including educational outcomes for children. Therefore, it is presumed that when the asset-ownership variables are added to the model as a second block, the R^2 for the model will significantly increase, implying that asset-ownership, over and above income, is important in influencing the educational outcomes of a child in a given household.

Findings

Descriptive Statistics

The sample in this study (see Table 1) is almost distributed evenly between males (51 percent) and females (49 percent). The mean age is 15 with a distribution between 13 and 18 years of age. Almost, 74 percent of the children have both parents living while 5 percent have only a father living, 14 percent have only a mother living and 6 percent have no living parent. The mean attainment level for father's education among this sample is 5 years (implying mid primary school) with the mean attainment level for mother's education at 3 years (implying lower primary school). The household average yearly income is US\$1,536 (computed from Ugandan shillings). Approximately 31 percent of households also receive income from employment sources in addition to or other than enterprise income. Twenty-eight percent of

households live in the Central region, 16 percent live in the Northern region, 25 percent live in Eastern region, and 31 percent live in the Western region with 66 percent of all households living in rural areas. SEE TABLE 1.

When asset-ownership is assessed (see Table 2), it is shown that 27 percent of household heads inherited land during their lifetime. Fifty-four percent of the sample own a bicycle while 7 percent own some other form of transportation. Owning a micro-enterprise is characteristic of 83 percent of the households. Thirteen percent of households participated in a savings group. Electricity was present in 10 percent of the homes. And for dwelling type, independent housing made up 72 percent, huts made up 19 percent, muzigos consisted of 7 percent, and 3 percent of the dwellings were of other types. SEE TABLE 2.

Are orphan-caretaking households different from non-orphan-caretaking households on measurable socio-economic (including income) and asset-ownership characteristics?

Bivariate Analysis

The results of the ANOVA (see Table 3) indicate that the household means for each of the three groups, single orphan-caretaking households, double orphan-caretaking households and non-orphan-caretaking households, do not vary significantly for the following variables: receipt of employment income, and savings group participation. However, for the variables, children in household currently attending school [F(2, 9010) = 52.92, p< 0.01], total household income [F(2, 9009) = 8.34, p< 0.01], inherited land [F(2, 9010) = 3.75, p< 0.05], bicycle ownership [F(2, 9010)= 54.62, p< 0.01], other forms of transport ownership [F(2, 9010) = 6.17, p< 0.01], micro-enterprise ownership [F(2, 9009) = 9.98, p< 0.01], electricity [F(2, 9002) = 6.09, p< 0.01], and for all four dwelling types, including independent house [F(2, 8998) = 6.21, p< 0.01], Muzigo

[$F(2, 8998) = 10.02, p < 0.01$], hut [$F(2, 8998) = 5.07, p < 0.01$], and other type [$F(2, 8998) = 5.19, p < 0.01$] the means of the three groups significantly differ. SEE TABLE 3.

To determine which of the three groups are significantly different, a Scheffe post hoc test is executed. The results (see Table 3) reveal that overall, compared to both orphan groups, non-orphan children are significantly more likely to attend school ($p < 0.01$). Moreover, non-orphan-caretaking households are significantly more likely to own a bicycle ($p < 0.01$), and to own a micro-enterprise ($p < 0.01$).

In addition, compared to single orphan-caretaking households, non-orphan-caretaking households have a significantly higher income ($p < 0.01$), are significantly more likely to have inherited land ($p < 0.05$), own other forms of transportation ($p < 0.01$), and live in an independent house ($p < 0.01$).

Compared to double orphan-caretaking households, non-orphan-caretaking households are significantly less likely to live in a muzigo ($p < 0.01$) and less likely to have electricity ($p < 0.01$). This finding is, in part, consistent with a finding from an earlier study by Urassa et al. (1997) who found that many orphaned children in rural Tanzania lived in poorer households than their orphan counterparts. Finally, compared to double orphan-caretaking households, single orphan-caretaking households have significantly less income ($p < 0.01$) are significantly less likely to own other forms of transportation ($p < 0.01$), significantly less likely to have electricity ($p < 0.01$), and less likely to live in a muzigo ($p < 0.01$). One explanation could be that since double orphans have no surviving biological parent, they may be more likely to be taken in by households that are more financially stable than households with a single-surviving parent caring for his/her own single-orphaned children. It should, however, be noted that being a double-orphaned child being taken in by a more financially stable household does not necessarily mean that the double-

orphaned children would have the same educational opportunity like their non-orphan counterparts with whom they live. In fact, Case et al. (2004) found that orphaned children in sub-Saharan Africa were “less likely to be enrolled [in school] than are non-orphans with whom they live” (p.483). Given that finding, Case and colleagues concluded that “outcomes for orphans depend on the relatedness of orphans to their household heads. The lower enrollment of orphans is largely explained by the greater tendency of orphans to live with distant relatives or unrelated caregivers” (Case et al., 2004: 483). Indeed, it would be reasonable to assume that the double-orphaned children being taken in by the economically stable households are not being given the opportunity to enroll in schools because they are being used as helpers or maids in the households where they live. Therefore, government policies and programs may need to target all children regardless of orphan status, and economic stability of the households in which they live.

Assets ownership and children’s school attendance

To address the question regarding the impact of asset-ownership on children’s school attendance, two logistic regressions were performed. The first model (model 1) includes only socio-economic characteristics (including income), and the second model (model 2), includes asset variables, using socio-economic characteristics and income as controls. The results from the two models are presented in Table 4.

The impact of socio-economic characteristic on children’s school attendance

Controlling for asset-ownership—several variables seem to be important in predicting school attendance including age, gender, survival of parents, education of parents, receipt of employment income and region. SEE TABLE 4.

For age, as a child gets older, he/she is less likely to attend school. An examination of the odds ratios suggest that compared to 18 year olds, 13 year olds are 7.88 times more likely to

attend school, 14 year olds are 5.11 times more likely to attend, 15 year olds are 2.97 times more likely to attend and 16 year olds are 1.75 times more likely to attend. There is no significant difference between 17 and 18 year olds in school attendance. Compared to females, males are also significantly more likely to attend school. The odds ratio for a male attending school is 1.74 compared to that of a female attending school. Overall, orphans are significantly less likely to attend school than non-orphans. Specifically, being a single orphan and being a double orphan decreases the odds ratio of attending school by a factor of 0.72 and 0.57 respectively. This study also indicates that the higher educational attainment of both, mother and father, increase the likelihood of a child attending school. For every year increase in either mother's or father's education level, the odds ratio of a child attending school increases by a factor of 1.11 and 1.13 respectively. In households that receive employment income in addition to or other than micro-enterprise income, children are significantly less likely to attend school. The odds ratio for children in households receiving additional employment income decreases by a factor of 0.86. The last significant variable for the socio-economic characteristics is regions. Compared to children living in households in the Southern region, children living in households in the Eastern and Northern regions are more likely to attend school. Compared to children in the Southern region, children living in Eastern and Northern regions have an odds ratio of attending school of 1.96 and 1.50, respectively.

The impact of asset-ownership on children's school attendance

The primary aim of this paper is to examine the effects of asset-ownership on children's (including orphans') school attendance, controlling for numerous observable factors. When asset-ownership variables are included in the model as the second "block", the change in the R^2 indicates that asset-ownership helps in predicting school attendance above and beyond the socio-

economic characteristics, including income. When the asset-ownership block is added, the R^2 value increases by 3 percentage points (from 0.29 to 0.32). This increase is statistically significant ($p < 0.01$). This implies that all else constant, asset-ownership improves the likelihood of a child attending school and/or staying in school.

Specifically, controlling for the socio-economic characteristics (including income) of a child's household, a positive relationship exists between several household assets and children's school attendance. In particular, inherited land (land ownership), bicycle ownership, ownership of a micro-enterprise, participation in a savings group and having electricity are all positively associated with school attendance; while living in a muzigo or hut is negatively associated with school attendance. (For details see table 4, model 2).

The findings in this study support several of the hypotheses raised earlier. Specifically, the findings support the following hypotheses.

- (1) *Children in households with independent permanent housing are more likely to attend school compared to children in muzigo or huts.* Compared to living in an independent house, a child living in a muzigo has a 0.67 odds ratio of attending school while a child living in a hut has a odds ratio of 0.65.
- (2) *Children in households that own land are more likely to attend school.* In households where land has been inherited a child is 1.25 times more likely to attend school than a child in a household where land has not been inherited.
- (3) *Children in households with electricity are more likely to attend school.* Having electricity significantly increases a child's odds of attending school by a factor of 1.42.

- (4) *Children in a household with a viable micro-enterprise are more likely to attend school.* Overall, owning a micro-enterprise seems to have a strong effect on school attendance. Children living in households reporting at least US\$300 in micro-enterprise annual income are almost twice (1.86) as likely to attend school compared to children in households reporting micro-enterprises annual income of less than US\$300.
- (5) *Children in households that participate in savings groups are more likely to attend school.* Children living in households that participate in a savings group are 1.38 times more likely to attend school compared to children in households that do not participate in savings groups.
- (6) *Children in households that own at least some form of transportation (for example a bicycle) are more likely to attend school.* In households where a bicycle is owned, children are significantly more likely to attend school. A child's odds of attending school increase by 1.56 if he/she lives in a household possessing a bicycle. Owning other forms of transportation was not significant. Owning other forms of transportation (including car ownership, motorcycle or motorscooters) was not significant probably because of the smaller percentage of people in this group (7%).

Discussion, Implications and Conclusions

This paper points to several household socio-economic factors which influence educational outcomes of children in Uganda. Moreover, all else constant, the paper also points to several household assets which influence the educational outcomes. In this section, we present the implications and conclusions that can be drawn from the findings presented above.

Overall, the results of this study indicate that orphans—be it single orphans or double orphans—are more likely to live in households with limited or less resources including physical assets. The study also indicates that asset-ownership, over and above income, matters in influencing the educational outcomes of a child including the orphaned child. This implies that policy and program interventions that explicitly incorporate economic empowerment through asset-ownership may increase chances for children to stay in school.

Specifically, the study points to several implications. First, the results of the bivariate statistics indicate that being an orphan puts a child at a disadvantage. Regardless of whether a child is a single or double orphan, such a child is less likely to attend school compared to non-orphaned children. This finding is consistent with earlier studies that found that in Africa, orphaned children are disadvantaged in regard to school attendance (see Case et al. 2004; Deininger, et al., 2003; Meier, 2003; UNICEF, 2003). Moreover, some studies have found that even in circumstance where orphans and non-orphans live in the same households, orphans are less likely to be enrolled in school than are their non-orphan counterparts with whom they live (Case, et al., 2004). Indeed, the findings of this paper plus findings from similar studies cited here point to a need for creative policies and programs that would address school attendance among orphaned children. It is important to note that in 1996 (before the data used in this analysis were collected), the Ugandan government introduced universal primary education (UPE), offering free primary education for up to 4 children in every family. Following that policy, primary school enrollment among orphans increased from 68% to 88% (UNICEF, 2003). Unfortunately, although primary education for all children in Uganda is now free, secondary education is not universal or free.ⁱⁱⁱ The UPE policy—as is currently structured—may help explain the findings that as a child gets older, he/she is less likely to attend school, suggesting

that many times after a child completes primary seven (the last grade in primary schooling funded by the government), he/she may not have the resources, monetary or otherwise, to continue to the next level (secondary school education).

The results on gender and education are consistent with several studies which indicate that in sub-Saharan Africa, girls are less likely to be in school compared to their male counterparts (see Barton and Wamai, 1994; World Bank, 2001; Ssewamala, 2004). Programs are therefore needed to address both age and gender gaps in school attendance in Uganda. In the short-run, there may be a need to address these gaps (especially the gender gap) through affirmative-action where government policies and programs deliberately put emphasis on the girl-child's education either by providing the girl child free secondary school education, or by heavily subsidizing their education cost. The current UPE policy in Uganda affords the girl-child a chance to go to school only up to primary seven when parents or caregivers do not necessarily incur much financial cost in terms of paying school fees. However, when it comes to secondary schooling which requires fee-paying, the girl-child is more likely to be disadvantaged, thus a need for affirmative-action programs and policies to afford the girl-child the same educational opportunities of her male counterpart.

Second, orphans are more likely to live in households which are asset-poor. Orphan-caretaking households are less likely to own a bicycle, which is not simply a basic means of transport for most families in Uganda, but a physical asset with multi-purposes. For example, although bicycles are used as a means of transportation, they are also used as something that can ease the workload in households—hence affording children the opportunity to go to school. Moreover, it is not unusual to find families using bicycles as a means of income—by ferrying people from one point to another (e.g., from one village to another). Results from the logistic

regression suggest that children in households where a bicycle is owned are more likely to attend school. One possible explanation for this could be that for children who are not attending boarding schools—but with a longer commute to school—having some form of transportation allows them the ease to travel to and from school. Therefore, one implication is that in order to help poor children in Uganda, innovative ways of creating opportunities for these households to at least own a means of transportation—such as a bicycle—may be needed.

Third, microenterprise, another form of financial wealth, has a significant impact on children's school attendance. Children living in households owning micro-enterprises with annual incomes of more than US\$300 are almost twice (1.83) as likely to attend school compared to children in households reporting micro-enterprises with annual incomes of less than US\$300. This implies that promoting viable income-generating activities among families with children (including those caring for orphaned children) could possibly help enhance school attendance. Indeed, some studies on micro-enterprises in developing countries indicate that participants in these programs do save and plan for their children's future (see Schuler and Hashemi 1994; Ssewamala, 2004).

Forth, a household belonging to a saving group increases the chances of children in that household attending school by a factor of 1.38. Belonging to a savings group and/or having savings may act as a buffer in case of an emergency including paying tuition for the children and school related expenses. This affords the children a chance to attend school. Moreover, most savings groups, for example Rotating Savings and Credit Associations, to which several poor households in Uganda belong, provide these poor households a chance to turn their would-be tiny savings into relatively large lump sums that could easily enable such households to afford education for their children.

In addition, the study finds that several other physical assets, specifically land inheritance, independent housing, and having electricity in a household, are all important in influencing a child's educational attendance. Land is an important asset. It is not only used for food production, but in some places in Uganda it is used explicitly as a cash generating enterprise with land owners using it for backyard subsistence farming, cash cropping and/or renting it out for money. This may bring in small amounts of money not necessarily reported as "income" by the landowners, but very crucial in supplementing a household's meager income. This may partly explain why children in households where land was inherited are more likely to be attending school compared to children in households that did not inherit land. In addition, children residing in muzigos and huts are less likely to go to school than children living in independent housing. The same holds true for children who live in households without electricity. As mentioned earlier, the type of dwelling and the presence or absence of electricity in a household, in part, may be used as a proxy for the level of household wealth. This may explain why children residing in muzigos, those residing in huts, and those residing in households without electricity are less likely to be attending school. These are children living in households that are asset poor. As hypothesized throughout this paper, asset-poverty, beyond income poverty, may have an impact on the children's ability to attend school. For example, children living in households without electricity may find it hard to do their school related work at home (homework) when there are no lights. Therefore, helping families afford a decent living in the form of independent living, having access to electricity through rural electrification programs and/or helping families afford electricity through government aid and/or subsidization may significantly improve school attendance among children in Uganda.

Three limitations of this study should be highlighted. First, the data used in this study were captured at household level. UNHS, defines a household as a group of people who occupy the same living space and share meals together. Many times, households are families, but they do not necessarily have to be, sometimes they consist of other relatives, visitors or individuals living alone. The implication of the definition of a household as used by UNHS is that some of the assets being attributed to the households may not necessarily be helpful to everyone in the household, especially for the orphaned child. Probably the findings, as they relate to children, would have been much stronger if the data were collected at the family level than a household level. Second, in some cases, we use proxies for assets like land ownership. A head of household having inherited land may not necessarily mean that they still owned that land at the time of data collection. They may have disposed off the land. However, since this is a secondary data set, land inheritance was the best proxy for land ownership. A further concern is that these data were collected at one point in time and conditions and responses could be different for different time periods. In other words, the results presented here are simply suggestive. Long-term effects cannot be determined without a more in-depth longitudinal study. These three limitations call for primary data collection with various asset variables clearly specified, and a longitudinal observation.

Conclusion

Given the premise of asset-theory and the findings in this paper, it is justifiable to argue that policy and program interventions aimed at poor households with children should involve providing these households with more than just reactive services. In addition, governments should specifically address the needs of families with orphaned children to make policies and programs as inclusive as possible. Programs and policy should start moving toward empowering

these families with asset-ownership opportunities, such as micro-enterprise development, savings mobilization possibilities (for example facilitating the formation of co-operatives), ownership of bicycles and land, independent housing and electricity. As Townsend (1970) observes, vulnerability is not simply a state of inadequate income, but rather a state of insufficient resources including, *inter alia*, assets and service. By creating asset-ownership opportunities among families in Uganda, both the family and the community networks may be strengthened affording the children a chance to grow in a family and/or familiar community environment.

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Table 1**Socio-economic Characteristics (N=9,042)**

Characteristics	Mean (St. Dev.)	Percentage
<i>Gender</i>		
Female		49
Male		51
<i>Age</i>		
	15.28 (1.75)	
13		20
14		20
15		16
16		15
17		12
18		17
<i>Survival of Parents</i>		
Non-orphan		74
Single Orphan		20
Double Orphan		6
<i>Father's Education in Years</i>		
	5.29 (4.28)	
<i>Mother's Education in Years</i>		
	3.22 (3.69)	
<i>Current School Attendance</i>		
		77
<i>Income Total</i>		
	1,535 (2482.77)	
<i>Receipt of Employment Income</i>		
		31
<i>Region of Residence</i>		
Northern		16
Southern		28
Eastern		25
Western		31
<i>Rural Residency</i>		
		66

Table 2

Asset Ownership Characteristics (N=9,042)

<u>Characteristics</u>	<u>Mean (St. Dev.)</u>	<u>Percentage</u>
<i>Land Inheritance</i>		27
<i>Own a Bicycle</i>		54
<i>Own Other Transportation</i>		7
<i>Micro-enterprise Income Over \$300</i>		83
<i>Household Participates in Savings Group</i>		13
<i>Household Electricity</i>		10
<i>Type of Dwelling</i>		
Independent House		71
Muzigo (rented house)		7
Hut		18
Other Type of Dwelling		3

Table 3**School Attendance, Income, and Assets by Orphan Status (N=9,042)**

Variables	Non-orphans		Single Orphans		Double Orphans	
	<u>M</u> (n=6,661)	<u>SD</u>	<u>M</u> (n=1,784)	<u>SD</u>	<u>M</u> (n=586)	<u>SD</u>
School attendance	0.80 _a	0.40	0.71 _a	0.46	0.67 _a	0.47
Income	1558.16 _a	2515.90	1357.54 _{ab}	2175.93	1810.08 _b	2928.07
Receipt of employment income	0.31	0.46	0.30	0.46	0.34	0.47
Inherited land	0.28 _a	0.49	0.25 _a	0.43	0.27	0.45
Own bicycle	0.57 _a	0.50	0.44 _a	0.50	0.49 _a	0.50
Own other transportation	0.07 _a	0.26	0.05 _{ab}	0.23	0.09 _b	0.29
Micro-enterprise income over \$300	0.84 _a	0.37	0.8 _a	0.40	0.79 _a	0.41
Savings group participation	0.13	0.34	0.13	0.34	0.10	0.31
Household electricity	0.09 _a	0.29	0.09 _b	0.29	0.14 _{ab}	0.34
Independent house	0.73 _a	0.45	0.69 _a	0.46	0.70	0.46
Muzigo	0.06 _a	0.24	0.07 _b	0.26	0.11 _{ab}	0.31
Hut	0.19 _a	0.39	0.21	0.41	0.15 _a	0.36
Other dwelling	0.02 _a	0.15	0.03	0.18	0.04 _a	0.21

Note. Means in a row sharing subscripts are significantly different.

Table 4**Logistic Regression Predicting School Attendance (N=9,042)**

Independent Variable	Model 1			Model 2		
	b	SE	Odds Ratio	b	SE	Odds Ratio
<i>Socio-economic Characteristics</i>						
Male	0.55**	0.06	1.74	0.54	0.07	1.74
Age 18 (reference group)						
Age 13	1.98**	0.14	7.24	2.06**	0.15	7.88
Age 14	1.53**	0.11	4.61	1.63**	0.11	5.11
Age 15	0.98**	0.10	2.65	1.09**	0.11	2.97
Age 16	0.48**	0.10	1.61	0.59**	0.10	1.75
Age 17	-0.20	0.11	0.82	-0.14	0.11	0.87
Non-orphan (reference group)						
Single orphan	-0.40**	0.08	0.67	-0.33**	0.08	0.72
Double orphan	-0.60**	0.14	0.55	-0.57**	0.15	0.57
Father's education level	0.14**	0.01	1.15	0.12**	0.01	1.13
Mother's education level	0.09**	0.01	1.10	0.09**	0.01	1.11
Income	0.00**	0.00	1.00	0.00	0.00	1.00
Receipt of employment income	-0.26	0.07	0.77	-0.15	0.07	0.86
Southern region (reference group)						
Eastern region	0.49**	0.10	1.63	0.67**	0.11	1.96
Northern region	-0.10	0.10	0.91	0.4**	0.13	1.50
Western region	0.21*	0.09	1.24	0.17	0.09	1.19
Rural residency	-0.09	0.09	0.91	-0.19	0.11	0.83
<i>Asset Ownership Characteristics</i>						
Inherited land				0.22**	0.07	1.25
Own bicycle				0.45**	0.07	1.56
Other transportation				0.10	0.17	1.11
Micro-enterprise income over \$300				0.62**	0.09	1.86
Savings group participation				0.32**	0.11	1.38
Household electricity				0.35*	0.17	1.42
Independent house (reference group)						
Muzigo				-0.40*	0.16	0.67
Hut				-0.44**	0.11	0.65
Other dwelling				-0.22	0.23	0.80

* p < .05. ** p < .01.

Endnotes

ⁱ For example, whereas 12.3 percent of all children in sub-Saharan Africa are orphans, Asia and Latin American (including the Caribbean) have 7.3 percent and 6.2 percent respectively (UNAIDS, et al., 2004).

ⁱⁱ The measure of household wealth used by Case et al. (2004) primarily contains ownership of household durables like a radio, a television, a refrigerator, and ownership of a means of transportation, including a car, a bicycle and a motorcycle.

ⁱⁱⁱ Schooling in Uganda consists of seven years of primary school followed by six years of secondary school (4 years lower secondary/ordinary level, and 2 years upper secondary/advanced level).