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The influence of orphanhood on children's schooling and labour: evidence from Sub Saharan Africa

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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.

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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ABSTRACT

This paper explores possible links between orphanhood and two important determinants of child vulnerability - child labour and schooling - using household survey data from 10 Sub Saharan Africa countries. It forms part of a broader, on-going effort to improve policy responses to the orphan crisis and to child vulnerability generally. Marginal effects calculated after a bivariate probit indicate that becoming an orphan makes it generally less likely that a child has the opportunity to attend school and generally more likely that a child is exposed to work. The size and significance of these effects varies considerably across the 10 analysed countries, but in only one - Lesotho - does orphanhood appear to have no significant effect on either work involvement or school attendance. Double orphans appear to be especially vulnerable to schooling loss and work exposure in the analysed countries, underscoring the importance of the distinction between single and double orphans for policy purposes.

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1. INTRODUCTION

1. A full understanding of child vulnerability in Sub-Saharan Africa is not possible without an examination of its links with the region's orphan crisis. AIDS orphans number some 11 million in the region (UNAIDS/UNICEF, 2002), 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 dramatic rise in orphanhood is overwhelming the ability of families, communities, civil societies and governments to ensure orphans' safety and well-being. Most orphaned 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. HIV/AIDS-affected children have fewer opportunities to acquire human capital, meaning that they will also be more vulnerable, and will have more difficulty securing gainful employment, when they become youths and young adults.

2. Although these general facts are clear, little research exists shedding light on the concrete links between orphanhood and child labour. Understanding these links is vital for galvanizing and guiding policy on the orphan issue. Governments in Sub Saharan Africa have to date been slow to respond to the orphan crisis, in part because the crisis is being shouldered primarily by families and communities, out of public view. At the close of 2003, of the 40 Sub Saharan Africa countries with generalized epidemics, only six had a policy in place on orphans and other vulnerable children.

3. This paper explores possible links between orphanhood and two important indicators of child vulnerability – child labour and schooling – using household survey data from 10 Sub Saharan Africa countries (Angola, Burundi, Central African Republic, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, Swaziland and Zambia). It forms part of a broader, on-going effort to improve policy responses to the orphan crisis and to child vulnerability generally.

4. The paper is structured as follows. Section 2 reviews current literature on orphanhood and child labour in the SSA region, and Section 3 details data sources and methodology used in the subsequent analysis. Section 4 presents data relating to the extent and nature of the orphanhood phenomenon in the 10 selected countries, including orphan rates, distribution of orphans by category (i.e., maternal, paternal or double), and orphans' living arrangements. Section 5 presents descriptive evidence of links between orphanhood and children's time use, and in particular evidence of links between orphanhood, work involvement and school attendance. Section 6 examines orphanhood as a determinant of child labour and schooling decisions, based on estimation of a bivariate probit model. Section 7 concludes.

2. ORPHANHOOD AND VULNERABILITY: EXISTING EVIDENCE

5. An orphan crisis has dramatically emerged in Africa, largely associated with the HIV/AIDS epidemic. The death of prime-age-adults due to HIV/AIDS has orphaned millions of children, jeopardizing their well-being and compromising their opportunities. According to revised 2000 estimates from the U.S. Census Bureau more than 44 million children in 34 developing nations will likely have lost one or both parents by 2010, principally due to HIV/AIDS and complicating illnesses. At the end of 2003, an estimated 40 million around the world were living with HIV/AIDS, including the 5 million people who acquired HIV in 2003. The most affected region remains Sub-Saharan Africa, which is home to nearly three-quarters of the worldwide population of people living with HIV/AIDS.

6. In the region, 12 percent of all children are orphans, compared with 6.5 percent in Asia and 5 percent in Latin America and the Caribbean.

7. Recent Demographic and Health Surveys (DHS) indicate that in Uganda, Malawi, Mozambique, Zambia and Zimbabwe, nearly 15 percent of all children under the age of 15 have lost one or both parents and more than 20 percent of 15-year-old children in these countries are orphans. Though the numbers are already staggering, the orphan crisis in Sub-Saharan Africa is just starting to unfold. Due to today's young adults' growing number of deaths, the number of orphaned children will increase. By 2010 an estimated 20 million children under the age of 15 will be orphans because of HIV/AIDS, nearly twice the number orphaned in this age group in 2001 (UNICEF, 2003).

8. The largest increases will be in countries with the highest HIV rates, such as Botswana, Lesotho and Swaziland, where the national adult HIV prevalence has risen higher than thought possible, exceeding 30 percent.

9. Even where HIV prevalence has stabilized or declined, the number of orphans will continue to grow or at least remain high for several years, reflecting the long time lag between HIV infection and death. Because of the long incubation period the positive correlation between orphan rates and HIV prevalence (the percent of people living with HIV) presents a great deal of variation and countries differ on how orphan rates have changed over time. Countries where HIV has increased rapidly and recently may have high HIV prevalence but low AIDS mortality with only a small impact on orphan rates (e.g., South Africa). In countries with mature epidemics, like Uganda, HIV prevalence may have declined or stabilized in part because of high mortality rates. Thus, the percentage of children orphaned may be high even though HIV prevalence has declined. This pattern is confirmed for Uganda by Case and colleagues (2004)[1] which found that although estimates of orphanhood in the country were quite high both in 1995 and 2000 and have remained stable, Uganda experienced substantial declines in HIV prevalence during the 1990s. These results are also consistent with reports on the success of Ugandan prevention programs.

10. HIV/AIDS is just one of several causes of orphanhood (occupation-related, war-related, maternal causes). Even without HIV/AIDS, the percentage of children who are orphans would be significantly higher in Sub-Saharan Africa than in other regions of the world; if it were not for the disease's spread, it would be declining, instead of increasing exponentially.

[1] The authors use data from 19 DHS (Demographic and Health Surveys) conducted in 10 countries between 1992 and 2000.

2.1 Definition

11. Most estimates and models define an orphan as a child whose mother has died. Maternal demographic data is more easily obtained and in surveys, biological mothers are more easily related to their children than fathers. Though some censuses count paternal orphans, reliable data on the number of paternal orphans is not available in many countries. Several studies consider both maternal and paternal orphans and double orphans too. AIDS increases the proportion of orphans that have lost both parents, since if one parent is infected with HIV, the probability that the spouse is also infected is quite high. Defining double orphans is complicated by the fact that some children have parents whose vital status is unknown to the respondent. Case and colleagues (2004) define double orphans as children for whom either both parents are deceased, or one parent is deceased and the other parent has unknown vital status, or both parents have unknown vital status. They prefer a broader definition of double orphans because parents with unknown vital status, even if alive, are unlikely to influence their children's care.

12. Orphan estimates are also affected by the age range chosen. Most orphan estimates are for children under 15 years of age. Data from child health surveys is normally based on children under 15 years. Data on children 15-17 years is usually presented together with adult data in the 15-49 year category. Defining orphans as children under 15 years detracts attention from the needs of older adolescents, including the sexual and economic exploitation of adolescent girls.

13. Definitions which exclude paternal orphans underestimate total orphan numbers by 45-70 percent, definitions which exclude 15-17 year old children underestimate this figure by 25-35 percent (Foster and Williamson, 2000).

14. The age distribution of orphans is fairly consistent across countries. Surveys indicate that on average only 2 percent of children were orphaned before their first birthday. Overall, about 15 percent of orphans are 0-4 years old, 35 percent are 5-9 years old, and 50 percent are 10-14 years old.

15. The data from household surveys does not include children living outside family care settings (children living on the street and in institutions), thus probably underestimating orphans rates.

16. The percent of children who are paternal orphans generally exceeds the percent who are maternal orphans at all ages. This reflects the higher age-specific mortality of men and the fact that women usually marry older men. The share who have lost both parents is quite small, particularly in the pre-school age group. Aside from these common patterns in all developing countries, there are important differences across and within regions in the ratio of paternal to maternal orphans. Ainsworth and Filmer (2002)[2] found that in West Africa, 4 to 10 percent of school-aged children were paternal orphans, about twice the proportion who were maternal orphans. Relatively few (1.6 percent or less) were two-parent orphans. In Eastern and Southern Africa paternal orphan rates were 3 to 5 times higher than maternal rates, which were similar to West Africa. An exception was Mozambique, with the highest maternal orphan rate of any of the countries studied, nearly 7 percent. With the exception of three countries (Zambia, Zimbabwe and Uganda), the two-parent orphan rate in East Africa was under 2 percent. Similarly, Case and colleagues (2004) observed that in some countries, particularly Kenya, Namibia, Tanzania, Uganda, Zambia and Zimbabwe, the fraction of children who had lost a father were markedly larger than those who had lost a mother. They also found that in other countries, including the two West

[2] The study is based on 34 DHS and 5 LSS (Living Standards Surveys).

African countries in which HIV/AIDS rates were thought to be lower (Ghana and Niger), the differential loss of fathers was small.

2.2 Living arrangements

17. In most African communities, the concept of 'adoption' does not have the western connotation; there is a strong tradition of redistributing children, orphans and non-orphans, across households through child fostering. It is common for biological parents in many Sub-Saharan African countries to send their children to be reared by other adults, either by relatives or by non-relatives. Child fostering contributes to mutually recognised benefits for both natal and fostering families. The foster family also gains from this reciprocal arrangement since it can acquire child workers, particularly for domestic service. In some countries a high proportion of children, 20 percent or more, may not be living with their parents. Extended families involve a large network of connections among people extending through varying degrees of relationship including multiple generations, over a wide geographic area and involving reciprocal obligations (Foster and Williamson, 2000). The extended family remains the predominant caring unit for orphans in communities with severe HIV/AIDS epidemics.

18. Children who lose a parent through death often experience additional changes in the set of adults who provide them with care. Orphanhood elevates the risk of living apart from parents. Traditions of patrilineage may dictate that paternal orphans remain with paternal relatives rather than with their mothers. Furthermore, remarriage and migration among widows and widowers may also result in separation of children from their surviving parents.

19. Case and colleagues (2004) observed that in all the country-years examined, paternal orphans were less likely to live with their mothers than were non-orphans.

20. In many countries the relative differences in living arrangements between orphans and non-orphans are large and have become more pronounced in later years. Case and colleagues (2004) found that in Tanzania, for example, 73.5 percent of paternal orphans lived with their mothers in 1992, a statistic that dropped to 64.2 percent by 1999. At the same time, the fraction of non-orphans living with their mothers remained stable at approximately 85 percent. The authors found that the relative differences in living arrangements between orphans and non-orphans were even larger for children who had lost a mother. For example, in Tanzania, the fraction of maternal orphans who lived with their fathers declined from 54.3 percent in 1992 to 43 percent in 1999. In Zambia, only 41.3 percent of maternal orphans lived with their fathers in 1996, compared with 74.5 percent of non-orphans. In Malawi, 46.6 percent of maternal orphans lived with their fathers in 1992; only 27.8 percent of maternal orphans lived with their fathers by 2000.

21. Studies show that in almost every country in the region, female-headed households assume care of more orphans than male-headed households. As a result, female-headed households with orphans have the highest dependency ratios.

22. If both parents die, there are again differences between countries with regard to who within the family will assume primary responsibility. In South Africa, the majority of double orphans (and children not living with a surviving parent) are being raised by their grandparents (64 percent) while in Cameroon 57 percent are reared by 'other relatives', generally aunts and uncles.

23. Case and colleagues (2004) observed that in all countries, orphans were more likely to live in households with a higher fraction of elderly members, and with less well educated heads. They found that maternal and paternal orphans were twice as

likely as non-orphans to live in households headed by a grandparent, and three times as likely to be living in households headed by 'other relatives'. These results are consistent with evidence highlighting the role of grandparents, and often grandmothers, in the care of orphans (Hunter 1990, Ntozi 1997). Infact, while grandparents already have an important role in the care of orphans, there is notable increase in their burden as the number of orphans in communities increases.

24. In some cases increasingly frail grandparents are recruited into childcare and they often agree to take orphans because other relatives refuse. The data on the number of orphans cared for by aunts/uncles and grandparents from four African countries suggests that grandparents are more frequently recruited as caregivers in areas where the AIDS epidemic is more severe or where the extended family is weakened (Foster and Williamson, 2002).

25. Changes in the composition of households through migration of family members is an important mechanism by which extended families cope with the economic and childcare need consequences of HIV/AIDS. Urban-rural migration occurs as a result of the 'going-home-to-die' phenomenon, whilst rural-urban migration occurs as widows and widowers move to towns to seek work or remarriage. More than one half of young widows and one quarter of young widowers under 35 years in Uganda moved from the household of their late spouse to earn money or for remarriage (Ntozi, 1997)[3].

26. Orphans are not necessarily equally distributed within countries. Particular areas within countries have higher or lower percentages of orphans, largely depending on the HIV/AIDS-prevalence rate. For example, in Ethiopia and Uganda, prevalence rates are higher in urban areas, which might account for the higher proportion of orphans in these areas.

27. Separation of siblings following parental death is a strategy of families to distribute the burden of care between several relatives and constitutes another source of trauma for children. In Zambia, nearly 60 percent of a sample of orphaned children had been separated; nearly four out of five saw their brothers and sisters less than once a month (Family Health International, 2002)[4].

28. Child-headed households are also becoming increasingly common in Sub-Saharan Africa due to the AIDS epidemic. There are still relatively few households – less than 1 percent in most countries – headed by children under the age of 18 (child/adolescent headed household).

29. The extended family system will continue to be the central social welfare mechanism in most parts of Sub-Saharan Africa, but this traditional support system is under severe pressure and in many instances has already been saturated and increasingly impoverished. Most worryingly, it is precisely those countries that will see the largest increase in orphans in the future years where the extended family is already most stretched by caring for orphans. Furthermore, these intense pressures coincide with a rapid evolution of the very nature of the extended family. Extended family relationships have been weakened because of modernization, the extension of cash economies and labor migration. More people live in nuclear units with weaker ties to other branches of the family, particularly in cities. Children who belong to families with little regular contact with relatives are at risk of being abandoned if they are orphaned. Households headed by migrants, in urban areas and on commercial farms or estates have limited access to extended family and community safety nets.

[3] The authors use a dataset based on a sample of 1797 households covering east, south and western Uganda.

[4] The study is based on Head of Household Baseline Survey in Zambia covering 8 districts.

Children who slip through the safety net may end up in a variety of vulnerable situations such as street and working children and child-headed households. The proportion of orphan households headed by elderly caregivers, the number of child-headed households and sibling dispersal or migration may serve as indicators of saturation of the extended family safety net. Other indicators include households with orphans from two or more families, increased numbers of working children, children removed from schooling to provide care and orphaned street children.

30. Strategies for coping of extended families have negative impacts on children in households indirectly affected by HIV/AIDS, thus enlarging the number of children affected. For example, children may see their standard of living deteriorate when cousins come to live with them following the death of an aunt or uncle. These 'other vulnerable children' experience a reduction in their quality of life and an erosion of the opportunities available for fulfilling their rights.

31. When adults fall ill from HIV/AIDS and can no longer work, households see their incomes plummet and they suffer financially both from the loss of earnings and the increased expenditure for medical care. Households with orphans are more likely to become poorer, because of the increased 'dependency ratio'. Female-headed households are the most severely affected. A large and increasing share of families are impoverished to the point where basic needs go unmet. The most common unmet needs are education, food, medical care and clothes.

32. In the next two sections is a review of the studies on orphanhood's impact on children's schooling and work.

2.3 Education

33. The HIV/AIDS epidemic is seriously undermining the achievement of the goals of Education for All (EFA) adopted by the international community at the April 2000 World Education Forum in Dakar, Senegal, as well as the United Nations Millennium Development Goals. Evidence indicates that children's participation in formal schooling is decreasing in African countries with the highest prevalence of HIV (11 percent or greater), while enrolments in countries with lower HIV incidence have increased (Chesterfield, 2001). HIV/AIDS affects the supply, the demand and the quality of education. As for the demand, one way in which it affects school enrolment and school attendance of students in the education system is by producing a large increase in the number of orphans. In many cases households with orphans cannot cover school fees and children are withdrawn from school to reduce family expenses. Children are also withdrawn from school to assist in nursing of ailing parents or caregiving of younger siblings or to work. Rates of absenteeism can be expected to rise and consequently the likelihood of premature dropout increases as children are forced to work or to take on caretaking responsabilities. Foster parents may not have the same altruistic ties to the children, and may be less likely to realize financial gains from investments made in orphans, leading to weaker incentives to invest in such children's education.

34. Despite the fact that several studies on the impact of orphanhood on education have reached different and at time divergent findings, some trends about orphanhood and education may be emerging. In many AIDS affected contexts, orphans are less likely to be enrolled or at their proper educational level than non-orphans of the same age. Double orphans appear to be at the highest risk, and loss of a mother may prove more detrimental than loss of a father. (despite the relative poverty experienced by paternal orphans). Studies also show that the contrast between the attendance of orphans and non-orphans is greatest in countries where attendance is already low.

35. Researches on these issues include community-based studies and multi-country analyses. Most studies have focused exclusively on orphans with no comparison group of children with living parents, but several have used data from the Demographic and Health Surveys (DHS) in many countries to identify orphans in the samples and to examine the difference in school enrolments between orphans and children whose parents were alive. DHS data is particularly useful for cross-national comparisons because of the use of similar research design and questionnaires. The Multiple Indicator Cluster Surveys sponsored by UNICEF also provide comparable information on education for a large number of countries.

36. A controversial issue is whether orphaned children are worse off than other equally poor children or whether the impact of becoming an orphan is to swell the already large group of poor or uneducated children. Understanding the risks that orphans face is important when designing policies, in order to choose between targeted intervention linked to the special needs of orphans and policies that will raise the levels of schooling of the unenrolled poor, orphan and non-orphan alike. Using recent DHS, Case and colleagues (2003) investigated the impact of orphanhood on primary school enrolment in 10 Sub-Saharan countries between 1992 and 2000. They found that orphans are at a significant risk for lower school enrolment, and that this risk is not explained solely by their relative poverty. Searching for explanations beyond household wealth, the researchers discovered that orphans are less likely to be enrolled in school than non-orphans living in the same household. They propose that the critical determinant is the nature of the family relationship between the orphan and the decision-making adult in the family or household, consistent with 'Hamilton's Rule', which postulates that closeness of biological ties governs investments in children. They found that, as a general pattern, the probability of school enrolment is related to the closeness of the relationship between the child and the household head. Children living in households headed by non-parental relatives fare worse than those living with parental heads, and those living in households headed by non-relatives fare worse still. According to the authors, much of the gap between the schooling of orphans and non-orphans is explained by the greater likelihood that orphans will live with more distant relatives or unrelated caregivers. These findings suggest the need for targeted interventions for orphans.

37. Another analysis of nationally representative household surveys in 28 countries in Sub-Saharan Africa, Latin America, the Caribbean, with one country in Southeast Asia, reaches different conclusions (Ainsworth and Filmer 2002). The authors found that while there are some examples of large differentials in enrolment by orphan status, in the majority of cases the orphan enrolment gap is dwarfed by the gap between children from richer and poorer households. They conclude that it cannot be assumed that enrolment differentials exist between orphans and non-orphans or, when they exist, why. On the other hand, all but a handful of the countries studied have sharp differentials in enrolment between children in poor and non-poor households and several have very low enrolments for both poor and non-poor children. On the basis of these findings they suggest that social protection and schooling policies need to be tailored to the needs of specific countries. For the researchers this point is important in light of the current tendency of policy makers to advocate a single 'best practice' model for all countries.

38. The authors suggest that for countries like Benin, Burkina Faso, Guinea, and Senegal, where the overall enrolment is very low, the key to raising enrolment among orphans is to pursue sectoral and economic policies to raise enrolment among all children.

39. In the group of countries with moderate overall enrolment rates the most disadvantaged children are the poor, including poor orphans. Policies to reduce the

gap in enrolment between poor and non-poor will contribute significantly to raising enrolment among orphans without any orphan-specific targeting. They note how this can be seen most clearly by the case of Uganda where, in 1997, the government launched a large scale 'universal enrolment' program that included the abolishing of fees for primary school that resulted in a surge in enrolments, particularly among the poor, orphans and non-orphans. In countries like Zimbabwe where overall enrolment rates are high even among the poor, lower enrolment of orphans is likely related to orphans' specific problems. This justifies interventions to meet the their unique needs.

40. Gertler and colleagues (2004) analyze data from 600,000 households from Indonesia's National Socioeconomic Survey (SUSENAS) during 1994-96. They describe the main theoretical arguments proposed in literature to explain why the loss of a parent might reduce investments in children. Using a semi-nonparametric technique, they compare youth who lose a parent to similar "control" youth with similar observable characteristics and living in the same neighborhood. They consider only short-term effects and find that a parent's recent death reduces children's enrollment. The effect is highest for youth at the transition between primary and junior secondary and between junior secondary and senior secondary.

41. A study of orphans in Tanzania observed that orphans were significantly less likely to attend school; orphanhood lowered the odds of attending school by 45 to 64 percent (Suliman, 2003)[5]. Always in Tanzania (Kagera region), in an analysis of the impact of orphan status and adult deaths on primary school enrolment, Ainsworth and colleagues (2002)[6] found that enrolment of large proportions of young children was delayed, while enrolment of older children was maintained. Among the children whose enrolment was most affected at the primary level were children in poor households suffering an adult death, with orphans being the most disadvantaged, and maternal orphans. Makame and colleagues (2002)[7] found that in a poor neighbourhood of Dar El Salaam (Tanzania), though orphans were less likely to be in school, those in school were attending as regularly as the non-orphans.

42. Children who had lost a parent to AIDS were 50 percent less likely to receive an education, and double orphans were 90 percent less likely to be educated in Burkina Faso in 1998-1999 (Burkina Faso National Committee to Combat AIDS, 2003). In a study conducted in eastern Zimbabwe, Nyamukapa and colleagues (2003)[8] observed that children whose parents had died recently were equally likely to have started school as children of the same age whose parents were alive. As time passed since their mother's death, children who had lost their mother were less likely to have completed primary school than children who had lost their father or children whose parents were living, suggesting that widowed mothers give higher priority to their children's education than widowed fathers.

43. Another study from Zimbabwe found that 31 percent of the households interviewed had a child who was not attending school following the death of the mother (Mutangadura, 2000)[9].

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[5] The study is based on data for 5,184 households in Tanzania and Zanzibar from Tanzania Human Resource Development Survey (HRDS), 8,327 households from 1992 Tanzania DHS and 3,615 households from 1999 Tanzania DHS.

[6] The authors used the Kagera Health and Development Survey (KHDS), a longitudinal socioeconomic survey of more than 800 households, conducted from 1991 to 1994 throughout the region.

[7] The study compares 41 orphans whose father and/or mother had died from AIDS, and were living in poor suburbs of Dar El Salaam, with 41 matched non-orphans from the same neighbourhoods.

[8] The study uses a stratified population-based survey (the 'Manicaland Study') of 8,399 households of the epidemiology and socio-demographic impact of HIV in eastern Zimbabwe.

[9] The study is based on a sample of 215 purposively selected households fostering maternal orphans.

44. In Uganda, a household survey in the capital city of Kampala found that 47 percent of households with orphans did not have enough money to send children to school, compared with 10 percent in non-orphan households (Muller and Abba, 1990)[10]. In Zambia, a study found that in urban areas 32 percent of orphans were not enrolled in school compared to 25 percent of non-orphans, while in rural areas 68 percent of orphans were not enrolled compared to 48 percent of non-orphans (UNAIDS, 1999). Always in Zambia, some evidence from micro-studies showed that 44 percent of children of school age were not attending school in the Copperbelt region, with proportionately more orphans (53.6 percent) than non-orphans (42.4 percent) not attending (Rossi and Reijer, 1995)[11].

45. Orphans were found to have lower school attendance in 44 countries for which information was available by mid-2003, with a widening gap in countries with trend data.

46. Using DHS data from Ghana, Kenya, Niger, United Republic of Tanzania and Zimbabwe, Bicego and others (2003) found that orphans were less likely than non-orphans to be at their proper educational level, with the effect stronger at younger ages (age 6-10) than older ages (11-14). They also found double orphans were at a particular disadvantage. A study conducted on the impact of AIDS on the education sector in Botswana, Malawi and Uganda found country-specific results (Bennel and others, 2002)[12]. For example, in Botswana, a country with one of the highest HIV prevalence rates, absenteeism of school children was very low and, in primary schools, orphans had better attendance records than non-orphans, whereas in Uganda and Malawi, absenteeism was somewhat higher among orphans than non-orphans. The authors note that Botswana has a strong schooling culture and household demand for child labor is low. In addition, the Botswana Government has introduced a national program of targeted support for orphans.

47. A related issue is whether the effects of orphanhood differ across boys and girls. There is a presumption in much of the literature that female orphans are at a disadvantage. According to a report from the World Bank, girls are more likely than boys to be retained at home for domestic work or for caregiving when incomes plummet due to AIDS deaths (World Bank, 2002). Another study claims that prime-age-adult deaths cause the removal of children, especially girls, from school (UNAIDS, 2002).

48. No study provided evidence that female orphans are more disadvantaged in terms of their schooling. Case and colleagues (2004) did not find that female orphans are disadvantaged relative to males. Also Ainsworth and Filmer (2002) observed that orphanhood did not appear to exacerbate the gender enrolment gap.

2.4 Child labour

49. In Sub-Saharan Africa one of the economic impacts of the AIDS/HIV epidemic is an increase in the amount of work performed by children, sometimes as young as 5 years old. This region already has a higher proportion of children working than any other, with 29 percent of children aged 5 to 14 economically active. Households surveys show little difference in the proportions of working non-orphaned and orphaned children, but this could depend from underreporting, resulting from the

[10] The study is based on a survey of 1,133 households in Kampala.

[11] The study is based on a retrospective survey of 250 households.

[12] A total of 41 schools in three countries were surveyed for the study.

methodology used to interview caretakers. Further, as mentioned before, surveys do not include children outside the family setting.

50. UNICEF recently reviewed the effects orphanhood has on schooling and child labor in 20 Sub-Saharan African countries. In all countries, children aged 5-14 who had lost one or both parents were less likely to be in school and more likely to be working more than 40 hours a week. Monasch and Snoad (2003)[13], using data from 40 Sub-Saharan countries, found that orphans were more involved in child labor than other children. Suliman (2003) found that in Tanzania orphans were more likely to work while attending school than non-orphans; single-parent orphans were twice as likely as non-orphans to have ever worked for a pay, and dual orphans were more than ten times as likely to have worked for pay.

51. A different method for investigating orphaned children's work is through surveys of working children. Rapid assessments carried out by the International Labour Organization found that orphaned children are much more likely than non-orphans to be working in commercial agriculture, domestic service, commercial sex and as street vendors. In a rapid assessment in Zambia, HIV/AIDS was estimated to have added 23 to 30 percent to the child labor force (Mushingeh and colleagues, 2002). An analysis of data from the Zambia Child Labour Survey for 1999 confirms statistically the linkages between HIV/AIDS and child labor; orphaned children are found, in general, twice as likely to be working as non-orphaned children.

52. Children are affected by HIV/AIDS before they are orphaned. Their workload starts when parents become sick and increases when they become orphaned. When a parent falls sick, children often shoulder new responsibilities; these include domestic chores, nursing for ailing parents, agricultural or income generating activities and childcare duties. Workload of orphans may be greater than non-orphans living in the same household (Foster, Makufa, Drew and colleagues, 1997)[14]. Increased domestic workload is often disproportionately greater on girls than boys (Ledward, 1997). In order to generate an income, adolescents may leave orphan households to seek work in towns, as agricultural laborers for more prosperous farmers and as domestic laborers; some girls become involved in commercial sex or enter into marriage in order to provide for the needs of younger children in their household.

53. By placing huge burdens on the extended family system—the backbone of African societies-the HIV/AIDS epidemic is leading to increasing numbers of street children. There are no meaningful estimates of the numbers or proportions of children orphaned by HIV/AIDS who live on the street, but there are clear indications that the overall numbers of street children are rising in many Sub-Saharan cities, most likely because of the increasing number of children orphaned by HIV/AIDS. A recent study in Zimbabwe, for example, found that half of street children are orphans, the majority due to AIDS. In Lusaka, Zambia, the majority of children living on the street are orphans (Zambia 1999 Child Labour Survey Country Report). In Brazzaville, Congo, almost one half of street children are orphans (Nkouika-Dinghani-Nkita, 2000).

54. The Rapid Assessments indicate strong links between HIV/AIDS, orphanhood and the worst forms of child labor. Children forced to live on the streets may turn to commercial sex and crime as a means to survive. A rapid assessment in Zambia in 2002 found that among children engaged in commercial sex about half (47 percent) were double orphans and 24 percent single orphans. A rapid assessment in four

[13] The study is based on Multiple Indicator Cluster Surveys (MICS) and DHS.

[14] The study is based on interviews held with 40 orphans, 25 caretakers and 33 other community workers recruited from a rural area near Mutare, Zimbabwe.

mining areas in the United Republic of Tanzania found that the children involved in the mines were between 7 and 17years old. Among children working part-time, 7 percent were orphans, while 38 percent of children working full-time were orphans.

3. DATA SOURCES

55. The data used for the remaining sections of this paper are drawn from Multiple Indicator Cluster Surveys (MICS) conducted in Angola, Burundi, Central African Republic (CAR), Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal and Swaziland in 2000. The surveys followed the design, planning and implementation methodologies of the global MICS survey programme. [15] Stratified sample designs were employed, building national probabilistic samples, stratified by geographic area and residence (urban-rural).[16] The survey questionnaires targeted male and female children under 17 years of age (household questionnaire module), women of child-bearing age (women questionnaire module), and children aged less than five years (child questionnaire). Data for Zambia are drawn from an ILO/IPEC Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey conducted in 1999. Sample sizes disaggregated by residence are provided in Table 1 below.

Table 1. - Survey sample sizes

	Urban	Rural	Total
MICS 2 (2000)			
Angola	3674	2338	6012
Burundi	3710	269	3979
CAF	4909	9082	13991
Cote D'Ivoire	3230	4081	7311
Gambia	2313	2165	4478
Kenya	7151	1823	8993
Lesotho	1790	5609	7399
Senegal	2305	4078	6383
Swaziland	2749	1013/429(town)	4192
SIMPOC (1999)			
Zambia	4123	4123	8246

[15] In order to obtain comparable data at international level, the division of Evaluation, Policy and Planning of UNICEF, in cooperation with UNESCO, USAID, WHO and DHS, developed the Multiple Indicator Cluster Survey (MICS) programme for implementation in a large number of countries. The survey was designed to assess progress on the end-decade goals set at the 1990 United Nations World Summit for Children. These goals related to nutrition, health and education, as well as to birth registration, family environment, knowledge of HIV/AIDS, and child labour.

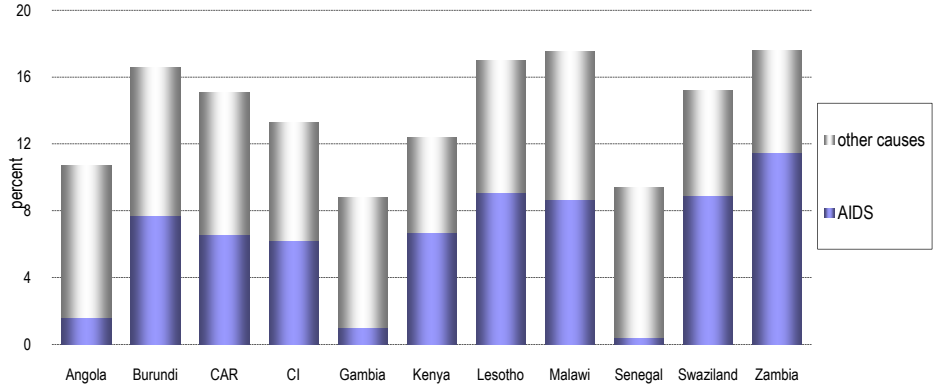
[16] Due to inaccessibility were excluded from the sample the rural areas of the departments of Beny and Pando, accounting for 1.5 percent of the National population.

4. EXTENT AND NATURE OF ORPHANHOOD

4.1 Orphan and fostering rates

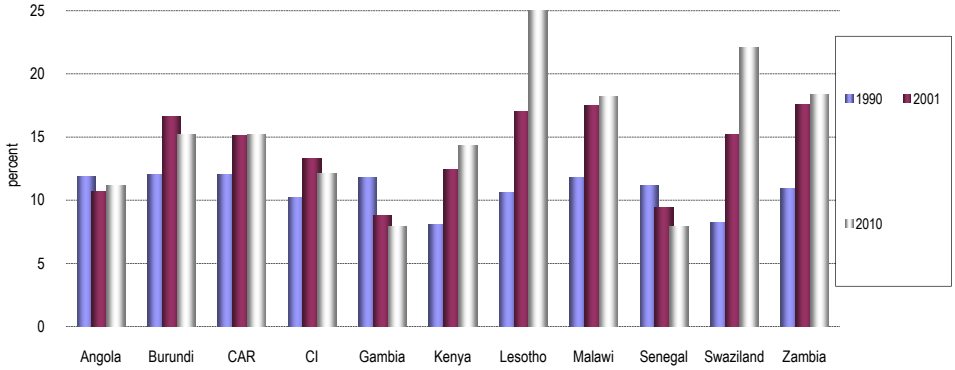
56. A large proportion of Sub-Saharan African (SSA) children must grow up in the absence of one or both birth parents. In six of the 10 SSA countries selected for this study (Burundi, Central African Republic, Lesotho, Malawi, Swaziland and Zambia), orphan rates exceed 15 percent, while in the remaining four countries (Cote d'Ivoire, Gambia, Kenya, and Senegal) they are at least nine percent. AIDS is the largest single factor behind these high orphan rates. The AIDS virus is responsible for around one out of two orphan cases in six of the countries (Burundi, CAR, Kenya, Lesotho, Malawi and Swaziland), and for two out of every three orphan cases in another (Zambia). Only in Senegal is the role of AIDS relatively minor, accounting for only about four percent of total orphan cases.

Figure 1.- Orphans as a percentage of all children under 15, by cause, selected Sub-Saharan Africa countries, 2001



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

Figure 2. - Orphanhood trends, Sub-Saharan Africa countries, 1990-2010



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

57. Figure 2 illustrates changes in orphan rates over time. There was a large rise in orphan rates between 1990 and 2001 in seven of the countries (Burundi, CAR, Cote d'Ivoire, Kenya, Lesotho, Swaziland and Zambia), but only in two countries (Lesotho and Swaziland) is the orphan rate projected to continue to increase rapidly through to 2010. AIDS is again the most important factor driving these trends. Indeed, in the

absence of AIDS, orphanhood would have fallen slightly during the 1990-2001 period in all 10 countries, due to improvements in the mortality rates of adults during the traditional child-bearing years. Instead, only the three countries where AIDS plays the smallest role (Angola, Gambia and Senegal) saw a decline in orphan rates during the 1990-2001 period. The largest projected rises in orphan rates through to 2010 are in Lesotho and Swaziland, a product of the fact that these two countries have been lowest in controlling the spread of HIV/AIDS. HIV infection rates in Lesotho and Swaziland exceed 30 percent.

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

Country	Residence	% of total children aged 5-14 years					
		Non-orphans		Single orphans(2)		Double orphan(5)	Total
		Living w/ parents	Fostered(1)	Maternal orphan(3)	Paternal orphan(4)		
Angola	Urban	77.0	7.8	2.8	10.5	2.0	100
	Rural	79.4	7.5	2.7	8.9	1.5	100
	Total	77.7	7.7	2.7	10.0	1.9	100
Burundi	Urban	72.3	2.7	5.3	16.0	3.8	100
	Rural	72.5	2.5	5.4	15.9	3.7	100
	Total	70.2	4.9	3.1	16.3	5.5	100
CAR	Urban	73.8	8.7	4.1	10.0	3.4	100
	Rural	81.4	8.0	3.0	6.3	1.4	100
	Total	78.4	8.3	3.4	7.8	2.1	100
Cote d'Ivoire	Urban	75.9	14.6	1.7	5.9	2.0	100
	Rural	75	15.2	1.7	6.1	2.0	100
	Total	76.6	14.1	1.8	5.6	2.0	100
Gambia	Urban	77.7	10.1	2.2	9.6	0.5	100
	Rural	83.7	6.8	1.7	6.9	1.0	100
	Total	81.6	7.9	1.8	7.8	0.9	100
Kenya	Urban	88.9	2.9	1.4	5.0	1.8	100
	Rural	82.6	5.2	2.3	8.3	1.7	100
	Total	83.7	4.8	2.1	7.7	1.7	100
Lesotho	Urban	72.2	10.5	3.0	12.9	1.4	100
	Rural	69.1	11.1	3.0	14.6	2.2	100
	Total	69.7	11.0	3.0	14.3	2.1	100
Senegal	Urban	82.6	9.5	2.0	5.3	0.6	100
	Rural	82.6	9.5	2.0	5.3	0.6	100
	Total	82.6	9.5	2.0	5.3	0.6	100
Swaziland	Urban	71.8	11.9	3.3	10.5	2.5	100
	Rural	67.3	18.2	2.1	9.6	2.8	100
	Town	77.1	11.3	1.7	7.4	2.6	100
	Total	68.1	17.3	2.2	9.7	2.8	100
Zambia	Urban	76.5	8.3	2.9	9.4	2.9	100
	Rural	75.0	7.1	3.2	10.4	4.3	100
	Total	76.0	7.9	3.0	9.8	3.4	100

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.

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS) conducted in 2000 in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey conducted in 1999 in Zambia.

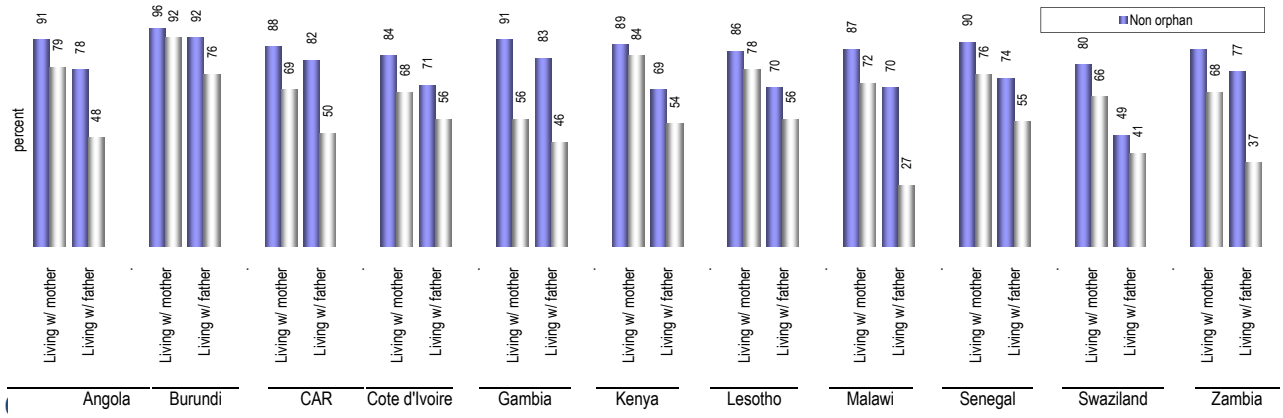
58. Table 2 provides a breakdown of the child population aged 5-14 years by orphanhood status. Orphan rates in this age group vary from eight percent in Senegal to 25 percent in Burundi. In all 10 countries, the proportion of children that has lost a father is much higher than the proportion that has lost a mother. Differences in orphan rates by residence are not large, with the exception of Kenya, where rural children are more likely to be orphans, and CAR where orphan rates are higher among urban children. There is also a significant group of children, ranging from five percent of total 5-14 year-olds in Burundi and Kenya to 17 percent of total 5-14 year-olds in

Swaziland, 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 merits policy attention. This paper therefore assesses the relative risks faced by both orphans and foster children.

4.2 Living arrangements

59. Children who lose a parent through death often must cope with additional changes in their primary caregivers, and do not necessarily remain in the care of the surviving parent. Figure 3, presenting living arrangements for orphans and non-orphans, illustrates this point. In all 10 analysed countries, the proportion of children living apart from their (surviving) mother or father is greater for orphans than for non-orphans. Also in all 10 countries, it is maternal orphans that are most at risk of becoming *de facto* double orphans by being also separated from their surviving father. The proportion of maternal orphans separated from their surviving father exceeds 44 percent in all countries except Burundi. The situation is worst in Malawi, where only about one in four children who have lost their mother are able to remain with their surviving father.

Figure 3. - Living arrangements for orphans and non-orphans



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

61. Unfortunately, the data do not allow identification of the relationship between actual or *de facto* double orphans and their caretakers, and in particular whether they are a child's immediate family, extended family or are non-relatives. It is therefore not possible to analyze in more detail the effects of relationship with household head on child vulnerability.[17] The data also do not indicate whether an orphan is separated from his or her siblings, another important factor determining vulnerability.

62. It should also be stressed that the estimates cited in Figure 3 do not reflect orphaned children not living in formal households. An additional group of orphans lives on the street, either because the initial care arrangement was unsustainable, or because the child had no other options. There are unfortunately no meaningful estimates of the size of this unreached group in most countries. But studies conducted in various Sub Saharan African countries point to growing numbers of

[17] Studies across a large number of Sub-Saharan Africa countries, indicate that the degree of relatedness between orphans and their adult caregivers is highly predictive of children's outcomes. 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.

street children in major cities, most likely because of the increasing number of children orphaned by AIDS.[18]

[18] See, for example: Nkouika-Dinghani-Nkita G., *Les déterminants du phénomène des enfants de la rue à Brazzaville*, UERPOD, Brazzaville, Congo, 2000, and *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.

5. ORPHANHOOD, CHILD LABOUR AND SCHOOLING: DESCRIPTIVE EVIDENCE

63. 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.

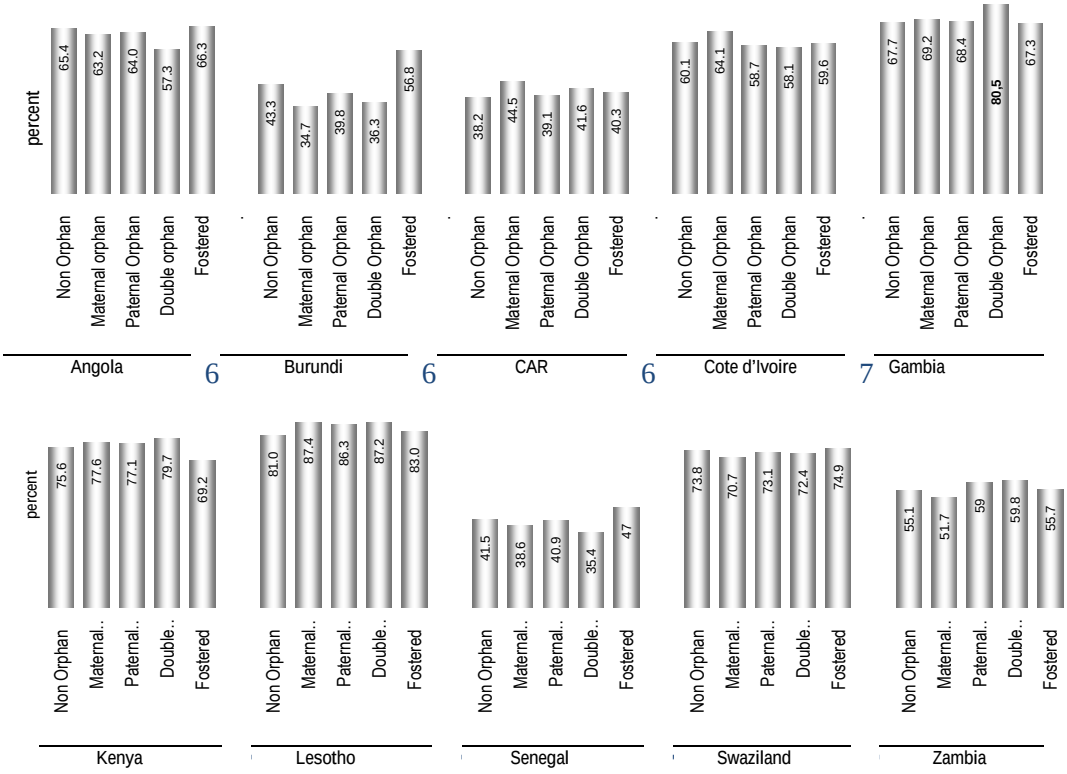
64. To what extend are these effects present in the 10 Sub Saharan Africa countries selected for analysis in this paper? Descriptive evidence of associations between orphanhood status and time use is presented below, while Section 5 looks at orphanhood status as a determinant of time use decisions relating to children. We need to stress 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 better identify the effect of orphanhood on children's activities.

5.1 Orphanhood and schooling

65. Attendance rates by orphanhood status, presented in Figure 4, do not indicate any consistent pattern across countries between parental death and the ability to go to school. In some countries (e.g., Angola, Burundi, Senegal and Swaziland), non-orphans attend school in higher proportion than all categories of orphans, while in others (e.g., CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho and Zamiba), the attendance rates of orphans are equal to or even exceed those of non-orphans. In Burundi, school attendance is highest among fostered children, perhaps indicating that Burundian families willing to take in children are also more committed to ensuring the education of these children.

66. Attendance rates vary somewhat by category of orphan, although specific patterns are not consistent across countries. In two countries (CAR and Cote d'Ivoire) children who have lost their mothers are less likely to attend school than those that have lost their fathers, in two others (Burundi and Zambia) the opposite pattern holds, while in the remaining countries the attendance rates of maternal and paternal orphans differ little. Only in Angola and Senegal do double orphans appear to face a disadvantage vis-à-vis single orphans in terms being able to attend school; in Gambia and Kenya the attendance rate of double orphans actually exceeds that of single orphans.

Figure 4 .- Orphanhood status and school attendance, by country



Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000, conducted in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey, 1999, conducted in Zambia.

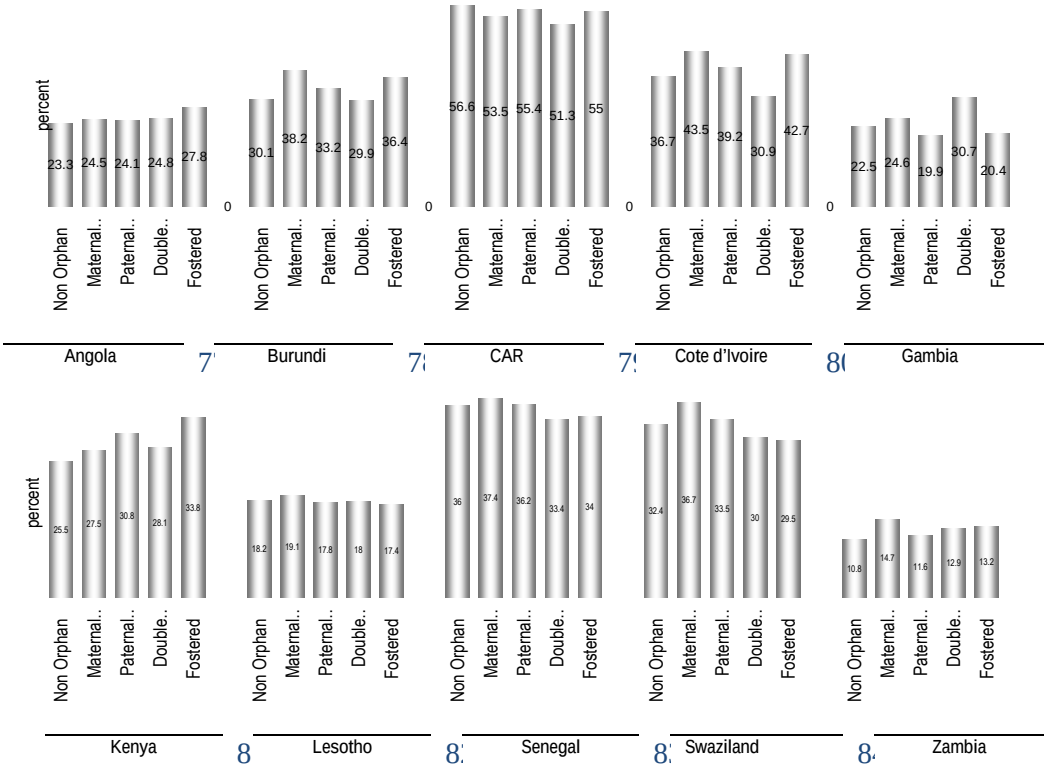
75. Again, it should be kept in mind that these figures do not consider the unknown number of orphans living outside any formal household, a group not captured by household surveys. Few of these children are reached by the schooling system or other State institutions.

5.2 Orphanhood and child labour

76. Estimating child labour rates is complicated by the fact that international conventions do not target all children's work as child labour for elimination. 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.[19]

[19] For a detailed discussion of this point, see *Child Labour Indicators used by the UCW Project: An Explanatory Note* (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(1), by country



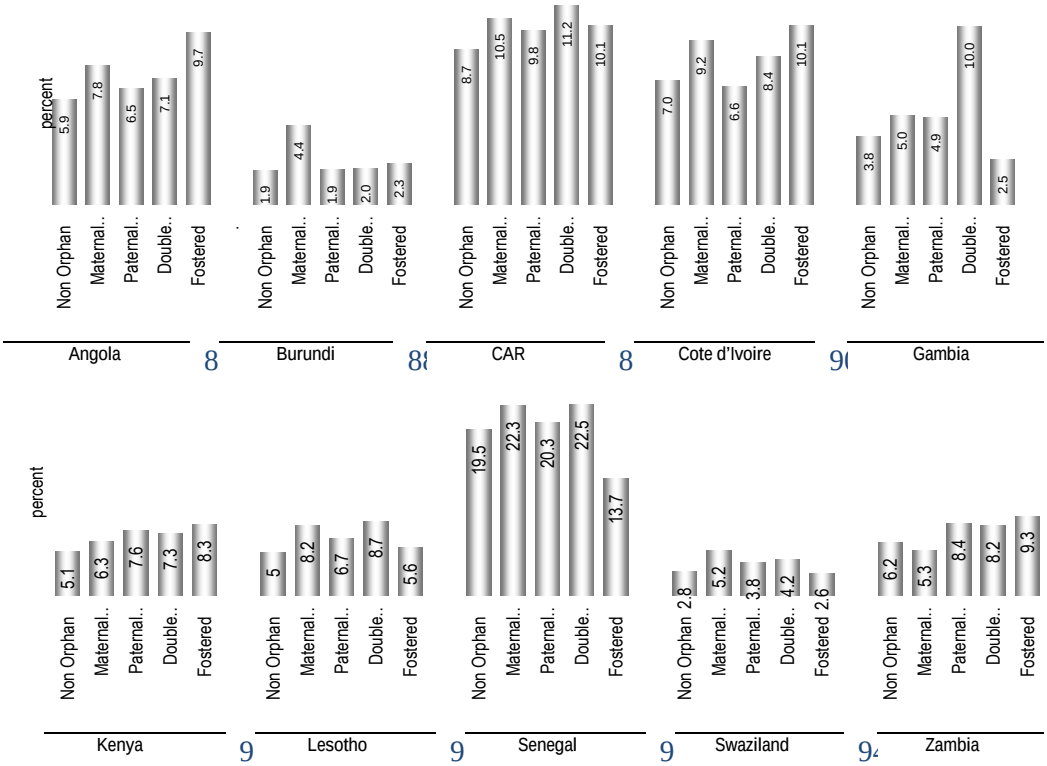
Notes: (1) Percentage of total 5-14 year-olds spending at least one hour in an economic activity during the reference week.

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000, conducted in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey, 1999, conducted in Zambia.

85. Figure 5 presents the results relative to economic activity. Orphans work in greater proportion than non-orphans in seven of the 10 countries (Angola, Burundi, Cote d'Ivoire, Kenya, Senegal, Swaziland and Zambia), but the differences in work rates by orphan status are generally small. Children losing only their fathers (and primary household breadwinner) are not necessarily more likely to work than children losing only their mothers. Indeed, maternal orphans are more vulnerable to work involvement than paternal orphans in seven of the countries, while only in two countries does the opposite pattern hold. Double orphans, perhaps surprisingly, work in greater proportion than other categories of orphans only in one country, Gambia.

86. Involvement in household chores is presented in Figure 6. Orphans are more likely than non-orphans to be involved in household chores in all countries except Cote D'Ivoire, though again differences are frequently small. In seven of the 10 countries, maternal orphans are more likely to spend at least 28 hours per week performing chores than paternal orphans, suggesting that maternal orphans often must help substitute for the household labour previously performed by their mothers. Overall levels of involvement in household chores are highest among double orphans or foster children in eight of the 10 countries, indicating that these children often must shoulder a special burden in the running of the households that take them in.

Figure 6. - Orphanhood status and involvement in household chores(1), by country



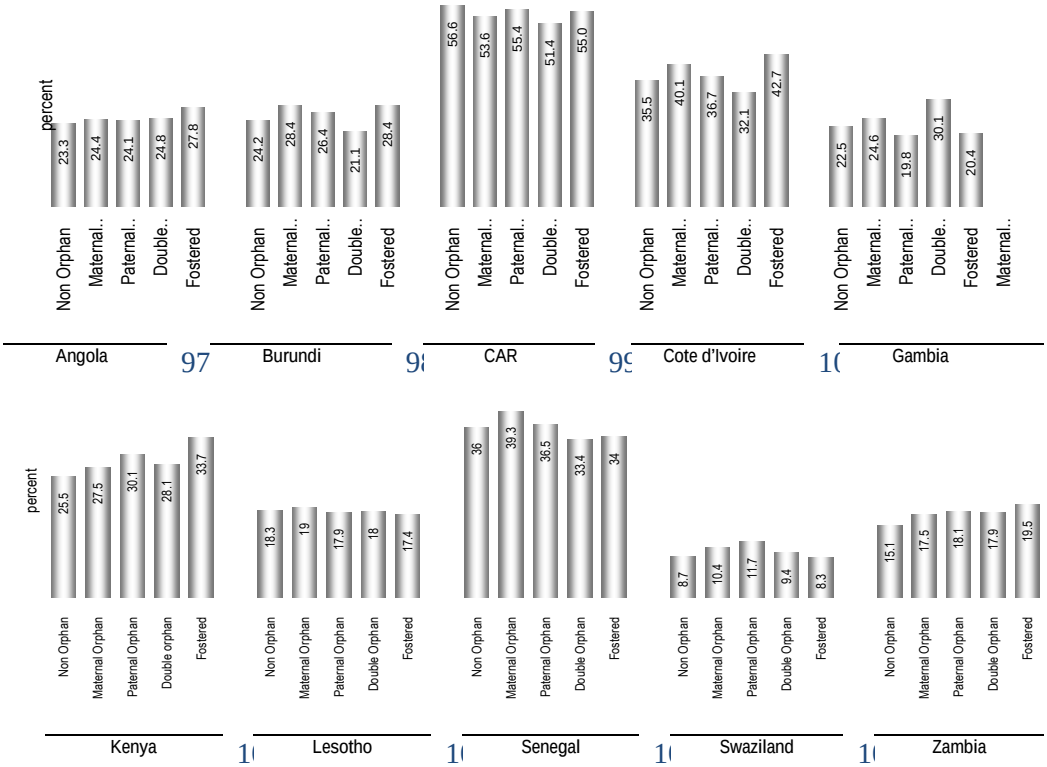
Note: (1) Percentage of total 5-14 year-olds spending at least 28 hours on household chores during the reference week.

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000, conducted in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey, 1999, conducted in Zambia.

95. Involvement in child labour, as measured by a composite index combining economic activity and household chores, is presented in Figure 7. It indicates that child labour rates are higher for orphans than non-orphans in seven of the 10 countries (Angola, Burundi, Cote d'Ivoire, Kenya, Senegal, Swaziland and Zambia), though, once again, differences are often relatively small.

96. Two points should be kept in mind, however, in interpreting these results. First, as noted above, the estimates 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 individuals characterized by largely different individual and household characteristics, and by the fact that vulnerability and orphanhood status vary significantly with these characteristics. Decisions concerning children's time use depend on numerous individual and household factors that influence both orphans and non orphans. 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 6.

Figure 7 -. Orphanhood status and involvement in child labour(1), by country



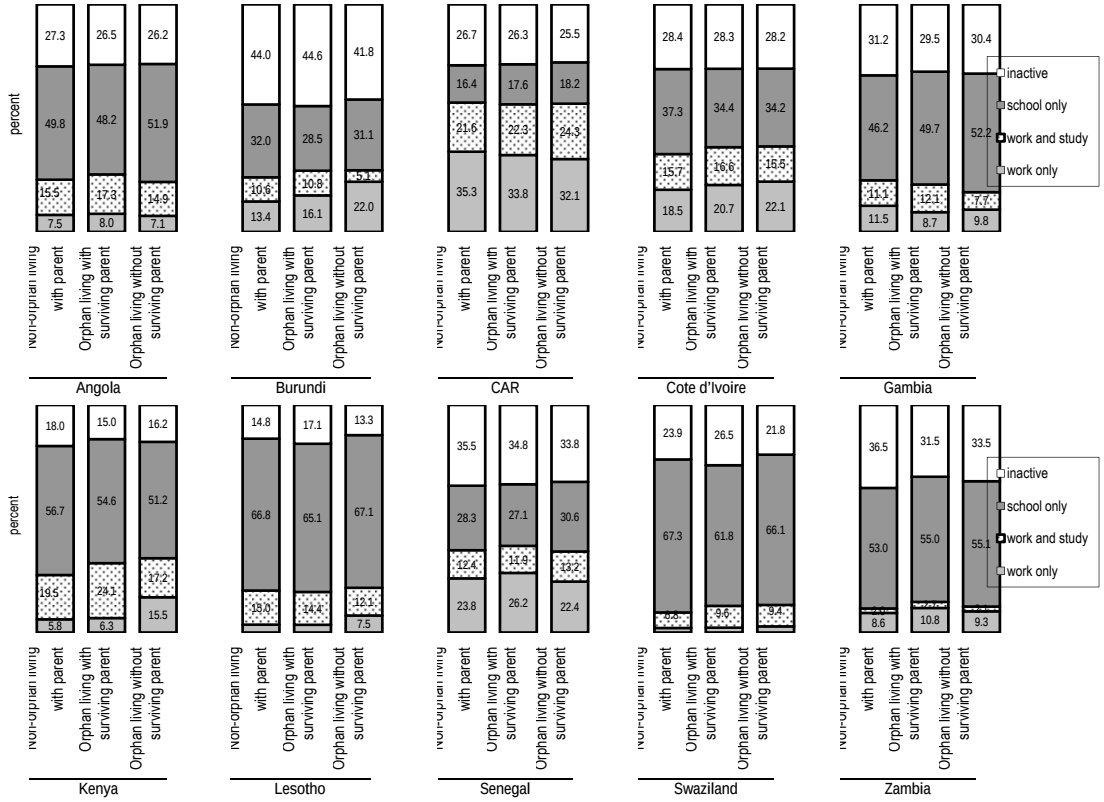
Note: (1) Percentage of total 5-14 year-olds engaged in either economic activity (for at least one hour during the reference week) or household chores (for at least 28 hours during the reference week), excluding the overlapping category of children engaged in both. Estimates exclude 12-14 year-old children performing light work (i.e., those spending less than 14 hours per week in economic activity).

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000, conducted in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey, 1999, conducted in Zambia.

5.3 Orphanhood, time use and living arrangement

105. 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 outside 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



Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000, conducted in Angola, Burundi, CAR, Cote d'Ivoire, Gambia, Kenya, Lesotho, Senegal, and Swaziland.

106. Descriptive evidence from the 10 countries, however, shows no clear pattern between living arrangement and time use (Figure 8). Orphans living with their surviving parent are slightly more likely to work in three of the countries (Angola, Gambia and Zambia), in two others (Kenya and Lesotho) the opposite holds true, while in the remaining five (Burundi, CAR, Cote d'Ivoire, Senegal and Swaziland) children living with and without the surviving parent are roughly equally likely to work. Similarly for school attendance, orphans living with their surviving parent attend school in higher proportion in three countries (Burundi, Kenya and Zambia), attend school in lesser proportion in two others (Senegal and Swaziland), and in the remaining five (Angola, CAR, Cote d'Ivoire, Gambia and Lesotho) attend school in roughly equal proportion. But differences in school attendance by orphans' living arrangement are relatively small except in the case of Kenya, where the school attendance of children living without their surviving parent is 10 percentage points less than that of children living with their a remaining parent.

107. It should again be recalled, however, that the above analysis excludes the group of children living outside of households altogether, as this group was beyond the scope of the MICS household survey series. Few of these children are reached by the schooling system or other State institutions. Forced to eke out an existence on the street, they are much more likely to be involved in unconditional worst forms of work, including prostitution, leaving them vulnerable to contracting HIV/AIDS.

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

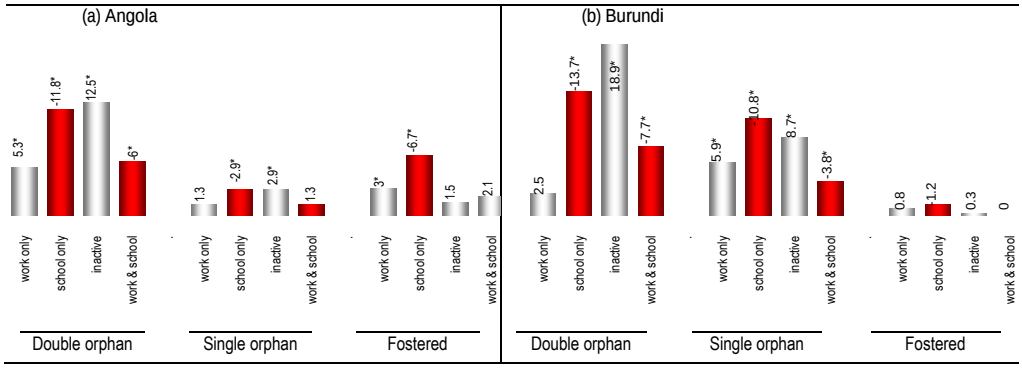
108. This section examines orphanhood as a determinant of child labour and schooling decisions. The results described are derived from a bivariate probit model, whose details are reported in the Appendix. We have estimated the probability of working (both in economic activity and performing household chores[20]) as a function of a set of individual, household and individual characteristics that are well known to be relevant for such decisions.[21]

6.1 Marginal effects

109. Marginal effects calculated after a bivariate probit indicate that becoming an orphan makes it generally less likely that a child has the opportunity to attend school and generally more likely that a child is exposed to the hardships of work. The size and significance of these effects varies considerably across the 10 analysed countries, but in only one – Lesotho – does orphanhood appear to have no significant effect on either work involvement or school attendance. Double orphans appear to be especially vulnerable to schooling loss and work exposure in the analysed countries, underscoring the importance of the distinction between single and double orphans for policy purposes.

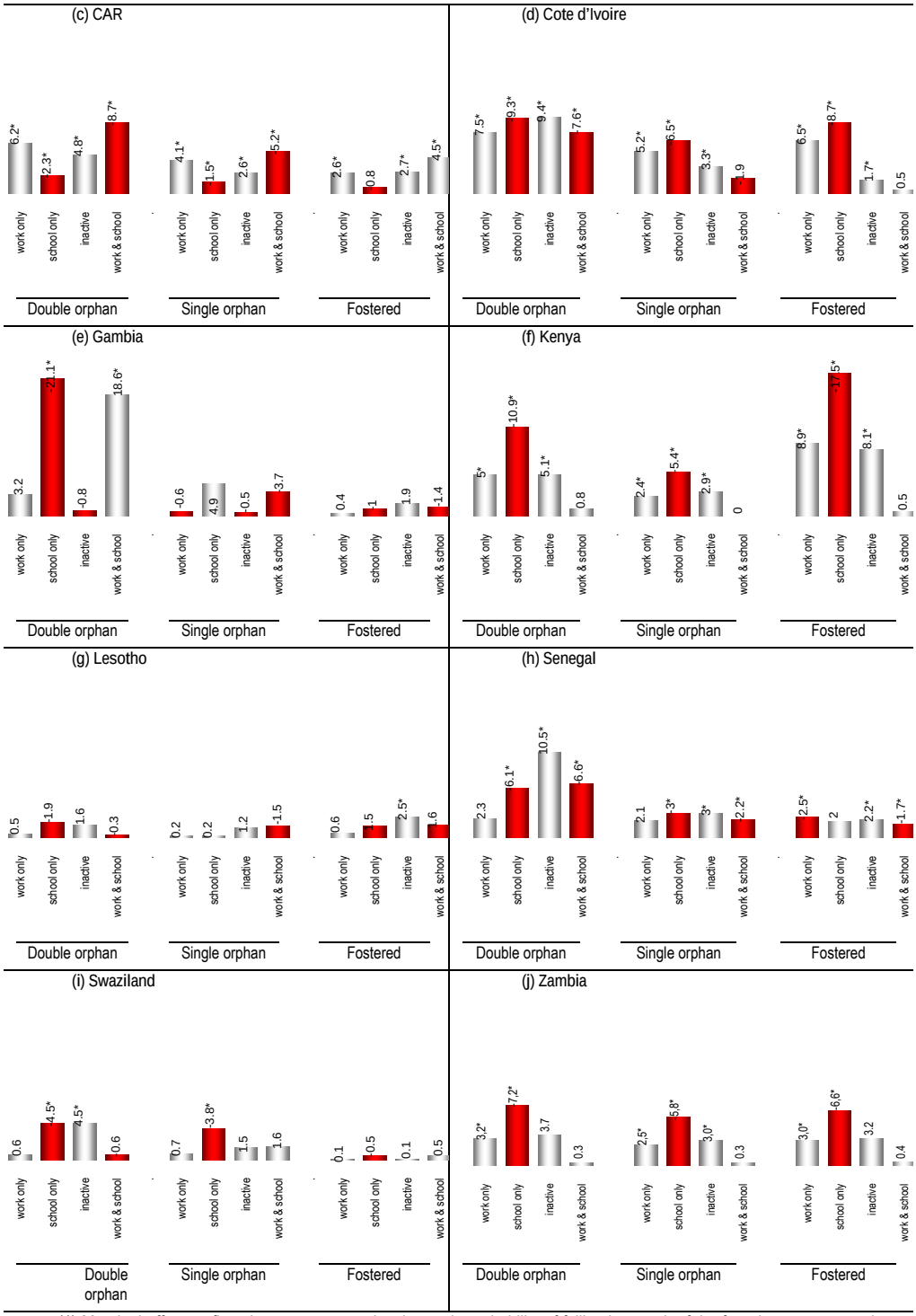
110. Parental loss particularly affects a child's chances of attending school. The death of both parents significantly reduces the likelihood that a child attends school full-time in all analysed countries except Lesotho, while the death of one parent significantly reduces the probability of school attendance in all analysed countries except Gambia and Lesotho. The size of the effect is in many cases very large. In Gambia, becoming a double orphan reduces the probability of full-time school

Figure 9. - Influence of orphanhood status on children's time use[1] (marginal effects after bivariate probit)[2]



[20] Results are very similar if we consider economic activity only. In this case the effect of orphanhood on children's activity is higher for the "idle" category, that includes also household chores.

[21] For a more detailed discussion, see Cigno et al., *Child Labour Handbook*, SP 0206, The World Bank, 2002.



Notes: (1) Marginal effects reflect the percentage point change in probability of falling into each of the four time-use categories as a result of being "double orphan", "single orphan" or "fostered" instead of "non-orphan". Control variables include: age, sex, household income, education of caretaker and household structure. Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week. Complete estimation results are presented in Annex 1. (2) Results that are statistically significant at the five percent level are indicated with an asterisk.

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000; and Statistical Information and Monitoring Programme on Child Labour (SIMPOC) survey, 1999, conducted in Zambia.

attendance by 21 percentage points, in Burundi by 14 percentage points, and in Angola, Cote d'Ivoire and Kenya by around 10 percentage points. The size of the effect of single orphanhood on schooling is smaller, but nonetheless large enough to

merit concern. Becoming a single orphan makes it 11 percentage points less likely that a child attends school full-time in Burundi, and at least four percentage points less likely in Cote d'Ivoire, Kenya, Swaziland and Zambia. Orphanhood also negatively affects the likelihood of part-time school attendance (i.e., school attendance in combination with work) in a number of the analysed countries, augmenting the overall risk of schooling loss.

112. The effect of parental death on children's work involvement is less consistent across the analysed countries. Becoming a double orphan significantly increases the risk of work involvement in five of the analysed countries (Angola, Central African Republic, Cote d'Ivoire, Kenya and Zambia) but has an insignificant effect in the other five (Burundi, Gambia, Lesotho, Senegal and Zambia). Becoming a single orphan significantly also affects chances of work involvement in five of the analysed countries (Burundi, Central African Republic, Cote d'Ivoire, Kenya and Zambia). The effect of orphanhood on work is strongest in the Central African Republic (CAR) and Cote d'Ivoire. Becoming a double orphan in CAR and Cote d'Ivoire raises the risk of work exposure by six and eight percentage points, respectively; becoming a single orphan in these two countries raises the likelihood of work involvement by four and five percentage points, respectively.

113. Orphanhood also appears to have an important effect on the likelihood of a child being inactive, i.e., not in school, not economically active and not spending significantly amounts of time on household chores. Indeed, parental death has a greater effect on inactivity than on work in many of the analysed countries. As shown in Figure 9, the loss of both parents significantly raises the likelihood of inactivity in all but Gambia, Lesotho and Zambia. The loss of one parent significantly raises a child's chances of being inactive in all but Gambia, Lesotho and Swaziland. The size of these effects is frequently large. Becoming a double orphan, for example, makes it 19 percentage points more likely that a child is inactive in Burundi, 13 percentage points more likely in Angola, and around 10 percentage points more likely in Cote d'Ivoire and Senegal.

114. The results presented above suggest that children are frequently forced out of school by parental death, but that not all of these drop-outs are forced into work. While some move into economic activity or spend greater time on household chores, others remain at home, outside of economic activity and school, presumably inactive.

115. Reasons for the apparent link between orphanhood and inactivity are not immediately clear and merit further investigation. It may be that some families take their children from school upon the death of a breadwinner because they are no longer able to afford school costs, but that the children are not needed for productive activities. Another possibility is that these reportedly inactive children are kept at home in order to shoulder greater responsibility for household chores, but that their time on chores nonetheless falls below the arbitrary 28 hours threshold for categorising children as working. A third, more worrying, possibility is that this residual "inactive" category reflects orphans' move into unreported worst forms of work. Household heads are unlikely to acknowledge to survey interviewers the involvement of their child household members in these dangerous or morally repugnant forms of work, and could instead simply report them as inactive.

116. The specific patterns of change brought on by parental death vary considerably across countries. Double orphanhood, for example, causes a move from school into full-time economic activity and into the "inactive" category in almost equal proportion in four countries (Central African Republic, Cote d'Ivoire, Kenya and Zambia), but in three others (Burundi, Senegal and Swaziland) it causes a move from school almost entirely into the "inactive" category. In Gambia, unlike the other

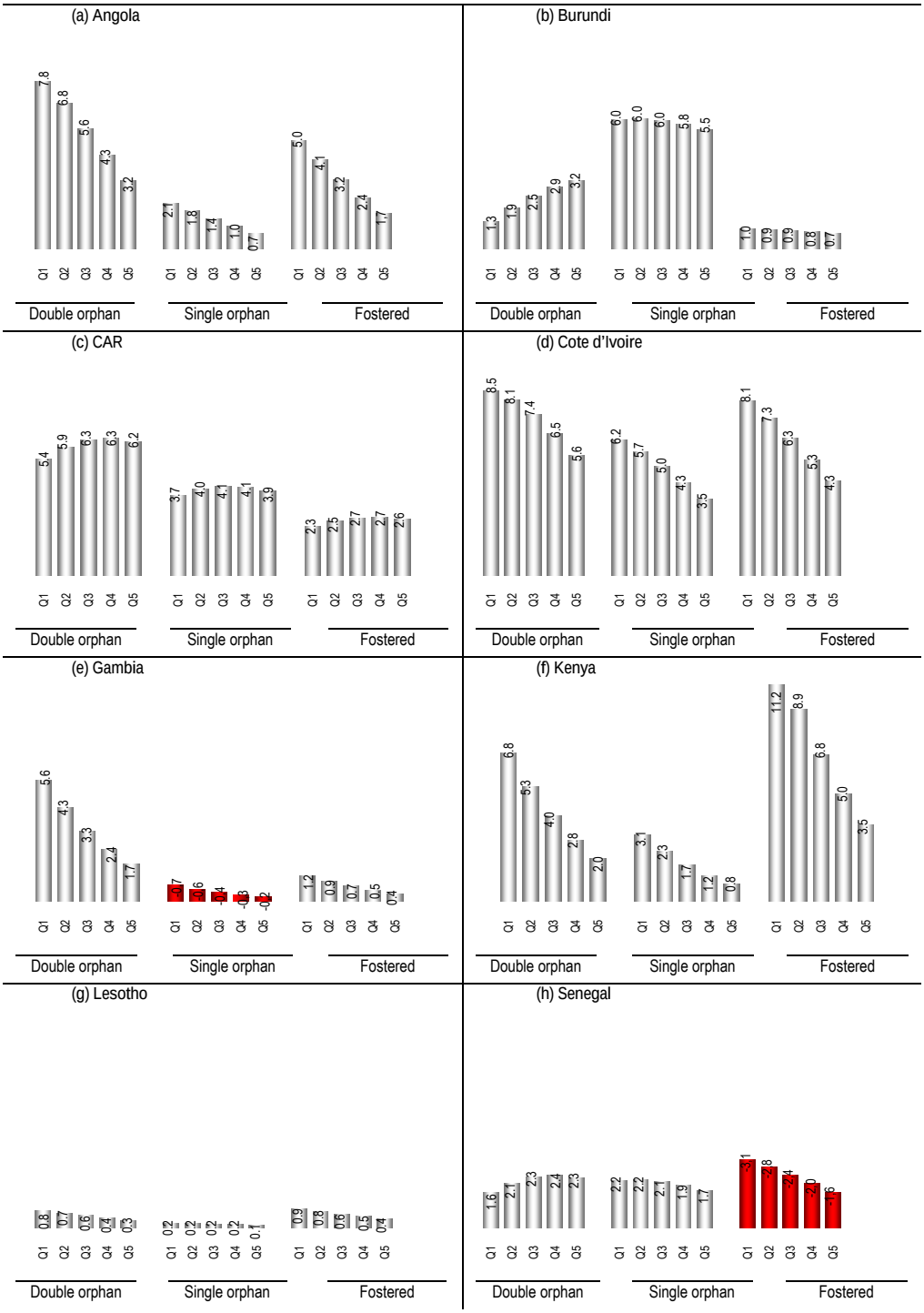
analysed countries, double orphanhood causes a shift only from full-time schooling to schooling combined with work; neither full-time work nor inactivity are affected.

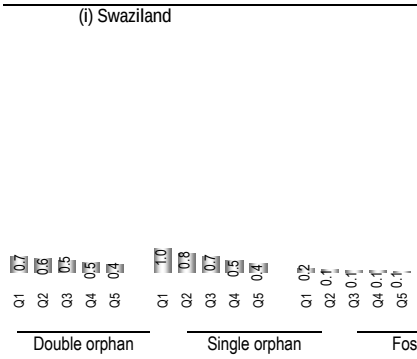
117. Patterns of change also sometimes depend on whether a child has lost one of both parents. In Senegal and Burundi, for example, the loss of only one parent results in a shift from schooling into both economic activity and the "inactive" category, while the loss of both parents results in a move from schooling almost entirely into the "inactive" category. There is also a larger movement to the "inactive" category in the case of double orphans in Cote d'Ivoire. In other analysed countries (e.g., Angola, Central African Republic and Swaziland), however, patterns of movement are the same in the cases of single and double orphanhood.

118. Fostering also appears to increase child vulnerability in some contexts, underscoring the fact that foster children are also a group meriting policy attention. Leaving the immediate family for an alternative care arrangement makes it significantly more likely that a child is denied schooling in Angola, Cote d'Ivoire, Kenya, and Zambia, and significantly more likely that a child is forced to work full-time in Angola, Central African Republic, Cote d'Ivoire, Kenya and Zambia. Being a foster child makes it significantly more likely that a child falls into the "inactive" category in Central African Republic, Cote d'Ivoire, Kenya, Lesotho and Senegal. The effect of fostering is greatest in Kenya, where becoming a foster child reduces a child's chances full-time school attendance by 18 percentage points, increases a child's chances of full-time work by nine percentage points, and increases a child's chances of falling into the "inactive" category by eight percentage points. In Senegal, conversely, fostering actually appears to reduce a child's risk of work involvement: a Senegalese child entering a foster care arrangement is almost three percentage points less likely to be exposed to full-time work.

119. The interaction among household income, orphanhood and child vulnerability is inconsistent across the analysed countries. In four (Angola, Gambia, Cote d'Ivoire and Kenya), poor children face a considerably higher risk than non-poor children of work involvement upon becoming an orphan or upon being placed in foster care (Figure 10). In two others (Burundi the Central Africa Republic), the opposite pattern appears to hold, at least in the case of double orphanhood: a non-poor child is at considerably greater risk than a poor child of being forced into work upon the death or his or her parents. In the remaining countries, household income has an inconsistent or only a limited effect on the vulnerability of orphans and foster children to work.

Figure 10. Influence of orphanhood status on the likelihood of children working[1], by household income quintile (marginal effects after bivariate probit)[2]





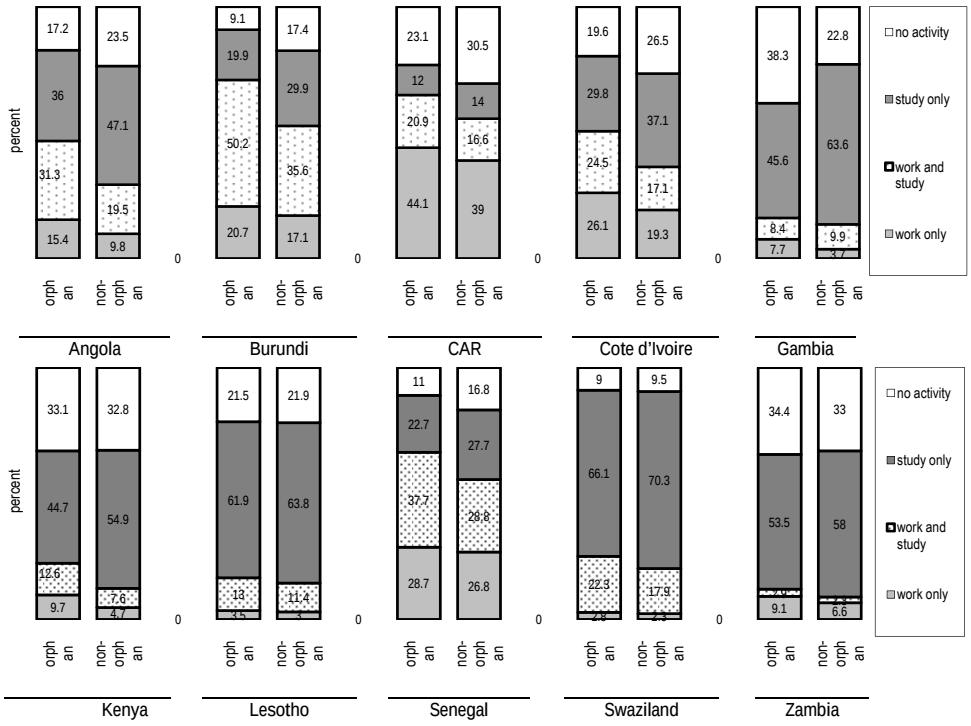
Notes:(1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week. (2) Marginal effects reflect the percentage point change in probability of "working only" as a result of becoming a "double orphan", "single orphan" or "foster child" instead of "non-orphan". Control variables include: age, sex, education of caretaker and household structure. Complete estimation results are presented in Annex 1

Sources: UCW calculations based on Multiple Indicator Cluster Surveys (MICS II), 2000.

6.2 Simulated probabilities

122. Simulated probabilities, shown in Figure 11, are another tool for analyzing the causal relationship between orphanhood status and children's time-use patterns. Marginal effects provide a measure of how a child's time allocation would change if he or she became an orphan (single or double). On the other hand, we might want to know how much higher on average the vulnerability of orphans is to work and lost schooling once we control for individual and household characteristics. The simulation of individual behavior provides a possible answer to such a question.

Figure 11 -. Children's activity by orphanhood status: Simulated probabilities



123. The simulated probabilities highlight the fact that orphans and non-orphans differ greatly in terms of their probable time use. They indicate that orphans are *more*

likely than non-orphans to be involved in work (full-time as well as part-time), and *less* likely to be attending school full-time, across all nine analysed countries. As shown in Figure 11, these differences in vulnerability to work and lost schooling are frequently large. Orphans, for example, are 44 percent more likely than non-orphans to be working in Kenya, and 37 percent more likely than non-orphans to be working in Angola. Orphans are 33 percent less likely than non-orphans to attend school full-time in Burundi, and 28 percent less likely than non-orphans to attend school full-time in Gambia.

7. CONCLUSIONS AND POLICY IMPLICATIONS

125. Understanding the risks that orphans face is important for policy: if, holding all else equal, orphans are more at risk, then governments may be well advised to target orphans specifically when designing policies. This study attempted to shed light on links between orphanhood and two important indicators of child risk – child labour involvement and school attendance – as part of a broader effort to guide policy in dealing with the AIDS orphans crisis in Sub-Saharan Africa.

126. The study takes the existing literature on the AIDS orphan phenomenon a step further by demonstrating a clear causal link between orphanhood, on the one hand, and child labour and school drop-out, on the other. The study also indicates that social protection and schooling policies need to be designed considering the specific country situation, as the magnitude and significance of the effects of orphanhood on schooling and work, and patterns of movement from school to work, vary greatly from country to country.

127. Marginal effects calculated after a binomial probit regression indicated that orphanhood significantly reduces a child's chances of attending schooling in nine of the 10 analysed countries (Lesotho is the exception). The effect is particularly strong in the case of double orphanhood, underscoring the importance of the distinction between single and double orphans for policy purposes. The influence of parental death on children's exposure to work is less consistent, significantly increasing the risk of work involvement in only five of the 10 analysed countries

128. These results therefore suggest that while orphanhood frequently forces children out of school, not all are forced into work. Some must enter economic activity or spend greater time on household chores, but others remain at home, outside of economic activity and school, presumably inactive. The regression results show that the loss of one or both parents significantly raises the likelihood of child inactivity in all but three of the analysed countries. This group of inactive children, denied schooling and at risk of entering work, also merits policy attention.

129. The study did not show a consistent pattern of poor orphans being more vulnerable to work than non-poor orphans. In four of the analysed countries, poor children were found to face a considerably higher risk than non-poor children of work exposure upon becoming orphans. But in the remaining analysed countries, household income levels were found to have either an inconsistent or only small effect on the vulnerability of orphans to work. This argues for caution in using targeted income transfers as a policy prescription for reducing work among poor orphans.

130. We conclude with a few remarks on information gap and direction of further research.. The surveys examined contains very little information on possible policy instruments and do not allow to evaluate the impact of possible intervention. On the other hand, these are the surveys that contains information on the whole range of children's activities (not only schooling) and orphanood.

131. Moreover, additional information is needed in a number of areas in order to further understanding of the relationship between orphanhood and child vulnerability. Information on the relationship of the orphan to the household head, for example, and the effect of this on the risk of work exposure, will be critical as a rationale for emphasising extended family-based care solutions for orphans. Better information on orphans not living in households, who are most at risk of involvement in worst forms of child labour and who are least likely to be reached by schools and other State institutions, will be essential to identifying policy alternatives for this group.

132. Incorporating questions relating to orphanhood status and care arrangements into ILO/IPEC SIMPOC[22] surveys, World Bank Living Standards Monitoring Surveys (LSMS) and other standard household survey instruments will be a necessary first step in filling information gaps on orphanhood and vulnerability. The UNICEF Multiple Indicator Cluster Survey (MICS) is currently the only such survey instrument containing a component relating to orphanhood, but lacks many relevant information for policy analysis and formulation. As we write this paper, we are aware that indeed several relevant questions are being introduced in selected surveys. The analysis of this new evidence will help not only to better define orphans vulnerability, but also to identify broad policy interventions.

[22] Statistical Information and Monitoring Programme on Child Labour.

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ANNEX 1: REGRESSION RESULTS

Table A1.1. - Marginal effects after bivariate probit estimation: ANGOLA

variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	Z	dy/dx	z
Sex	0.019	4.3	-0.045	-4.2	0.020	2.6	0.005	0.6
Age	-0.038	-4.9	0.063	3.4	-0.209	-15.6	0.185	12.3
Age2	0.002	5.3	-0.004	-4.1	0.009	13.2	-0.007	-9.6
Household size	-0.017	-3.4	0.039	3.3	-0.027	-3.1	0.005	0.6
Siblings 0-4	0.025	4.3	-0.056	-4.1	0.037	3.8	-0.006	-0.6
Siblings 5-14	0.012	2.3	-0.027	-2.3	0.012	1.4	0.004	0.4
Household members 15-65	0.016	3.3	-0.036	-3.1	0.026	3.2	-0.006	-0.7
Sex household head*	0.006	1.0	-0.014	-1.0	0.003	0.3	0.005	0.5
Education household head *	-0.046	-8.4	0.100	8.4	-0.101	-11.1	0.048	5.2
Wealth index	-0.036	-16.3	0.084	16.8	-0.034	-9.2	-0.015	-3.7
Reg1*	-0.012	-1.5	0.023	1.1	-0.035	-2.6	0.024	1.4
Reg2*	0.007	0.9	-0.081	-4.2	-0.106	-10.8	0.179	9.9
Reg4*	0.015	1.8	-0.052	-2.7	-0.043	-3.6	0.080	4.6
Reg5*	-0.005	-0.7	-0.044	-2.3	-0.107	-10.8	0.156	8.9
Reg6*	-0.019	-2.8	0.006	0.3	-0.099	-9.7	0.112	6.5
Urban*	-0.029	-4.8	0.083	6.2	0.045	4.9	-0.099	-8.6
Double orphan*	0.053	2.4	-0.118	-3.2	0.125	3.7	-0.060	-2.4
Single orphan*	0.013	1.8	-0.029	-1.7	0.029	2.2	-0.013	-1.0
Fostered*	0.030	3.0	-0.067	-3.3	0.015	1.0	0.021	1.3

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.2. - Marginal effects after bivariate probit estimation: BURUNDI

variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	-0.005	-0.5	-0.020	-1.7	0.056	4.7	-0.031	-4.6
Age	-0.076	-4.7	0.277	13.2	-0.409	-18.6	0.209	16.6
age2	0.005	5.9	-0.013	-12.5	0.016	14.8	-0.008	-12.6
Household size	-0.020	-2.1	0.018	1.4	0.015	1.1	-0.012	-1.6
Siblings 0-4	0.034	3.1	-0.029	-2.0	-0.027	-1.8	0.021	2.5
Siblings 5-14	0.030	3.2	-0.035	-2.9	-0.004	-0.3	0.008	1.1
Household members 15-65	-0.006	-0.7	0.012	1.1	-0.011	-0.9	0.005	0.7
Sex household head*	0.038	2.8	-0.066	-3.4	0.042	2.2	-0.014	-1.2
Education household head *	-0.044	-4.6	0.100	7.2	-0.109	-8.3	0.053	5.8
Wealth index	-0.027	-8.1	0.046	10.7	-0.030	-6.8	0.011	4.3
Reg1*	0.115	7.2	-0.167	-9.5	0.079	4.0	-0.027	-2.5
Reg3*	0.159	6.9	-0.174	-9.9	0.033	1.4	-0.018	-1.5
Reg4*	0.065	3.1	-0.110	-5.3	0.081	3.2	-0.035	-2.9
Reg5*	0.061	3.6	-0.086	-4.6	0.036	1.7	-0.011	-1.0
Urban*	-0.112	-8.1	0.168	5.5	-0.017	-0.6	-0.039	-2.8
Double orphan*	0.025	1.0	-0.137	-5.8	0.189	5.9	-0.077	-7.6
Single orphan*	0.059	3.9	-0.108	-6.6	0.087	4.6	-0.038	-4.0
Fostered*	0.008	0.3	-0.012	-0.3	0.003	0.1	0.000	0.0

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.3. - Marginal effects after bivariate probit estimation: CENTRAL AFRICAN REPUBLIC

variable	work only[1]		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	0.113	20.5	-0.051	-17.1	0.020	5.4	-0.083	-16.0
Age	-0.167	-17.4	0.041	8.1	-0.171	-26.1	0.296	32.9
Age2	0.008	17.2	-0.002	-9.4	0.007	21.3	-0.013	-28.6
Household size	0.017	3.4	-0.010	-3.6	-0.005	-1.6	-0.002	-0.4
Siblings 0-4	-0.018	-3.2	0.009	2.9	-0.001	-0.2	0.010	1.9
Siblings 5-14	-0.020	-4.1	0.012	4.5	0.008	2.4	0.000	0.1
Household members 15-65	-0.017	-3.6	0.011	4.2	0.009	2.9	-0.003	-0.6
Sex household head*	-0.006	-0.6	0.006	1.2	0.012	2.0	-0.012	-1.4
Education household head *	-0.107	-18.4	0.039	11.8	-0.053	-13.6	0.121	21.5
Wealth index	-0.068	-26.7	0.032	23.3	-0.005	-3.0	0.041	17.2
Reg1*	0.061	4.2	-0.038	-6.4	-0.042	-5.3	0.019	1.4
Reg2*	0.141	9.5	-0.073	-16.2	-0.076	-10.9	0.008	0.6
Reg3*	0.109	7.5	-0.069	-15.2	-0.089	-14.1	0.050	3.6
Reg4*	0.172	11.8	-0.090	-23.7	-0.105	-17.6	0.023	1.6
Reg5*	0.215	14.0	-0.080	-18.8	-0.030	-3.1	-0.105	-8.1
Reg6*	0.141	8.4	-0.065	-12.2	-0.052	-5.8	-0.025	-1.6
Reg7*	0.207	13.2	-0.094	-26.0	-0.103	-16.1	-0.010	-0.7
Reg8*	0.180	10.9	-0.079	-17.6	-0.071	-8.8	-0.030	-1.9
Reg9*	0.132	7.9	-0.055	-9.3	-0.014	-1.3	-0.063	-4.3
Reg10*	0.211	14.9	-0.089	-24.0	-0.079	-11.3	-0.043	-3.3
Reg11*	0.038	2.1	-0.030	-3.8	-0.044	-4.4	0.036	2.0
Reg12*	0.168	10.5	-0.083	-20.6	-0.094	-14.1	0.010	0.6
Reg13*	0.141	8.5	-0.055	-9.2	0.037	3.0	-0.123	-9.4
Reg14*	0.221	15.7	-0.086	-22.1	-0.053	-6.6	-0.082	-6.6
Reg15*	0.214	14.8	-0.087	-22.2	-0.067	-8.8	-0.060	-4.5
Reg16*	0.082	4.5	-0.047	-6.9	-0.050	-5.1	0.015	0.9
Urban*	-0.142	-21.1	0.087	20.7	0.045	9.3	0.010	1.6
Double orphan*	0.062	3.4	-0.023	-2.8	0.048	3.4	-0.087	-6.0
Single orphan*	0.041	4.5	-0.015	-3.3	0.026	3.9	-0.052	-6.5
Fostered*	0.026	2.7	-0.008	-1.6	0.027	3.7	-0.045	-5.1

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.4. - Marginal Effects after bivariate probit estimation: COTE D'IVOIRE

Variable	work only(1)		study only		nothing		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Female*	0.087	17.1	-0.118	-15.4	0.063	11.5	-0.032	-4.6
Age	-0.080	-9.1	0.057	4.3	-0.216	-22.8	0.239	20.0
Age2	0.004	9.6	-0.004	-5.5	0.009	19.8	-0.010	-16.6
Household size	0.005	1.5	-0.011	-2.3	-0.011	-3.2	0.018	4.0
Siblings 0-5	0.010	2.6	-0.010	-1.6	0.021	4.8	-0.021	-3.9
Siblings 6-14	-0.010	-3.0	0.017	3.4	0.004	1.1	-0.011	-2.5
Household members 16-65	-0.012	-3.6	0.022	4.6	0.012	3.4	-0.022	-5.1
Household head female	0.015	2.2	-0.022	-2.0	0.008	1.0	-0.001	-0.1
Household head education	-0.115	-23.1	0.168	17.6	-0.095	-16.5	0.042	4.9
Wealth index	-0.042	-16.8	0.059	15.6	-0.025	-9.3	0.008	2.4
Reg1*	0.196	9.0	-0.262	-17.7	-0.090	-8.2	0.157	6.8
Reg2*	0.163	7.6	-0.257	-16.7	-0.108	-10.7	0.202	8.6
Reg3*	0.115	5.6	-0.174	-9.0	-0.058	-4.4	0.117	4.9
Reg4*	0.074	3.9	-0.123	-5.9	-0.046	-3.3	0.095	4.1
Reg5*	0.029	2.0	-0.058	-2.9	-0.034	-2.6	0.064	3.2
Reg6*	0.159	7.4	-0.197	-10.8	-0.034	-2.3	0.072	3.2
Reg7*	0.085	5.2	-0.181	-10.3	-0.099	-9.3	0.195	9.4
Reg9*	0.075	4.1	-0.093	-4.4	0.090	4.6	-0.073	-4.0
Reg10*	0.235	10.3	-0.280	-20.2	-0.086	-7.6	0.131	5.6
Reg11*	0.008	0.5	-0.015	-0.7	-0.008	-0.5	0.015	0.7
Urban*	-0.110	-17.9	0.205	21.2	0.088	12.2	-0.183	-21.9
Double orphan*	0.075	3.3	-0.093	-3.7	0.094	3.8	-0.076	-3.6
Orphan*	0.052	4.7	-0.065	-4.8	0.033	3.0	-0.019	-1.5
Fostered*	0.065	7.9	-0.087	-8.5	0.017	2.1	0.005	0.5

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.5. - Marginal effects after bivariate probit estimation: GAMBIA

variable	work only[1]		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	0.008	2.2	-0.040	-2.0	0.019	1.7	0.013	0.8
Age	-0.026	-4.1	0.091	2.6	-0.097	-5.2	0.033	1.1
Age2	0.001	3.4	-0.004	-2.1	0.004	4.2	-0.001	-0.9
Household size	0.002	1.0	-0.018	-1.9	-0.004	-0.8	0.020	2.4
Siblings 0-4	0.000	-0.1	0.020	1.5	0.015	2.1	-0.035	-2.9
Siblings 5-14	-0.001	-0.3	0.010	1.0	0.005	0.9	-0.014	-1.5
Household members 15-65	-0.001	-0.4	0.012	1.3	0.006	1.3	-0.018	-2.1
Sex household head*	-0.007	-1.1	0.049	1.5	-0.003	-0.2	-0.039	-1.3
Education household head *	0.009	0.6	-0.084	-0.7	-0.007	-0.1	0.082	0.8
Wealth index	-0.008	-4.3	0.036	3.8	-0.021	-4.1	-0.007	-0.9
Reg2*	-0.005	-0.9	0.055	1.4	0.012	0.6	-0.061	-1.9
Reg3*	0.038	2.1	-0.164	-2.8	0.046	1.4	0.080	1.5
Reg4*	0.039	1.7	-0.240	-3.5	-0.005	-0.2	0.206	3.1
Reg5*	0.151	3.9	-0.373	-6.6	0.183	3.6	0.039	0.8
Reg6*	0.091	3.2	-0.295	-4.9	0.104	2.5	0.100	1.9
Reg7*	0.051	2.2	-0.297	-4.8	-0.005	-0.2	0.252	4.1
Reg8*	0.025	1.6	-0.267	-4.5	-0.037	-1.8	0.279	4.8
Urban*	0.010	1.5	-0.001	0.0	0.067	3.2	-0.076	-2.3
Double orphan*	0.032	1.1	-0.211	-2.4	-0.008	-0.2	0.186	2.1
Single orphan*	-0.006	-1.3	0.049	1.5	-0.005	-0.3	-0.037	-1.3
Fostered*	0.004	0.6	-0.010	-0.3	0.019	1.0	-0.014	-0.5

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.6 - Marginal effects after bivariate probit estimation: KENYA

variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	-0.004	-1.5	0.038	3.7	0.006	1.4	-0.039	-4.2
Age	-0.049	-10.2	-0.022	-1.3	-0.117	-16.8	0.189	11.4
Age2	0.002	10.2	-0.001	-0.6	0.005	15.0	-0.007	-8.8
Household size	0.000	0.4	-0.002	-0.6	0.000	-0.2	0.002	0.6
Siblings 0-4	0.007	4.2	-0.016	-2.4	0.010	3.8	-0.001	-0.1
Siblings 5-14	0.000	0.1	-0.007	-1.4	-0.002	-1.3	0.009	2.0
Household members 15-65	0.001	0.8	-0.008	-1.6	-0.001	-0.3	0.007	1.6
Sex household head*	0.000	-0.1	0.001	0.1	0.000	-0.1	0.000	0.0
Education household head *	0.013	0.9	-0.059	-0.9	0.009	0.3	0.038	0.6
Wealth index	-0.017	-12.2	0.063	13.4	-0.012	-6.4	-0.034	-7.7
Reg1*	-0.037	-9.8	0.268	5.5	-0.035	-2.7	-0.195	-4.2
Reg2*	-0.047	-8.5	0.185	3.0	-0.061	-6.6	-0.077	-1.3
Reg3*	-0.034	-5.2	0.167	2.8	-0.036	-2.7	-0.098	-1.7
Reg4*	-0.043	-7.0	0.150	2.4	-0.058	-5.7	-0.049	-0.8
Reg6*	-0.052	-8.3	0.193	3.2	-0.067	-6.8	-0.073	-1.2
Reg7*	-0.064	-6.5	0.211	3.4	-0.077	-5.4	-0.070	-1.2
Reg8*	-0.040	-7.0	0.096	1.4	-0.059	-6.9	0.003	0.1
Urban*	-0.019	-5.1	0.175	10.5	0.039	4.0	-0.195	-14.4
Double orphan*	0.050	2.7	-0.109	-2.7	0.051	2.3	0.008	0.2
Single orphan*	0.024	3.6	-0.054	-2.8	0.029	3.2	0.000	0.0
Fostered*	0.089	7.0	-0.175	-7.6	0.081	5.8	0.005	0.3

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.7 - Marginal effects after bivariate probit estimation: LESOTHO

variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	-0.020	-9.7	0.100	10.0	-0.039	-7.5	-0.041	-4.7
Age	-0.036	-11.2	0.079	5.6	-0.138	-18.8	0.095	7.7
Age2	0.002	10.7	-0.005	-6.6	0.006	15.7	-0.003	-4.6
Household size	0.002	1.6	0.000	0.0	0.012	3.2	-0.015	-2.1
Siblings 0-4	0.000	-0.2	-0.001	-0.1	-0.003	-0.6	0.004	0.5
Siblings 5-14	0.002	1.2	-0.015	-1.8	0.000	0.0	0.013	1.8
Household members 15-65	-0.002	-1.5	-0.003	-0.4	-0.014	-3.5	0.019	2.8
Sex household head*	0.004	2.1	-0.017	-1.3	0.013	2.1	0.000	0.0
Education household head *	-0.044	-6.8	0.164	8.7	-0.058	-5.3	-0.062	-3.8
Wealth index	-0.007	-8.1	0.022	4.9	-0.024	-10.5	0.010	2.6
Reg1*	-0.015	-3.4	0.072	3.3	-0.027	-2.4	-0.031	-1.6
Reg2*	0.004	0.8	-0.040	-1.6	-0.006	-0.5	0.042	1.8
Reg3*	0.002	0.4	-0.009	-0.4	0.002	0.2	0.006	0.3
Urban*	-0.005	-1.8	0.065	4.4	0.032	3.3	-0.092	-8.4
Double orphan*	0.005	0.7	-0.019	-0.5	0.016	0.8	-0.003	-0.1
Single orphan*	0.002	0.6	0.002	0.1	0.012	1.4	-0.015	-1.2
Fostered*	0.006	1.8	-0.015	-0.9	0.025	2.6	-0.016	-1.2

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.8 - Marginal effect after bivariate probit estimation: SENEGAL

Variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	0.016	2.8	-0.040	-6.5	0.089	13.7	-0.066	-13.6
Age	-0.097	-9.3	0.165	15.3	-0.255	-22.2	0.187	21.8
Age2	0.006	11.1	-0.009	-16.4	0.011	19.6	-0.008	-19.2
Hhsize	-0.001	-0.3	0.004	0.9	-0.010	-2.3	0.007	2.3
Nch04	0.004	0.9	-0.007	-1.4	0.010	1.9	-0.007	-1.9
Nch514	-0.006	-1.6	0.003	0.8	0.011	2.6	-0.008	-2.6
Nch15_65	-0.001	-0.3	-0.002	-0.4	0.011	2.6	-0.008	-2.6
Hhead*	0.049	5.6	-0.044	-4.3	-0.028	-2.7	0.023	3.3
Ceduca~n*	-0.084	-11.7	0.111	12.4	-0.098	-12.3	0.071	9.5
Wlthind5	-0.060	-17.4	0.066	18.6	-0.020	-5.2	0.014	4.8
Reg1*	0.164	9.0	-0.164	-14.9	0.079	4.4	-0.078	-8.2
Reg2*	-0.120	-11.1	0.164	9.9	-0.117	-9.0	0.073	5.5
Reg3*	0.202	11.5	-0.178	-18.9	0.050	3.0	-0.074	-8.3
Reg4*	-0.028	-2.0	-0.026	-1.8	0.138	8.2	-0.084	-10.1
Reg5*	0.070	4.3	-0.094	-7.6	0.089	5.2	-0.064	-6.8
Reg6*	0.142	8.6	-0.122	-11.0	0.002	0.1	-0.021	-2.0
Reg7*	0.250	15.4	-0.191	-21.4	-0.022	-1.5	-0.036	-3.6
Reg8*	0.241	13.4	-0.206	-24.8	0.062	3.6	-0.096	-11.8
Reg9*	0.168	10.1	-0.136	-12.8	-0.017	-1.1	-0.014	-1.3
Urban1*	-0.103	-12.1	0.110	10.9	0.004	0.4	-0.011	-1.6
Orphan*	0.023	0.6	-0.061	-1.8	0.105	2.4	-0.066	-3.0
Orphan3*	0.021	1.8	-0.030	-2.7	0.030	2.4	-0.022	-2.5
Foster*	-0.025	-2.6	0.020	1.9	0.022	2.0	-0.017	-2.2

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.9 - Marginal effects after bivariate probit estimation: SWAZILAND

variable	work only(1)		study only		inactive		work and study	
	dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Sex	-0.001	-0.8	0.011	1.0	-0.010	-1.1	0.000	0.1
Age	-0.022	-6.2	0.196	10.2	-0.226	-14.7	0.052	4.4
age2	0.001	6.4	-0.010	-10.0	0.010	13.3	-0.002	-3.2
Household size	0.000	0.1	-0.003	-0.5	0.007	1.2	-0.003	-0.8
Siblings 0-4	0.003	1.8	-0.015	-1.8	0.006	0.8	0.007	1.3
Siblings 5-14	-0.002	-1.9	0.017	2.2	-0.014	-2.2	-0.001	-0.2
Household members 15-65	0.000	-0.3	0.003	0.4	-0.003	-0.5	0.000	0.1
Sex household head*	0.000	0.1	0.001	0.1	-0.005	-0.5	0.004	0.5
Education household head *	-0.012	-4.3	0.087	6.2	-0.077	-6.6	0.003	0.3
Wealth index	-0.005	-6.0	0.042	8.4	-0.040	-9.9	0.004	1.3
Reg1*	0.016	4.2	-0.086	-4.8	0.042	2.9	0.029	2.6
Reg2*	0.015	4.2	-0.078	-4.4	0.022	1.6	0.040	3.6
Reg4*	0.024	5.0	-0.121	-6.2	0.056	3.6	0.041	3.3
Urban*	0.012	2.8	-0.058	-2.8	0.007	0.4	0.039	3.0
Double orphan*	0.006	0.8	-0.045	-1.2	0.045	1.4	-0.006	-0.3
Single orphan*	0.007	1.9	-0.038	-2.0	0.015	1.0	0.016	1.4
Fostered*	0.001	0.4	-0.005	-0.3	-0.001	-0.1	0.005	0.5

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.10 - Marginal effects after bivariate probit estimation: ZAMBIA

	work only		*study only*		*work and study*		*inactive*	
variable	*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
Doube 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

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.11 Marginal effects after bivariate probit estimation, by household income quintile: ANGOLA

variable	work only(1) (dy/dx)					study only (dy/dx)					inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	0,032	0,026	0,020	0,015	0,010	-0,042	-0,045	-0,045	-0,044	-0,040	0,015	0,018	0,020	0,020	0,019	-0,005	0,000	0,005	0,008	0,011
age	-0,056	-0,049	-0,040	-0,031	-0,022	0,077	0,074	0,065	0,052	0,036	-0,239	-0,231	-0,214	-0,189	-0,161	0,218	0,206	0,189	0,169	0,147
age2	0,003	0,003	0,002	0,002	0,001	-0,004	-0,004	-0,004	-0,003	-0,003	0,010	0,010	0,009	0,008	0,007	-0,009	-0,008	-0,007	-0,006	-0,006
hhsize	-0,029	-0,023	-0,018	-0,013	-0,009	0,037	0,039	0,039	0,037	0,034	-0,024	-0,027	-0,027	-0,026	-0,023	0,015	0,011	0,006	0,002	-0,001
nch04	0,041	0,033	0,026	0,019	0,013	-0,053	-0,056	-0,056	-0,053	-0,048	0,033	0,036	0,037	0,036	0,032	-0,020	-0,014	-0,007	-0,002	0,003
nch514	0,020	0,016	0,012	0,009	0,006	-0,025	-0,027	-0,027	-0,026	-0,024	0,008	0,010	0,012	0,012	0,011	-0,002	0,001	0,003	0,006	0,007
nch15_65	0,026	0,022	0,017	0,012	0,009	-0,034	-0,036	-0,036	-0,034	-0,031	0,024	0,026	0,026	0,025	0,022	-0,016	-0,011	-0,007	-0,003	0,000
hhead*	0,010	0,008	0,006	0,005	0,003	-0,013	-0,014	-0,015	-0,014	-0,013	0,001	0,002	0,003	0,004	0,004	0,002	0,004	0,005	0,006	0,006
ceducation*	-0,073	-0,061	-0,048	-0,036	-0,026	0,096	0,101	0,100	0,095	0,084	-0,098	-0,103	-0,102	-0,096	-0,086	0,075	0,063	0,050	0,038	0,027
wlthind5	-0,061	-0,049	-0,038	-0,028	-0,019	0,078	0,083	0,085	0,082	0,076	-0,022	-0,029	-0,033	-0,034	-0,032	0,005	-0,005	-0,013	-0,020	-0,024
reg1*	-0,019	-0,016	-0,012	-0,009	-0,006	0,024	0,024	0,023	0,020	0,017	-0,038	-0,037	-0,035	-0,032	-0,027	0,033	0,029	0,025	0,021	0,017
reg2*	0,016	0,011	0,008	0,005	0,003	-0,056	-0,068	-0,079	-0,088	-0,094	-0,140	-0,126	-0,109	-0,091	-0,073	0,179	0,182	0,180	0,174	0,164
reg4*	0,028	0,022	0,016	0,011	0,008	-0,041	-0,047	-0,051	-0,054	-0,055	-0,062	-0,054	-0,045	-0,036	-0,028	0,074	0,078	0,080	0,079	0,076
reg5*	-0,004	-0,005	-0,005	-0,004	-0,003	-0,024	-0,033	-0,042	-0,051	-0,057	-0,136	-0,124	-0,110	-0,093	-0,076	0,164	0,163	0,157	0,148	0,136
reg6*	-0,030	-0,025	-0,020	-0,015	-0,010	0,019	0,014	0,008	0,000	-0,008	-0,119	-0,113	-0,102	-0,088	-0,073	0,130	0,124	0,114	0,103	0,092
urban1*	-0,052	-0,041	-0,031	-0,022	-0,015	0,068	0,077	0,082	0,085	0,085	0,071	0,059	0,047	0,036	0,026	-0,086	-0,094	-0,098	-0,099	-0,096
orphan*	0,077	0,068	0,056	0,043	0,032	-0,106	-0,115	-0,118	-0,116	-0,107	0,113	0,122	0,125	0,122	0,113	-0,085	-0,075	-0,063	-0,050	-0,037
orphan3*	0,021	0,018	0,014	0,010	0,007	-0,028	-0,029	-0,029	-0,027	-0,024	0,028	0,029	0,029	0,027	0,024	-0,021	-0,018	-0,014	-0,010	-0,007

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.12 Marginal effects after bivariate probit estimation, by household income quintile: BURUNDI

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	-0,010	-0,007	-0,005	-0,003	-0,001	-0,019	-0,020	-0,020	-0,019	-0,018	0,057	0,057	0,056	0,054	0,052	-0,027	-0,029	-0,031	-0,032	-0,033
age	-0,054	-0,066	-0,075	-0,081	-0,083	0,251	0,266	0,276	0,279	0,275	-0,389	-0,402	-0,409	-0,409	-0,402	0,192	0,202	0,208	0,211	0,210
age2	0,004	0,004	0,005	0,005	0,005	-0,011	-0,012	-0,013	-0,013	-0,013	0,015	0,015	0,016	0,016	0,016	-0,007	-0,008	-0,008	-0,008	-0,008
hhsize	-0,025	-0,023	-0,021	-0,018	-0,016	0,014	0,016	0,017	0,019	0,020	0,020	0,017	0,015	0,013	0,011	-0,009	-0,010	-0,012	-0,013	-0,015
nch04	0,042	0,038	0,035	0,031	0,027	-0,022	-0,025	-0,028	-0,031	-0,033	-0,035	-0,031	-0,028	-0,024	-0,020	0,016	0,018	0,021	0,024	0,026
nch514	0,036	0,033	0,031	0,028	0,025	-0,029	-0,032	-0,034	-0,037	-0,038	-0,011	-0,007	-0,004	-0,001	0,002	0,004	0,006	0,008	0,010	0,012
nch15_65	-0,006	-0,006	-0,006	-0,006	-0,006	0,011	0,012	0,012	0,013	0,013	-0,010	-0,010	-0,011	-0,011	-0,012	0,005	0,005	0,005	0,005	0,004
hhead*	0,041	0,040	0,038	0,036	0,033	-0,058	-0,062	-0,065	-0,067	-0,068	0,033	0,038	0,042	0,044	0,045	-0,016	-0,016	-0,014	-0,012	-0,010
ceducation*	-0,043	-0,044	-0,044	-0,043	-0,041	0,091	0,096	0,099	0,101	0,099	-0,101	-0,106	-0,109	-0,109	-0,108	0,053	0,053	0,053	0,052	0,050
wlthind5	-0,029	-0,028	-0,027	-0,026	-0,024	0,040	0,043	0,046	0,048	0,049	-0,024	-0,027	-0,030	-0,032	-0,033	0,013	0,012	0,011	0,010	0,009
urban1*	-0,137	-0,126	-0,114	-0,102	-0,090	0,147	0,158	0,167	0,174	0,178	0,013	-0,002	-0,015	-0,026	-0,035	-0,024	-0,031	-0,038	-0,045	-0,053
orphan*	0,013	0,019	0,025	0,029	0,032	-0,114	-0,126	-0,136	-0,144	-0,149	0,168	0,179	0,188	0,195	0,198	-0,067	-0,072	-0,077	-0,080	-0,081
orphan3*	0,060	0,060	0,060	0,058	0,055	-0,092	-0,100	-0,107	-0,113	-0,116	0,069	0,078	0,086	0,091	0,095	-0,037	-0,038	-0,038	-0,037	-0,034
foster*	0,009	0,009	0,009	0,008	0,007	-0,010	-0,011	-0,011	-0,012	-0,012	0,001	0,002	0,003	0,004	0,005	-0,001	-0,001	0,000	0,000	0,000

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.13 Marginal effects after bivariate probit estimation, by household income quintile: CENTRAL AFRICAN REPUBLIC

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	0,110	0,113	0,113	0,108	0,100	-0,035	-0,043	-0,051	-0,059	-0,065	0,007	0,014	0,021	0,027	0,032	-0,083	-0,084	-0,082	-0,076	-0,067
age	-0,146	-0,160	-0,168	-0,167	-0,160	0,035	0,039	0,041	0,041	0,036	-0,152	-0,163	-0,171	-0,176	-0,176	0,263	0,284	0,297	0,302	0,299
age2	0,007	0,008	0,008	0,008	0,008	-0,002	-0,002	-0,002	-0,002	-0,002	0,006	0,007	0,007	0,007	0,007	-0,012	-0,012	-0,013	-0,013	-0,013
hhsize	0,017	0,017	0,017	0,016	0,014	-0,006	-0,008	-0,010	-0,011	-0,013	-0,007	-0,006	-0,005	-0,004	-0,003	-0,004	-0,003	-0,002	0,000	0,002
nch04	-0,018	-0,018	-0,018	-0,017	-0,016	0,006	0,007	0,009	0,010	0,011	0,001	0,000	-0,001	-0,002	-0,003	0,011	0,011	0,010	0,009	0,007
nch514	-0,021	-0,021	-0,020	-0,019	-0,017	0,008	0,010	0,012	0,014	0,017	0,010	0,009	0,008	0,007	0,005	0,003	0,002	0,000	-0,002	-0,005
nch15_65	-0,018	-0,018	-0,017	-0,016	-0,014	0,007	0,009	0,011	0,013	0,015	0,011	0,010	0,009	0,008	0,006	0,000	-0,001	-0,003	-0,005	-0,007
hhead*	-0,007	-0,006	-0,006	-0,005	-0,004	0,003	0,005	0,006	0,007	0,009	0,013	0,012	0,012	0,011	0,010	-0,009	-0,010	-0,012	-0,014	-0,015
ceducation*	-0,102	-0,107	-0,107	-0,104	-0,096	0,029	0,035	0,040	0,044	0,046	-0,042	-0,048	-0,054	-0,058	-0,061	0,115	0,120	0,121	0,118	0,111
wlthind5	-0,067	-0,068	-0,068	-0,064	-0,059	0,022	0,027	0,032	0,038	0,042	0,003	-0,001	-0,006	-0,010	-0,013	0,043	0,043	0,041	0,036	0,030
urban1*	-0,150	-0,148	-0,142	-0,132	-0,118	0,058	0,072	0,088	0,104	0,118	0,063	0,055	0,045	0,034	0,023	0,029	0,021	0,009	-0,006	-0,023
orphan*	0,054	0,059	0,063	0,063	0,061	-0,017	-0,020	-0,024	-0,026	-0,027	0,040	0,044	0,049	0,052	0,054	-0,076	-0,083	-0,088	-0,089	-0,088
orphan3*	0,037	0,040	0,041	0,041	0,039	-0,011	-0,013	-0,015	-0,016	-0,017	0,021	0,024	0,026	0,028	0,029	-0,047	-0,050	-0,052	-0,052	-0,051
foster*	0,023	0,025	0,026	0,027	0,026	-0,006	-0,007	-0,008	-0,008	-0,008	0,023	0,025	0,027	0,028	0,028	-0,040	-0,043	-0,045	-0,046	-0,046

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.14 Marginal effects after bivariate probit estimation, by household income quintile: COTE D'IVOIRE

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	0,108	0,097	0,084	0,071	0,057	-0,110	-0,116	-0,118	-0,117	-0,112	0,054	0,060	0,063	0,063	0,060	-0,053	-0,042	-0,029	-0,017	-0,005
age	-0,087	-0,085	-0,078	-0,069	-0,058	0,073	0,066	0,054	0,039	0,020	-0,234	-0,226	-0,213	-0,195	-0,173	0,248	0,245	0,237	0,225	0,211
age2	0,005	0,005	0,004	0,004	0,003	-0,004	-0,004	-0,004	-0,003	-0,002	0,010	0,010	0,009	0,008	0,008	-0,010	-0,010	-0,010	-0,009	-0,008
hhsize	0,007	0,006	0,005	0,004	0,003	-0,009	-0,010	-0,012	-0,013	-0,014	-0,014	-0,012	-0,011	-0,009	-0,008	0,015	0,017	0,018	0,018	0,019
nch04	0,012	0,011	0,010	0,009	0,007	-0,011	-0,011	-0,010	-0,008	-0,007	0,022	0,022	0,021	0,019	0,017	-0,023	-0,022	-0,021	-0,020	-0,018
nch514	-0,013	-0,012	-0,010	-0,008	-0,006	0,015	0,016	0,018	0,019	0,019	0,007	0,005	0,004	0,003	0,002	-0,008	-0,010	-0,012	-0,013	-0,014
nch15_65	-0,016	-0,013	-0,011	-0,009	-0,007	0,018	0,021	0,023	0,024	0,025	0,016	0,014	0,011	0,009	0,007	-0,018	-0,021	-0,023	-0,024	-0,026
hhead*	0,019	0,017	0,014	0,012	0,010	-0,020	-0,021	-0,022	-0,022	-0,021	0,006	0,007	0,008	0,008	0,008	-0,005	-0,003	-0,001	0,001	0,003
ceducation*	-0,148	-0,131	-0,111	-0,092	-0,073	0,163	0,168	0,168	0,163	0,153	-0,089	-0,094	-0,095	-0,091	-0,084	0,074	0,057	0,039	0,020	0,004
wlthind5	-0,053	-0,047	-0,041	-0,034	-0,027	0,054	0,057	0,059	0,059	0,057	-0,020	-0,023	-0,025	-0,026	-0,025	0,019	0,013	0,007	0,001	-0,005
urban1*	-0,151	-0,128	-0,106	-0,085	-0,066	0,171	0,191	0,208	0,221	0,229	0,127	0,105	0,084	0,065	0,049	-0,147	-0,168	-0,186	-0,201	-0,212
orphan*	0,085	0,081	0,074	0,065	0,055	-0,086	-0,091	-0,093	-0,092	-0,088	0,086	0,092	0,094	0,093	0,089	-0,086	-0,081	-0,075	-0,066	-0,056
orphan3*	0,062	0,057	0,050	0,043	0,035	-0,059	-0,063	-0,066	-0,066	-0,065	0,026	0,030	0,033	0,034	0,033	-0,029	-0,024	-0,017	-0,010	-0,004
foster*	0,081	0,072	0,063	0,053	0,043	-0,076	-0,083	-0,088	-0,090	-0,090	0,006	0,013	0,018	0,021	0,023	-0,010	-0,002	0,007	0,016	0,024

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.15 Marginal effects after bivariate probit estimation, by household income quintile: GAMBIA

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	0,011	0,008	0,006	0,005	0,003	-0,040	-0,037	-0,033	-0,029	-0,025	0,027	0,024	0,021	0,017	0,014	0,002	0,004	0,006	0,007	0,008
age	-0,038	-0,030	-0,022	-0,016	-0,012	0,121	0,104	0,086	0,070	0,054	-0,140	-0,122	-0,104	-0,086	-0,069	0,057	0,048	0,040	0,033	0,027
age2	0,002	0,001	0,001	0,001	0,000	-0,005	-0,004	-0,003	-0,003	-0,002	0,006	0,005	0,004	0,004	0,003	-0,002	-0,002	-0,002	-0,001	-0,001
hhsize	0,003	0,002	0,002	0,001	0,001	-0,017	-0,017	-0,017	-0,017	-0,017	-0,006	-0,005	-0,004	-0,003	-0,002	0,020	0,020	0,020	0,019	0,018
nch04	-0,002	-0,001	-0,001	0,000	0,000	0,016	0,018	0,020	0,021	0,022	0,022	0,019	0,015	0,012	0,010	-0,037	-0,036	-0,034	-0,033	-0,031
nch514	-0,001	-0,001	0,000	0,000	0,000	0,006	0,007	0,007	0,008	0,008	0,007	0,006	0,005	0,004	0,003	-0,012	-0,012	-0,012	-0,011	-0,011
nch15_65	-0,001	-0,001	-0,001	0,000	0,000	0,010	0,011	0,011	0,012	0,012	0,010	0,008	0,007	0,005	0,004	-0,018	-0,018	-0,017	-0,016	-0,016
hhead*	-0,009	-0,007	-0,005	-0,004	-0,003	0,040	0,038	0,037	0,035	0,032	-0,005	-0,006	-0,005	-0,005	-0,004	-0,025	-0,026	-0,026	-0,026	-0,025
ceducation*	0,011	0,008	0,006	0,004	0,003	-0,057	-0,056	-0,055	-0,053	-0,050	-0,008	-0,006	-0,004	-0,003	-0,002	0,054	0,054	0,053	0,051	0,049
wlthind5	-0,013	-0,010	-0,007	-0,005	-0,004	0,048	0,044	0,040	0,036	0,031	-0,028	-0,025	-0,022	-0,018	-0,015	-0,007	-0,009	-0,011	-0,012	-0,013
urban1*	0,010	0,008	0,006	0,005	0,004	-0,011	-0,001	0,009	0,017	0,025	0,100	0,086	0,072	0,059	0,047	-0,099	-0,093	-0,087	-0,082	-0,076
orphan*	0,056	0,043	0,033	0,024	0,017	-0,213	-0,215	-0,214	-0,211	-0,206	-0,021	-0,013	-0,007	-0,003	-0,001	0,178	0,185	0,189	0,191	0,190
orphan3*	-0,007	-0,006	-0,004	-0,003	-0,002	0,033	0,031	0,029	0,027	0,024	-0,009	-0,009	-0,008	-0,007	-0,005	-0,016	-0,017	-0,017	-0,017	-0,017
foster*	0,012	0,009	0,007	0,005	0,004	-0,044	-0,041	-0,037	-0,034	-0,030	0,021	0,019	0,017	0,014	0,012	0,010	0,012	0,014	0,014	0,015

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.16 Marginal effects after bivariate probit estimation, by household income quintile: KENYA

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	-0,009	-0,007	-0,005	-0,003	-0,002	0,050	0,051	0,050	0,048	0,045	0,012	0,009	0,007	0,005	0,003	-0,053	-0,053	-0,051	-0,049	-0,046
age	-0,067	-0,049	-0,035	-0,024	-0,016	0,020	0,008	-0,005	-0,017	-0,027	-0,164	-0,146	-0,125	-0,104	-0,084	0,211	0,187	0,166	0,145	0,127
age2	0,003	0,002	0,002	0,001	0,001	-0,002	-0,002	-0,001	-0,001	0,000	0,007	0,006	0,006	0,005	0,004	-0,008	-0,007	-0,006	-0,005	-0,004
hhsize	0,001	0,001	0,001	0,000	0,000	-0,005	-0,005	-0,005	-0,005	-0,004	-0,001	-0,001	0,000	0,000	0,000	0,005	0,005	0,005	0,004	0,004
nch04	0,009	0,006	0,005	0,003	0,002	-0,011	-0,010	-0,008	-0,007	-0,005	0,015	0,014	0,012	0,010	0,008	-0,012	-0,010	-0,008	-0,006	-0,005
nch514	0,001	0,001	0,001	0,000	0,000	-0,010	-0,010	-0,010	-0,010	-0,009	-0,004	-0,004	-0,003	-0,002	-0,002	0,013	0,013	0,012	0,012	0,011
nch15_65	0,001	0,001	0,001	0,000	0,000	-0,006	-0,006	-0,006	-0,006	-0,005	-0,001	-0,001	0,000	0,000	0,000	0,005	0,006	0,005	0,005	0,005
hhead*	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	-0,001	-0,001	-0,001	0,000	0,000	0,001	0,001	0,001	0,000	0,000
ceducation*	0,030	0,021	0,015	0,010	0,006	-0,135	-0,131	-0,123	-0,113	-0,102	-0,002	0,002	0,004	0,005	0,005	0,108	0,107	0,104	0,098	0,090
wlthind5	-0,024	-0,018	-0,013	-0,009	-0,006	0,065	0,063	0,059	0,055	0,049	-0,016	-0,016	-0,015	-0,014	-0,012	-0,025	-0,029	-0,032	-0,032	-0,032
urban1*	-0,037	-0,026	-0,018	-0,012	-0,008	0,197	0,194	0,186	0,175	0,160	0,065	0,051	0,039	0,029	0,021	-0,226	-0,218	-0,206	-0,191	-0,173
orphan*	0,068	0,053	0,039	0,028	0,020	-0,121	-0,118	-0,112	-0,103	-0,093	0,063	0,062	0,058	0,053	0,046	-0,010	0,003	0,014	0,022	0,027
orphan3*	0,031	0,023	0,017	0,012	0,008	-0,053	-0,050	-0,045	-0,040	-0,035	0,041	0,039	0,035	0,031	0,026	-0,020	-0,012	-0,007	-0,002	0,001
foster*	0,112	0,089	0,068	0,050	0,035	-0,180	-0,178	-0,171	-0,159	-0,144	0,102	0,102	0,098	0,091	0,081	-0,035	-0,013	0,005	0,018	0,028

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.17 Marginal effects after bivariate probit estimation, by household income quintile: LESOTHO

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	-0,032	-0,026	-0,020	-0,015	-0,011	0,119	0,109	0,100	0,092	0,084	-0,059	-0,049	-0,039	-0,030	-0,023	-0,029	-0,035	-0,041	-0,046	-0,051
age	-0,050	-0,043	-0,036	-0,028	-0,022	0,156	0,116	0,079	0,046	0,018	-0,214	-0,175	-0,138	-0,106	-0,078	0,109	0,102	0,095	0,088	0,081
age2	0,002	0,002	0,002	0,001	0,001	-0,008	-0,006	-0,005	-0,003	-0,002	0,009	0,007	0,006	0,005	0,003	-0,004	-0,003	-0,003	-0,003	-0,002
hhsize	0,003	0,003	0,002	0,002	0,001	-0,007	-0,004	0,000	0,003	0,005	0,019	0,016	0,012	0,009	0,007	-0,015	-0,015	-0,015	-0,014	-0,014
nch04	-0,001	-0,001	0,000	0,000	0,000	0,001	0,000	-0,001	-0,002	-0,002	-0,005	-0,004	-0,003	-0,002	-0,002	0,005	0,005	0,004	0,004	0,004
nch514	0,003	0,003	0,002	0,001	0,001	-0,014	-0,015	-0,015	-0,015	-0,015	-0,001	0,000	0,000	0,000	0,000	0,012	0,013	0,013	0,014	0,014
nch15_65	-0,002	-0,002	-0,002	-0,002	-0,001	0,005	0,001	-0,003	-0,007	-0,010	-0,021	-0,017	-0,014	-0,010	-0,008	0,019	0,019	0,019	0,019	0,018
hhead*	0,007	0,006	0,004	0,003	0,003	-0,023	-0,020	-0,017	-0,014	-0,011	0,019	0,016	0,013	0,010	0,007	-0,003	-0,002	0,000	0,001	0,001
ceducation*	-0,064	-0,054	-0,044	-0,035	-0,027	0,184	0,174	0,164	0,154	0,144	-0,079	-0,069	-0,058	-0,047	-0,037	-0,040	-0,051	-0,062	-0,072	-0,080
wlthind5	-0,011	-0,009	-0,007	-0,006	-0,004	0,035	0,028	0,022	0,016	0,011	-0,037	-0,031	-0,024	-0,019	-0,014	0,013	0,012	0,010	0,008	0,007
urban1*	-0,010	-0,007	-0,005	-0,003	-0,002	0,044	0,055	0,065	0,073	0,080	0,051	0,041	0,032	0,024	0,018	-0,085	-0,089	-0,092	-0,094	-0,096
orphan*	0,008	0,007	0,005	0,004	0,003	-0,027	-0,023	-0,019	-0,015	-0,012	0,025	0,021	0,017	0,013	0,010	-0,006	-0,005	-0,003	-0,002	-0,001
orphan3*	0,002	0,002	0,002	0,001	0,001	-0,005	-0,001	0,002	0,005	0,007	0,018	0,015	0,012	0,009	0,007	-0,016	-0,016	-0,015	-0,015	-0,015
foster*	0,009	0,007	0,006	0,005	0,004	-0,028	-0,022	-0,015	-0,009	-0,004	0,038	0,032	0,025	0,020	0,015	-0,019	-0,018	-0,016	-0,015	-0,014

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.18 Marginal effects after bivariate probit estimation, by household income quintile: SENEGAL

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	0,011	0,015	0,017	0,017	0,016	-0,032	-0,037	-0,040	-0,042	-0,041	0,083	0,087	0,090	0,089	0,086	-0,061	-0,065	-0,066	-0,065	-0,062
age	-0,090	-0,096	-0,097	-0,092	-0,082	0,131	0,152	0,168	0,177	0,177	-0,222	-0,243	-0,258	-0,264	-0,260	0,181	0,188	0,186	0,178	0,165
age2	0,006	0,006	0,006	0,005	0,005	-0,007	-0,008	-0,009	-0,010	-0,010	0,009	0,010	0,011	0,012	0,012	-0,008	-0,008	-0,008	-0,008	-0,007
hhsize	0,000	-0,001	-0,001	-0,001	-0,001	0,003	0,003	0,004	0,004	0,004	-0,009	-0,010	-0,010	-0,010	-0,009	0,007	0,007	0,007	0,007	0,007
nch04	0,004	0,004	0,004	0,004	0,004	-0,005	-0,006	-0,007	-0,007	-0,007	0,008	0,009	0,010	0,010	0,010	-0,007	-0,007	-0,007	-0,007	-0,006
nch514	-0,008	-0,007	-0,006	-0,005	-0,004	0,002	0,003	0,004	0,004	0,005	0,013	0,012	0,011	0,010	0,009	-0,007	-0,008	-0,009	-0,009	-0,010
nch15_65	-0,002	-0,002	-0,001	-0,001	0,000	-0,002	-0,002	-0,002	-0,001	-0,001	0,011	0,011	0,011	0,011	0,010	-0,007	-0,008	-0,009	-0,009	-0,009
hhead*	0,060	0,054	0,047	0,039	0,032	-0,033	-0,039	-0,045	-0,050	-0,053	-0,042	-0,034	-0,027	-0,019	-0,012	0,014	0,019	0,024	0,029	0,033
ceducation*	-0,092	-0,089	-0,082	-0,072	-0,060	0,091	0,104	0,113	0,118	0,118	-0,077	-0,090	-0,100	-0,105	-0,106	0,079	0,076	0,069	0,059	0,048
wlthind5	-0,068	-0,064	-0,059	-0,051	-0,043	0,050	0,060	0,068	0,074	0,077	-0,003	-0,013	-0,022	-0,029	-0,034	0,020	0,017	0,012	0,007	0,000
urban1*	-0,122	-0,112	-0,100	-0,085	-0,070	0,084	0,100	0,113	0,122	0,127	0,033	0,017	0,001	-0,013	-0,024	0,004	-0,004	-0,014	-0,024	-0,034
orphan*	0,016	0,021	0,023	0,024	0,023	-0,046	-0,055	-0,063	-0,068	-0,071	0,091	0,099	0,106	0,110	0,110	-0,061	-0,065	-0,066	-0,066	-0,062
orphan3*	0,022	0,022	0,021	0,019	0,017	-0,023	-0,027	-0,031	-0,033	-0,034	0,023	0,028	0,031	0,034	0,034	-0,022	-0,022	-0,022	-0,020	-0,018
foster*	-0,031	-0,028	-0,024	-0,020	-0,016	0,015	0,018	0,021	0,023	0,025	0,029	0,025	0,021	0,017	0,013	-0,012	-0,015	-0,017	-0,020	-0,022

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week

Table A1.19 Marginal effects after bivariate probit estimation, by household income quintile: SWAZILAND

variable	work only(1) (dy/dx)					study only (dy/dx)					Inactive (dy/dx)					work and study(dy/dx)				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
sex	-0,002	-0,002	-0,001	-0,001	-0,001	0,014	0,012	0,011	0,009	0,008	-0,013	-0,011	-0,010	-0,008	-0,007	0,001	0,001	0,000	0,000	0,000
age	-0,027	-0,025	-0,022	-0,018	-0,015	0,259	0,226	0,190	0,154	0,119	-0,289	-0,256	-0,220	-0,183	-0,148	0,058	0,055	0,051	0,048	0,044
age2	0,001	0,001	0,001	0,001	0,001	-0,012	-0,011	-0,009	-0,008	-0,006	0,013	0,012	0,010	0,008	0,007	-0,002	-0,002	-0,002	-0,002	-0,001
hhsize	0,000	0,000	0,000	0,000	0,000	-0,005	-0,004	-0,003	-0,002	-0,001	0,009	0,008	0,007	0,005	0,004	-0,003	-0,003	-0,003	-0,003	-0,003
nch04	0,004	0,003	0,003	0,002	0,001	-0,016	-0,016	-0,015	-0,014	-0,013	0,007	0,006	0,006	0,005	0,004	0,006	0,006	0,007	0,007	0,007
nch514	-0,003	-0,003	-0,002	-0,002	-0,001	0,020	0,019	0,017	0,014	0,012	-0,017	-0,015	-0,013	-0,011	-0,009	0,000	-0,001	-0,001	-0,001	-0,002
nch15_65	0,000	0,000	0,000	0,000	0,000	0,004	0,003	0,003	0,002	0,002	-0,004	-0,003	-0,003	-0,002	-0,002	0,000	0,000	0,000	0,000	0,000
hhead*	0,000	0,000	0,000	0,000	0,000	0,002	0,002	0,001	0,000	-0,001	-0,006	-0,005	-0,005	-0,004	-0,003	0,003	0,004	0,004	0,004	0,004
ceducation*	-0,016	-0,014	-0,012	-0,010	-0,008	0,105	0,096	0,085	0,074	0,062	-0,096	-0,086	-0,076	-0,064	-0,053	0,006	0,004	0,002	0,000	-0,001
wlthind5	-0,007	-0,006	-0,005	-0,004	-0,003	0,053	0,047	0,041	0,034	0,028	-0,051	-0,046	-0,039	-0,033	-0,027	0,005	0,005	0,004	0,003	0,002
urban1*	0,018	0,015	0,012	0,009	0,007	-0,058	-0,059	-0,058	-0,058	-0,056	0,006	0,006	0,007	0,006	0,006	0,034	0,037	0,040	0,042	0,044
orphan*	0,007	0,006	0,005	0,005	0,004	-0,055	-0,050	-0,044	-0,037	-0,030	0,056	0,050	0,044	0,037	0,031	-0,007	-0,007	-0,006	-0,005	-0,004
orphan3*	0,010	0,008	0,007	0,005	0,004	-0,041	-0,039	-0,037	-0,035	-0,033	0,018	0,016	0,015	0,013	0,011	0,013	0,014	0,016	0,017	0,018
foster*	0,002	0,001	0,001	0,001	0,001	-0,004	-0,005	-0,005	-0,005	-0,005	-0,002	-0,002	-0,001	-0,001	-0,001	0,005	0,005	0,005	0,005	0,006

Note: (1) Work is defined as all economically active children aged 5-14, in addition to all children aged ≤14 involved in household chores ≥ 28 hrs/week