



Asset ownership among households caring for orphans and vulnerable children in rural Zimbabwe: The influence of ownership on children's health and social vulnerabilities

Thomas M. Crea^{a*}, Margaret Lombe^a, Laura A. Robertson^b, Lovemore Dumba^c, Phyllis Mushati^d, J.C. Makoni^e, Gideon Mavise^f, Jeffrey W. Eaton^b, Brighton Munatsi^d, Constance A. Nyamukapa^b and Simon Gregson^b

^aGraduate School of Social Work, Boston College, Chestnut Hill, MA, USA; ^bSchool of Public Health, Imperial College London, London, UK; ^cDepartment of Social Services, Harare, Zimbabwe; ^dBiomedical Research and Training Institute, Harare, Zimbabwe; ^eDiocese of Mutare Community Care Program (DOMCCP), Mutare, Zimbabwe; ^fCatholic Relief Services Zimbabwe, Harare, Zimbabwe

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The high prevalence of human immunodeficiency virus/acquired immune deficiency syndrome in sub-Saharan Africa has resulted in a dramatic increase in orphans and vulnerable children (OVC) over the past decade. These children typically rely on extended family networks for support, but the magnitude of the crisis has resulted in traditional familial networks becoming overwhelmed and more economically and socially vulnerable. Previous research consistently demonstrates the positive influence of household asset ownership on children's well-being. Using data from impoverished households caring for OVC in rural Manicaland Province, Zimbabwe, this study explores the influence of household asset ownership on OVC health vulnerability (HV) and social vulnerability (SV). Findings indicate that asset ownership is associated with significantly lower SV, in terms of school attendance and birth registration. Yet, assets do not emerge as a direct influence of OVC HV as measured by disease and chronic illness, although having a chronically ill adult in the household increases HV. These findings suggest that asset ownership, specifically a combination of fixed and movable assets, may offset the influence of other risk factors for children's SV.

Keywords: orphans and vulnerable children (OVC); assets; child well-being

Introduction

The high prevalence of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) in sub-Saharan Africa (SSA) has produced a dramatic increase in orphans and vulnerable children (OVC) over the past decade (Lombe & Ochumbo, 2008). OVC typically rely on extended family networks for support (Foster et al., 1995) but the magnitude of the crisis has resulted in traditional familial networks being overwhelmed and more economically and socially vulnerable (Ssewamala, Han, Neilands, Ismayilova, & Sperber, 2010). Households must rely on family resources, including household assets, to offset the heightened risks posed to OVC (Ssewamala et al., 2010). A growing number of social assistance programs focus on cash transfers (CTs) and asset building for households, with positive results related to children's vulnerabilities (Chowa, Ansong, & Masa, 2010). The purpose of the current study is to explore the extent to which household asset holding may contribute to decreased health vulnerability (HV) and social vulnerability (SV) for OVC in rural Zimbabwe.

Assets and child well-being

Household asset ownership represents a household's ability to establish security during times of economic stress (Zhan & Sherraden, 2003) and may buffer children from poor health and educational outcomes (Lerman & McKernan, 2008). To build assets among those living in extreme poverty, social assistance programs include village banking, individual development accounts, children's development accounts (CDAs), CT schemes, and conditional cash transfer (CCT) schemes (Ssewamala et al., 2010). Below, we review literature pertaining specifically to the relationship between assets and children's health and social vulnerabilities in the context of sub-SSA.

Assets and health vulnerability

Individuals in asset-poor households are at greater risk of developing health problems often because of lack of health care (Adato & Bassett, 2009). Studies of social assistance programs in SSA have shown positive impacts on health. In South Africa, Goudge et al. (2009) found that for individuals facing chronic

*Corresponding author. Email: creat@bc.edu

or prolonged illnesses, households that accessed CTs were able to withstand the livelihood shocks of illness. Similarly, a study in Malawi found that households receiving CTs reported improved health for adults and children, greater use of health care, and an accumulation of a greater number of productive assets (Miller, Tsoka, & Reichert, 2008). In Uganda, Ssewamala et al. (2010) found that participation in Child Savings Accounts (CSAs) significantly reduced adolescents' intentions to engage in risky sex behaviors. Research outside of SSA has also supported the link between asset ownership and improved child health outcomes (Chowa et al., 2010).

Assets and social vulnerability

Among economically vulnerable families, asset holding is directly related to children's educational outcomes (Filmer & Pritchett, 1999). In a study of children currently enrolled in school in Uganda, Curley, Ssewamala, and Han (2010) found that OVC participating in CDA saved money and increased their assets. In a related study, Ssewamala et al. (2010) found that adolescents who knew their caregivers were saving on their behalf performed better in school.

Beyond education, OVC may lack birth certification which would allow them access to school enrollment as well as health and other services, placing them at further risk of SV. Twine, Collinson, Polzer, and Kahn. (2007) found that poorer households in South Africa were less likely to apply for child-support grants targeting the poor, often because they lacked official documentation. Yet, further research is needed to measure the extent to which greater household assets contribute to increased social protection.

Conversely, increasing household wealth may contribute to a greater demand for child labor, and a reduction in school attendance. In a Malawi study, Hazarika and Sarangi (2005) found that households participating in microcredit programs needed children to manage household affairs to a greater extent as business enterprises expanded. In a Ghana study, Blunch and Verner (2001) found that greater assets predicted lower child labor. Thus, the beneficial aspects of asset holding may differ across context and by the type of asset under consideration (Chowa, Ansong, & Masa, 2009).

Pilot CCT project: Manicaland, Zimbabwe

Despite recent declines in HIV/AIDS prevalence (Halperin et al., 2011; Gregson et al., 2011), the situation for OVC in Zimbabwe remains critical

(UNICEF, 2011). As in other parts of SSA, OVC in Zimbabwe are at greater risk for mortality (Watts, Lopman, Nyamukapa, & Gregson, 2005), disease (Watts et al., 2007), and psychosocial distress (Nyamukapa et al., 2008). In rural Manicaland Province in Eastern Zimbabwe, OVC are at greater risk of leaving primary school (Nyamukapa, Foster, & Gregson, 2003; Nyamukapa & Gregson, 2005) and adolescent female OVC are less likely to attend secondary school (Gregson et al., 2005; Nyamukapa et al., 2008).

In 2008, the Manicaland Cash Transfer Pilot commenced, under the auspices of Imperial College London and the Biomedical Research and Training Institute (BRTI; Robertson, Nyamukapa, Mushati, Munyati, & Gregson, 2011). The purpose of the project was to measure the health and social impacts of conditional and unconditional CTs on OVC in rural Manicaland Province, Zimbabwe. Orphans were defined as maternal (mother deceased; father alive); paternal (father deceased; mother alive); or double (both parents deceased). This distinction is important, given the existing lack of clarity in the research over the defining the term "orphan", and allows for an examination of the differential impacts of orphan status on children's outcomes (Sherr et al. 2008). In September 2009, researchers conducted a rapid baseline census. The present study uses data collected during this baseline phase.

Research questions

This study is guided by two research questions: (1) What influence does household asset ownership have on OVC HV (measured by the presence of disease or chronic illness) and (2) What influence does asset ownership have on OVC SV (measured by school attendance and birth registration).

Methods

Sample

A community-randomized controlled trial of CCTs was conducted in Manicaland Province, Zimbabwe, in 2009 and 2010, by researchers at the BRTI and Imperial College London. Targeting vulnerable households was accomplished by completing a rapid baseline census survey in three districts: Nyanga, Makoni, and Mutasa. This survey was followed by a community-verification exercise in which household reports on eligibility criteria were confirmed or otherwise at community meetings. Only those households identified as eligible in both processes (the BRTI/IC census and the community verification) were treated as eligible for the CT program.

A household is defined as individuals who live within the same home and eat from the same pot. Vulnerable households, eligible to be included in the study, must contain children under the age of 18 years, not be in the wealthiest 20% of households, and have met one or more of the following criteria: (1) being in the poorest quintile of households (bottom 20%); (2) having one or more orphans; (3) household head is under age 18 years; (4) at least one member is chronically ill; or (4) at least one member is disabled. The study was approved by the Medical Research Council of Zimbabwe (MRCZ/A/1518) and the Imperial College Research Ethics Committee (ICREC_9_3_10). Of the 11,820 households completing a baseline census questionnaire, 10,536 (89%) reported caring for at least one child. A total of 29,442 children, aged 0–17 years, were enumerated in the census. The sample used in the current study contained 10,319 households for which asset data were available (97.9%); these households included 28,519 children (96.9%).

Measures

Data collected in the rapid baseline census included movable household assets (television, radio, bicycle, motorbike, and car), non-movable assets (water system, house type, latrine type, floor type, and electricity), ages and gender of adults and children, number of persons living in the household, and disability and chronic illness status of adults and children (yes/no for each). Orphan status was coded as maternal only (yes/no), paternal only (yes/no), or double (both maternal and paternal; yes/no). Further information was collected on the following indicators of children's well-being: having, or having applied for, a birth certificate (yes/no); and, for children ages 6–17 years, having attended school at least 90% of days in the past month (yes/no). Assets were summed for each household to produce an asset index, following a methodology from a previous study which showed high correlations between a "summed score" approach and more sophisticated multidimensional scaling analysis (see Lopman et al., 2007). This wealth index resulted in a measure which ranged from 0.01 to 1.00 (higher is better) and has been used successfully for previous analyses of data from this population (Lopman et al., 2007). A measure of HV was computed for each child, ages 0–17 years, by summing whether he or she had a chronic illness (1 – yes, 0 – no), and whether he or she had a disability (1 – yes, 0 – no). A measure of SV was computed for each child by summing whether a school-aged child, ages 6–17 years, had regular school attendance

(1 – yes, 0 – no) and whether a child had, or had applied for, birth registration (1 – yes, 0 – no).

Analysis

One-way ANOVAs were used to examine household characteristics by terciles of asset ownership based on the distribution of the asset index in this sample (low = 0.01–0.18; mid = 0.19–0.25; high = 0.26–0.54). One-way ANOVAs were also used to examine child characteristics by asset ownership terciles. With children as the units of analysis, nested within households, two mixed linear models were fitted, using SAS Proc Mixed, to predict children's HV (Model 1) and SV (Model 2). While the resulting outcome variables are discrete, not continuous, conducting multilevel models with a Poisson distribution was not possible given the violation of the assumption of independence of observations. Predictors in each of these models included the following variables: asset index, number of children in the household, maternal and paternal orphan status, double orphan status, number of adults in household, number of disabled adults, number of chronically ill adults, mean age of adults, child's age, and child's gender. For Model 1, the full sample of children was used ($N = 26,181$ for which all covariates were available). For Model 2, the sample was restricted to school-aged children only, that is those ages 6 years and older ($N = 18,895$ for which all covariates were available).

Results

The mean asset index score for the 10,319 households was 0.24 ($SD = 0.14$). The mean number of children tended to be higher in the lowest and middle terciles ($p < 0.001$), while the number of adults tended to be higher as asset increased ($p < 0.001$) (see Table 1). The mean number of orphans was highest for households in the mid-range tercile ($p < 0.001$). The mean number of adults with disabilities was lower for the wealthiest households ($p < 0.05$) while the mean number of adult chronic illnesses was highest for mid-range wealth ($p < 0.001$).

Of the 28,519 children, boys and girls were evenly represented overall and across categories of asset ownership, with ages ranging from 0 to 17 years ($M = 9.35$, $SD = 4.73$) (see Table 2). Mean age of children increased along with asset ownership ($p < 0.001$). Children's HV did not significantly differ across terciles of asset ownership, but SV significantly decreased along with ownership ($p < 0.001$).

The first linear mixed model used HV as the dependent variable (see Table 3). Intraclass correla-

Table 1. Household characteristics and asset ownership.

	Range	Asset index (terciles)			
		Total (<i>N</i> = 10,319)	Low (<i>N</i> = 3480)	Mid (<i>N</i> = 3484)	High (<i>N</i> = 3355)
		<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)
Number of children**	1–13	2.74 (1.45)	2.87 (1.49)	2.72 (1.43)	2.62 (1.42)
Number of orphans**	0–8	0.87 (1.23)	0.88 (1.30)	0.96 (1.26)	0.76 (1.14)
Number of adults**	1–14	2.87 (1.51)	2.70 (1.42)	2.95 (1.53)	2.97 (1.55)
Number of adults with disabilities*	0–6	0.09 (0.32)	0.10 (0.32)	0.10 (0.34)	0.08 (0.31)
Number of adults with chronic illness**	0–5	0.39 (0.65)	0.35 (0.61)	0.41 (0.66)	0.40 (0.66)
Age of adults**	18–99	37.74 (11.23)	36.54 (10.80)	39.49 (12.06)	37.12 (10.48)

* $p < 0.05$; ** $p < 0.001$.

tion (ICC) for this model was 0.187, indicating that 18.7% of the variance could be accounted for by autocorrelation of children within households. Controlling for other covariates, assets did not significantly predict HV. Child's maternal or paternal orphan status each predicted higher HV ($p < 0.001$) with maternal orphans' having a larger magnitude; double orphan status did not significantly predict increased HV. Having chronically ill adults in the household predicted higher HV ($p < 0.0001$). Boys were more likely than girls to have higher HV ($p < 0.05$), but predicted HV decreased with more children in the household ($p < 0.05$). Post-hoc analyses were conducted to test the influence of predictors on child's chronic illness (yes/no) as the dependent variable using a generalized linear mixed model. The emerging patterns were similar to the original model, except that greater number of children in the household predicted a greater likelihood of a child's having a chronic illness ($p < 0.001$).

The second linear mixed model used SV as the dependent variable. ICC for this model was 0.427. Controlling for other covariates, greater assets predicted lower SV ($p < 0.0001$). Greater number of

children, adults, and disabled adults each predicted higher SV ($p < 0.01$). Maternal and paternal orphan status each predicted higher SV ($p < 0.0001$) with maternal status emerging as a stronger predictor. Double orphan status predicted decreased SV ($p < 0.01$).

Discussion

This study provides important insights regarding the relationship between household assets and OVC well-being. For school-aged children, household assets seemed to emerge as a significant protective factor against SV. This finding supports other research which shows beneficial impacts of assets on school enrollment (Curley et al., 2010; Filmer & Pritchett, 1999), perhaps related to households' greater ability to pay for school fees and uniforms (Chowa et al., 2010). Greater school enrollment, plus the ability to access birth registration, allows an increased measure of social protection for these children (Twine et al., 2007). Yet, having a disabled adult in the household, plus a greater number of dependents, likely increases

Table 2. Child characteristics and asset ownership.

	Range	Asset index (terciles)			
		Total (<i>N</i> = 28,519)	Low (<i>N</i> = 10,034)	Mid (<i>N</i> = 9670)	High (<i>N</i> = 8815)
		<i>M</i> (SD) or %	<i>M</i> (SD) or %	<i>M</i> (SD) or %	<i>M</i> (SD) or %
Child's gender					
Male	–	49.9	50.0	49.6	50.1
Female	–	50.1	50.0	50.4	49.9
Age of children*	0–17	9.35 (4.73)	8.98 (4.72)	9.63 (4.70)	9.48 (4.76)
Health vulnerability (disability + chronic illness)	0–2	0.06 (0.24)	0.06 (0.24)	0.06 (0.24)	0.06 (0.25)
Social vulnerability (school attendance + birth registration)*	0–2	0.31 (0.52)	0.41 (0.57)	0.28 (0.50)	0.23 (0.47)

* $p < 0.001$.

Table 3. Predictors of children's health and social vulnerabilities.

	Model 1 (health vulnerability; ICC = 0.187; <i>N</i> = 26,181; ages 0–17 years)		Model 2 (social vulnerability; ICC = 0.426; <i>N</i> = 18,895; ages 6–17 years)	
	<i>B</i> (SE)	<i>p</i>	<i>B</i> (SE)	<i>p</i>
Intercept	0.068 (0.009)	<0.0001	0.533 (0.026)	<0.0001
Assets	−0.005 (0.013)	0.674	−0.541 (0.033)	<0.0001
Number of children in Household (HH)	−0.003 (0.001)	0.013	0.009 (0.003)	0.0023
Orphan status				
Maternal only	0.036 (0.008)	<0.0001	0.186 (0.017)	<0.0001
Paternal only	0.019 (0.004)	<0.0001	0.039 (0.009)	<0.0001
Double (maternal and paternal)	−0.007 (0.010)	0.489	−0.065 (0.021)	0.002
Number of adults in HH	−0.005 (0.001)	<0.0001	−0.013 (0.003)	<0.0001
Number of disabled adults in HH	0.010 (0.006)	0.081	0.042 (0.014)	0.003
Number of chronically ill adults in HH	0.048 (0.003)	<0.0001	0.011 (0.007)	0.117
Mean age of adults in HH	−0.001 (0.001)	0.004	−0.002 (0.000)	<0.0001
Child's age	0.000 (0.000)	0.664	−0.008 (0.001)	<0.0001
Child's gender (male vs. female)	0.006 (0.003)	0.041	−0.005 (0.006)	0.449

the chances that a child will seek work to support the household rather than attend school (Chowa et al., 2010). OVC in these circumstances may be doubly vulnerable: their educational horizons are shortened by needing to support the household, and with lack of education comes a higher risk of disease and risky behaviors (Birdthistle et al., 2008; Gregson et al., 2005) which increase both their SV and HV.

In contrast to the relationship between assets and SV, household assets did not significantly predict OVC HV, a pattern that runs counter to findings of some studies (see Adato & Bassett, 2009), but may also reflect a dynamic in which HV is less subject to economic factors than SV (Watts et al., 2007). The strongest predictor of OVC increased HV (beyond orphan status) proved to be greater numbers of chronically ill adults in the household. To disentangle these relationships, post-hoc analyses were conducted examining how OVC outcomes compared between households with and without chronically ill adults (independent samples *t*-tests). Children in households with chronically ill adults had higher HV ($p < 0.001$) and SV ($p < 0.05$). One plausible explanation may be that a chronic illness is shared between adults and children, given the larger context of a major HIV epidemic with limited prevention of mother-to-child transmission services. Another explanation may be that chronically ill adults lack the ability to access needed medical care for children in the household, resulting in higher incidences of disease and chronic illness. Yet, the Government of Zimbabwe and UNICEF sponsor outreach vaccination campaigns with reasonable coverage levels, and healthcare costs at child clinics tend to be free or cheap, and accessible by foot.

In addition, households with chronically ill adult members also tended to own more assets ($p < 0.01$), another counterintuitive finding which deserves further inquiry. Previous research has shown a complicated relationship between HIV and wealth. Early in the epidemic more educated and wealthy people were at higher risk of infection, although increasingly, poorer households seem to be emerging as higher risk (Gregson, Waddell, & Chandiwana, 2001; Hargreaves et al., 2008).

Both maternal and paternal orphan status predicted higher HV and SV for children, findings which reinforce the importance of clearly defining orphan status (Sherr et al., 2008). Yet, double orphan status also emerged as a predictor of *reduced* SV. While loss of one parent is an important aspect of vulnerability (Skinner et al., 2006), if double orphans do not fall through the extended family safety net entirely (Foster et al., 1995), they may be allocated to better-off relatives and therefore be more likely to receive measures of social protection. Family circumstances may be less important in terms of HV, as vaccinations, for example, typically are administered by UNICEF and Ministry of Health Outreach Program.

Limitations

The data used in this study were collected as part of a baseline survey, prior to households' receiving CTs. Thus, this study's primary limitation is its reliance on cross-sectional data which do not allow for comparisons over time and do not allow for inferences of causality from assets to HV and SV. The relationship between CTs and children's outcomes are also

unmeasured in this study. The relationships between assets and OVC HV and SV may be influenced by unmeasured variables. For example, although assets have been shown to be a stronger predictor of child well-being than income (Zhan & Sherraden, 2003), income as a variable was not available for inclusion in this study. Although vulnerable households enrolled in this study did not receive any support from CT program prior to the beginning of the study, they may have received assistance in the past either from other programs or sources, which allowed them to increase their stock of assets. Unfortunately, these data do not allow for an examination of the source of assets, or how long assets have been owned. It is also possible that the use of linear probability models with discrete outcomes has produced biased estimates. As a test, two logit models were specified using the same predictors and outcomes. Without exception, the direction and significance of all covariates were the same as the linear mixed models, although the effects were larger especially for the SV model. This difference in magnitude may be explained by the auto-correlation of children's outcomes within households, which were unaccounted for in the logit models. Future studies could benefit from examining whether CTs to households with chronically ill adults result in greater asset holding, and the extent to which these assets predict lower HV following CTs. This question is particularly salient given research which shows that CTs to such groups can contribute to greater resiliency (Goudge et al., 2009) and improved health (Miller et al., 2008).

Conclusion

As one of the few studies of its kind (Goudge et al., 2009; Miller et al., 2008; Ssewamala et al., 2010), and the largest to date, to our knowledge, which relies on a large-scale representative sample, this study provides important insights about the impact of assets on OVC well-being in SSA. Amongst the most vulnerable households, asset holding seems to buffer the influence of other risk factors on OVC SV, even prior to receipt of CTs. Future research could benefit from an examination of how CTs, and CCTs, influence SV as mediated by asset building. The question thus becomes, to what extent do CTs influence OVC well-being directly, or do households use social protection to build stores of assets as a buffer against future shocks (Goudge et al., 2009)? Future research could also benefit from exploring the more complex relationship, in this sample, of asset holding and OVC HV. The question here is whether, and how, CTs may reduce HV above and beyond asset holding.

It is also important to note the context in which this baseline survey was conducted. The period of data collection occurred in the immediate aftermath of a period of record levels of hyperinflation in Zimbabwe, and an associated meltdown in health and social services. In this context, it is possible that existing household assets served as a buffer to economic shocks (Goudge et al., 2009), perhaps by selling or exchanging existing assets to cover the costs of basic needs. Future research in this population could also benefit from exploring the extent to which asset holding served as a protective factor during a severe economic crisis.

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