



**Understanding Children's Work**  
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# Orphanhood and child vulnerability ZAMBIA

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September 2004



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**Working Paper**

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As part of broader efforts toward durable solutions to child labor, the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), and the World Bank initiated the interagency Understanding Children's Work (UCW) project in December 2000. The project is guided by the Oslo Agenda for Action, which laid out the priorities for the international community in the fight against child labor. Through a variety of data collection, research, and assessment activities, the UCW project is broadly directed toward improving understanding of child labor, its causes and effects, how it can be measured, and effective policies for addressing it. For further information, see the project website at [www.ucw-project.org](http://www.ucw-project.org).

This paper is part of the research carried out within UCW (Understanding Children's Work), a joint ILO, World Bank and UNICEF project. The views expressed here are those of the authors' and should not be attributed to the ILO, the World Bank, UNICEF or any of these agencies' member countries.

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# **Orphanhood and child vulnerability**

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### **ABSTRACT**

A large proportion of Zambia children must grow up in the absence of one or both birth parents. In all, nearly one-fifth (18 percent) of children aged 0-14 years of age are orphans, one of the highest orphan rates in the Sub-Saharan Africa region. There is also a large group of children, accounting for about eight percent of total 5-14 year-olds, who are fostered, i.e., children who are not orphans but nonetheless live in a separate household from their parents. This Country Brief explores the effect of orphanhood and fostering on child vulnerability. Evidence is presented indicating that orphanhood increases child vulnerability on two fronts: it makes it more likely that a child is denied schooling and more likely that a child is exposed work. Becoming a double orphan reduces of probability of attending school only by six percentage points and increases the probability of work only by almost three percentage points. The loss of only one parent has a smaller but still significant effect on school attendance and work.

# **Orphanhood and child vulnerability**

## **ZAMBIA**

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## 1. INTRODUCTION

1. A full understanding of child vulnerability in the Sub-Saharan Africa region is not possible without an examination of its links with the HIV/AIDS pandemic. AIDS orphans now number some six million in the region, and for every child orphaned by AIDS, another is caring for a sick relative or is affected by the disease in some other way. The overwhelming majority of these children must perform some form of work to support themselves and/or their families, interfering with or precluding schooling. The worst off are forced onto the street, where they become involved in prostitution or other harmful and exploitative forms of work. AIDS-affected children have fewer opportunities to acquire human capital, meaning that they are also more vulnerable, and have more difficulty securing gainful employment, when they become youths and young adults.

2. Although these general facts are clear, little research exists exploring the concrete links between AIDS orphans, schooling, and child labour, or the implications of these links for policy. This Country Brief for Zambia is one of a five-country series examining links between orphanhood and child vulnerability in specific national contexts. The series forms part of a broader research effort designed to help improve policy responses to the AIDS orphan phenomenon and to child vulnerability issues generally. The Country Brief draws primarily on data from the SIMPOC Child Labour Survey conducted in Zambia during 1999.

## 2. NATIONAL CONTEXT

3. Zambia, with a total population of 10.4 million (2003), suffers widespread poverty and social deprivation. An estimated 73 percent of the population live below the poverty line, and over one-quarter of young children are malnourished. Almost one in five children die before reaching their fifth birthday, and life expectancy stands at just 36.9 years. A rebound in the copper sector and improved crop yields have helped the Zambia emerge from a humanitarian crisis which, in 2002, saw 2.3 million people in need of emergency food aid. Pockets of food insecurity nonetheless remain in the country.

Table 1. Basic indicators: Zambia

	1999	2002	2003
Population, total	9.7 million	10.2 million	10.4 million
Population growth (annual %)	2.1	1.7	1.5
Life expectancy (years)	38.5	36.9	..
Fertility rate (births per woman)	..	5.1	..
Under 5 mortality rate (per 1,000 children)	..	182.0	..
Child malnutrition, weight for age (% of under 5)	..	28.1	..
Prevalence of HIV (female, % ages 15-24)	..	..	..
Literacy total (% of ages 15 and above)	77.3	79.9	..
Primary completion rate, total (% age group)	..	59.1	..
Net primary enrolment (% relevant age group)	66.6	..	..
Net secondary enrolment (% relevant age group)	..	..	..
Access to improved water source (% of total pop.)	..	..	..
Access to improved sanitation (% of urban pop.)	..	..	..
GNI per capita, Atlas method (current US\$)	330.0	340.0	380.0
GDP growth (annual %)	2.2	3.3	5.1
Total debt service (% of exports of goods and services)	16.1	27.1	..
Aid per capita (current US\$)	64.4	62.5	..

Source: *World Development Indicators database*, August 2004

4. Zambia is one of the countries worst-affected by the HIV/AIDS pandemic. An estimated 16 percent of the population is HIV-positive, severely compromising the country's social and economic development prospects. Zambia is host to around 630,000 children under the age of 17 years orphaned due to AIDS. The HIV/AIDS pandemic has been officially recognized as an emergency in the Zambia, and the Government has signed a statutory instrument allowing the local manufacturing of generic anti-retroviral drugs (ARVs) during the five-year emergency period.

### 3. EXTENT AND NATURE OF ORPHANHOOD

#### 3.1 Orphan rate

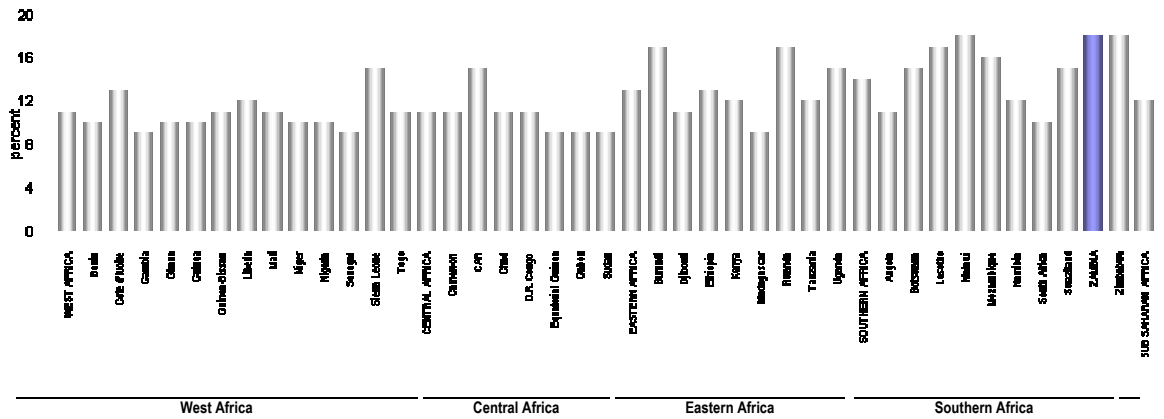
5. A large proportion of Zambia children must grow up in the absence of one or both birth parents. In all, nearly one-fifth (18 percent) of children aged 0-14 years of age, 874,000 in absolute terms, are either "single" (i.e., one parent deceased) or "double" (i.e., both parents deceased) orphans. This orphan rate ranks alongside those of Malawi and Zimbabwe as highest in the Sub-Saharan Africa region (Figure 1). AIDS is the largest single factor behind this high orphan rate, responsible for two out of every three (65 percent) orphan cases.

6. Figure 2 illustrates the rise in orphanhood since 1990, both in absolute terms and as a proportion of the overall child population. The figure also illustrates that this rise was driven entirely by HIV/AIDS. Indeed, in the absence of AIDS, orphanhood would have fallen during the 1990-2001 period, from 8.8 to 3.5 percent of the child population, and from 358,000 to 302,000 children in absolute terms, due to improvements in the mortality rates of adults during the traditional child-bearing



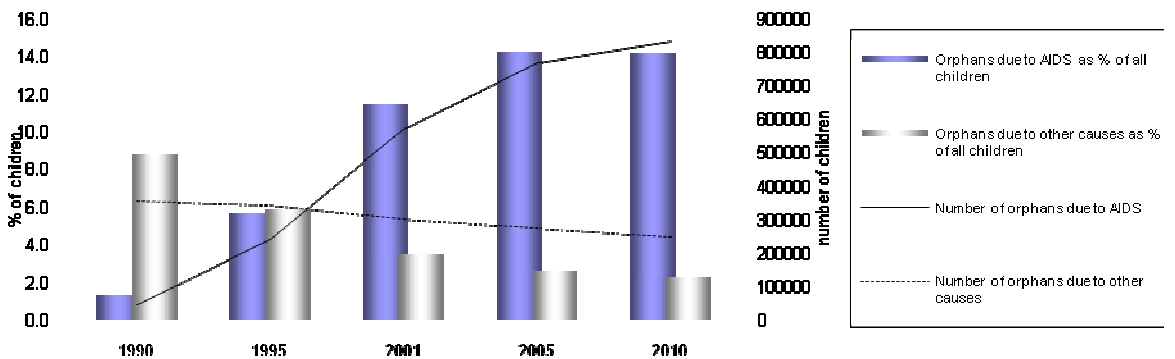
years. UN projections indicate that orphan numbers will continue to rise through to 2010, albeit at a decreasing rate, again driven entirely by AIDS.

Figure 1. Orphans as a percentage of all children under 15, Sub-Saharan Africa region, 2001



Source: UNICEF, *Africa's Orphaned Generations*, November 2003

Figure 2. Orphanhood trends in Zambia, 1990-2010



Source: UNAIDS, UNICEF and USAID, *Children on the Brink 2002: A Joint Report on Orphan Estimates and Program Strategies*, July 2002.

7. Table 2 provides a breakdown of the child population aged 5-14 years by orphanhood status according to results of the 1999 Child Labour Survey. About 16 percent of children from this age group are orphans. The proportion of children that have lost a father (10 percent) is over three times higher than the proportion of children who have lost a mother (three percent). More than three percent of 5-14 year-olds have lost both parents. Orphan rates are slightly higher in urban compared to rural areas for all three orphan categories (i.e., maternal, paternal and double). There is also a large group of children, accounting for about eight percent of total 5-14 year-olds, who are fostered, i.e., children who are not orphans but nonetheless live in a separate household from their parents. This group is also vulnerable to abuses and therefore merits policy attention.

Table 2. Orphanhood status, children aged 5-14 years, Zambia

Residence	sex	% of total children aged 5-14 years					
		Non-orphans		Single orphans <sup>(2)</sup>		Double orphan <sup>(5)</sup>	Total
		Not fostered	Fostered <sup>(1)</sup>	Maternal orphan <sup>(3)</sup>	Paternal orphan <sup>(4)</sup>		
Rural	male	76,65	8,04	3,34	9,46	2,52	100
	female	76,39	8,59	2,47	9,24	3,3	100
	total	76,52	8,32	2,91	9,35	2,91	100
Urban	male	76,84	6,17	2,89	10,15	3,96	100
	female	73,12	8,01	3,54	10,75	4,58	100
	total	75,04	7,06	3,2	10,44	4,26	100
Total	male	76,72	7,34	3,17	9,71	3,06	100
	female	75,2	8,38	2,86	9,79	3,77	100
	total	75,97	7,85	3,02	9,75	3,41	100

Notes: (1) Parents alive, but child living in a different household from them; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

### 3.2 Living arrangements

8. Research suggests that orphans' living arrangements can play a critical role in determining their well-being and safety.<sup>1</sup> Children who lose a parent through death do not necessarily remain in the care of the surviving parent. Traditions of patrilineage, for example, may dictate that paternal orphans remain with paternal relatives rather than their mothers. Living arrangements may also be affected by remarriage and migration of the surviving parent.<sup>2</sup>

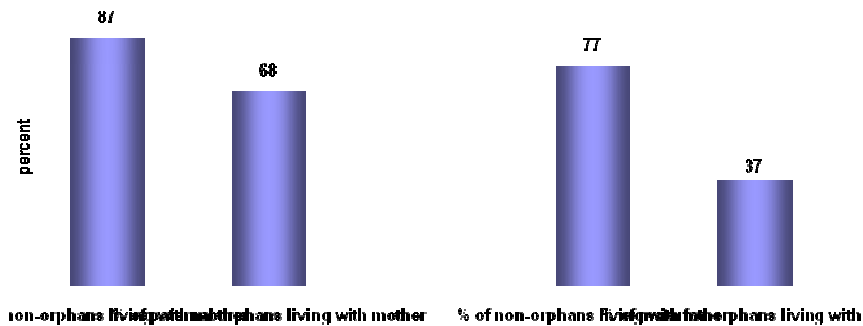
9. In Zambia, it is maternal orphans that are most at risk of becoming *de facto* double orphans by being also separated from their surviving father. Sixty three percent of maternal orphans do not live with their surviving fathers, while about 32 percent of paternal orphans do not live with their surviving mothers (Figure 3). By comparison, 87 percent of non-orphans live with their mothers, and 77 percent of non-orphans live with their fathers.

10. Unfortunately, the data do not allow the identification of the relationship between actual or *de facto* double orphans and their caretakers. It is therefore not possible to analyze the effects of relationship with household head on child vulnerability in more detail.

<sup>1</sup> See, for example: Case A., Paxson C., and Ableidinger J. (2002). *Orphans in Africa*. Center for Health and Well-Being, Research Program in Development Studies, Princeton University. This study finds, across a large number of Sub-Saharan Africa countries, that the degree of relatedness between orphans and their adult caregivers is highly predictive of children's outcomes.

<sup>2</sup> Foster 1996, Ntozi and Nakayiwa 1999 and Monk 2000, as cited in Case A., Paxson C., and Ableidinger J. (2002). *Orphans in Africa*. Center for Health and Well-Being, Research Program in Development Studies, Princeton University.

Figure 3. Residence patterns for orphans and non-orphans



Source: UNICEF, *Africa's Orphaned Generations*, November 2003.

11. It should also be stressed that the estimates cited in Figure 3 stem from a household survey, and therefore do not reflect orphaned children not living in formal households. An additional group of Zambia orphans lives on the street, either because the initial care arrangement was unsustainable, or because the child had no other options. A rapid assessment of street children in Lusaka indicated that over half, 58 percent, were either single or double orphans.<sup>3</sup>

#### 4. ORPHANHOOD, CHILD LABOUR AND SCHOOLING: DESCRIPTIVE EVIDENCE

12. Orphanhood can affect the time use patterns of children in many possible ways. As parents succumb to AIDS, children may have to allocate more time to income generation, food production, household chores or caring for other family members. At the same time, AIDS-stricken families may be less able to afford school costs, or be less willing to lose valuable hours of children's time each day to study. The effects may vary according to whether it is the mother, father or both that are stricken. The loss of the mother may mean that the child must shoulder more of the burden of running the household, while the loss of the father might mean that the child must work outside the home to compensate for the father's lost earnings. Double orphans moving to a new household may be under particular pressure to work to make up for the extra burden that their presence represents.

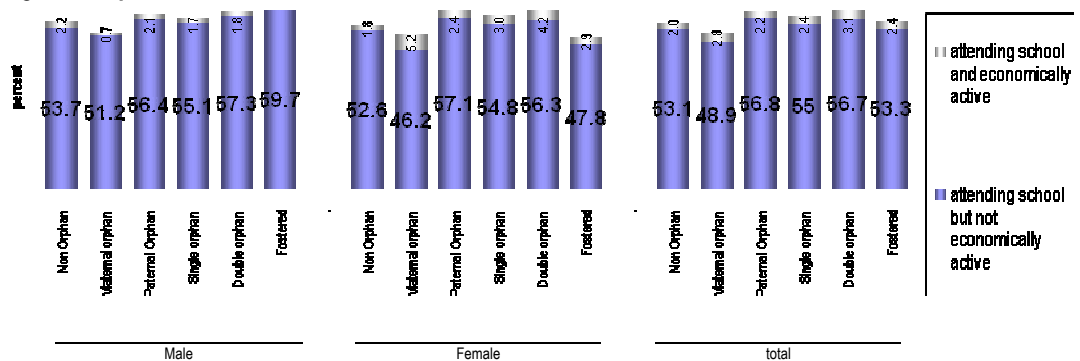
13. To what extent are these effects present in Zambia? Descriptive evidence of associations between orphanhood status and time use is presented below, while Section 5 looks at orphanhood status as a determinant of time use decisions relating to children. It should be stressed that descriptive statistics may offer only limited evidence about the vulnerability of orphans to child labour and school drop out. For reasons that will be discussed below, regression analysis is needed to disentangle the effects of orphanhood on children's activities.

<sup>3</sup> *Zambia 1999 Child Labour Survey Country Report*, Republic of Zambia Statistical Office and ILO/IPEC, 1999, as cited in UNICEF, *Africa's Orphaned Generations*, November 2003.

#### 4.1 Orphanhood and schooling

14. Losing the opportunity to attend school may be particularly damaging for orphans, denying them a sense of continuity and security in the short term, and an opportunity to acquire knowledge and skills needed for adult life in the long term. But in Zambia, orphanhood does not appear to have any obvious effect on children's ability to attend school. Indeed, orphans attend school in slightly higher proportion than non-orphans for all categories of orphans except maternal orphans (Figure 4). It should be recalled, however, that these figures do not consider the unknown number of double orphans living outside any formal household, a group not captured by the 1999 Child Labour Survey. Few of these children are reached by the schooling system or other State institutions.

Figure 4. Orphanhood status and school attendance



Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

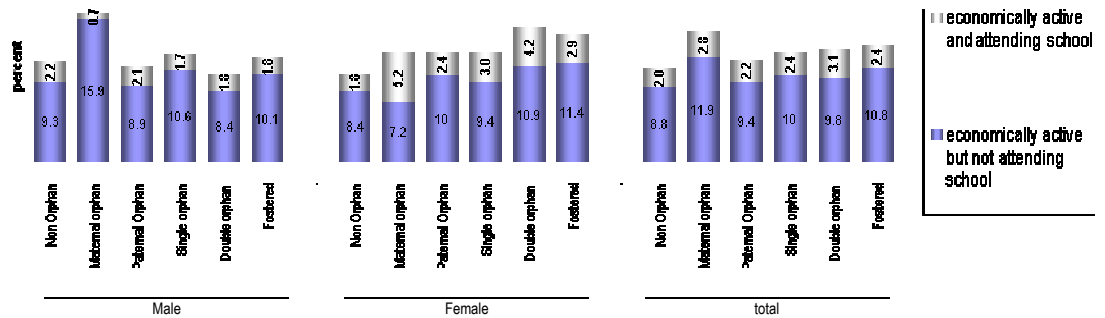
#### 4.2 Orphanhood and child labour

15. Estimating child labour rates is complicated by the fact that international conventions do not target all children's work as child labour for elimination.<sup>4</sup> Child labour is a narrower concept that refers only to negative or undesirable forms of work that should be eliminated. In addition, while there is a general agreement that, at least to a certain extent, household chores should be included in the definition of child labour, as of today there are no internationally accepted measures of child labour that incorporate household chores. For these reasons, estimates are presented below for three different indicators of child labour: economic activity only, household chores, and a composite index that includes as child labourers children performing economic activity (excluding light work) and children performing household chores for more than 28 hours a week.

16. Figure 5 presents the results relative to the economic activity. It indicates that orphans are more involved in economic activity than non-orphans, but that the difference in economic activity rates between the two groups is relatively small. Figure 5 also shows that involvement in economic activity differs little by orphan category.

<sup>4</sup> For a detailed discussion of this point, see *Child Labour Indicators used by the UCW Project: An Explanatory Note* ([www.ucw-project.org](http://www.ucw-project.org)) and *Towards an inter-agency consensus on child labour Indicators: A discussion note* (unpublished).

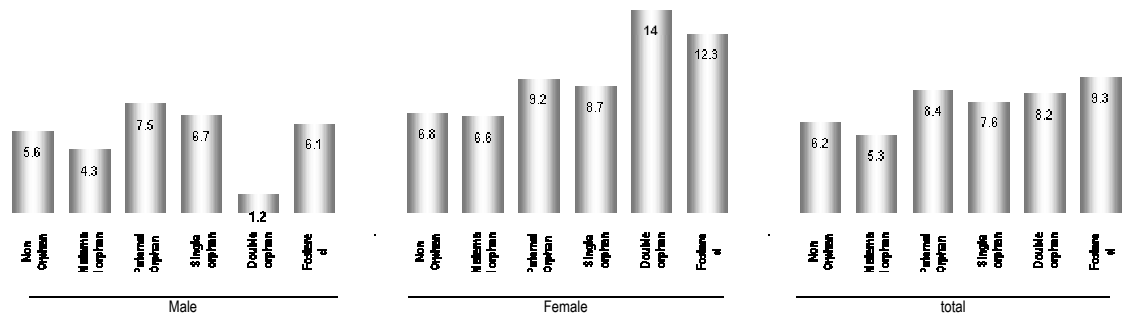
Figure 5. Orphanhood status and involvement in economic activity



Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

17. Involvement in household chores is presented in Figure 6. It shows that the highest levels of involvement in household chores are among female double orphans and female foster children. These groups are about twice as likely to be performing household chores as female non-orphans, suggesting that girls frequently must take on responsibility for chores when they are forced to join new households. Male double orphans have the lowest level of involvement in chores. Only one percent of males who have lost both parents must perform chores, compared to almost six percent of male non-orphans. There is no clear association between orphanhood status and household chores for other categories of orphans.

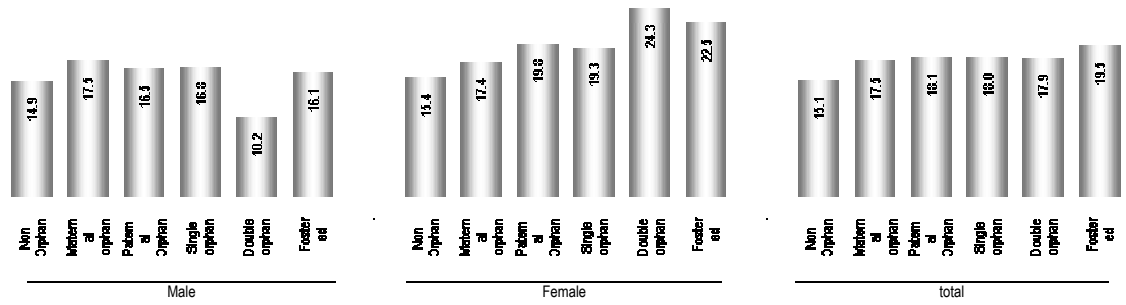
Figure 6. Orphanhood status and involvement in household chores



Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

18. Two points should be kept in mind, however, in interpreting these results. First, as noted above, the estimates of economic activity involvement do not include children living outside any formal household, the group most likely to be forced into work in order to eke out an existence. Second and more importantly, the vulnerability of orphans to child labour might be confounded by the fact that simple averages mix together children characterized by largely different individual and household characteristics, and by the fact that vulnerability and orphanhood status vary significantly with these characteristics.

Figure 7. Orphanhood status and child labour<sup>(1)</sup>



Note: (1) All economically active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week), in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

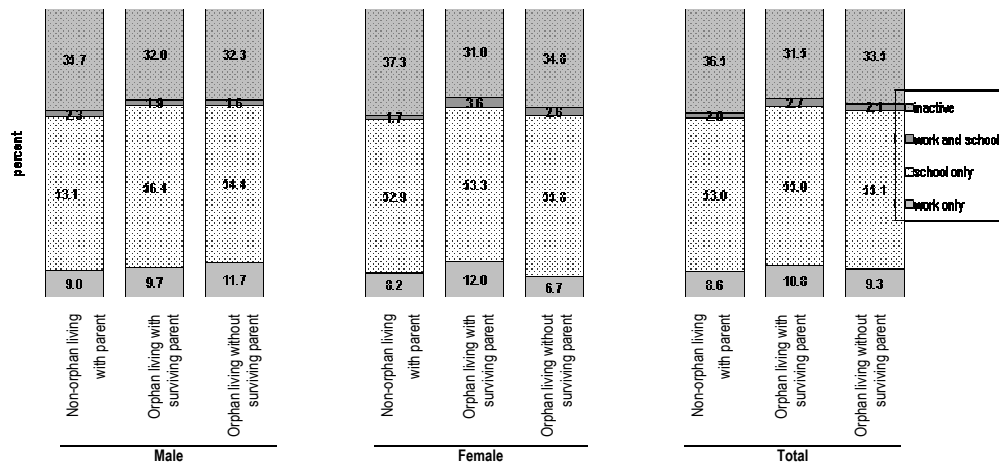
Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

19. Decisions concerning children’s time use depend on numerous individual and household factors that influence both orphans and non orphans. Again, regression analysis is needed to control for these factors and disentangle causal relationships that determine children’s vulnerability. The issue of causality is taken up in Section 5.

### 4.3 Orphanhood, time use and living arrangement

20. Does an orphan’s living arrangement also influence his or her time use? It is easy to imagine circumstances when this would be the case. An external household, for example, obliged to take in an orphan could see the child as an additional burden and put him or her to work in order to ease this burden. A surviving parent, on the other hand, might have greater interest in investing in the child’s education and in the longer-run returns that this education will generate. Opposite outcomes are of course also possible. A household in position to take in an outside child may be better off financially and therefore less in need of the returns to a child’s labour, while a household that has lost an adult breadwinner may be in greater need of the labour of its child members in order to compensate.

Figure 8. Children’s time use by orphanhood status and living arrangement



Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

21. Data from Zambia show that links between living arrangement and time use differ somewhat by sex. For male orphans, rates of full-time work are slightly higher, and rates of full-time schooling are slightly lower, for orphans separated from their surviving parent compared to orphans still living with their surviving parent. For female orphans, however, the opposite patterns holds true. Rates of work are much higher, and rates of full-time school are slightly lower, among those still living with the surviving parent.

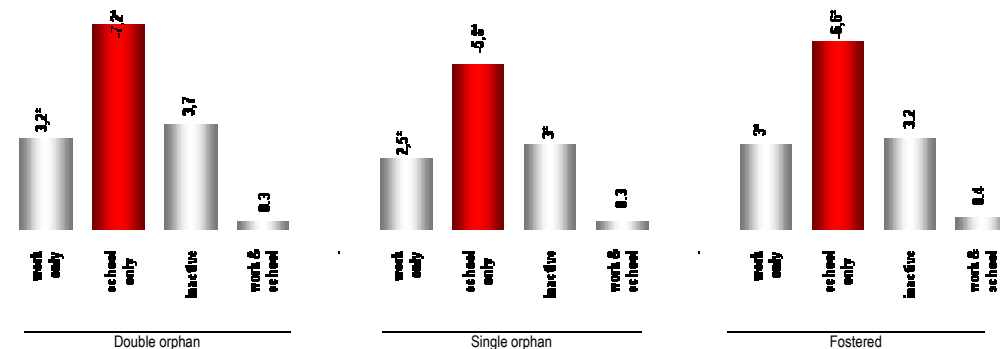
## 5. ORPHANHOOD AS A DETERMINANT OF CHILD LABOUR AND SCHOOLING DECISIONS: ECONOMETRIC EVIDENCE

22. This section examines orphanhood as a determinant of child labour and schooling decisions. The results described are derived from a bivariate probit model, whose details are reported in the Appendix. We have estimated the probability of working (both in economic activity and performing household chores<sup>5</sup>) as a function of a set of individual, household and individual characteristics that are well known to be relevant for such decisions.<sup>6</sup>

23. Marginal effects calculated after a bivariate probit suggest a clear causal relationship between orphanhood status and time use in Zambia. Becoming an orphan appears to increase child vulnerability on two fronts: it makes it more likely that a child is denied schooling and more likely that a child is exposed to work. Becoming a foster child has a similar effect, reducing the probability of school attendance and increasing the probability of work.

24. Compared to non-orphans, single orphans are six percentage points less likely to attend school only. Single orphans forced out of school appear to move both to the “inactive” category and to the category of work only. Becoming a single orphan makes it three percentage points more likely to be “inactive” and 2.5 percentage

Figure 9. Influence of orphanhood status on children’s time use<sup>(1)</sup> (marginal effects after bivariate probit)<sup>(2)</sup>



Source: UCW calculations based on Zambia Child Labour Survey, 1999

points more likely to be involved in work only. It should be kept in mind that the “work” category includes both children performing economic activity and children performing key household chores such as water fetching and fuel wood collection.

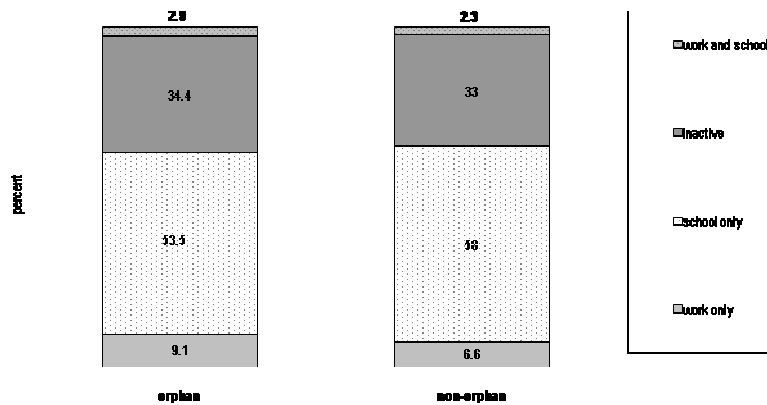
<sup>5</sup> Results are very similar if we consider economic activity only. In this case part of the effect of orphanhood is on the

<sup>6</sup> For a more detailed discussion see Cigno et al. [Child Labor Handbook](#), SP 0206, The World Bank

25. Losing both parents has a slightly larger effect on time use. Becoming a double orphan reduces the probability of attending school only by seven percentage points, while making it three percentage points more likely that a child works only.

26. Simulated probabilities, shown in Figure 10, are another tool for analyzing the causal relationship between orphanhood status and time-use. Marginal effects provide a measure of how a child's time allocation would change if he or she became an orphan (single or double). Simulated probabilities, on the other hand, provide an indication of how much higher on average is orphans' vulnerability to work and lost schooling once individual and household characteristics are controlled for.

Figure 10. Children's activity by orphanhood status: Simulated probabilities



Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999

27. The simulated probabilities highlight the fact that orphans and non-orphans differ greatly in terms of the probable time use. Compared to non-orphans, and controlling for various individual and household characteristics (see full model in Annex II), orphans are about one-third more likely to be involved in full-time work, and slightly less likely to be attending school full-time. Orphans and non-orphans are almost equally likely to be inactive.



## ANNEX I: DETAILED STATISTICAL TABLES

Table A1. Orphanhood status and time use, children aged 5-14 years, Zambia

sex	Time use	Non-orphans	Maternal orphan <sup>(2)</sup>	Paternal orphan <sup>(3)</sup>	Single orphan	Double orphan <sup>(5)</sup>	Fostered <sup>(1)</sup>
male	Work only	9.3	15.9	8.9	10.6	8.4	10.1
	Work and study	53.7	51.2	56.4	55.1	57.3	59.7
	Study only	2.2	0.7	2.1	1.7	1.8	1.8
	Inactive	34.9	32.2	32.7	32.6	32.5	28.4
female	Work only	8.4	7.2	10.0	9.4	10.9	11.4
	Work and study	52.6	46.2	57.1	54.8	56.3	47.8
	Study only	1.8	5.2	2.4	3.0	4.2	2.9
	Inactive	37.1	41.3	30.4	32.8	28.7	37.9
total	Work only	8.8	11.9	9.4	10.0	9.8	10.8
	Work and study	53.1	48.9	56.8	55.0	56.7	53.3
	Study only	2.0	2.8	2.2	2.4	3.1	2.4
	Inactive	36.0	36.4	31.6	32.7	30.3	33.5

Notes: (1) Child living in a different household from biological parents; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999.

Table A2. Orphanhood status, living arrangement and time use, children aged 5-14 years, Zambia

Sex	Living arrangement	Work only	Study only	Work and study	Inactive
male	Non-orphan living with parent	9.0	53.1	2.3	35.7
	Orphan living with surviving parent	9.7	56.4	1.9	32.0
	Orphan living without surviving parent	11.7	54.4	1.6	32.3
female	Non-orphan living with parent	8.2	52.9	1.7	37.3
	Orphan living with surviving parent	12.0	53.3	3.6	31.0
	Orphan living without surviving parent	6.7	55.8	2.6	34.8
total	Non-orphan living with parent	8.6	53.0	2.0	36.5
	Orphan living with surviving parent	10.8	55.0	2.7	31.5
	Orphan living without surviving parent	9.3	55.1	2.1	33.5

Notes: (1) Child living in a different household from biological parents; (2) Child's mother or father deceased; (3) Child's mother deceased; (4) Child's father deceased; (5) Child's mother and father deceased.

Source: UCW calculations based on Zambia, SIMPOC Child Labour Survey, 1999.

Table A3. Children's work\* 5-14, by sex and residence

Area	Male	Female	Total
Urban	7.1	9.6	8.3
Rural	20.7	20.5	20.6
<b>Total</b>	<b>15.7</b>	<b>16.6</b>	<b>16.1</b>

\*Children's Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A4. Children aged 5-14, carrying out household chores for more than 28 hrs/week, by sex and residence

Area	Male	Female	Total
Urban	3.4	5.9	4.6
Rural	6.6	7.7	7.2
<b>Total</b>	<b>5.4</b>	<b>7.1</b>	<b>6.2</b>

Table A5. Children aged 5-14, by sex, type of activity and residence

Area	Type of activity	Male	Female	Total
Urban	Work* only	3.8	5	4.4
	study only	59.3	57.7	58.5
	Work* and study	2.8	3.8	3.3
	no activities	34.1	33.5	33.8
Rural	Work* only	14.4	13.8	14.1
	study only	46	43.8	44.9
	Work* and study	5.1	5.7	5.4
	no activities	34.5	36.7	35.6
Total	Work* only	10.5	10.6	10.6
	study only	51	48.8	49.9
	Work* and study	4.2	5	4.6
	no activities	34.3	35.5	34.9

\*Children's work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A7. Children aged 5-14, by orphanhood status, type of activity and sex

Sex	Type of activity	Total	Non Orphan	Orphan	Maternal Orphan	Paternal Orphan	Double Orphan
Male	Work* only	11.2	10.5	11.6	16.2	10.1	8.3
	study only	54	50.9	51.4	51.6	51.4	57.1
	Work* and study	4.4	4.3	5	1.1	6.3	2.5
	no activities	30.4	34.2	31.9	31.1	32.2	32.1
Female	Work* only	14.3	10.4	12.5	11.4	12.7	16.3
	study only	47.5	49	48.9	44.3	50.3	51
	Work* and study	6.8	4.9	6.8	5.8	7.1	7.7
	no activities	31.4	35.8	31.8	38.4	29.9	25
Total	Work* only	12.8	10.5	12	14.1	11.4	12.8
	study only	50.7	49.9	50.2	48.3	50.8	53.7
	Work* and study	5.6	4.6	5.9	3.3	6.7	5.4
	no activities	30.9	35	31.9	34.4	31.1	28.1

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A8. Children economically active\* aged 5-14, by orphanhood status, type of activity and sex

Sex	Type of activity	Total	Non Orphan	Orphan	Maternal Orphan	Paternal Orphan	Double Orphan
Male	Work* only	10.2	9.3	10.6	15.9	8.9	8.4
	Work* and study	1.8	2.2	1.7	0.7	2.1	1.8
	Hhchores	4.6	4.0	5	2.2	6.0	1.0
Female	Work* only	10.3	8.4	9.4	7.2	10.0	10.9
	Work* and study	3.2	1.8	3	5.2	2.4	4.2
	Hhchores	8.1	5.3	7	5.3	7.5	10.1
Total	Work* only	10.2	8.8	10	11.9	9.4	9.8
	Work* and study	2.5	2.0	2.4	2.8	2.2	3.1
	Hhchores	6.4	4.7	6	3.6	6.7	6.0

\* all economic active children aged 5-14, including children aged 12-14 involved in light work (<14hrs/week), excluding children aged 5-14 performing only household chores

Table A9. Children aged 5-14, by orphanhood status, type of activity and residence

Area	Type of activity	Non Orphan	Orphan	Total
Urban	Work* only	4.4	5.1	4.4
	study only	58.6	61.3	58.7
	Work* and study	3.2	5.6	3.3
	no activities	33.8	27.9	33.5
Rural	Work* only	14	19.2	14.1
	study only	44.9	47.3	45
	Work* and study	5.3	5.2	5.3
	no activities	35.8	28.3	35.5
Total	Work* only	10.5	12.8	10.6
	Study only	49.9	53.7	50
	Work* and study	4.6	5.4	4.6
	no activities	35	28.1	34.8

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A10. Children aged 5-14, by orphanhood status, residence and type of activity

Area	Type of activity	Non Orp. living with parent	Orp living with survival parent	Orp living without s. parent
Urban	Work* only	3.6	5.6	8.0
	study only	59.3	58.2	53.6
	Work* and study	3.2	2.3	4.6
	no activities	33.9	33.9	33.9
Rural	Work* only	13.7	16.3	14.7
	study only	44.5	44.5	49.4
	Work* and study	5.1	8.7	5.6
	no activities	36.7	30.5	30.4
Total	Work* only	10.0	11.8	12.2
	Study only	49.9	50.3	50.9
	Work* and study	4.4	6.0	5.2
	no activities	35.7	31.9	31.7

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A11. Children aged 5-14, by orphanhood status, sex of the household head and type of activity

Sex of Household Head	Type of activity	Non Orphan	Orphan	Total
Male	Work* only	9.9	11.3	10.0
	study only	50.8	57.6	51.0
	Work* and study	4.6	6.2	4.6
	no activities	34.6	24.9	34.4
Female	Work* only	12.9	15.3	13.0
	study only	45.9	47.1	46.0
	Work* and study	4.5	4.1	4.4
	no activities	36.7	33.5	36.5
Total	Work* only	10.5	12.8	10.6
	Study only	49.9	53.6	50.1
	Work* and study	4.6	5.4	4.6
	no activities	35.0	28.2	34.8

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A12. Orphans aged 5-14, by household expenditure quintile, type of activity and sex

Sex	Type of activity	Household expenditure quintile					Total
		poorest	second	middle	fourth	richest	
Male	Work* only	11.9	14	7	2.8	1.5	8.3
	Study only	36.6	42	71.9	63.9	90.9	57.1
	Work* and study	2	5	1.8	0	3	2.5
	no activities	49.5	39	19.3	33.3	4.5	32.1
Female	Work* only	26.1	21.3	24.5	1.6	3.6	16.3
	Study only	29.5	38.2	39.8	64.5	85.7	51
	Work* and study	12.5	2.9	5.1	11.3	9.8	7.7
	no activities	31.8	37.5	30.6	22.6	0.9	25
Total	Work* only	18.5	18.2	18.1	2.2	2.8	12.8
	Study only	33.3	39.8	51.6	64.2	87.6	53.7
	Work* and study	6.9	3.8	3.9	5.2	7.3	5.4
	no activities	41.3	38.1	26.5	28.4	2.2	28.1

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A13. Non orphans aged 5-14, by household expenditure quintile, type of activity and sex

Sex	Type of activity	Household expenditure quintile					Total
		poorest	second	middle	fourth	richest	
Male	Work* only	18.6	13.9	5.6	6.1	1.7	10.6
	study only	33.6	46.2	55.2	62.4	72.9	50.9
	Work* and study	3	4.4	5.8	3.6	4.8	4.2
	no activities	44.8	35.5	33.4	28	20.6	34.3
Female	Work* only	17.6	12.2	6.3	7	2.8	10.4
	study only	30.3	43.7	54.9	60.1	74.7	48.9
	Work* and study	4.5	4.6	5.2	6	4.2	4.9
	no activities	47.6	39.5	33.6	26.9	18.3	35.8
Total	Work* only	18.1	13.1	6	6.5	2.2	10.5
	study only	31.9	45	55	61.3	73.8	49.9
	Work* and study	3.8	4.5	5.5	4.7	4.5	4.6
	no activities	46.2	37.4	33.5	27.5	19.5	35

\*Work is defined as all economic active children aged 5-14, excluding children aged 12-14 involved in light work (<14hrs/week) in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

## ANNEX II: RESULTS FROM THE ESTIMATES

Table A14. Marginal effects after bivariate probit estimation (work defined as all economic active children aged 5-14 years)

variable	work only		study only		work and study		inactive	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
age	-0.016	-2.9	0.582	33.3	0.020	9.6	-0.586	-34.6
age2	0.001	4.0	-0.026	-29.2	-0.001	-9.1	0.026	30.0
female*	-0.005	-1.5	-0.007	-0.6	-0.001	-1.9	0.014	1.3
urban*	-0.056	-11.2	-0.013	-0.9	-0.013	-8.2	0.081	6.1
Household size	0.001	1.0	0.009	4.8	0.0003	4.3	-0.010	-5.7
Ln expenditure pc	-0.025	-12.0	0.149	22.7	0.001	2.7	-0.126	-20.1
Hh. head not educated*	0.055	5.3	-0.251	-12.4	-0.002	-1.7	0.198	10.1
Hh. head primary education*	0.030	6.1	-0.153	-11.4	0.0003	-0.4	0.124	9.7
Double orphan*	0.025	2.0	-0.062	-2.0	0.002	0.9	0.035	1.2
Single orphan*	0.016	2.6	-0.048	-2.8	0.001	1.0	0.030	1.9
Foster*	0.019	2.2	-0.057	-2.6	0.001	0.8	0.038	1.8
Central*	0.023	2.1	-0.127	-4.3	-0.001	-0.7	0.104	3.8
Copperbelt *	0.073	5.2	-0.190	-7.0	0.004	1.7	0.114	4.4
Eastern*	-0.019	-2.9	-0.168	-5.9	-0.006	-7.3	0.192	7.1
Luapula*	-0.011	-1.3	-0.081	-2.7	-0.004	-4.1	0.095	3.3
Lusaka*	-0.020	-2.5	-0.186	-6.5	-0.006	-7.0	0.212	7.8
Northern*	-0.001	-0.2	-0.121	-4.4	-0.004	-4.0	0.126	4.8
Southern*	0.027	2.5	-0.083	-3.0	0.001	0.8	0.055	2.1
Western*	-0.022	-3.2	-0.018	-0.6	-0.004	-4.4	0.044	1.5

*Table A15. Marginal effects after bivariate probit estimation (work defined as all economically active children aged 5-14 years, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week)*

variable	work only		study only		work and study		inactive	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
age	-0.037	-5.5	0.544	32.2	0.066	17.5	-0.573	-35.3
age2	0.002	6.5	-0.024	-28.4	-0.003	-15.3	0.025	30.4
female*	0.010	2.2	-0.012	-1.1	0.003	1.7	-0.001	-0.1
urban*	-0.048	-8.4	0.002	0.1	-0.026	-9.4	0.072	5.6
Household size	0.000	-0.3	0.007	4.1	0.001	3.6	-0.008	-4.9
Ln expenditure pc	-0.032	-12.6	0.145	22.8	0.006	5.4	-0.120	-20.1
Hh head not educated*	0.067	5.9	-0.244	-12.8	-0.008	-3.4	0.186	9.9
Hh. head primary education *	0.040	7.1	-0.148	-11.4	-0.003	-1.2	0.110	9.1
Double orphan*	0.032	2.2	-0.072	-2.5	0.003	0.7	0.037	1.4
Single orphan*	0.025	3.3	-0.058	-3.5	0.003	1.1	0.030	2.0
Foster*	0.030	3.0	-0.066	-3.1	0.004	1.0	0.032	1.6
Central*	0.063	3.9	-0.142	-5.0	0.005	0.9	0.074	2.7
Copperbelt *	0.105	6.2	-0.200	-7.7	0.011	2.0	0.083	3.3
Eastern*	0.031	2.3	-0.166	-6.0	-0.009	-2.7	0.145	5.5
Luapula*	0.031	2.2	-0.093	-3.2	0.0003	0.0	0.062	2.3
Lusaka*	0.003	0.2	-0.185	-6.6	-0.018	-6.5	0.201	7.4
Northern*	0.040	2.9	-0.135	-5.0	-0.003	-0.7	0.098	3.8
Southern*	0.057	3.9	-0.102	-3.7	0.010	1.8	0.035	1.4
Western*	-0.013	-1.2	-0.030	-1.0	-0.010	-2.6	0.053	1.9