Chapter 12

The Work-School Trade-Off among Children in West Africa: Are Household Tasks More Compatible with School Than Economic Activities?

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Theoretical and empirical studies of time allocation decisions for children in developing countries point to a number of determinants of the demand for education and the supply of child labor. These studies can be grouped into two main schools of thought. The first is in the vein of the theory of the demand for education, introduced by Becker (1964). Becker posited that parents' decisions about whether to send their children to school are the result of a trade-off between the expected returns to and the cost of education. This cost includes school-related monetary expenditures and the opportunity cost of forgone wages or other remuneration. If the returns to education are too low compared with its cost, parents will choose not to send the children to school and will have them work instead. Child labor can also be considered as the best option when specific know-how and skills learned on the job are more profitable than education (Rosenzweig and Wolpin 1985; De Vreyer, Lambert, and Magnac 1999).

The second school of thought focuses on the impact of various constraints affecting the supply of child labor, the demand for education, or both. A first set of constraints stems from imperfections in the markets for labor and land (Bhalotra and Heady 2003). When a household does not have enough labor to work all the land it owns, it has two options: hire external labor (farm workers) or rent out or sharecrop part of its land. If external labor is not available—because of labor market imperfections (frequent in rural areas) or a weak or nonexistent land market—the household may put its children to work. Any factor that raises the opportunity cost of children's time tends to increase their labor participation and reduce their attendance at school. Poverty-related

constraints (Basu and Van 1998) and credit market imperfections (Jacoby and Skoufias 1997; Ranjan 1999; Baland and Robinson 2000; Skoufias and Parker 2002) may also explain the emergence of child labor and the concomitant fall-off in school attendance.

Many empirical studies set out to identify the factors involved in the work-school trade-off. Many are based on the joint estimation of school attendance and labor participation equations using bivariate or sequential probit models. The definition of child labor differs somewhat across studies. Some studies—including research by the International Labour Organization (ILO)—define child labor as "any economic activity conducted by a child"; children whose only work is performing household tasks within the family sphere are considered economically inactive.[1] Other studies adopt a broader definition, considering participation in household tasks to be a form of child labor. Although this more inclusive definition may seem preferable, grouping domestic and economic activities in the same category amounts to making the strong implicit assumption that the same factors determine both. Analysis of the factors involved in the work-school trade-off would probably be enriched if domestic and economic activities were considered as two distinct alternatives.

On the basis of this principle, we conduct a joint analysis of the determinants of school and work among children 10–14, separating out activities conducted in the household from economic activities. Using the approach adopted by Kis-Katos (2012), we estimate a trivariate probit model using simulated maximum likelihood in which participation in school, household tasks, and economic activities is explained by a vector of variables including the child's characteristics (age, gender, relationship to household head, birth rank, religion, and so forth) and the characteristics of the child's household (wealth, size, composition, activities, and so forth). The data used are drawn from Phase 1 of the 1-2-3 surveys conducted simultaneously in seven West African cities (for a description of these surveys, see box O.1 in the overview).

The findings show that the determinants of participation in the two types of activity are significantly different. For example, having a household head who is a self-employed entrepreneur increases the participation of children in economic activities in five of the seven cities (all except Bamako and Ouagadougou) but has no effect on their participation in domestic activities. Boys participate considerably less in domestic activities than girls, but they have a greater probability than girls of participating in economic activities in two of the seven cities (Dakar and Niamey). There seems to be much more competition in the allocation of time between economic activity and school than between domestic activity and school.

This chapter is structured as follows. The first section presents descriptive statistics drawn from the 1-2-3 survey data on schooling and child labor. The second section presents the empirical strategy for modeling the work-school

trade-off. The third section presents and comments on the results of the estimations. The last section summarizes the main conclusions and draws some policy implications.

Work and School among Children in West Africa

Phase 1 of the 1-2-3 surveys is an employment survey providing detailed information on economic and domestic activities (taking care of children, the elderly, and infirm; fetching water and wood; and so forth) of all individuals 10 and older. The following discussion concentrates on children 10–14.[2]

Table 12.1, which presents the work participation and school enrollment rates in each city, reveals wide disparities across cities. The percentage of

Table 12.1 Work Participation and School Enrollment Rates for Children 10–14 in Seven Cities in West Africa, by Gender, 2001/02
(percent)

City	Performs domestic activities	Performs economic activities	Performs domestic or economic activities	Attends school	Inactive	Number of (weighted) observations
Abidjan						
Girls	51.6	20.2	58.0	57.5	5.7	177,888
Boys	17.6	8.9	24.3	80.7	7.7	142,312
All	36.5	15.2	43.0	67.8	6.6	320,200
Bamako						
Girls	51.8	11.5	54.8	71.9	9.0	74,237
Boys	14.6	9.8	22.6	81.3	12.6	73,964
All	33.2	10.7	38.7	76.6	10.8	148,202
Cotonou						
Girls	77.6	19.4	79.3	67.4	1.4	53,254
Boys	61.3	8.0	65.4	87.7	2.5	49,440
All	69.8	13.9	72.6	77.2	1.9	102,694
Dakar						
Girls	58.8	6.8	61.7	65.9	7.9	124,088
Boys	19.5	10.8	27.9	72.5	15.3	117,458
All	39.7	8.7	45.3	69.1	11.5	241,546
Lomé						
Girls	92.0	22.0	92.1	77.7	0.5	48,467
Boys	77.5	9.6	78.6	94.4	0.5	42,780
All	85.2	16.2	85.8	85.5	0.5	91,247

(continued next page)

Table 12.1 (continued)

City	Performs domestic activities	Performs economic activities	Performs domestic or economic activities	Attends school	Inactive	Number of (weighted) observations
Niamey						
Girls	64.4	10.3	66.3	71.3	5.5	45,831
Boys	23.8	14.3	32.5	74.4	13.3	40,660
All	45.3	12.1	50.4	72.8	9.2	86,491
Ouagadougou						
Girls	60.6	9.0	63.5	74.1	4.8	58,187
Boys	21.0	6.8	26.2	85.0	8.4	54,889
All	41.4	7.9	45.4	79.4	6.5	113,076

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries in the West African Economic and Monetary Union (WAEMU) conducted in 2001/02 by the Observatoire économique et statistique d'Afrique Subsaharienne (AFRISTAT); Développement, Institutions et Mondialisation (DIAL); and national statistics institutes.
Note: Sample weights were used to obtain representative results for the underlying population. Percentages sum to more than 100 percent because children may both engage in economic or domestic activities and attend school.

children 10–14 attending school is higher in Lomé (86 percent), Ouagadougou (79 percent), and Cotonou (77 percent) than in the richer cities of Abidjan (68 percent) and Dakar (69 percent). In Abidjan, this situation reflects discrimination against girls: the Gender Parity Index (GPI) (the ratio of girls' enrollment to boys' enrollment) is 71 percent in Abidjan and more than 85 percent in the other cities (except Cotonou, where it is 77 percent).

Lomé and Cotonou also have the highest rates of children 10–14 working and attending school (72 percent in Lomé, 52 percent in Cotonou) (table 12.2). These figures are much higher than in Niamey (32 percent), Ouagadougou (31 percent), Bamako and Dakar (26 percent), and Abidjan (17 percent). The rate of participation in domestic activities varies widely across cities. In contrast, participation in economic activities is low in all seven cities (9–16 percent). Girls participate much more than boys in domestic and economic activities and attend school less than their male counterparts.

Table 12.3 provides information on the average number of hours worked by working children per week. Not surprisingly, children who work without going to school work longer hours on average than children who combine work and school. However, the observed differences are much larger for the number of hours spent on economic activities, suggesting that it is possible to combine domestic activities and school, at least up to a certain point. The number of hours spent on domestic activities is higher among girls not attending school than for girls attending school (this result does not hold for boys), Table 12.3 also reveals that whether or not they are enrolled in school, girls spend much more time than boys on domestic activities.

Table 12.2 Work-School Trade-Off for Children 10–14 in Seven Cities in West Africa, by Gender, 2001/02

City	Working only	Attending school only	Working and attending school	Inactive	Number of (weighted) observations
Abidjan					
Girls	36.8	36.4	21.2	5.7	177,888
Boys	11.6	68.0	12.7	7.7	142,312
All	25.6	50.4	17.4	6.6	320,200
Bamako					
Girls	19.1	36.2	35.7	9.0	74,237
Boys	6.1	64.8	16.5	12.6	73,964
All	12.6	50.5	26.1	10.8	148,202
Cotonou					
Girls	31.2	19.3	48.1	1.4	53,254
Boys	9.9	32.2	55.5	2.5	49,440
All	20.9	25.5	51.7	1.9	102,694
Dakar					
Girls	26.2	30.4	35.5	7.9	124,088
Boys	12.2	56.8	15.7	15.3	117,458
All	19.4	43.2	25.9	11.5	241,546
Lomé					
Girls	21.8	7.3	70.4	0.5	48,467
Boys	5.1	20.9	73.5	0.5	42,780
All	14.0	13.7	71.8	0.5	91,247
Niamey					
Girls	23.2	28.2	43.1	5.5	45,831
Boys	12.3	54.2	20.2	13.3	40,660
All	18.1	40.4	32.4	9.2	86,491
Ouagadougou					
Girls	21.2	31.7	42.3	4.8	58,187
Boys	6.7	65.5	19.5	8.4	54,889
All	14.1	48.1	31.3	6.5	113,076

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries (see table 12.1 for details).

Tables 12.4 and 12.5 show the nature of the work children perform and the type of remuneration they receive. Table 12.4 displays a wide range of activities across cities. Family worker status is dominant in six of the seven cities.[3] Wide gender differences are apparent. Family worker is the dominant category for girls in all cities. Among boys, family worker is the dominant category only in Lomé and Niamey. In the other cities, more than 70 percent of boys who work are apprentices in Abidjan, Cotonou, and Dakar, and about 50 percent are apprentices in Bamako and Ouagadougou.

Table 12.3 Average Weekly Hours Worked by Children 10–14 in Seven Cities in West Africa, by Gender, 2001/02

	Children who work and attend school		Children who work and do not attend school		All children who work	
City	Time spent on economic activities	Time spent on domestic activities	Time spent on economic activities	Time spent on domestic activities	Time spent on economic activities	Time spent on domestic activities
Abidjan						
Girls	1.9	6.8	24.3	17.2	16.1	13.4
Boys	1.5	4.7	38.6	3.1	19.2	3.9
All	1.7	6.1	27.2	14.4	16.9	11.0
Bamako						
Girls	5.4	17.4	14.4	22.0	8.5	19.0
Boys	13.1	9.2	36.4	7.3	19.4	8.6
All	7.8	14.8	19.8	18.4	11.7	16.0
Cotonou						
Girls	0.4	11.0	28.0	22.0	11.3	15.3
Boys	0.2	8.8	42.8	6.9	6.6	8.5
All	0.3	9.8	31.4	18.6	9.3	12.4
Dakar						
Girls	1.5	15.0	8.4	19.9	4.4	17.1
Boys	5.5	8.0	33.4	5.2	17.7	6.8
All	2.7	12.9	16.0	15.4	8.4	14.0
Lomé						
Girls	5.0	18.3	29.9	27.1	10.9	20.4
Boys	3.2	11.6	27.7	14.5	4.7	11.8
All	4.1	15.1	29.5	25.0	8.3	16.7
Niamey						
Girls	2.8	16.7	9.7	21.0	5.2	18.2
Boys	12.8	10.2	28.6	8.4	18.7	9.5
All	5.7	14.8	15.7	17.0	9.3	15.6
Ouagadougou						
Girls	1.6	15.6	17.1	24.9	6.7	18.7
Boys	3.8	8.0	37.8	4.2	12.4	7.0
All	2.2	13.3	21.8	20.1	8.3	15.4

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries (see table 12.1 for details).

Gender differences are also apparent in the breakdown between unskilled and apprentice activities. Except in Lomé, girls have a much lower probability of being apprentices and are much more likely to be unskilled workers than boys. On the whole, these findings suggest that when girls do not go to school, their

Table 12.4 Nature of Work Performed by Children 10–14 in Seven Cities in West Africa, by Gender, 2001/02

City	Unskilled worker	Apprentice	Family worker[a]	Other[b]	Number of observations
Abidjan					
Girls	35.4	7.6	55.4	1.5	34,921
Boys	11.4	73.9	14.7	0.0	12,669
All	29.0	25.3	44.6	1.1	47,590
Bamako					
Girls	24.1	2.7	70.2	3.0	8,257
Boys	7.4	48.0	44.7	0.0	7,022
All	16.4	23.5	58.5	1.6	15,279
Cotonou					
Girls	22.9	11.3	65.9	0.0	10,332
Boys	4.6	81.1	14.4	0.0	3,928
All	17.8	30.5	51.7	0.0	14,260
Dakar					
Girls	35.9	13.9	42.5	7.7	8,352
Boys	7.3	76.4	15.5	0.8	12,675
All	18.7	51.6	26.2	3.6	21,027
Lomé					
Girls	11.3	3.9	84.1	0.7	10,710
Boys	30.5	21.2	48.3	0.0	4,123
All	16.7	8.7	74.1	0.5	14,834
Niamey					
Girls	12.9	7.8	76.9	2.4	4,656
Boys	6.5	21.7	69.5	2.3	5,763
All	9.4	15.5	72.8	2.3	10,419
Ouagadougou					
Girls	18.5	9.4	72.1	0.0	5,194
Boys	9.6	48.3	41.1	1.0	3,738
All	14.8	25.7	59.1	0.4	8,933

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries (see table 12.1 for details).
a. Includes mostly servants, maids, and vendors.
b. Includes mostly servants and maids who report being paid wages in semi-qualified work.

labor is used to provide the household with income or to perform domestic tasks. In contrast, boys continue to accumulate human capital. Their apprenticeships do not raise the household's income, but they give boys the skills to increase their resources in adulthood. Gender inequality in access to education may therefore be coupled with inequality in access to vocational training. This conclusion is underpinned by the data in table 12.5, which show that girls in all

Table 12.5 Type of Remuneration Working Children 10–14 Receive in Seven Cities in West Africa, 2001/02

City	Fixed wage	Daily or hourly pay	Piece-rate	Commission	Profits	In kind	No remuneration	No answer given	Number of observations
Abidjan									
Girls	16.0	4.3	4.3	12.2	13.6	18.1	30.9	0.7	34,921
Boys	2.5	4.9	0.0	7.1	1.5	1.5	82.4	0.0	12,669
All	12.5	4.4	3.2	10.9	10.4	13.8	44.3	0.5	47,590
Bamako									
Girls	25.4	0.0	0.7	0.0	39.0	9.1	21.6	4.3	8,257
Boys	0.3	9.8	8.6	1.2	35.6	16.7	25.2	2.6	7,022
All	13.8	4.5	4.4	0.5	37.4	12.6	23.3	3.5	15,279
Cotonou									
Girls	15.5	0.0	0.0	0.2	1.7	11.8	70.7	0.0	10,332
Boys	1.6	1.6	0.0	0.0	0.0	7.3	89.4	0.0	3,928
All	11.6	0.4	0.0	0.2	1.3	10.6	75.9	0.0	14,260
Dakar									
Girls	44.6	0.0	2.6	4.9	8.9	4.2	31.3	3.5	8,352
Boys	7.1	3.5	10.6	10.9	5.5	2.0	58.9	1.6	12,675
All	22.1	2.1	7.4	8.5	6.9	2.9	47.9	2.3	21,027
Lomé									
Girls	13.0	2.2	0.8	1.5	26.0	13.6	42.1	0.7	10,710
Boys	5.1	11.6	16.1	2.1	19.9	8.0	37.4	0.0	4,123
All	10.8	4.9	5.1	1.7	24.3	12.0	40.8	0.5	14,834
Niamey									
Girls	16.4	0.0	1.8	0.0	13.5	1.3	63.6	3.4	4,656
Boys	2.3	6.6	18.1	2.2	14.6	2.7	50.8	2.8	5,763
All	8.6	3.6	10.8	1.2	14.1	2.1	56.5	3.1	10,419
Ouagadougou									
Girls	21.9	1.1	2.1	0.0	15.8	20.3	38.3	0.4	5,194
Boys	7.4	9.8	11.4	0.0	26.3	17.9	27.2	0.0	3,738
All	15.9	4.7	6.0	0.0	20.1	19.3	33.7	0.2	8,933

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries (see table 12.1 for details).

cities have a greater probability than boys of being paid a fixed wage; boys have a higher probability of receiving no remuneration in four of the seven cities (Abidjan, Bamako, Cotonou, and Dakar).

Modeling the Trade-Off between Work and School

Becker's (1964) human capital model considers education as an investment made by autonomous individuals on the basis of their preferences and characteristics (time preference, life expectancy, cognitive skills, and so forth) on the one hand, and the returns to education on the other. Individuals may be more or less constrained in their choices, depending on their capacity to borrow and to make a living while investing in education. In each period, individuals decide whether they continue to invest in education or enter the labor market to get a job based on their qualifications. The optimal level of investment in education is reached when the marginal cost of one additional year of schooling equals the marginal return to the additional year of schooling. This model has been extended to take the trade-off between education and fertility into account (Becker and Lewis 1973), as well as the trade-off in allocating investment in human capital among children within a household (Behrman, Pollak, and Taubman 1982).

This theoretical framework can be used to interpret some of the statistical and econometric results on the determinants of the demand for schooling and child labor. In this setting, it is assumed that the household head allocates the child's time (excluding leisure). Time may be allocated to schooling, domestic tasks, and market work based on the household's preferences, the immediate and future returns to each activity, and various constraints the household faces. Acquisition of specific skills while working may raise future returns on the labor market more than skills acquired at school. Parents may thus decide not to educate their child or to reduce the time they spend at school (De Vreyer, Lambert, and Magnac 1999). Poverty may be one of the constraints to schooling, whatever the household's preferences and the size of the returns to education. All these factors are closely intertwined and determine, to varying degrees, the parents' decision to send their children to school, make them work, or make them participate in domestic tasks. Our empirical strategy deals with this interdependence.

We model children's allocation of time among economic (market) activities, domestic activities, and school, considering these choices to be interdependent and simultaneous. We do not observe the number of hours spent in each activity, but we know whether each child participates in each. We estimate a trivariate probit model in which three latent variables—participation in economic activities, L^*; participation in domestic activities, D^*; and school attendance,

S^*—depend on a vector of explanatory variables **X**; a vector of parameters β_L, β_D, and β_S; and error terms ε_L, ε_D, and ε_S, which are jointly normally distributed.

Formally, we estimate the following system of equations (written for child ***i***):

$$L_i = \begin{cases} 1 \text{ if } L_i^* = \mathbf{X}_i'\beta_L + \varepsilon_L > 0 \\ 0 \text{ if not} \end{cases}$$

$$D_i = \begin{cases} 1 \text{ if } D_i^* = \mathbf{X}_i'\beta_D + \varepsilon_D > 0 \\ 0 \text{ if not} \end{cases}$$

$$S_i = \begin{cases} 1 \text{ if } S_i^* = \mathbf{X}_i'\beta_S + \varepsilon_S > 0 \\ 0 \text{ if not} \end{cases} \qquad (12.1)$$

$$\text{where} \begin{pmatrix} \varepsilon_{iL} \\ \varepsilon_{iD} \\ \varepsilon_{iS} \end{pmatrix} \rightarrow \mathbf{N}(\mathbf{0}, \Sigma) \text{ with } \Sigma = \begin{pmatrix} \mathbf{1} & \rho_{LD} & \rho_{LS} \\ \rho_{LD} & \mathbf{1} & \rho_{DS} \\ \rho_{LS} & \rho_{DS} & \mathbf{1} \end{pmatrix}.$$

Coefficients ρ_{jk} (with $j \neq k$) reflect the correlation that can exist between the errors of the three choice equations. Depending on whether the choices are independent or not, these coefficients are zero or significantly different from zero. This model is estimated by simulated maximum likelihood using the GHK (Geweke-Hajivassiliou-Keane) method (Terracol 2002; Greene 2003).

The vector of variables **X** includes individual characteristic variables (child's age, gender, migratory status, status in relation to household head, and religion) and household characteristic variables (the household head's gender, the presence or absence of a spouse, the level of education of the household head and his or her spouse, the employment status of the household head, the household size, the number of children, and the level of wealth). Child's age is included to capture the fact that the probability of being in school between the ages of 10 and 14 decreases with age, even in countries (such as Burkina Faso, Côte d'Ivoire, Mali, and Togo) where the age limit for compulsory attendance is higher than 14, the probability declines even more in countries where it is lower than 14 (such as Benin, Niger, and Senegal) (see note 2).

Child's gender is also included among the regressors. As suggested by the descriptive statistics, the allocation of time is likely to differ for girls and boys, with girls having lower levels of schooling on average and being more involved in domestic and market work (except in Dakar and Niamey).

Relationship to the household head is measured by a dummy variable taking the value 1 if the child is the son or daughter of the head (and 0 otherwise). It is included to capture the fact that household heads may be more likely to invest in

the education of their biological children, either for altruistic reasons or because they expect to receive greater support from them in the future. (In the absence of well-functioning insurance markets and retirement schemes, education may be part of an implicit contractual arrangement between parents and their children whereby parents invest in their children's education in order to receive support from their children when they are too old to work.)

The child's migratory status (measured by a dummy taking the value 1 if the child originates from a rural area) is included to control for the impact of the child's background on his or her allocation of time. Many children reside in households headed by adults who are not their biological parents, even if their parents reside in these households (the 1-2-3 surveys do not record such detailed information). Children born outside the capital city are likely to be foster children.[4] Time allocation of these children depends partly on the reasons why they are in foster care.

Variables for the gender and education of the household head and spouse are introduced to capture household preferences for sending children to school or work. The education variable also controls for the fact that highly educated adults may offer better learning conditions to children, choose better schools, and facilitate their insertion into the labor market. An increase in the level of education of the household head and his or her spouse is thus expected to result in a decrease in children's participation in economic activity and an increase in their schooling.

The household head's self-employment status is included to control for the opportunity cost of attending school. Because children in households with self-employed members can be easily employed in the family businesses, they bear a higher opportunity cost of attending school, which may negatively affect their schooling investment and increase their participation in market work.

Household size and the number of children in the household may also affect a child's time allocation. The presence of more children in the household may negatively affect schooling and increase participation in domestic tasks if older children take care of younger ones. By contrast, more adults in the household may allow a better allocation of tasks and relax the time constraint, which may positively affect schooling and reduce the likelihood of market work.

The expected sign of the variable measuring household wealth is undetermined a priori. On the one hand, richer households are less likely to be budget constrained, which should positively affect schooling and reduce child labor. On the other hand, richer households are more likely to possess productive assets. By increasing the returns to labor, those assets may increase child labor. As we control for the head's self-employment status, this last effect should already be captured, so that the positive impact of wealth should dominate.

Household wealth is measured by a composite standard-of-living indicator, built using the data on household assets and the characteristics of the dwelling.

This indicator provides a less cyclical measure of the household standard of living than income or per capita consumption. It is built from a principal component analysis, which summarizes the information in 16 variables: (ownership or nonownership of a car, motorbike, bicycle, radio, television, hi-fi, refrigerator, and sewing machine; number of rooms in the dwelling; whether the dwelling is a private house; connection of the dwelling to the electricity grid; type of water supply (tap or standpipe); and type of toilet (private flush lavatory, shared flush lavatory, or latrine) (table 12.6).

The first principal component accounts for 22–30 percent of the total variance. It is significantly and positively correlated with most of the variables

Table 12.6 Weights of Variables in the First Principal Component

Variable	Abidjan	Bamako	Cotonou	Dakar	Lomé	Niamey	Ouagadougou
Assets owned							
Car (yes = 1; no = 0)	0.26	0.36	0.32	0.25	0.32	0.33	0.32
Motorbike (yes = 1; no = 0)	0.00	0.13	0.17	0.10	0.13	0.09	0.22
Bicycle (yes = 1; no = 0)	0.01	0.14	0.14	0.10	0.08	0.16	0.03
Radio (yes = 1; no = 0)	0.17	0.13	0.15	0.15	0.16	0.19	0.10
Television (yes = 1; no = 0)	0.27	0.33	0.31	0.33	0.33	0.34	0.33
Hi-fi (yes = 1; no = 0)	0.25	0.30	0.27	0.24	0.28	0.23	0.28
Refrigerator (yes = 1; no = 0)	0.25	0.37	0.31	0.20	0.33	0.29	0.32
Sewing machine (yes = 1; no = 0)	0.10	0.18	0.10	0.17	0.13	0.15	0.13
Dwelling characteristics							
Number of rooms	0.34	0.22	0.26	0.25	0.25	0.23	0.15
Connected to the electricity grid (yes = 1; no = 0)	0.11	0.32	0.24	0.26	0.29	0.30	0.32
Private house (yes = 1; no = 0)	0.25	0.24	0.27	0.26	0.32	0.31	0.31
Connected to running water (yes = 1; no = 0)	0.37	0.31	0.30	0.39	0.30	0.36	0.34
Water access via a standpipe (yes = 1; no = 0)	–0.35	–0.19	–0.28	–0.37	–0.22	–0.31	–0.32
Private lavatory (yes = 1; no = 0)	0.40	0.30	0.36	0.33	0.34	0.28	0.31
Shared lavatory (yes = 1; no = 0)	–0.20	–0.02	–0.20	–0.21	–0.03	–0.01	–0.02
Latrine (yes = 1; no = 0)	–0.22	–0.14	–0.03	–0.15	–0.16	–0.04	0.04
Percentage of total inertia explained by first principal component	0.27	0.23	0.26	0.22	0.26	0.28	0.29

Sources: Based on Phase 1 of the 1-2-3 surveys of selected countries (see box O.1 and table 12.1 for details).

concerned and can be interpreted as an indicator of the households' standard of living or wealth.

Some variables (such as child's migration status and the household wealth index) are likely to be correlated with unobserved heterogeneity terms that affect the probability of going to school, performing domestic activities, or working. Children that migrated, either on their own or to follow their parents, may adopt different behavior with respect to working or going to school not because they migrated but because migration was a precondition for them to get involved in these activities (an example is children who are being fostered so that they can attend school in the capital). The wealth index might be positively correlated with the probability of going to school without having any causal relation to it (if, for instance, the wealthiest households have a higher preference for education). Control variables, such as the education of the household head and spouse, are included in the list of explanatory variables in order to reduce this source of bias, but we cannot guarantee that we eliminated it completely. Without any credible instrument that would allow the use of two-stage least squares to solve the problem, we have no choice but to recognize possible sources of bias when commenting on the regression results in the next section.

Econometric Results

Table 12.7 presents the results of the estimations. Given that the standard deviations of the estimated coefficients are potentially biased by error term correlations for children from the same household, the error terms have been corrected.

The residual correlation coefficients indicate that the unobservable variables have opposite effects on school attendance and work (either domestic or market work). This finding suggests that a form of competition exists between school and work. Competition between school and economic activity (P_{LS}) appears to be much stronger than competition between school and domestic activity (P_{DS}). The value of the correlation coefficient P_{DS} is low and not significantly different from zero for four of the seven cities (Bamako, Cotonou, Lomé, and Ouagadougou), whereas the value of P_{LS} is significant and high for all cities. This finding is similar to that obtained by Dumas (2004) for Brazil and Kis-Katos (2012) for two northern Indian provinces.

For individual characteristics, the results show that older children have a lower probability of going to school and a higher probability of participating in both market activities and domestic tasks. This result is robust to the sample and the specification. In many cities, boys have a higher probability of going to school than girls and a systematically lower probability of participating in household tasks. The findings on participation in economic activities are more

Table 12.7 Results of Trivariate Probit Model of Allocation of Time of Children 10–14 in Seven Cities in West Africa, 2001/02

Variable	Abidjan	Bamako	Cotonou	Dakar	Lomé	Niamey	Ouagadougou
Attends school							
Age	–0.131**	–0.0685**	–0.183**	–0.126**	–0.0926*	–0.141**	–0.165**
	(0.0309)	(0.0262)	(0.0324)	(0.0208)	(0.0377)	(0.0245)	(0.0267)
Boy (dummy)	0.670**	0.206*	0.215	0.188*	0.779**	0.0227	–0.0186
	(0.191)	(0.101)	(0.158)	(0.0770)	(0.195)	(0.0822)	(0.155)
Child of household head (dummy)	0.601**	0.363*	1.174**	0.0859	0.624**	0.310**	0.636**
	(0.125)	(0.143)	(0.124)	(0.0820)	(0.174)	(0.113)	(0.127)
Muslim (dummy)	–0.134		–0.273		–0.0550		–0.483**
	(0.129)		(0.177)		(0.193)		(0.105)
Muslim × child of household head (dummy)	–0.299		0.237		–0.494		0.185
	(0.201)		(0.301)		(0.303)		(0.167)
Male-headed household (dummy)	0.0240	0.232	–0.0859	–0.206	–0.251	0.0579	0.832**
	(0.179)	(0.346)	(0.231)	(0.182)	(0.231)	(0.296)	(0.216)
Single-headed household (dummy)	0.238	0.381	0.370	0.162	0.0763	0.0840	0.702**
	(0.156)	(0.338)	(0.228)	(0.187)	(0.230)	(0.298)	(0.215)
Education of household head	0.0208	0.0466**	0.00895	0.0476**	0.0309	0.0518**	0.0280*
	(0.0143)	(0.0132)	(0.0139)	(0.0103)	(0.0168)	(0.0116)	(0.0139)
Education of spouse of household head	0.0274	0.0149	0.0156	0.0483**	0.0279	0.0199	–0.0106
	(0.0191)	(0.0162)	(0.0162)	(0.0140)	(0.0233)	(0.0142)	(0.0157)
Education of household head × boy	0.0481*	0.0272	0.0441*	0.00471	0.00380	0.00191	0.0515*
	(0.0245)	(0.0200)	(0.0217)	(0.0136)	(0.0318)	(0.0160)	(0.0232)
Education of spouse × boy	–0.0624*	0.00379	0.0349	–0.0153	0.0315	0.0336	0.0178
	(0.0311)	(0.0259)	(0.0307)	(0.0193)	(0.0479)	(0.0218)	(0.0258)
Self-employment of household head (dummy)	–0.190	–0.244*	–0.232*	–0.298**	–0.287*	–0.213**	–0.0322
	(0.102)	(0.0974)	(0.106)	(0.0720)	(0.119)	(0.0816)	(0.0873)

Number of adults in household	0.0344 (0.0197)	0.0610** (0.0194)	–0.0152 (0.0260)	–0.00742 (0.0110)	0.0528 (0.0283)	–0.00297 (0.0147)	0.0184 (0.0200)
Number of children in household	0.0283 (0.0274)	–0.0545* (0.0218)	–0.0142 (0.0259)	–0.0242 (0.0141)	–0.0133 (0.0385)	–0.0136 (0.0156)	–0.0382 (0.0203)
Internal migrant (dummy)	–0.787** (0.137)	–0.831** (0.185)	–0.809** (0.150)	–0.638** (0.143)	–0.590** (0.176)	–0.675** (0.196)	–0.314* (0.158)
Migrant × child of household head	0.746** (0.203)	0.469* (0.235)	0.566** (0.210)	0.537** (0.207)	0.736** (0.244)	0.568* (0.228)	0.699** (0.212)
Wealth index	0.155** (0.0285)	0.0241 (0.0320)	0.0972** (0.0302)	0.114** (0.0195)	–0.00642 (0.0327)	0.0820* (0.0328)	0.0316 (0.0255)
Intercept	1.295** (0.431)	0.894 (0.536)	2.238** (0.515)	2.070** (0.324)	1.638** (0.582)	1.999** (0.449)	1.718** (0.447)
Participates in domestic tasks							
Age	0.0989** (0.0284)	0.0848** (0.0237)	0.0811** (0.0257)	0.137** (0.0197)	–0.0312 (0.0325)	0.0545* (0.0218)	0.0801** (0.0225)
Boy (dummy)	–0.762** (0.186)	–1.106** (0.101)	–0.598** (0.138)	–1.266** (0.0802)	–0.852** (0.194)	–1.065** (0.0839)	–0.949** (0.125)
Child of household head (dummy)	–0.392** (0.126)	–0.171 (0.136)	–0.219 (0.126)	–0.150 (0.0789)	–0.144 (0.153)	–0.0561 (0.117)	–0.144 (0.123)
Muslim (dummy)	0.155 (0.140)		–0.577** (0.164)		0.0817 (0.298)		0.0747 (0.0953)
Muslim × child of household head (dummy)	–0.617** (0.205)		0.609** (0.228)		–0.0829 (0.368)		–0.153 (0.139)
Male-headed household (dummy)	–0.218 (0.175)	0.105 (0.317)	0.125 (0.172)	–0.0600 (0.138)	–0.0243 (0.226)	0.374 (0.253)	0.370 (0.219)
Single-headed household (dummy)	–0.268 (0.162)	–0.110 (0.309)	–0.117 (0.173)	–0.126 (0.138)	–0.276 (0.233)	0.302 (0.250)	0.241 (0.219)

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Table 12.7 (continued)

Variable	Abidjan	Bamako	Cotonou	Dakar	Lomé	Niamey	Ouagadougou
Education of household head	–0.0190 (0.0147)	0.0123 (0.0110)	–0.0112 (0.0138)	–0.0105 (0.00972)	–0.0325 (0.0193)	–0.00486 (0.0109)	–0.0171 (0.0128)
Education of spouse of household head	–0.0242 (0.0196)	–0.0328* (0.0143)	–0.0134 (0.0156)	–0.0197 (0.0129)	–0.0511* (0.0260)	–0.0117 (0.0139)	0.00592 (0.0148)
Education of household head × boy	–0.00487 (0.0209)	–0.0152 (0.0152)	–0.00234 (0.0166)	0.0208 (0.0131)	0.0275 (0.0244)	0.0110 (0.0152)	0.0235 (0.0157)
Education of spouse × boy	0.0297 (0.0268)	0.0371 (0.0197)	0.0302 (0.0209)	0.0364* (0.0180)	0.0266 (0.0313)	–0.0201 (0.0225)	–0.0278 (0.0199)
Self-employment of household head (dummy)	–0.132 (0.115)	–0.131 (0.0897)	0.172 (0.0986)	0.152* (0.0747)	0.0550 (0.117)	0.132 (0.0814)	0.00493 (0.0836)
Number of adults in household	–0.0327 (0.0223)	–0.0367* (0.0156)	–0.0586* (0.0238)	–0.0227* (0.0110)	–0.0115 (0.0260)	–0.0152 (0.0156)	–0.0107 (0.0174)
Number of children in household	–0.0613 (0.0327)	0.0286 (0.0193)	–0.0389 (0.0256)	–0.00119 (0.0136)	0.0205 (0.0334)	0.00199 (0.0177)	–0.0516** (0.0199)
Internal migrant (dummy)	0.251 (0.141)	0.0961 (0.176)	0.133 (0.168)	–0.00141 (0.149)	0.508* (0.199)	0.300 (0.193)	0.389* (0.160)
Migrant × child of household head	–0.309 (0.194)	–0.105 (0.220)	–0.0390 (0.209)	0.0579 (0.204)	–0.0568 (0.235)	–0.130 (0.225)	–0.198 (0.191)
Wealth index	–0.0748* (0.0311)	–0.0346 (0.0277)	–0.0313 (0.0287)	–0.0249 (0.0204)	0.00148 (0.0344)	–0.0493 (0.0296)	–0.0309 (0.0232)
Intercept	–0.185 (0.441)	–0.743 (0.483)	0.307 (0.412)	–1.104** (0.295)	2.156** (0.567)	–0.610 (0.396)	–0.810* (0.408)
Participates in market activities							
Age	0.126** (0.0399)	0.199** (0.0356)	0.208** (0.0348)	0.247** (0.0307)	0.0917** (0.0341)	0.0848** (0.0269)	0.174** (0.0317)
Boy (dummy)	–0.364 (0.218)	0.213 (0.112)	–0.0358 (0.175)	0.369** (0.110)	–0.451** (0.170)	0.237* (0.0972)	0.0394 (0.203)

Child of household head (dummy)	–0.348*	–0.0442	–1.145**	0.000821	–0.327*	–0.216	–0.612**
	(0.165)	(0.153)	(0.133)	(0.110)	(0.160)	(0.143)	(0.146)
Muslim (dummy)	–0.0873		0.270		–0.305		0.382*
	(0.153)		(0.175)		(0.200)		(0.152)
Muslim × child of household head (dummy)	0.320		–0.399		0.126		–0.0761
	(0.239)		(0.353)		(0.294)		(0.215)
Male-headed household (dummy)	–0.166	–0.236	0.263	0.260	0.356	0.157	–0.416
	(0.196)	(0.406)	(0.231)	(0.172)	(0.202)	(0.269)	(0.301)
Single-headed household (dummy)	–0.201	0.0699	–0.169	–0.00493	0.239	0.238	–0.190
	(0.173)	(0.400)	(0.247)	(0.176)	(0.209)	(0.259)	(0.293)
Education of household head	–0.0257	–0.00460	–0.0128	–0.0200	–0.0188	0.00319	–0.0295
	(0.0181)	(0.0134)	(0.0152)	(0.0144)	(0.0162)	(0.0154)	(0.0192)
Education of spouse of household head	0.0125	0.00876	–0.0285	–0.0423*	–0.00510	–0.0433*	0.0262
	(0.0200)	(0.0170)	(0.0186)	(0.0214)	(0.0242)	(0.0183)	(0.0216)
Education of household head × boy	–0.0498	–0.0316	–0.0760**	–0.0361	0.00239	–0.0389	–0.00870
	(0.0277)	(0.0171)	(0.0276)	(0.0202)	(0.0252)	(0.0199)	(0.0256)
Education of spouse × boy	0.0320	–0.0415	–0.00248	0.0358	–0.00833	0.0510*	–0.0205
	(0.0301)	(0.0223)	(0.0389)	(0.0276)	(0.0339)	(0.0236)	(0.0285)
Self-employment of household head (dummy)	0.322*	0.171	0.284*	0.237*	0.279*	0.330**	0.0803
	(0.130)	(0.110)	(0.117)	(0.0934)	(0.112)	(0.0996)	(0.111)
Number of adults in household	–0.0522	–0.0185	0.0172	0.00425	0.0406	–0.0249	–0.0456
	(0.0308)	(0.0196)	(0.0264)	(0.0150)	(0.0237)	(0.0189)	(0.0236)
Number of children in household	–0.0126	0.0183	0.0202	0.0176	–0.0304	–0.00986	0.0560
	(0.0353)	(0.0216)	(0.0300)	(0.0168)	(0.0332)	(0.0230)	(0.0319)
Internal migrant (dummy)	0.635**	0.626**	0.588**	0.703**	0.556**	0.577**	–0.0511
	(0.171)	(0.185)	(0.149)	(0.173)	(0.173)	(0.210)	(0.180)
Migrant × child of household head	–0.718**	–0.507*	–0.562*	–0.738**	–0.476*	–0.291	–0.465
	(0.256)	(0.250)	(0.220)	(0.266)	(0.218)	(0.255)	(0.269)

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Table 12.7 (continued)

Variable	Abidjan	Bamako	Cotonou	Dakar	Lomé	Niamey	Ouagadougou
Wealth index	0.00113	–0.0128	–0.0389	–0.0866**	–0.0767*	–0.0394	–0.0324
	(0.0354)	(0.0329)	(0.0314)	(0.0269)	(0.0342)	(0.0395)	(0.0328)
Intercept	–1.959**	–3.558**	–3.173**	–4.964**	–2.313**	–2.315**	–2.875**
	(0.604)	(0.671)	(0.567)	(0.454)	(0.524)	(0.459)	(0.543)
ρ_{DS}	–0.389**	–0.0749	–0.0618	–0.0968*	–0.165	–0.156**	–0.0934
	(0.0636)	(0.0535)	(0.0630)	(0.0417)	(0.0932)	(0.0482)	(0.0506)
ρ_{LS}	–1.189**	–0.389**	–1.866**	–0.671**	–0.766**	–0.411**	–0.759**
	(0.108)	(0.0650)	(0.148)	(0.0646)	(0.0850)	(0.0655)	(0.0789)
ρ_{LD}	0.0746	0.231**	0.101	–0.0293	0.362**	0.222**	0.0524
	(0.0744)	(0.0612)	(0.0696)	(0.0563)	(0.0774)	(0.0479)	(0.0506)
Number of observations	1,168	1,526	1,327	2,367	1,130	1,820	1,744

Sources: Based on Phase 1 of the 1-2-3 surveys of selected WAEMU countries 2001/02.
Note: Figures in parentheses are robust standard errors.
* significant at the 10 percent level, ** significant at the 5 percent level, *** significant at the 1 percent level.

varied: boys are less likely to engage in an activity outside the home environment in Lomé but more likely to do so in Dakar and Niamey. The nature of the child's relationship to the household head is an important determinant of allocation of time between work and school. Biological children of the household head have a higher probability of going to school and a lower probability of working (at home or in the market) than other children.[5] Children who were not born in the capital have a significantly lower probability of going to school and a higher probability of working in all cities except Ouagadougou.[6] This result is true only for children who do not reside with their biological parents, however, as the migratory status variable's interaction with the children of household head dummy is always significantly positive. This finding suggests that children who migrated to the capital and whose biological parents are likely to live elsewhere are more likely to work than to go to school.

One possible explanation of these results is that migration status may affect the probability of working or attending school because migration and the choice of activity are part of the same project. Children who migrated with their parents may be more likely to go to school because one of the reasons for migrating was to enhance the possibilities of getting the children educated.[7] Children who migrated without their parents may have moved in order to find work.

Many nonbiological children, particularly children born outside the capital, are likely to have been fostered to an adult member of the household. In Senegal, for instance, about 12 percent of children 15 and younger are fostered, and 32 percent of households host or send one or more fostered children (Beck and others 2011). The fact that these children have a lower probability of going to school than the biological children of their hosting household is consistent with the hypothesis, popular among some international organizations and supported by some academic works, that fostering may have a negative impact on children's well-being (Kielland 1999; UNICEF 1999; Case, Lin, and McLanahan 2000; Case, Paxson, and Ableidinger 2004; Bishai and others 2003). Early studies on child fostering, such as the study by Ainsworth (1996), find evidence that does not contradict this hypothesis, but these studies are limited by the nature of the data, which do not allow comparison of fostered children with children in their household of origin.

Using data that match the origin and hosting households of fostered children in Burkina Faso, Akresh (2008) shows that fostered children do not have a lower probability of going to school than the biological children of their hosting household and that this probability is significantly higher than that of their nonfostered siblings. Using 2006/07 data from Senegal, Coppoletta and others (2011) show that adults who were fostered when young have slightly higher levels of education and better positions in their households than adults who had not been fostered. Hence, in the absence of other evidence, we cannot interpret

our results as firm evidence that fostered children are disadvantaged compared with their biological siblings.

A number of household characteristics also influence the time allocation decisions made for children. Having an educated head of household—and, to a lesser extent, spouse—raises the probability of a child going to school in most cities and reduces the probability of the child working. This finding is consistent with what is generally found in the literature: the presence of educated adults in a household raises children's returns to education by providing fertile ground for learning and encouraging them to spend more time in school and less time working. The impact of the level of education of the household head is particularly strong among boys in Abidjan, Cotonou, and Ouagadougou.

The level of education of the spouse of the household head is less significant, because it encompasses two opposite effects. On the one hand, an educated woman has more employment opportunities and is therefore more likely to delegate domestic work to children in her household, which reduces their chances of going to school (however, results from chapter 7 show that the number of hours of domestic work does not decline when women work for income). On the other hand, an educated women is in a better position to support the children in her household in their school education and therefore to send them to school rather than work.

The effect of the number of adults in the household on children's schedules is significant in only a few cities. In Bamako and, to a lesser extent, Abidjan and Lomé, the presence of more adults increases the probability of going to school; it reduces participation in domestic activities in most cities. These results suggest a distribution of tasks among different household members. Children in the same household appear to compete with one another to go to school, as an increase in the number of children tends to reduce school attendance. However, the impact is not statistically strong or significant, except in Bamako.

Self-employment by the head of household and the household wealth indicator have strong effects on children's allocation of time. Living in a household whose head is a self-employed entrepreneur significantly raises children's participation in economic activities in five of the seven cities (all except Bamako and Ouagadougou), at the expense of schooling. One could argue that the decision of the household to start a business depends on whether there are young children able to help out. If this is the case, entrepreneurship is jointly determined with child work.

This finding can be interpreted in two other ways. First, labor market imperfections may make it difficult to hire external labor. A household head could consequently be driven to rely on family members, especially children. This interpretation mirrors in an urban setting the finding of Bhalotra and Heady (2003) in rural Ghana and Pakistan.

Second, work experience gained by children in the family business could enhance their employability, encouraging them to opt out of school. Household heads using the labor of their children (or other children in the household) could well be equipping them with skills or specific human capital they can then sell on the labor market. This interpretation echoes the hypothesis that children's professional experience gained in the first period raises their labor productivity in the second period.

As many empirical studies show (see, in particular, Psacharopoulos 1997; Ray 1999, 2000; Lachaud 2004), household wealth is an important determinant of the time allocation decisions made for children. It has a positive and significant effect on school attendance among children in four of the seven cities (Abidjan, Cotonou, Dakar, and Niamey), where it reduces their participation in work (economic or domestic) activities. This effect is to be expected where access to the financial market depends on the level of household wealth. Higher wealth allows households to relax the budgetary constraint, favoring school enrollment. Given that the wealth variable is not instrumented, one cannot exclude the risk of an upward bias for the wealth coefficient estimate in the schooling equation and downward bias in the labor market participation equation. However, given that the education levels of the household head and spouse are included in the equations and qualitatively identical results were obtained in five of seven cities (all but Bamako and Ouagadougou), a true wealth effect appears to be at work, at least in some cities.

Conclusion

The chapter examines some of the factors influencing the allocation of children's time in seven West African cities. It finds that both domestic and economic activities compete with school, but many children combine school with domestic activities. Marked differences are evident between boys and girls, biological and nonbiological children, and migrant and nonmigrant children, with boys, biological children, and nonmigrant children having a higher propensity for going to school and a lower propensity for participating in domestic tasks and (for all groups but boys) economic activities. The propensity to attend school (work) is generally significantly higher (lower) in more educated and wealthier households and households in which the household head is not a self-employed entrepreneur.

This last finding points to a potential drawback of the standard recommendation of providing credit and other asset-building mechanisms to poor households. To the extent that these mechanisms allow parents to operate their own business, they could actually increase child labor (Del Carpio and Loayza 2012 for Nicaragua and Hazarika and Sarandi 2008 for rural Malawi find results that

confirm this intuition). This negative impact on school attendance may be mitigated if children learn specific skills that allow them to increase their resources in adulthood by more than the forgone earnings attributable to reduced schooling. The data suggest that boys seem to have privileged access to this alternative way of accumulating human capital. If further investigations confirm this result, it would mean that gender inequality in access to education is coupled with inequality in access to on-the-job training in West African countries.

Notes

1. The ILO definition of child labor is rather restrictive. It includes work that is "mentally, physically, socially or morally dangerous and harmful to children; and interferes with their schooling by: depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work" (ILO 2012). According to this definition, a child who is prevented from attending school because of involvement in family activities is not considered at work as long as these activities are not dangerous or harmful.
2. The age of the end of compulsory schooling varies across countries (11 in Benin; 12 in Niger and Senegal; 15 in Côte d'Ivoire, Mali, and Togo; 16 in Burkina Faso). It is not clear whether this age is relevant, however, as it is not rigorously enforced. As is usual in the literature, we thus chose to focus on children ages 10–14.
3. Dakar, where 52 percent of working children are apprentices, is the exception. Apprentices are also important in Cotonou (32 percent), Ouagadougou (26 percent), Abidjan (25 percent), and Bamako (24 percent). Apprentices are generally not paid, but they learn to become welders, mechanics, tailors, blacksmiths, tinsmiths, and restaurant servers.
4. Although Abidjan and Cotonou are not administrative capitals, we refer to them as capitals because they are the most important economic centers in their countries (Cotonou is also the seat of government).
5. Children with the status of domestic staff were excluded from the sample to avoid biasing the results.
6. A large proportion of children in some cities (37 percent in Lomé, 31 percent in Abidjan, 27 percent in Cotonou, and 23 percent in Ouagadougou) were born outside the capital. This proportion is lower in Bamako (17 percent), Niamey (15 percent), and Dakar (9 percent).
7. It could also be the case that these children share with their parents common unobserved characteristics that increase both the probability of migration and the probability of attending school. Our data do not allow us to test this possibility.

References

Ainsworth, M. 1996. "Economic Aspects of Child Fostering in Cote d'Ivoire." In *Research in Population Economics,* vol. 8, ed. T. P. Schultz, 25–62. Greenwich, CT: JAI Press.

Akresh, R. 2008 "School Enrollment Impacts of Non-traditional Household Structure." BREAD Working Paper 89, Bureau for Research and Economic Analysis of Development, Durham, NC.

Baland, J. M., and J. A. Robinson. 2000. "Is Child Labor Efficient?" *Journal of Political Economy* 108 (4): 663–79.

Basu, K., and P. Van. 1998. "The Economics of Child Labor." *American Economic Review* 88 (3): 412–27.

Beck, S., P. De Vreyer, S. Lambert, K. Marazyan, and A. Safir. 2011. "Child Fostering in Senegal." Paris School of Economics. http://www.parisschoolofeconomics.eu/docs/lambert-sylvie/confiage7-1.pdf.

Becker, G. S. 1964. *Human Capital*. New York: Columbia University Press for the National Bureau of Economic Research.

Becker, G. S., and H. Lewis. 1973. "On the Interaction between the Quantity and Quality of Children." *Journal of Political Economy* 81 (2): S279–88.

Behrman, J. R, R. Pollak, and P. Taubman. 1982. "Parental Preferences and Provision for Progeny." *Journal of Political Economy* 90 (1): 52–73.

Bhalotra, S., and C. Heady. 2003. "Child Farm Labor: The Wealth Paradox." *World Bank Economic Review* 17 (2): 197–227.

Bishai, D., E. D. Suliman, H. Brahmbhatt, F. Wabwire-Mangen, G. Kigozi, N. Sewankambo, D. Serwadda, M. Wawer, and R. Gray. 2003. "Does Biological Relatedness Affect Survival?" *Demographic Research* 8 (9): 262–77.

Case, A., I.-F. Lin, and S. McLanahan 2000. "How Hungry Is the Selfish Gene?" *Economic Journal* 10 (466): 781–804.

Case, A., C. Paxson, and J. Ableidinger. 2004. "Orphans in Africa: Parental Death, Poverty, and School Enrollment." *Demography* 41 (3): 483–508.

Coppoletta, R., P. De Vreyer, S. Lambert, and A. Safir. 2011. "The Long Term Impact of Child Fostering in Senegal: Adults Fostered in their Childhood." Paris School of Economics. http://www.parisschoolofeconomics.eu/docs/lambert-sylvie/lotif_ver22.pdf.

De Vreyer, P., S. Lambert, and T. Magnac. 1999. "Educating Children: A Look at Household Behaviour in Côte d'Ivoire." Document de travail, Centre d'Etude des Politiques Economiques de l'Université d'Evry (EPEE) 99-13, Evry, France.

Del Carpio, X. V., and N. V. Loayza. 2012. "The Impact of Wealth on the Amount and Quality of Child Labor." Policy Research Working Paper 5959, World Bank, Washington, DC.

Dumas, C. 2004. "Impact de la structure familiale sur les décisions parentales de mise au travail des enfants: le cas du Brésil." *Revue d'Economie du Développement* 18 (1): 71–99.

Greene, W. H. 2003. *Econometric Analysis*, 5th ed. New York: Prentice Hall.

Hazarika, G., and S. Sarangi. 2008. "Household Access to Microcredit and Child Work in Rural Malawi." *World Development* 36 (5): 843–59.

ILO (International Labour Organization). 2012. "What Is Child Labour?" http://www.ilo.org/ipec/facts/lang--en/index.htm.

Jacoby, H., and E. Skoufias. 1997. "Risk, Financial Markets and Human Capital in a Developing Country." *Review of Economic Studies* 64: 311–35.

Kielland, A. 1999. "Children's Work in Benin: Estimating the Magnitude of Exploitative Child Placement." World Bank, Social Protection Sector, Washington, DC.

Kis-Katos, K. 2012. "Gender Differences in Work-Schooling Decisions in Rural North India." *Review of Economics of the Household.* doi:10.1007/s11150–012–9153–x.

Lachaud, J.-P. 2004. "Le travail des enfants et la pauvreté en Afrique: un réexamen appliqué au Burkina Faso." Working Paper 96, Centre d'Economie du Développement, Université Montesquieu Bordeaux IV.

Psacharopoulos, G. 1997. "Child Labour Versus Educational Attainment: Some Evidence from Latin America." *Journal of Population Economics* 10 (4): 377–86.

Ranjan, P. 1999. "An Economic Analysis of Child Labor." *Economics Letters* 64 (1): 99–105.

Ray, R. 1999. "The Determinants of Child Labor and Child Schooling in Ghana." *Journal of African Economies* 11 (4): 561–90.

———. 2000. "Child Labor, Child Schooling, and Their Interaction with Adult Labor: Empirical Evidence for Peru and Pakistan." *World Bank Economic Review* 14 (2): 347–67.

Rosenzweig, M., and K. Wolpin. 1985. "Specific Experience, Household Structure, and Intergenerational Transfers: Farm Family Land and Labor Arrangements in Developing Countries." *Quarterly Journal of Economics* 100 (5): 961–87.

Skoufias, E., and S. Parker. 2002. "A Cost-Effectiveness Analysis of Demand and Supply-Side Education Interventions." FNCD Discussion Paper 227, International Food Policy Research Institute, Washington, DC.

Terracol, A. 2002. "Triprobit and the GHK Simulator: A Short Note." Appendix to the Stata Triprobit command. http://fmwww.bc.edu/repec/bocode/g/GHK_note.pdf.

UNICEF (United Nations Children's Fund). 1999. "Child Domestic Work." Innocenti Digest No. 5, International Child Development Center, Florence, Italy.

AFRICA DEVELOPMENT FORUM

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1 2 3 4 16 15 14 13

ISBN (paper): 978-0-8213-9781-7
ISBN (electronic): 978-0-8213-9782-4
DOI: 10.1596/978-0-8213-9781-7

Cover image: ©Michelle Saint-Léger, IRD, 2013.
Cover design: Debra Naylor, Naylor Design, Inc.

Library of Congress Cataloging-in-Publication Data
Vreyer, Philippe De.
Urban labor markets in sub-Saharan Africa/Philippe De Vreyer and François Roubaud.
p. cm.
Includes bibliographical references and index.
ISBN 978-0-8213-9781-7 — ISBN 978-0-8213-9782-4 (electronic)
1. Labor market—Africa, Sub-Saharan. 2. Africa, Sub-Saharan—Economic conditions. 3. City dwellers—Employment—Africa, Sub-Saharan. I. Roubaud, François. II. World Bank. III. Title.
HD5837.A6V74 2013
331.120967—dc23

2012050217

The French translation of this book is copublished by Agence Française de Développement and Institut de Recherche pour le Développement (IRD). The IRD, a French public research institute emphasizing interdisciplinarity, has focused its research for more than 65 years on the relationship between man and its environment in Africa, Asia, Latin America, the Mediterranean, and the French tropical overseas territories. Its research, training, and innovation activities are intended to contribute to the social, economic, and cultural development of southern countries. For further information: www.editions.ird.fr.