Session:
Child Labor and Education in Africa

CHILD LABOR AND SCHOOLING IN BURKINA FASO AND MALI:
A MULTILEVEL EVENT HISTORY ANALYSIS[1]

Jean-François Kobiané [(*)] & Richard Marcoux [(**)]

[(*)]Institut Supérieur des Sciences de la Population
Université de Ouagadougou
03 B.P. 7118 Ouagadougou 03
Burkina Faso
Tel.: (226) 50 30 25 58
Fax: (226) 50 30 25 60
e-mail : jfkobiane@issp.bf

[(**)]Department of Sociology
Université Laval
Pavillon Charles-De-Koninck
Local 4491, Quebec City (Québec)
G1K 7P4 Canada
Tel.: (418) 656-5105
Fax: (418) 656-7390
e-mail: richard.marcoux@soc.ulaval.ca

Preliminary Draft (March 2007)

Introduction

The educational levels in Burkina Faso and Mali are among the lowest in the African continent and in the world. Both countries are located in what Antonioli (1993:82) has termed the "Soudano-Sahelian Illiteracy Zone". Indeed, the Gross Enrollment Rate (GER) for primary school (based on the educational statistics from the Ministry of Education) was in 2005-2006, 61 % and 75 % respectively in Burkina Faso and Mali. These overall levels of schooling are also characterized by important spatial and gender gap. For the same academic year, the GER for boys was 66 % and 55 % for girls in Burkina while in Mali it was respectively 80 % and 65 %. In terms of spatial inequalities, in Burkina Faso, the GER for the Kadiogo province where the capital city (Ouagadougou) is located was 96 % against 33 % for the rural province of Tapoa. At the same time, in Mali, Bamako (the capital city) had a GER of 130 % while the one of the Kidal region was 46 %. In such a setting, achieving the Millennium Development Goal of "Universal Primary Education" remains a huge challenge. Thus, both countries have implemented Ten-Year plans for basic education (PDDEB in Burkina Faso and PRODEC in Mali) which main objectives are to increase school attendance rates, to reduce gender and spatial gaps, and also to improve school quality.

On another side, child labor is a widespread phenomenon in these settings, despite all the conventions the governments of both countries have signed. Actually, the issue of child labor is a complex one, since children's labor activities are most of the time vital to families' survival. Indeed, poverty (which is increasing in these countries) is not only one of the main barriers to schooling improvements, but also one of the main factors which push lots of children in economic activities. Even if some children attend school while performing economic activities (Siddiqi and Patrinos, 1997; Rizzini et al., 1998), a child's labor activities can, to a certain extent, compromise his schooling (Moser, 1996; Marcoux et al., 2002). Therefore, the objective of Education for All (EFA) and the one of eliminating child hazardous labor are somewhat linked (ILO/IPEC, 2004).

Governments as well as the civil society (NGOs, associations…) in both countries are becoming more and more interested in issues related to childhood, and many actions have been undertaken

in past years in targeting theses issues as orphans' wellbeing, child labor and schooling, etc. But there his still a need to more understand the patterns of children's participation in school and labor activities. In addition, some recent work (see, e.g., Bass, 2004; Ray and Lancaster, 2004; Maitra and Ray, 2002) has highlighted the importance of a comparative approach between countries in terms of children's activities. By focusing on Burkina Faso and Mali two west-African countries sharing some common economic and cultural traits, we seek to understand the common and specific patterns in terms of children's participation in school and work.

There are numerous studies on the topic of child labor and schooling in developing countries[2]. Much of the research has been based on data derived from standard cross-sectional household surveys. Despite the findings from these studies and the lessons learnt, there is a need for examining supplementary data sources to assess the full scope of interaction between child labor and schooling. The main objective of this study is to analyze children's activities in a longitudinal framework, using two nationally representative and retrospective data collected in Burkina and Mali in 2000.

In this paper we first summarize some background elements dealing with the child schooling and labor nexus. The second section on methodology provides information on the data and describes the research methods. In the third section, we present the main results of the study.

Background

The literature on child labor and education have highlighted numerous social and economic factors, as well as factors linked to educational system as determinants of child participation in school in work (see, e.g., Bass 2004; Brisset 2000; Salazar and Glasinovich 1998; Unicef 1997; Schlemmer 1996…). Among all theses factors, poverty has appeared as one of the most pushing factor for child labor (Brisset 200).

---

[2] *See* Bass L. E. 2004. *Child Labor in Sub-Saharan Africa*, Boulder: Lynne Rienner Publishers ; Salazar M. C., and Glasinovich W. A. (ed.) 1998. *Child Work and Education. Five case studies from Latin America*, UNICEF, Ashgate Pub. Ltd, Florence ; Schlemmer B. (ed.) 1996. *The exploited child*, Zed Books, London-New-York.

In terms of research methods, there are numerous statistical methods for the analysis of child's activities (Maitra and Ray 2002; Ray 2003). The choice of a specific method depends on some criteria, and one of them is the way the analyst considers the process of children's activities, particularly schooling and labor: are schooling and labor considered as independent activities or not? Is the analyst considering all the combinations of children's activities, since a child who is not attending school is not necessarily working? A child can be neither in school nor at work, or at the opposite being attending school and working simultaneously (Maitra and Ray 2002).

In a recent review on "Child labor, school attendance and academic performance", Orazem and Gunnarsson highlighted some limitations and gaps in previous papers devoted to this topic (IPEC, 2003). Particular emphasis was given to the lack of empirical data on (i) the impact of child labor on cognitive achievement at the primary level; (ii) the long-term health consequences of child labor; and (iii) a threshold level of hours at which child labor causes damage. It also called for more retrospective data to analyze the longitudinal aspects of child labor. It is to be noted that IPEC–SIMPOC and UCW have tried to address some of the identified analytical gaps during the last few years (e.g. in surveys on the impact of child work on school attendance and performance). The study proposed here will be complementary to previous studies in this area. It attempts to contribute to the ongoing policy debate on the child labor – schooling nexus and provide impetus to programming work on the above.

Methodology

Data and research methods

The study will rely on data derived from two nationally representative and retrospective surveys collected in the year 2000. For Burkina Faso, research will be based on the "Migration and Urban Integration Survey in Burkina" (EMIUB)[3] conducted by the Demography Department of Université de Montréal, CERPOD[4] in Bamako, and UERD[5] in Ouagadougou. The survey

---

[3] Enquête Migration et Insertion Urbaine au Burkina.
[4] Centre d'Études et de Recherche sur la Population et le Développement.
[5] Unité d'enseignement et de Recherche en Démographie (which became Institut Supérieur des Sciences de la Population in 2005).

concerned 3 517 households and 8 644 event history data of respondents ages 15-64. Data for Mali will be drawn from the "Family Dynamic and Children's Schooling Survey in Mali" (EDFEEM),[6] also conducted by the Demography Department of Université de Montréal and CERPOD. The survey covered 3 848 households, 3 152 event history data of women ages 30-54, 2 307 event history data of men ages 35-59, and 2 991 residential and educational trajectories of children ages 12-16. Since the Mali survey concerned people aged 12-16 years, for comparison reason, we'll focus on the youngest cohort in Burkina Faso data and limit our analysis to period of childhood from the 6th birthday to age 16 (figures 1 and 2).
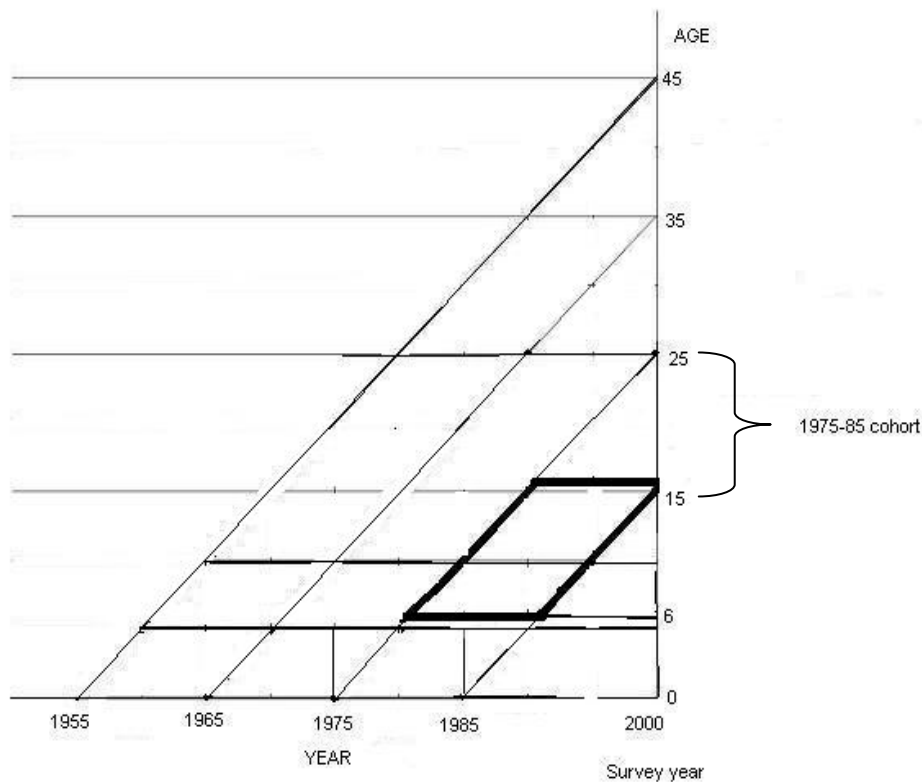

Figure 1: Lexis diagram illustrating the cohort under study and the period of observation (EMIUB)

---

[6] Enquête sur les dynamiques familiales et l'éducation des enfants au Mali.
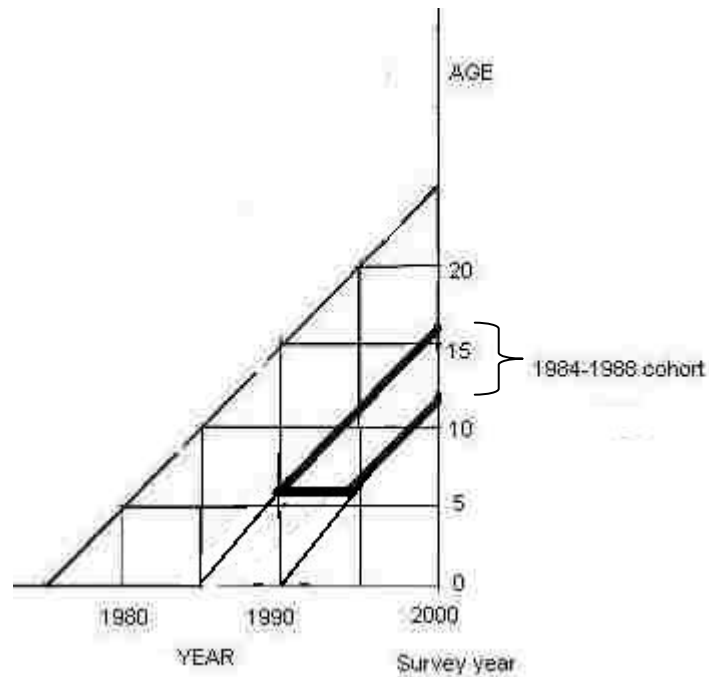
Figure 2: Lexis diagram illustrating the cohort under study and the period of observation
(EDFEEM)

Since most of the data used to examine child's work and schooling are cross-sectional data, a child can only be in one of the following situations at the time of the survey: *(i) neither in school nor at work*, *(ii) at school but not at work*, *(iii) at school and at work*, and *(iv) not at school but at work*. Nonetheless, when using longitudinal data, a child can experience one or more of theses *states* during his childhood: for instance a child can start school at age 6 and then combine school and work at ages 9 and 10 and then interrupt school at 11 while continuing to work. A child may not necessarily experience all these four states. This longitudinal approach of child's activities can be fruitful in terms of lessons and have important policy implications: what's the average duration spent in each specific state (one of the four combinations), that is the average duration of an *episode*? What's the average number of episodes for a specific state? What's the probability to transit from one state to another (e.g. from *"being only in school"* to *"being in school and working"*) which is an *event*. Another issue that we can address is the competing nature of child's activities (*competing risks*): the child who is *"only in school"* at a specific time can transit not

6

only to the state "*in school and working*", but also to the states "*not in school but working*" or "*neither in school, nor working*".

Since we can have for a specific child, many and different episodes of activities combinations, the structure of the data is one of repeated episodes for the same individual. Actually, longitudinal data have a two-level hierarchical structure, with repeated measurements (level 1) nested within individuals (level 2), and may therefore be analyzed using multilevel models (Goldstein 2003; Steele *et al.* 2004; Steele *et al.* 1996). So the method we'll use is a *multilevel event history model*. Given that the dependent variable is multinomial, using methods for unordered multinomial response data and logit link, Steele *et al.* (2004) proposed a general model for *multilevel discrete-time competing risks* which can be written as:

$$\log\left(\frac{h_{tjk}^{(r)}}{h_{tjk}^{(0)}}\right) = \alpha^{(r)^T} \mathbf{z}_t^{(r)} + \beta^{(r)^T} \mathbf{x}_{tjk}^{(r)} + u_k^{(r)}, \qquad r = 1, \dots, R.$$

The effect of duration is represented by $\alpha^{(r)^T} \mathbf{z}_t^{(r)}$, where $\mathbf{z}_t^{(r)}$ is a vector of functions of t and $\alpha^{(r)}$ is a parameter vector. The covariates, represented by $\mathbf{x}_{tjk}^{(r)}$ may be defined at the level of the discrete time interval (time-dependent), or at the episode or individual level. Unobserved individual-specific factors may differ for each type of event; these are represented by R random effects $u_k^{(r)}$.

In addition to analyzing the transitions from one specific state (a given combination of activities) to another, and the average duration of each type episode, we are also interested in examining the effects of some covariates on the different transitions.

Data preparation

We have to transform our data with continuous time into discrete time. This was on of the most difficult step before estimating the models.

Variables

Depending on the information available in the two data sets, we have tried to consider the factors that have appeared in the literature as determinants of children's activities in sub-Saharan Africa. One of the advantages of event history data is the possibility to consider time-vary covariates like, for instance, "orphan status". At the opposite, some covariates like gender or birth order may be fixed.

Table 1 present the distribution of the individuals and episodes according to the different covariates for the two countries. As we can see at the bottom part of this table, the distribution of the dependent variable (child activity) shows at first glance opposite patterns between the two countries: in Burkina Faso, the episodes of "only work" are more important, while in Mali, the largest proportion of episodes is devoted to "only school". In addition, the proportion of 'idle' children (neither in school nor working), is two times higher than the one observed in Burkina Faso. In both countries, the proportion of episodes where children combine school and work remains low.

Results

Descriptive results

In this section we'll present three types of results: i) the probabilities of experiencing school entry, economic activity or non economic activities the first time, ii) the distribution by age of the different episodes of child activity, and iii) the average duration of time spent performing the different type of activity. The probabilities of experiencing the three outcomes (schooling, economic activity, and non economic activity) come from the Kaplan-Meier survivor function.

The probabilities of experiencing the different events the first time

Figures 3a and 3b present the cumulative probabilities (%) of experiencing the three events respectively by age and gender, and by age and place of residence.

According to the patterns by age and gender, a first result is observed in both countries: children are more likely to experience work the first time by performing non economic activity. At all ages, the probabilities to perform non economic activity are higher than those of performing an economic activity. In addition, the experience of the first economic activity happens late in childhood and it increases sharply by ages 10-11.

Some differences exist between the two countries:

- Probabilities to perform a non economic activity are more important in Burkina Faso relatively to Mali, and this result holds for boys as well as for girls;

- At the opposite, probabilities to enter school are more important in Mali compared to Burkina Faso. This difference is due to late entries in Mali: at ages 9-10 entries in school are no longer observed in Burkina Faso, while in Mali, until ages 11 and even 13, we still observe new entries in school;

- Within each country there are gender differences: in Burkina Faso, boys are more likely to experience an economic activity than girls, particularly beyond age 10. But there is no difference between boys and girls in terms of non economic activity. In Mali, boys are more likely to perform non economic activities than girls.

Turning at the results by age and place of residence, the two following features can be noted:

- Not surprising, in Burkina Faso as well as in Mali, the probabilities to experience economic activities are more important in urban areas relatively to rural areas;

- The intensity of non economic activities is, in overall, more important in Burkina Faso than in Mali.

Distribution of the different combinations of child activity by age

From age 6 to age 16, how the different episodes of activities are distributed in regard with the four possible states (or alternatives) a child could experience:

- child attends school only : S(Y)W(N);

- child attends school but also works: S(Y)W(Y);

- child works and does not attend school: S(N)W(Y);

- Child does neither: S(N)W(N).

Figure 4a relative to gender differences shows that within each country, the patterns for boys and girls are very similar. Nonetheless, the patterns are different between countries:

- While pure school-going episodes (without any work involvement) increase with age in Mali, in Burkina Faso, the frequencies of this alternative peaks at around 8 and 9 years and then starts to decline markedly ;

- The frequencies of episodes where children combine schooling with work are very low in the two countries (even if a bit more higher in Mali as compared to Burkina Faso), and the pattern by age is similar to what is observed with "only school";

- The frequencies of idle children episodes decrease markedly in Burkina Faso until age 7 which is the official age of school entry, but start to increase again until ages 8-9, and then remain constant until age 16. At the opposite, idle episodes are widespread at younger ages in Mali (and is more important for girls), but decline markedly with age for boys. There is also a decline with age within girls but the proportions of idle episodes within girls remain more important comparatively to boys;

- Episodes where children only work are more important in Burkina Faso, and they also increase rapidly with age. In Mali, the frequencies of this alternative are almost constant over time.

Examining the results from figure 4b relative to place of residence, the following feature is worth noting: in both countries, rural patterns are more closed to the ones observed for girls, while urban patterns are more closed to boys'.

Average number of person-years spent in each state

How many time children spend on experiencing each type of alternative in their childhood (from age 6 to 16)? The results presented here summarize what have been highlighted formerly. Children spend a very few time in combining schooling and work (less than one year) but the average time spent on this alternative is higher for boys compared to girls, and higher for urban areas relatively to rural areas.

While children in Mali spend on average more time attending only school than children in Burkina Faso (except in urban areas), we note, at the opposite, that the last ones spend more time on work only than the formers.

Children in rural Burkina Faso spend on average more time in the idle state than children of urban areas. At the opposite, in Mali, children of rural areas spend more time in this state. In Mali as well as in Burkina Faso girls spend on average more time than boys in participating neither in school, neither in work.

Multivariate results

We present here the estimates from the multinomial multilevel discrete time model[7], where the reference state or alternative is "child attends school only". This category is generally considered as the best alternative from the viewpoint of child welfare (Maitra and Ray, 2002). We analyze

---

[7] We used the software MIXNO ("Mixed-effects nominal logistic regression") developed by Donald Hedeker (1998).

the factors of moving from the baseline "only school" to one of three other alternatives: i) combine school and work; ii) withdraw from school and work, and iii) withdraw from school and become idle.

Effect of child's characteristics

a) Age

As highlighted with the descriptive results, the probabilities to experience the different alternatives are very linked to age. There are two contrasted patterns when comparing Burkina Faso and Mali: relatively to the reference category, the risk of combining schooling and work or to work only increases exponentially with age in Burkina Faso, and particularly in urban areas (table 4). At the opposite, in Mali, the risk of experiencing these alternative decreases with age, particularly in rural areas.

The patterns in terms of risk of becoming idle are specific: in Mali, where as we have noted formerly the probability to experience schooling increases with age, the risk of withdrawing from school to become idle decrease markedly with age. In Burkina Faso, the risk of becoming idle is the lowest at ages 9-14 which correspond to ages for primary school. But at ages 15-16 children are more likely to become idle compared to 6-8.

b) Gender

Patterns regarding gender show that differences exist between the two countries with respect to region of residence. Let's consider first the case of urban areas: one can note (table 4) in Burkina Faso that boys are less likely to combine school and work or to perform only school comparatively to girls. The opposite is observed in Mali where boys in urban areas are more likely to be on work only or to combine work and schooling. In rural areas, boys from Burkina Faso are less likely to be only working compared to girls but they are more likely to combine schooling and work. In Mali, boys from rural areas, as well as from urban areas, are more likely

than girls to experience only work activity, but conversely they are less likely to combine schooling and work.

Regarding the risk of becoming idle, in both countries, in urban as well as in rural areas, boys are less likely to withdraw from school and do neither activity comparatively to girls.

c) Birth order

In urban areas in Mali, one can note that when birth order increases, more important is the probability to combine school and work or to withdraw from school to work. The same pattern is observed in rural Mali regarding the combination of school and work. In Burkina Faso the relation is not straightforward, but one can observe that children of higher birth order (3 and more) are more likely to perform a work (either by combining schooling and work, either by only working). These results are at the opposite of those observed by Dumas and Lambert (2006) in Senegal suggesting that older children are more likely to perform work and less likely to participate in school compared to the younger.

d) Kinship ties with the head of household

When we look at the results in urban Burkina Faso, there are closed to what could be expected: As the distance between the child and his caretakers in terms of kinship increases, the risk to withdraw from schooling to perform a work or to combine schooling with work also increases. In Mali, the relation is not straightforward: children residing with non related caregivers are more likely to combine schooling and work or to be involved in work only as compared with the children of the household head. But children residing in household headed by nonparental relatives are less likely to perform a work.

Results from urban areas show that in both countries, the higher the distance between the child and the household head, the higher the probability of becoming idle.

e) Orphan status

Becoming maternal orphan (in Burkina Faso) increases the risk of combining schooling with work or to withdraw from school for work (except for urban residence with respect to the combination of schooling and work). Becoming double orphaned, in rural areas, increases more importantly the risk of moving from the state "only schooling" to either the state "schooling and work" or the state "only work". A surprising result is the fact that paternal orphans are less likely to experience work episodes as compared to nonorphans. But this result is closed to what was observed in a previous research highlighting differences between orphans depending on the gender of the dead parent: paternal orphans were more likely to enter school as compared to maternal orphans (Kobiané *et al.* 2005).

Effect of the household head characteristics

a) Gender of the head of household

An important literature on the determinants of schooling in sub-Saharan Africa have highlighted the result that female headed household are more likely to send children to school comparatively to the male headed ones (Lloyd and Blanc 1996; Pilon and Clévenot 1996; Wakam 2002 and 2003…). Maitra and Ray (2002) using a multinomial logit estimation with the state "attends school and works" as the baseline category, have observed in Ghana that female head of household were more likely to withdraw children from work activities and keep them only in school and reversely less likely to keep them only in work. Thus, regarding these findings, we were expecting children residing with female head of household in Mali, to be less likely to be involved in work activities. Surprisingly, the results from Mali show that children are more likely to combine schooling and work or to perform only work when they are living with female headed household as compared to those residing with males head of household.

b) Household wealth

One of the common findings in studies on child labor and schooling is that poverty is one of main factors pushing children in work (Dumas and Lambert 2006; Bass 2004; Brisset 2000; Maitra and Ray, 2002; Salazar and Glasinovich 1998…). This relation termed by Basu and Van (1998) "The Luxury Axiom" is also observed in Burkina Faso, as well as in Mali, and particularly in urban areas: as the household wealth increases, children's are less likely to withdraw from school in order to perform a work. The same relation is observed in Burkina Faso with respect to combining schooling and work.

Effect of ethnicity

We consider the Fulbhe group as the reference in both countries. In Burkina Faso, where Fulbhe present one of the lowest level of schooling, one can note that children from all the other groups are almost certain not to withdraw from school to perform work or to combine schooling and work as compared to Fulbhe children (except the case of Gourounsi in urban areas with respect to "work only"). In Mali, children from the other groups comparatively to the Fulbhe children are more likely to combine schooling and work. Nevertheless, regarding the risk of moving from 'only attends school" to 'only works", there are two situations in urban Mali: children from ethnics groups as Bambara and Malinke are less likely, while those from the Minianka-Senoufo group are more likely to be involved in work as compared to Fulbhe children.

In terms of leaving school to do neither activity, in Burkina Faso, in rural as well as in urban zones, children from all the other groups are less likely to become idle relatively to Fulbhe children. In rural Mali also, children from all the other groups are less likely to become idle relatively to Fulbhe children. But in urban areas, only Minianka-Senoufo children are less likely to become idle comparatively to Fulbhe children, while the opposite result is observed when comparing Malinke to Fulbhe. These results again show the complexity of the cultural factor and the need for more specific research in some settings.

Conclusion

The objective of this study was to analyze the determinants of children's activities in longitudinal framework. The results have supported some findings from previous research: the role of poverty as one of factors pushing children to work was highlighted. Relatedness of the kinship with the head of household was also one important factor affecting children's activities. Maternal orphans and mostly double orphans appeared to be more likely to perform work activities as compared to nonorphans. Some results question the literature: while the literature highlighted the fact that females headed household are more likely to send children's to school, results from Mali suggest that they are also more likely to put children in work activities.

The study highlighted some common results: for example in both countries children spend a very few time in combining schooling and work (less than one year) but the average time spent on this alternative is higher for boys compared to girls, and higher for urban areas relatively to rural areas. Despite the common traits of the two countries, the study also showed a lots contrasted patterns between the two countries, in terms of gender as well as of region of residence (urban/rural).

References

Antonioli, A. (1993), *Le droit d'apprendre. Une école pour tous en Afrique,* L'Harmattan, Paris, 185 p.

Brisset, C. (2000), « Le travail des enfants », *Problèmes politiques et sociaux*, N° 839, Paris, 72 p.

Canagarajah, S., Coulombe, H. (1997), *Child labor and schooling in Ghana*, Policy research working paper, No. 1844, World Bank, Washington. D.C.

Diallo, Y. (2001) *Les déterminants du travail des enfants en Côte d'Ivoire*. Document de travail, N° 55, Centre d'Économie du Développement, Université Montesquieu-Bordeaux IV, Bordeaux, 15 p.

Diallo, Y. (2006) *Note méthodologique. Du cadre conceptuel aux estimations des formes de travail des enfants : une approche statistique*. Version provisoire, 15 p.

Dumas, C., et Lambert, S. (2006), « Trajectoires de scolarisation et de travail des enfants au Sénégal», Document de travail ILO/IPEC, Genève, 57 p.

Erny, P. (1972), *L'enfant et son milieu en Afrique noire. Essais sur l'éducation traditionnelle*, Payot, Paris, 310 p.

Filmer, Deon and Pritchett Lant H. (2001), « Estimating Wealth Effects without Expenditure Data-or Tears: an Application to Educational Enrollments in States India », Demography, Vol. 38, N° 1, p. 115-132.

Goldstein, H. (2003), *Multilevel Statistical Models*, Oxford University Press, 3rd Edition, New York, 253 p.

Goldstein, H., Pan, H., and Bynner, J. (2004), "A Flexible Procedure for Analysing Longitudinal Event Histories Using a Multilevel Model", *Understanding Statistics*, Vol. 3, No. 2, 85-99.

Hedeker, D. (1998), *MIXNO: a computer program for mixed-effects nominal logistic regression. Technical Report*, School of Public Health, University of Illinois at Chicago.

Jensen, P., Nielsen, H. (1997), "Child Labour or School Attendance? Evidence from Zambia", *Journal of population economics*, Vol. 10, No. 4, pp. 407-424.

Kamuzora, L. C. (1984), « High Fertility and the Demand for Labor in Peasant Economies : the Case of Bukoba District, Tanzania », *Development and Change*, Vol. 15, p. 105-124.

Kim, Jae-On et Charles W. Mueller (1978), Introduction to Factor Analysis. What it is and How to Do it, Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-013, Beverly Hills and London, 79 p.

Kobiané, J.-F. (2006a). " École et travail des enfants dans les pays du Sud : situation actuelle et perspectives " *in* : Marc Pilon (éd.), *Les défis du développement en Afrique subsaharienne. L'éducation en jeu*. Collection Rencontres, CEPED, pp. 185-204.

Kobiané J.-F. (2006b), *Ménages et scolarisation des enfants au Burkina Faso : à la recherche des déterminants de la demande scolaire*. Collection "Monographies de l'Institut de Démographie de l'UCL", Louvain-la-Neuve, Academia-Bruylant, 306 p.

Kobiané J.-F. (2004), « Habitat et biens d'équipement comme indicateurs de niveau de vie des ménages : bilan méthodologique et application la relation pauvreté/scolarisation», *Étude de la Population Africaine*, Supplément A au Vol. 19, pp. 265-283.

Kobiané J.-F. (2001), « Revue générale de la littérature sur la demande d'éducation en Afrique », *in* : M. Pilon et Y. Yaro (éditeurs) *La demande d'éducation en Afrique. État des connaissances et perspectives de recherche.* Collection Réseaux thématiques de recherche de l'U.E.P.A, N° 1, pp. 19-47.

Kobiané, J.-F., Calvès, A.-E., and Marcoux, R. (2005), "Parental Death and Children Schooling in Burkina Faso", *Comparative Education Review*, Vol.49, No. 4.

Lange, Marie-France (1987), « Le refus de l'école : pouvoir d'une société civile bloquée ? », *Politique africaine*, N° 27, p. 74-86.

Maitra, P., and Ray, R. (2002), "The joint Estimation of Child Participation in Schooling and Employment: Comparative Evidence from Three Continents". *Oxford Development Studies*, Vol. 30, No.1.

Marcoux, R. (1994), *Le travail ou l'école. L'activité des enfants et les caractéristiques des ménages en milieu urbain au Mali*, Études et travaux du CERPOD, N° 12, Bamako, 212 p.

Mbaye S. M. and A. S. Fall (1996), « Stratégies de socialisation et travail des enfants au Sénégal », *in* : B. Schlemmer (éd.), *L'enfant exploité. Oppression, mise au travail, prolétarisation*, Karthala-ORSTOM, Paris, pp. 437-445.

Minge-Kalman, W. (1978), « The industrial Revolution and the European Family: The Institutionalization of 'Childhood' as a Market for Family Labor », *Comparative Studies in Society and History*, Vol. 20, N° 3, p. 454-468.

Montgomery, Mark R., Gragnolati Michele, Burke Kathleen A. and Paredes Edmundo (2000), « Measuring Living Standards with Proxy Variables », Demography, Vol. 37, N° 2, p. 155-174.

Moser, C. O. N. (1996), *Confronting Crisis. A comparative Study of Household Responses to poverty and vulnerability in Four Poor Urban Communities*, Environmental Sustainable Development Studies and Monographs Series, N° 8, Washington, Banque Mondiale, 100 p.

Pilon, M. and Clévenot, D. (1996), « Femmes et scolarisation des enfants », Communication au *Séminaire international "Femmes et gestion des ressources"*, IFORD, Yaoundé, 5-7 février 1996, 24 p.

Poirier, J., Piché, V., Le Jeune, G., Dabiré, B., and Wane, H. R. (2001), "Projet d'étude des stratégies de reproduction des populations sahéliennes à partir de l'enquête 'Dynamique migratoire, insertion urbaine et environnement au Burkina Faso'", *Cahiers québécois de démographie*, Vol. 30, No. 2, pp. 289-310.

Rasbash, J., Steele, F., Browne, W., Prosser, B. (2005), *A User's Guide to MLwiN. Version 2.0.* Centre for Multilevel Modelling, University of Bristol, 256 p.

Ray, R. (2003), "The Determinants of Child Labour and Child Schooling in Ghana". *Journal of African Economies*, Vol. 11, No. 4, pp. 561-590.

Ray, R. and Lancaster, G. (2004), « The impact of children's work on schooling: Multi-country Evidence based on SIMPOC data », ILO/IPEC Working Paper, Geneva, 95 p.

Rizzini, I., I. Rizzini and F. R. Borges (1998), « Brazil : Children's Strength is not in Their Work », *in* : M. C. Salazar et W. A. Glasinovich (éd.), *Child Work and Education. Five case studies from Latin America*, UNICEF, Florence, pp. 20-38.

Salazar, M. C. (1998), « Child Work and Education in Latin America », *in* : M. C. Salazar et W. A. Glasinovich (éd.), *Child Work and Education. Five case studies from Latin America*, UNICEF, Florence, pp. 1-19.

Schlemmer, B. (1996), « Présentation générale », *in* : Bernard SCHLEMMER (éd.), *L'enfant exploité. Oppression, mise au travail, prolétarisation*, Karthala-ORSTOM, Paris, pp. 7-27.

Siddiqi, F. and H. A. Patrinos (1997), « Child Labor : Issues, Causes and Interventions », *Human Capital Development and Operations Policy Working Paper N° 56*, The World Bank, 10 p.

Steele, F., Diamond, I., and Wang, D. (1996), "The Determinants of the Duration of Contraceptive Use in China: A Multilevel Multinomial Discrete Hazards Modeling Approach". Demography, 33, 12-33

Steele, F.,Goldtein, H. and Browne, W. (2004), "A General Multilevel Multistate Competing Risks Model for History Data with an Application to a Study of Contraceptive Use Dynamics". *Journal of Statistical Modelling*, Vol. 4, No. 2, pp. 145-159.

UNICEF (1997), *La situation des enfants dans le monde 1997*, New York, 116 p.

Wakam, J. (2002), « Relations de genre, structures démographiques des ménages et scolarisation au Cameroun », *Etude de la Population Africaine*, Vol. 17, n° 2, pp. 1-22.

Wakam, J. (2003), « Structure démographique des ménages et scolarisation des enfants au Cameroun », in : Maria COSIO, Richard MARCOUX, Marc PILON et André QUESNEL (éditeurs)

Stratégies éducatives, familles et dynamiques démographiques. Actes du séminaire international organisé à Ouagadougou du 15 au 19 novembre 1999, CICRED-UERD-FNUAP, pp. 183-217.

Yang, M., Rasbash, J., Goldstein, H., and Barbosa, M. (2001), *MLwiN Macros for advanced Multilevel modelling*, Multilevel Models Project, Institute of Education, University of London, 48 p.

Table 1: Distribution of individuals/episodes by covariates

		Burkina Faso		Mali	
		Numb. of individuals	%	Numb. of individuals	%
Place of residence					
Urban		985	46.22	1796	60.11
Rural		1146	53.78	1192	39.89
Gender					
Boy		1118	52.46	1543	51.64
Girl		1013	47.54	1445	48.36
Birth order (with father)					
Ranks 1 & 2		686	32.19	901	30.15
Ranks 3 & 4		549	25.76	759	25.40
Ranks 5 et +		896	42.05	1328	44.44
Ethnicity (B.F.)	Ethnicity (Mali)				
Pular	Peul	152	7.13	448	14.99
Gourmantché	Bambara	172	8.07	1093	36.58
Mossi	Malinké	979	45.94	326	10.91
Samo	Soninke	97	4.55	354	11.85
Gourounsi	Minianka-Senoufo	81	3.80	294	9.84
Other ethnics	Other ethnics	650	30.50	473	15.83
	N=	2131		2988	
		Number of episodes	%	Number of episodes	%
Child's activity					
School only		6745	28.81	11809	40.15
School and work		1077	4.60	1827	6.21
Neither school nor work (Idle)		3629	15.50	9014	30.65
Work only		11960	51.09	6759	22.98
Relationship to head of household					
Father/mother		19798	84.57	25151	85.52
Other relative		3129	13.37	3757	12.78
Non-relative		484	2.06	501	1.70
Wealth index					
Poor		10246	43.77	14230	48.39
Intermediate		8944	38.20	12362	42.03
Non poor		4221	18.03	2817	09.58
Orphan status					
Nonorphan		20875	89.17	-	-
Paternal orphan		1684	07.19	-	-
Maternal orphan		675	02.88	-	-
Double orphan		177	00.76	-	-
Gender of the head of household					
Female		-	-	2514	08.55
Male		-	-	26895	91.45
	N=	23411		29409	
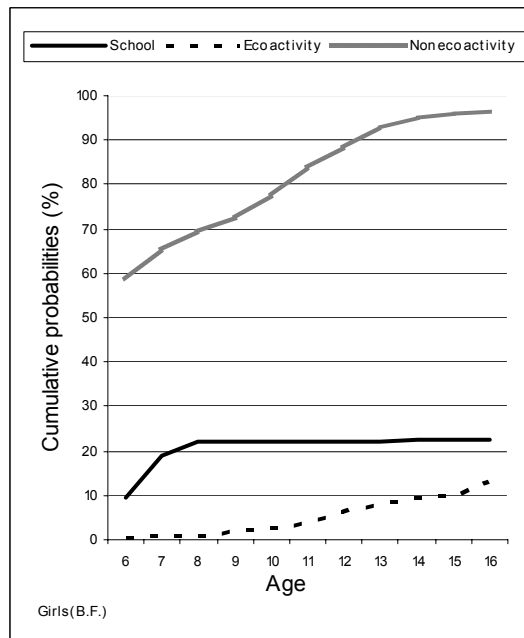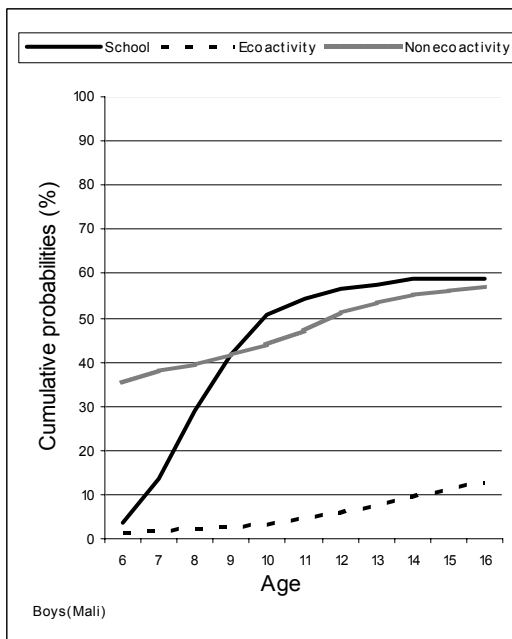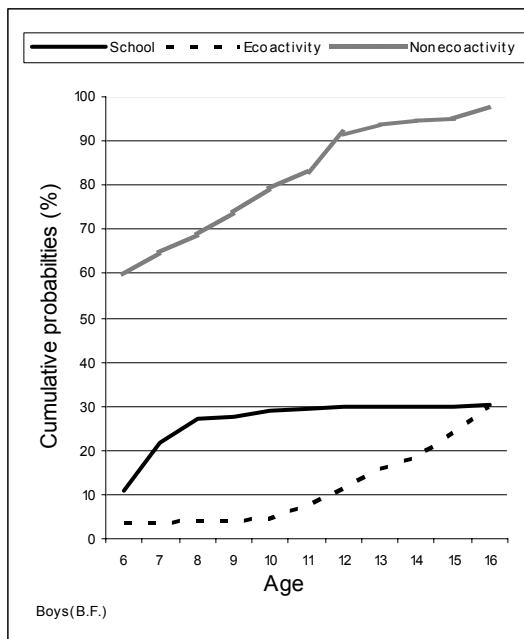
Figure 3a: Cumulative probabilities (%) in experiencing the different outcomes the first time, by
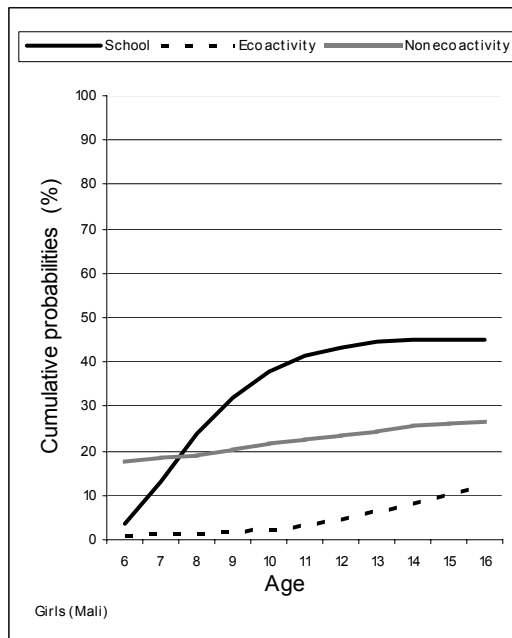age and gender
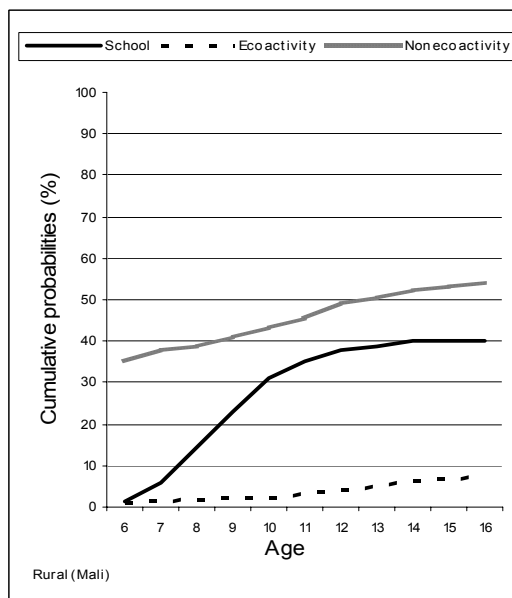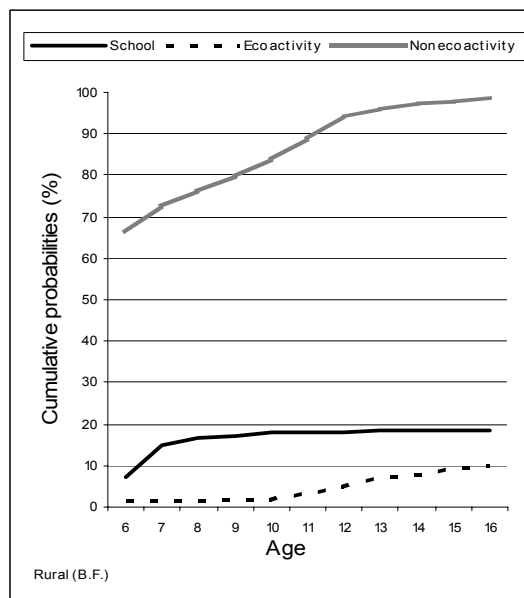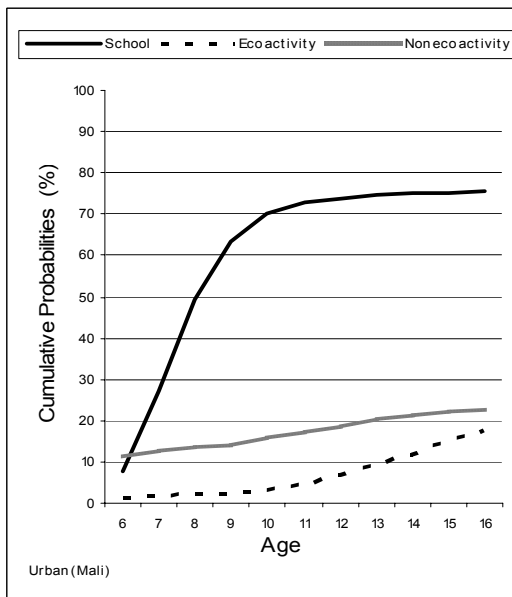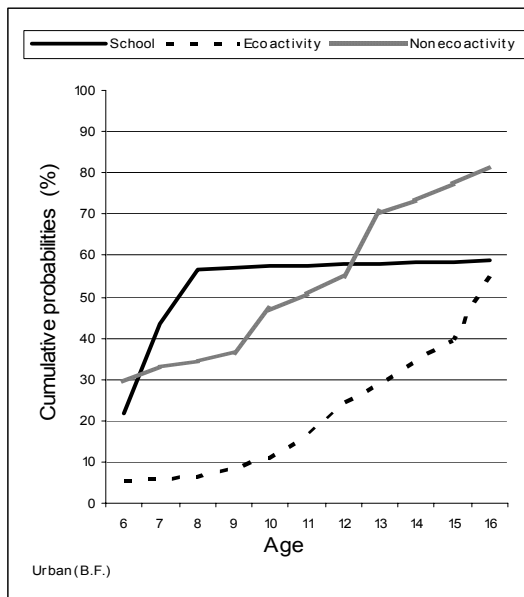
Figure 3b: Cumulative probabilities (%) in experiencing the different outcomes the first time, by age and place of residence
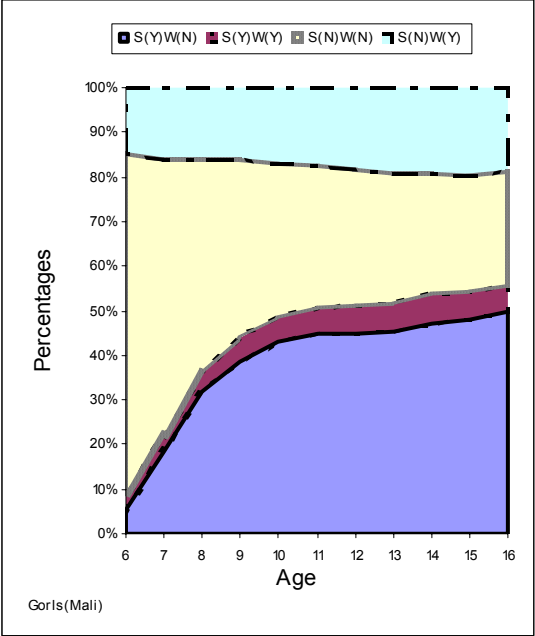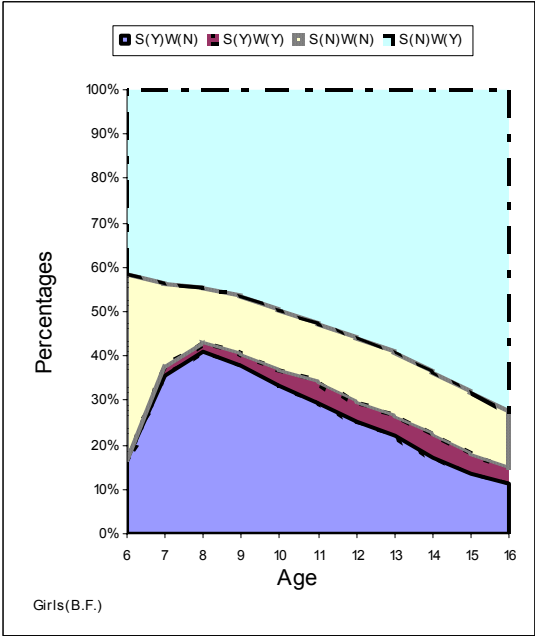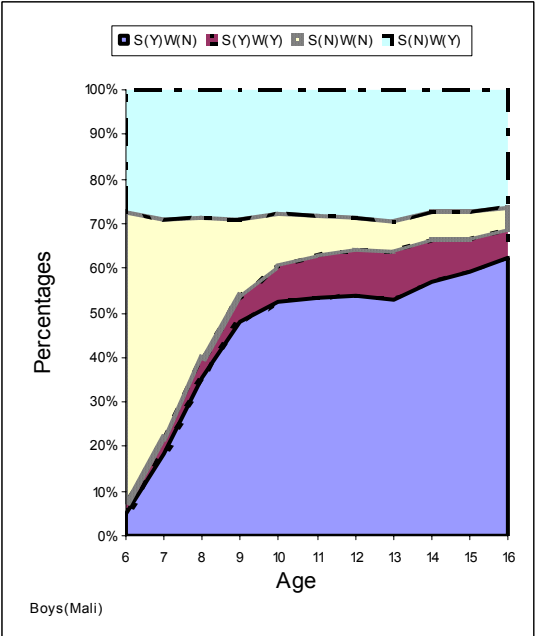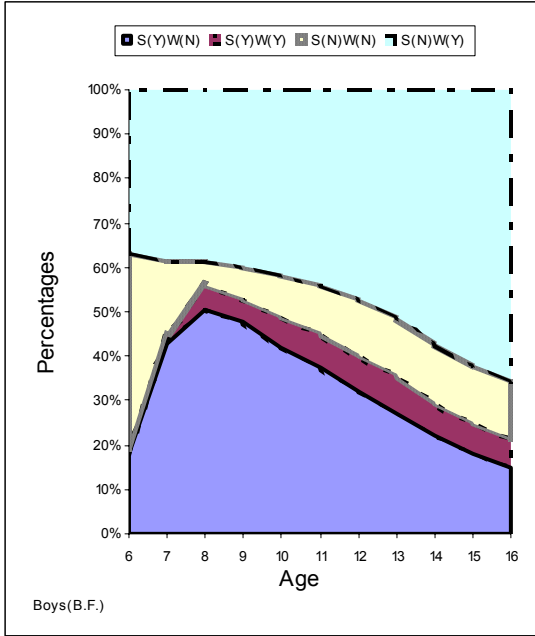
Figure 4a: Distribution (%) of the different states of activity by age and gender
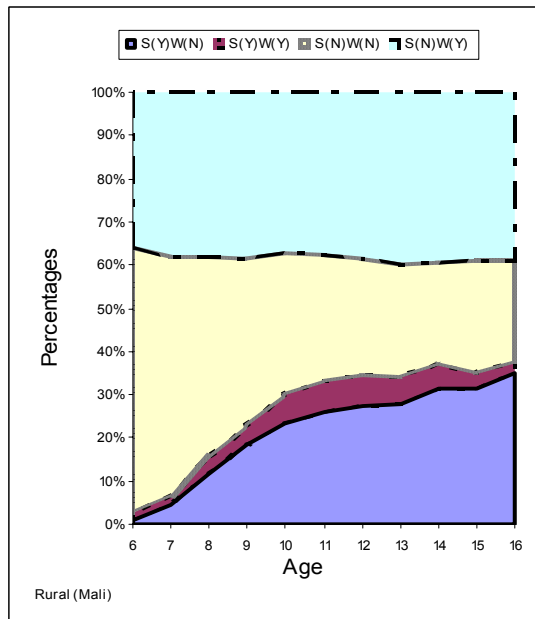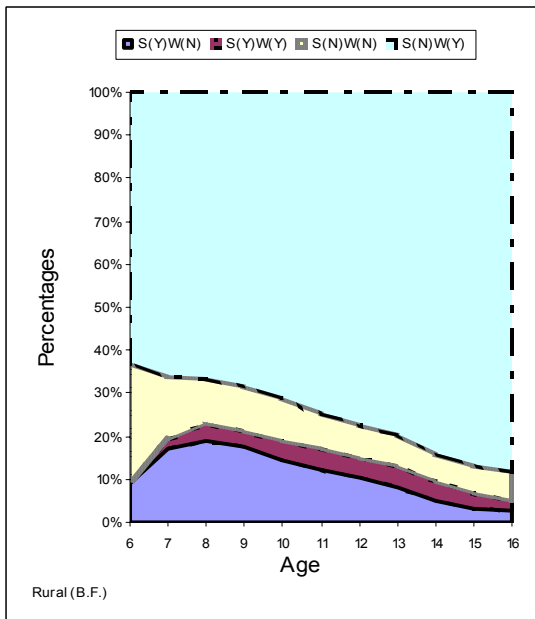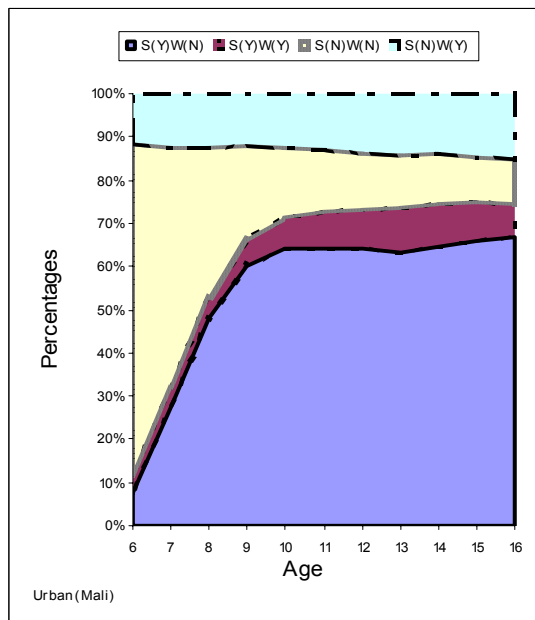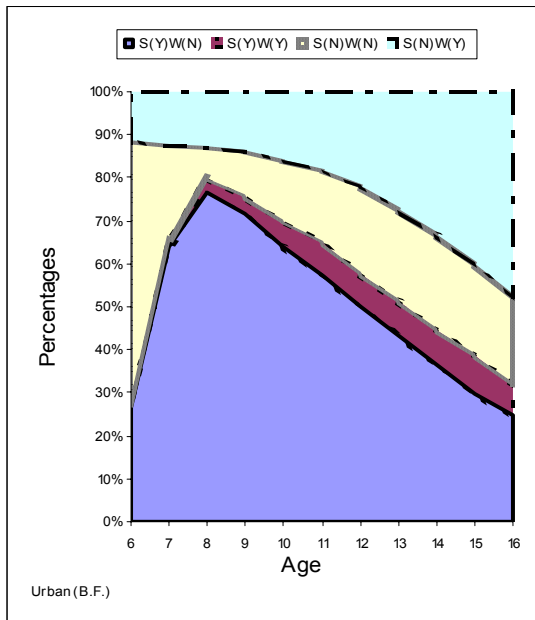
Figure 4b: Distribution (%) of the different states of activity by age and place of residence

Table 2: Average number of person-years spent in each state

	Burkina Faso				Mali			
	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)
Boys	3.20	0.59	1.43	4.75	4.28	0.70	2.09	2.79
Girls	3.13	0.41	2.00	6.57	3.60	0.52	4.01	1.70
Urban	5.47	0.63	2.37	2.56	5.29	0.71	2.65	1.32
Rural	1.19	0.40	1.13	8.24	1.93	0.46	3.56	3.68
Total	3.17	0.51	1.70	5.61	3.95	0.61	3.02	2.26

Table 3: Intra-class Correlations Coefficients (ICC)

	S(Y)W(N)	S(Y)W(Y)	S(Y)W(N)	S(N)W(N)	S(Y)W(N)	S(N)W(Y)
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Burkina Faso						
Urban	0.92	0.86	0.16	0.19	0.97	0.94
Rural	0.82	0.70	0.09	0.35	0.97	0.95
Mali						
Urban	0.77	0.85	0.71	0.61	0.96	0.96
Rural	0.47	0.32	0.36	0.66	0.95	0.96

Table 4: Estimates of the multinomial multilevel discrete time model

| Reference state : School=yes & Work=no | Odds ratios (School=yes & Work=yes) | | | |
| | Urban | | Rural | |
	Burkina Faso	Mali	Burkina Faso	Mali
Variables				
Model 1 (Age effect)				
Total number of iterations =	52	130	57	118
Log Likelihood =	-8997.797	-11937.349	-5747.946	-8442.015
Deviance (-2LogL) =	17995.593	23874.698	11495.892	16884.031
Age				
6-8	1.00	1.00	1.00	1.00
9-14	1.68***	0.15***	1.27***	0.88
15-16	5.31***	0.17***	4.10***	0.32***
Model 2 (Age + covariates)				
Total number of iterations =	859	278	636	521
Log Likelihood =	-8454.537	-11332.472	-5256.058	-6910.688
Deviance (-2LogL) =	16909.075	22664.943	10512.117	13821.377
Age				
6-8	1.00	1.00	1.00	1.00
9-14	13.28***	0.22***	6.33***	0.31***
15-16	∞***	0.26***	62.35***	0.12***
Child gender[a]				
Girl	1.00	1.00	1.00	1.00
Boy	0.72***	1.50***	2.00***	0.72**
Birth order				
Rank 1 & 2	1.00	1.00	1.00	1.00
Rank 3 & 4	3.95***	1.24*	1.56***	1.27*
Rank 5 et +	2.29***	1.38***	1.25	1.32***
Orphan status				
Non orphan	1.00	-	1.00	-
Paternal orphan	0.27***	-	0.92	-
Maternal orphan	0.46	-	2.41***	-
Double orphan	0.02	-	13.18***	-
Relationship to head of household[a]				
Father/mother	1.00	1.00	1.00	1.00
Other relative	8.85***	0.61***	1.61***	0.30***
Non relative	38.91***	4.79***	2.34**	9. 99
Gender of the head of household[a]				
Male	-	1.00	-	1.00
Female	-	4.22***	-	0.66
Wealth index[a]				
Poor	1.00	1.00	1.00	1.00
Middle class	0.23***	0.21***	0.43***	1.07
Rich	0.09***	0.31***	0.42***	0.40
Ethnicity (B.F.) *Ethnicity (Mali)*				
Fulbhe Fulbhe	1.00	1.00	1.00	1.00
Gourmantche Bambara	0.00***	1.43***	0.61	2.28***
Mossi Malinke	0.00***	1.33*	0.47***	2.88***
Samo Soninke	0.01***	3.24***	1.31	2.93***
Gourounsi Minianka-Senoufo	0.00***	5.70***	0.09***	2.59***
Other ethnic Other ethnic	0.00***	3.50***	0.55**	1.51*
Number of level 1 observations	10855	17930	12556	11479
Number of level 2 observations	985	1796	1146	1192
% of individuals with non-varying states	19.90	26.73	63.79	54.53

Notes: [a]: Time varying co-variates; ***: $p \leq .001$; **: $p \leq .01$; *: $p \leq .05$; ∞: very high positive value (beyond 100) meaning "perfect prediction", i.e. individuals in this category are almost certain to experience the event, compared to the reference category.

Table 4 (*continued*): Estimates of the multinomial multilevel discrete time model

Reference state : *School=yes & Work=no*		Odds ratios (*School=no & Work=no*)			
		Urban		Rural	
		Burkina Faso	Mali	Burkina Faso	Mali
Variables					
Model 1 (Age effect)					
Total number of iterations =		52	130	57	118
Log Likelihood =		-8997.797	-11937.349	-5747.946	-8442.015
Deviance (-2LogL) =		17995.593	23874.698	11495.892	16884.031
Age					
6-8		1.00	1.00	1.00	1.00
9-14		0.77***	0.03***	1.22***	0.13***
15-16		2.37***	0.02***	5.03***	0.30***
Model 2 (Age + covariates)					
Total number of iterations =		859	278	636	521
Log Likelihood =		-8454.537	-11332.472	-5256.058	-6910.688
Deviance (-2LogL) =		16909.075	22664.943	10512.117	13821.377
Age					
6-8		1.00	1.00	1.00	1.00
9-14		0.71***	0.03***	0.83*	0.03***
15-16		2.40***	0.02***	5.18***	0.01***
Child's gender[a]					
Girl		1.00	1.00	1.00	1.00
Boy		0.81***	0.31***	0.40***	0.07***
Birth rank					
Ranks 1 & 2		1.00	1.00	1.00	1.00
Rank 3 & 4		1.46***	1.12	0.91	1.09
Rank 5 et +		1.21***	1.18**	0.92	0.92
Orphan status[a]					
Non orphan		1.00	-	1.00	-
Paternal orphan		1.02	-	1.82***	-
Maternal orphan		0.66***	-	0.88	-
Double orphan		0.32	-	2.72*	-
Relationship to head of household.[a]					
Father/mother		1.00	1.00	1.00	1.00
Other relative		1.47***	1.15	1.97***	0.76*
Non-relative		4.86***	3.77***	1.51*	15.28
Gender of the household head.[a]					
Female		-	1.00	-	1.00
Male		-	1.63***	-	0.83
Wealth index[a]					
Poor		1.00	1.00	1.00	1.00
Middle class		0.82***	0.32***	0.45***	0.49***
Rich		1.26***	0.22***	0.27***	1.24
Ethnicity (B.F.)	*Ethnicity (Mali)*				
Fulbhe	Fulbhe	1.00	1.00	1.00	1.00
Gourmantche	Bambara	0.56***	1.12	0.97	5.39***
Mossi	Malinke	0.49***	0.38***	0.32***	2.42***
Samo	Soninke	0.86	1.11	0.32***	4.06***
Gourounsi	Minianka-Senoufo	0.35***	2.30***	0.08***	4.11***
Other ethnic	Other ethnic	0.64***	1.54***	0.44****	5.00***
Number of level 1 observations		10855	17930	12556	11479
Number of level 2 observations		985	1796	1146	1192
% of individuals with non-varying states		19.90	26.73	63.79	54.53

Notes: [a]: Time varying co-variates; ***: $p \le .001$; **: $p \le .01$; *: $p \le .05$; ∞: very high positive value (beyond 100) meaning "perfect prediction", i.e. individuals in this category are almost certain to experience the event, compared to the reference category.

Table 4 (*continued*): Estimates of the multinomial multilevel discrete time model

Reference state : *School=yes & Work=no*		Odds ratios (*School=no & Work=yes*)			
		Urban		Rural	
		Burkina Faso	Mali	Burkina Faso	Mali
Variables					
Model 1 (Age effect)					
Total number of iterations =		52	130	57	118
Log Likelihood =		-8997.797	-11937.349	-5747.946	-8442.015
Deviance (-2LogL) =		17995.593	23874.698	11495.892	16884.031
Age					
6-8		1.00	1.00	1.00	1.00
9-14		22.72***	0.08***	83.44***	0.17***
15-16		∞***	0.24***	∞***	0.64***
Model 2 (Age + covariates)					
Total number of iterations =		859	278	636	521
Log Likelihood =		-8454.537	-11332.472	-5256.058	-6910.688
Deviance (-2LogL) =		16909.075	22664.943	10512.117	13821.377
Age					
6-8		1.00	1.00	1.00	1.00
9-14		33.41***	0.13***	13.96***	0.05***
15-16		∞***	0.39***	∞***	0.04***
Child's gender[a]					
Girl		1.00	1.00	1.00	1.00
Boy		0.62***	4.83***	0.45***	1.65**
Birth rank					
Ranks 1 & 2		1.00	1.00	1.00	1.00
Rank 3 & 4		8.61***	2.06***	1.30	1.02
Rank 5 et +		2.93***	3.18***	1.01	0.71*
Orphan status[a]					
Non orphan		1.00	-	1.00	-
Paternal orphan		0.51**	-	1.38	-
Maternal orphan		3.33***	-	4.05***	-
Double orphan		0.09	-	∞***	-
Relationship to head of household.[a]					
Father/mother		1.00	1.00	1.00	1.00
Other relative		34.72***	0.80	1.98***	0.51***
Non-relative		∞***	∞***	1.68	42.96
Gender of the household head.[a]					
Female		-	1.00	-	1.00
Male		-	8.52***	-	3.53***
Wealth index[a]					
Poor		1.00	1.00	1.00	1.00
Middle class		0.09***	0.03***	0.27***	0.59***
Rich		0.03***	0.01***	0.14***	0.18***
Ethnicity (B.F.)	*Ethnicity (Mali)*				
Fulbhe	Fulbhe	1.00	1.00	1.00	1.00
Gourmantche	Bambara	0.00***	0.31***	0.80	4.18***
Mossi	Malinke	0.00***	0.31***	0.16***	0.58
Samo	Soninke	0.00***	1.37	0.22***	4.52***
Gourounsi	Minianka-Senoufo	∞***	9.16***	0.00***	2.73***
Other ethnic	Other ethnic	0.00***	4.53***	0.45***	1.16
Number of level 1 observations		10855	17930	12556	11479
Number of level 2 observations		985	1796	1146	1192
% of individuals with non-varying states		19.90	26.73	63.79	54.53

Notes: [a]: Time varying co-variates; ***: $p \leq .001$; **: $p \leq .01$; *: $p \leq .05$; ∞: very high positive value (beyond 100) meaning "perfect prediction", i.e. individuals in this category are almost certain to experience the event, compared to the reference category.

2. Figures are based on following tables

2.1 Cumulative probabilities of experiencing the different outcomes by age and gender

	Boys					
	Burkina Faso			Mali		
			Non eco.			Non eco.
Age	School	Eco. Activity	activity	School	Eco. Activity	Activity
6	10.64	3.5	59.7	3.44	1.39	35.2
7	21.79	3.58	64.62	13.68	1.76	37.92
8	26.99	3.85	68.79	28.95	2.27	39.44
9	27.81	3.94	73.83	41.85	2.59	41.41
10	28.83	4.45	79.00	50.74	3.05	44.04
11	29.39	7.50	83.29	54.5	4.36	47.08
12	29.64	11.19	91.31	56.61	5.94	51.26
13	29.82	15.85	93.75	57.55	7.8	53.51
14	29.93	18.62	94.41	58.79	9.44	55.28
15	30.02	24.12	94.8	58.79	11.23	56.24
16	30.16	29.85	97.74	58.93	12.5	57.04
N=	1013	1013	1013	1543	1543	1543

	Girls					
	Burkina Faso			Mali		
			Non eco.			
Age	School	Eco. Activity	activity	School	Eco. Activity	Non eco. activity
6	9.34	0.48	58.46	3.77	0.92	17.4
7	18.72	0.7	65.4	12.9	1.14	18.6
8	21.86	0.81	69.48	23.98	1.54	19.04
9	22.11	1.91	72.33	31.98	1.97	20.22
10	22.22	2.58	77.49	37.99	2.26	21.58
11	22.22	3.66	83.92	41.63	3.22	22.45
12	22.26	6.09	88.51	43.42	4.31	23.41
13	22.26	8.28	92.74	44.52	6.22	24.36
14	22.37	9.44	95.18	44.96	8.09	25.61
15	22.4	10.03	96.01	45.09	10.23	26.25
16	22.4	13.03	96.19	45.09	12.13	26.62
N=	1118	1118	1118	1445	1445	1445

2.2 Cumulative probabilities of experiencing the different outcomes by age and region

			Urban			
		Burkina Faso			Mali	
			Non eco.			Non eco.
Age	School	Eco. Activity	activity	School	Eco. Activity	Activity
6	21.71	5.35	29.54	7.59	1.47	11.52
7	43.64	5.98	33.01	27.32	1.82	12.69
8	56.6	6.29	34.53	49.27	2.14	13.36
9	57.15	8.41	36.81	63.57	2.48	14.12
10	57.53	11.05	46.4	70.26	3.32	15.77
11	57.64	16.2	50.5	72.77	4.71	17.39
12	58.13	23.78	55.38	73.94	6.67	18.69
13	58.13	28.43	69.93	74.88	9.33	20.15
14	58.48	34.37	73.52	75.1	11.7	21.3
15	58.57	39.16	77.35	75.27	15.33	21.96
16	58.72	55.33	81.53	75.44	17.76	22.42
N=	985	985	985	1796	1796	1796

			Rural			
		Burkina Faso			Mali	
			Non eco.			Non eco.
Age	School	Eco. Activity	activity	School	Eco. Activity	Activity
6	7.16	1.14	66.21	1.43	1.01	35.29
7	14.65	1.14	72.37	5.69	1.27	37.76
8	16.74	1.29	76.33	14.31	1.81	38.95
9	17.26	1.69	79.89	22.93	2.22	41.01
10	17.86	1.94	83.97	30.96	2.22	43.26
11	18.18	3	88.78	35.31	3.11	45.5
12	18.24	4.73	94.17	37.7	3.89	48.89
13	18.35	7.14	96.13	38.76	5.09	50.63
14	18.4	7.77	97.27	40.01	6.28	52.36
15	18.46	9.29	97.55	40.01	6.64	53.27
16	18.51	9.76	98.69	40.01	7.34	53.97
N=	1146	1146	1146	1192	1192	1192

2.3. Distribution of the different types of child activity by age and gender

	Boys									
	Burkina					Mali				
Age	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total
6	17.97	0.99	44.13	36.92	100	4.73	2.85	65	27.41	100
7	42.66	2.45	16.24	38.65	100	18.35	3.18	49.29	29.18	100
8	50.64	5.09	5.68	38.59	100	35.34	4.54	31.19	28.92	100
9	47.74	4.92	7.19	40.16	100	47.89	5.58	17.59	28.94	100
10	41.89	6.78	9.54	41.79	100	52.37	8.25	11.7	27.68	100
11	37.36	7.47	10.91	44.25	100	53.19	9.7	9.05	28.06	100
12	32.09	8.17	12.4	47.34	100	53.81	10.16	7.36	28.66	100
13	27.01	8.74	12.67	51.57	100	53.1	10.7	6.74	29.46	100
14	22.04	7.31	13.34	57.31	100	57.13	9.28	6.06	27.53	100
15	17.81	7.14	12.72	62.33	100	59.11	7.45	6.11	27.33	100
16	15.04	5.97	13.08	65.91	100	62.17	6.28	5.02	26.53	100

	Girls									
	Burkina					Mali				
Age	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total
6	16.46	0.18	41.77	41.59	100	5.47	3.46	76.4	14.67	100
7	35.69	1.5	19.08	43.73	100	18.48	3.67	61.87	15.99	100
8	41.22	2.21	11.92	44.66	100	31.7	4.08	48.1	16.12	100
9	37.86	2.59	13.13	46.43	100	38.69	5.05	40.21	16.06	100
10	33.21	3.92	13.45	49.42	100	43.11	5.54	34.46	16.89	100
11	29.36	4.66	13.34	52.64	100	44.81	5.89	31.86	17.45	100
12	25.41	4.32	14.5	55.77	100	44.67	6.23	30.82	18.28	100
13	21.88	4.66	14.35	59.1	100	45.26	6.15	29.21	19.38	100
14	17.15	5.39	13.73	63.73	100	47.14	6.79	26.84	19.22	100
15	13.32	4.83	13.76	68.1	100	48.04	6.3	26.09	19.57	100
16	11.36	3.29	12.86	72.49	100	49.64	6.12	25.36	18.88	100

2.3. Distribution of the different types of child activity by age and region

		Urban Burkina					Urban Mali			
Age	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total
6	26.5	0.41	61.52	11.57	100	7.8	4.01	76.61	11.58	100
7	63.75	2.09	21.45	12.71	100	27.51	4.29	55.57	12.64	100
8	76.52	3.3	7.09	13.09	100	48.11	4.9	34.41	12.58	100
9	71.73	3.75	10.33	14.18	100	60.08	5.9	2183	12.19	100
10	63.91	5.95	13.81	16.33	100	64.07	7.13	16.1	12.7	100
11	57.39	7.29	17	18.32	100	64.33	8.36	14.1	13.21	100
12	49.85	8	20.26	21.88	100	63.99	8.97	13.15	13.88	100
13	43.22	8.2	21.26	27.33	100	63.21	10.14	12.11	14.54	100
14	36.28	8.23	21.95	33.54	100	64.72	9.6	11.57	14.11	100
15	29.82	8.82	21.4	39.96	100	66.12	8.66	10.39	14.84	100
16	24.95	7.16	20.32	47.58	100	66.83	7.73	10.22	15.21	100

		Rural Burkina					Rural Mali			
Age	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total	S(Y)W(N)	S(Y)W(Y)	S(N)W(N)	S(N)W(Y)	Total
6	9.16	0.7	26.88	63.26	100	1.01	1.85	61.33	35.82	100
7	17.26	1.83	14.47	66.43	100	4.7	2.1	55.08	38.12	100
8	18.91	3.82	10.48	66.7	100	11.67	3.44	46.85	38.04	100
9	17.49	3.66	10.27	68.58	100	18.32	4.35	38.66	38.57	100
10	14.37	4.7	9.67	71.25	100	23.47	6.64	32.72	37.17	100
11	12.3	4.89	8.03	74.78	100	26.14	7.08	29.17	37.61	100
12	10.18	4.57	7.64	77.61	100	27.26	7.17	27.17	38.4	100
13	8.03	5.24	6.9	79.83	100	27.93	5.98	26.02	40.07	100
14	4.99	4.64	6.3	84.06	100	31.56	5.54	23.56	39.34	100
15	3.2	3.46	6.32	87.01	100	31.35	3.71	25.71	39.23	100
16	2.76	2.3	6.54	88.4	100	34.78	3.07	23.27	38.87	100