Child labor and labor market outcomes in Tanzania: a gender perspective

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Abstract

Using the Kagera Health and Development 1991-2010 panel survey, we investigate whether working during childhood leads to vulnerable employment during adulthood, and if there are gender differences in this relationship. We estimate both linear probability models with fixed effects and correlated random effects models to take account of the effects of time-invariant variables and of between-individual differences. Results of both estimation techniques show that one hour more of child labor is significantly associated with vulnerable employment during adulthood, as it increases the probability of becoming an unpaid family worker and decreases the probability of becoming an employer. This average effect, however, hides substantial gender differences. Splitting the sample into males and females, we find that child labor is very disruptive for females, while, for males, it can have positive effects. For example, having worked as employee or in the household non-farm business as a boy increases the probability of getting non-vulnerable employment in adulthood, while for girls the opposite is true.

1. Introduction

Child labor is widespread all over the world: according with the ILO estimates, 168 million children aged 5-17 years was involved in child labor in 2012. Although in the last years the number of child laborers has considerably declined, from 215 million in 2008 (13.6 per cent) to 168 million in 2012 (10.6 per cent), the problem of child labor remains a serious concern for many developing countries. This is because it can have an irreversible physical, psychological and moral impact on development, health and well-being of children. However, that child labor is not a homogeneous phenomenon: children carry out various kinds of job, in very different social, hygienic and moral contexts; as a result, the consequences on them can be very different. In addition, not all forms of child labor are considered harmful, especially in developing countries, where the first issue is to survive and where some activities could be considered an apprenticeship dimension or a part of the development process of children.

Overall, it is clear that child labor has a huge number of implications both in the short and in the long-run. So far, the literature has mainly focused on the short-run effects, namely, on the trade-off between child labor and education (Emerson, Souza & Ponczek (2013), Ray (2003), Rodgers & Standing (1981), Gunnarsson, Orazem & Sanchez (2006)).

In this paper, using panel data covering a long time span, we investigate the effects of child labor on individual economic activity during adulthood. In fact, this relationship might be ambiguous: on one hand, child labor can be harmful to children because it prevents them from acquiring education and it may compromise their health, confining them to irregular, unskilled and badly paid jobs. On the other hand, there may be some positive benefits deriving from professional training, learning by doing, work experience and potential for making contacts. In other words, there are many reasons to expect that young laborers can gain some human capital from their work experience, leading them to more skilled and well-paid jobs.

The few studies that, so far, have examined this relationship, have yielded mixed results. Emerson & Souza (2011) argue that child labor has a negative effect on adult earnings for young children, while for adolescents the effect turns out to be positive. Ilahi, Orazem & Sedlacet (2005) find a negative relationship between child labor and adult earnings. Beegle Dehejia & Gatti (2009) show that although child labor is associated with a higher probability of wage employment and higher daily earnings, this is true only in the short-term. Finally, Beegle, Dehejia & Gatti (2008) find that child labor is associated with farm activities and low productivity during adulthood. Moreover, to our knowledge, only two of them use panel data (Beegle, Dehejia & Gatti, (2009) and Beegle, Dehejia, Gatti & Krutikova (2008)), while the rest uses retrospective information. Finally, no one of them pays particular attention to gender issues.

This paper aims to contribute to the existing body of literature on this crucial topic and to fill the gaps. In particular, we analyze the child labor effect in the long-run, and try to answer the following questions: does

child labor lead to vulnerable employment during adulthood?[1] Is child labor associated with a specific adult economic activity?[2]

We study this subject focusing on gender differences, since child labor effects may differ greatly between boys and girls. First, girls are less physically strong and, therefore, work during childhood can be more disruptive for them than for boys. Second, child labor, preventing education, deprives them of an asset that is crucial to compete in the labor market, a place where they are already discriminated. Finally, girls typically engage in domestic chores, a type of work that creates specific skills that are going to lock them into these activities when they become adult. Child labor, therefore, could contribute to strengthen the usual association between women and unskilled jobs, domestic chores and unpaid work for the household.

We use, for our analysis, the Kagera Health and Development Survey (KHDS) for Tanzania, which is includes six waves, spanning over 19 years (1991- 2010). We estimate linear probability models with fixed effects and carry out robustness checks: (i) for the presence of non-linear relationships between child labor and our variables of interest to capture possible threshold effects of child labor hours; (ii) for correlated random effects to take account of time invariant variables, like sex, and to study between effects.

The paper is organized as follows: Section 2 briefly summarizes the relevant literature; Section 3 describes the case of the Kagera region in Tanzania, Section 4 introduces the dataset, explains the main variables and presents some descriptive statistics. The empirical strategy is discussed in Section 5. Section 6 presents the main results and the robustness checks. Section 7 concludes.

2. **State of the art**

In recent years, there has been a growing interest in child labor among academics, professionals and media. As a result, there has been a rapidly expanding analytical and empirical literature on child labor. Although this, little is known about the effect of child labor on adult outcomes. The assumption that child labor is harmful underpins both the theoretical and empirical literature.

Theoretically, Basu and Van (1998) in the "Economics of Child Labor" analyze the child labor phenomenon. They show that under some conditions, the luxury and substitution axiom, there are two possible equilibria: a "bad equilibrium" where wages are low and parents send their children to work, which then maintains wages at a low level, and a "good equilibrium", where wages are high, inducing parents to not send their children to work. Moreover, Basu (1999) with the formulation of the "Child Labor Trap" shows that child labor produces poverty, and poverty calls for more child labor. From this, we should conclude that child labor lowers the possibility of individuals to find a skilled and well paid job because it prevents education and human capital accumulation and it can jeopardize the health of children.

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[1] Vulnerable employment is defined accordingly to ILO, as the sum of own account workers and contributory family workers.
[2] Economic activities are defined according to the International Classification by Status in Employment (ICSE) approved by UN.

Empirically, the existing literature focused especially on the relationship between child labor and human capital accumulation. However, it is subject to a controversial debate because, in developing countries, work could represent an important form of socialization and some works are less disruptive than others. Therefore, on one hand, child labor is likely to create an unhealthy and unskilled labor force because it lowers the schooling attendance, preventing human capital accumulation and damaging the health of children. On the other hand, some form of child labor can be an important part of the development process of children: through it, children acquire work experiences and learn by doing, conferring them human capital. Moreover, in developing countries the quality of school is low, thus returns to schooling can be lower than returns to working. Therefore, child labor can be associated with better jobs and higher wages in adulthood.

This ambiguity is reflected in the empirical studies, the majority of which mainly focus on the child labor effect on school attendance. Some works suggest that child labor is detrimental to education: Coulombe & Canagarajah (1997) show that there is a significant negative relationship between going to school and working in Ghana; Gunnarsson, Orazem & Sanchez (2006) estimate that child labor lowers math scores by 7.5 percent and language scores by 7 percent in Latin America; Bezerra, Kassouf & Arends-Kuenning (2009) find that Brazilian children and adolescents who do not work have better school performance than students who work, in particular who work outside the house are worse off of those working only inside the house, however who work both inside and outside the house have the lowest test scores; Emerson, Souza & Ponczek (2013) estimate again a negative relationship between working and learning outcomes in both math and language in Brazil; Ray (2003) find that one hour more of wage work in Ghana is associated with more than a year less completed in educational attainment. However, other studies find different results: Rodgers and Standing (1981) wrote that we should not automatically assume work by children impairs education and intellectual development, since it could be an important component of "education", especially in household based production system. Moreover, education and child labor could be complementary rather than substitutes: Patrinos & Psacharopoulos (1997), studying a Peruvian dataset, shows that child labor is not damaging for education and speculate about the possibility that it makes possible for children to go to school. Therefore, work and education are not mutually exclusive: often, children engaged in work, are also attending school. They suggest that the negative implications of child labor on school attainment depend on the hours of work performed by children and on the age in which they begin it.

The literature examining the link between child labor and subsequent labor market outcomes, other than being limited, confirms this ambiguity: Emerson & Souza (2011) estimate the impact of child labor on the adult earnings in Brazil. They found that child labor is associated with lower adult wages especially for male children because of the trade-off with educational attainment. However, they highlighted that these negative effects become positive around age 12- 14. In other words, the entrance in the labor market during the childhood is deleterious and has negative implications for adults' wages; instead, adolescent labor has a positive impact on them. Ilahi, Orazem & Sedlacek (2005) study the consequences of child labor on adults' earnings and on the incidence of poverty in Brazil. Again, they found a negative relationship between child labor and adults' wages due to loss of schooling, and a high probability of being in poverty for older children

working. Both of them have not at their disposal panel dataset, therefore they use retrospective information. Beegle, Dehejia & Gatti (2009) use a panel data from Vietnam to study the consequences of child labor on socio-economic outcomes such as health, education and wage. They found that, five years later, school participation and education attainment lower significantly, but, in contrast to the previous studies, they also found substantially higher wages for older children workers. Moreover, they show that child labor is associated with greater probability of wage employment and with higher daily labor and farm earnings, which offsets the earnings loss due to reduced schooling. However, this is true only in a short horizon, over a long time span, from the age of thirty, the earning loss due to low education overcomes the earning gain due to child labor. Finally, Beegle, Dehejia, Gatti & Krutikova (2008) exploit the same panel dataset we use, in order to study the consequences of child labor on education, employment choices and marital status in Kagera region. They used the rainfall and crop shocks as instrumental variable and a 2LSLS method. Their results show that child labor is associated with farming and lower marginal productivity in agricultural labor in adult age.

With respect to this last work, our study is different: (i) we study different dependent variable: their work focuses on the impact of child labor on the probability of being farmer in adulthood and on the productivity when adult. We study instead in which way child labor affects vulnerable employment and any kind of economic activity defined by the International Classification by Status in Employment (own account worker, contributory family worker, employee, employer and other or non-working). (ii) We add a gender perspective to our results that it is not highlighted in their work. (iii) We are going to exploit different waves from them, we study if child labor during 1992-1993 affects the kind of employment that individual get in adulthood, 2004 and 2010, while Beegle, Dehejia, Gatti & Krutikova (2008) had at their disposal a panel dataset up to 2004. (iii) Third, we consider if the kind of work in which children are engaged has different implications for adult job. (iv) Finally, we implement a different methodology: Beegle, Dehejia, Gatti & Krutikova (2008) used an instrumental variable and thus a 2LSLS method, while we use a linear probability model with fixed effects. Moreover, we test for threshold effects of child labor hours and we estimate a correlated random effect to be able to consider in our analysis the effect of time invariant variables.

3. **Why Tanzania**

The incidence of child labor is especially high in low-income countries: 23 per cent of children are in employment. In particular, Sub-Saharan Africa shows the most worrying percentage: in 2012, 21.4 per cent of children are child laborers.[3] Tanzania is representative of this situation since, despite the regulation against child labor,[4] this phenomenon is yet a serious problem. The Integrated Labour Force Survey (ILFS) of 2006 shows that 84.8 per cent of children aged 5-17 years old were involved in child labor. The most part of them, 80.5 per cent, worked in agricultural sector and, in particular, in the family "shamba"[5] garden. Only about 2

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[3] Estimates by ILO 2012, child labor defined as children in employment below the minimum age, excluding children in permissible light work.

[4] Convention on the Rights of the Child in 1991; African Charter on the Rights and Welfare of the Child in 2003; Employment Labour Relation Act in 2004.

[5] Shamba is a Swahili word standing for plot or farm.

per cent of employed children, i.e. those doing economic work, were paid employees. Almost all, 82.7 per cent of girls and 80.1 per cent of boys, aged 5-17 years old carried out housekeeping works during the seven days prior to the survey. In terms of gender differential, the estimates show more boys than girls among the employed children. Girls were commonly employed as domestic servants, while the number of boys overcame that of girls in agriculture. The majority of these children, 79.0 per cent, lived in rural areas.[6]

Despite the positive trend in growth indicators, Tanzania remains one of the poorest countries in the world: in 2013, its Human Development Index (HDI) was 0.488. It is below the average for countries in the low human development group (0.493) and for Sub-Saharan Africa countries (0.502). Moreover, its Multidimensional Poverty Index (MPI)[7] shows that, in 2010, the 66.4 per cent of the population were multi-dimensionally poor and 21.5 per cent were near multi-dimensional poverty. Considering the income poverty line, in 2014, the 67.9 per cent of people lived below $ 1.25 a day.[8] The Tanzanian economy is heavily dependent on agriculture, which accounts for more the 25 per cent of GDP and employs the 62 per cent of the population. Industry is also quite important; it contributes by 22 per cent to the GDP and includes mining, quarrying, manufacturing, electricity, natural gas, water supply and construction. Finally, Tanzanian vast amount of minerals, in particular of gold, contributed to GDP by 3.3 per cent.[9]

One important aspect that is likely to affect our research question is the educational system. In Tanzania, it is composed by seven years of primary school, four years of secondary school, followed by two years of secondary advanced school. Finally, there are three years or more of university. Education is compulsory for children above 7 years old until age 15. Tanzania has experienced tremendous progress in this sector, with major growth in enrollment in primary and secondary schools: in 2014, 93 per cent of children aged 7 – 14 years old enrolled in primary school, while in 2000 they represented only 59 per cent. Net secondary school enrollment has also expanded quickly: from 6 per cent in 2000, to 35 per cent in 2014. However, this increase has not been accompanied by a proportional increase in resources for teachers, classrooms and books; therefore, the quality of schools has lowered significantly (Sifuna (2007)).

As result, we are in presence of a labor market characterized especially by jobs not requiring high skills and the quality of education is in doubt. Therefore, our research question arises spontaneously: in such context, is child labor a viable alternative to avoid vulnerable employment and get a good and profitable job in adulthood? For these reasons and for the availability of panel dataset, we focus on the Kagera region. It is one of the 30 administrative regions in Tanzania, it is located in North-Western Tanzania, on the Western shore of Lake Victoria, bordering Uganda to the North and Rwanda and Burundi to the West. It is among the most remote parts of Tanzania and it is mostly rural with a population of 2.4 million (the fourth most densely populated region). The region covers 40,838 km^2 of land surface and 11,885 km^2 of water surface: it accounts

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[6] Child labour in Tanzania: An analysis of findings of the Integrated Labour Force Survey 2006, National Bureau of Statistics Ministry of Finance and IPEC

[7] MPI identifies multiple deprivations in the same household in education, health and living standards. A deprivation score higher than 33.3 per cent indicates multidimensional poverty, while a score between co and 33.3 per cent indicates near multidimensional poverty.

[8] Human Development Report 2014, UNDP

[9] Statistical Abstract Report 2013, National Bureau of Statistics Ministry of Finance, June 2014

for approximately 3.3 per cent of Tanzania's total land area. Agriculture represents 50% of the region GDP, while most inhabitants along the Lake Victoria undertake fishing activities as main economic activity.

4. Dataset and descriptive statistics

In this work, we use the Kagera Health and Development Survey (KHDS)[10] that is a unique longitudinal dataset, spanning from 1991 to 2010, administered to 816 households from 51 communities in all five districts of Kagera. It collects extensive socioeconomic information from households with and without adult deaths in communities with high and low adult mortality rates. In particular, it is composed of six waves: from 1991 to 1994, 2004 and 2010. The attrition rate is quite low: 96 per cent of the original household were re-contacted in 2004, while 92 per cent in 2010.

Thanks to these features, we are able to select children between 6 and 15 years old in 1992 and 1993, collect information on child labor, and find them in 2004 and 2010. This allow us to study if labor involvement during childhood affects their economic activity during adulthood. We restrict our sample to children in this age group because Tanzanian children start school at age of 7 and complete compulsory school at age of 15.

The next table reports mean and standard deviation of the main variables in our sample. Since we select children in the age group 6-15 in 1992 and 1993 allowing children, who turn 6 years in 1993, to be part of our sample, we get an unbalanced panel. As a result, we have a sample of 916 individuals in 1992 and of 964 in 1993. Subsequently, we merge 1992 to 2004 and 1993 to 2010, in order to obtain two datasets where each individual is observed twice: one during childhood and one during adulthood. Finally, we merge these two datasets to obtain a unique longitudinal dataset.

As previously said, observations in 1992 and 1993 are between 6 and 15 years old, with a mean age of 11 in 1992, and of 12 in 1993. In 2004, individuals are between 18 and 26 years old with an average age of 23. In 2010, the age group of reference is 23-32, with an average age of 29.

Considering gender, our dataset is quite well balanced: females and males compose our sample almost equally. Looking at the education, in 1992, we find that 55 per cent of children are not enrolled in any school, while, in 1993, they represent the 50 per cent. Reminding that children start primary school at age of 7, that it lasts for 7 years and that our reference age group is 6-15, it is normal that we do not find almost anybody enrolled in secondary school or that have finished primary school between 1992 and 1993. In 1992, children enrolled spend almost 21 hours in schooling activities in the week previous the interview while, in 1993, these hours increase up to 23. Considering the waves relative to the adulthood, we see that, in 2004, only 1.3 per cent is completely without education and, in 2010, this share decreases to 1 per cent. Moreover, almost 60 per cent finished primary school, while there is somebody that still studies to complete the secondary: those who finished secondary school in 2004 represents the 6 per cent of the sample and in 2010 this percentage increase by 1.2 percentage points. Finally, in 2010, 0.8 per cent get a university degree.

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10 KHDS was conducted for the research project "The Economic Impact of Fatal Adult Illness due to AIDS and Other Causes" by the World Bank, Muhimbili University College of Health Sciences (MUCHS) and University of Dar es Salaam; its objective is to estimate the economic impact of the death of prime-age adults on surviving household members.

Orphan children, i.e. children that lose at least one parent, represents 38 and 40 per cent respectively in 1992 and 1993, while people without at least one parent in adulthood are 59 per cent in 2004 and 68 per cent in 2010. Nobody is married in childhood, while in 2004 almost half of the sample is married and in 2010 the percentage increases up to 70. During adulthood, the most part of people lives in rural area, however this percentage decrease between 2004 and 2010 from 86 to 73 per cent. Finally, household expenditure shows a positive trend overtime: in 2004 and 2010, it is the double of those in 90's. In particular, expenditure in food represents more than half of household expenditure both during childhood and adulthood.

Table 1 Descriptive statistics of panel dataset

| | Childhood | | | | Adulthood | | | |
| | 1992 | | 1993 | | 2004 | | 2010 | |
	Mean	S. D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Age	10.776	2.245	11.607	2.374	22.776	2.245	28.607	2.374
Female	0.491	0.500	0.488	0.500	0.491	0.500	0.488	0.500
Orphan	0.376	0.484	0.396	0.489	0.592	0.491	0.676	0.468
Married	0.000	0.000	0.000	0.000	0.479	0.499	0.693	0.461
Rural area	-	-	-	-	0.857	0.349	0.733	0.442
Education								
• No school	0.549	0.497	0.480	0.499	0.013	0.113	0.010	0.101
• Primary school								
- Not finish	0.432	0.495	0.514	0.500	0.737	0.440	0.725	0.446
- Finish	0.001	0.033	0.008	0.090	0.595	0.491	0.596	0.490
• Secondary school								
- Not finish	0.001	0.033	0.001	0.032	0.120	0.325	0.116	0.320
- Finish	-	-	-	-	0.062	0.241	0.074	0.263
• University								
- Not finish	-	-	-	-	0.001	0.033	0.018	0.135
- Finish	-	-	-	-	-	-	0.008	0.090
• Hours of school per week	21.567	14.436	22.836	13.970	-	-	-	-
Household expenditure Of which:	248,795	175,329	217,558	122,382	526,441	551,599	657,664	609,323
• Food consumption	160,799	97,870	139,092	77,304	355,220	402,426	388,313	310,042
• Non-food consumption	87,599	105,473	77,859	69,245	170,133	186,345	273,172	381,721
Observations	916		964		916		964	

4.1   Child labor

Child labor is often associated to pictures of children working as slaves, in chains or in prostitution. ILO estimates that in 2012 children involved in these kind of activities, called also "hazardous" or "worst form" of child labor, were 85 million. Even if, this is a huge number, they represent only half of total child laborers (168 million). The remaining 50 per cent carry out domestic chores or works in family's business. Therefore, it appears that child labor is a very heterogeneous phenomenon and we think that focusing only on a limited set of activities would underestimate the wideness of this phenomenon.

As, a consequence we adopt the ILO definition of child labor: "*work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development. It refers to 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;*
   ➢ *by obliging them to leave school prematurely;*
   ➢ *by requiring them to attempt to combine school attendance with excessively long and heavy work".*

According with this, we consider child labor any economic and non-economic activity carried out by children. Therefore, we consider domestic chores as part of child labor because they are likely to be extremely dangerous to children, they implicate long and tiring working days, insufficient or inadequate food and accommodation, humiliating or degrading treatment and it could create psychological problems such as isolation, abuse and exploitation.

As a result, our indicator of child labor measures hours spent by children, between 6 and 15 years old, working in family farm, family non-farm business, domestic chores (collecting firewood, fetching water, cleaning house, preparing meal) and as employee of someone else in the 7 days previous the interview.

Table 2 reports mean hours of work by activity and gender. Children work 18 hours per week in 1992 and 19 in 1994. They are especially employed in domestic chores and in works within the household farm, where they spent respectively almost 11 and 7 hours per week in both years. Finally, working as employee of someone else outside the household and working in the household non-farm business is not very common: the hours spent in them does not reach one hours per week. This is important since child labor outside the family is very likely to be classified in the worst form of child labor because children are no more in a protected family context. Moreover, the condition in which it is carried out could foster alcohol abuse, drugs, and prostitution. Girls work more hours than boys and this is due especially to domestic chores. Male' hours of work overcome those of girls only in the activities related to household farm. Moreover, hours of child labor for males are quite stable overtime, while those for female increase; this is true especially for working hour in household

farm. Therefore, it appears that girls needs more than boys to grow up to be a good substitute of adult activity, especially in work different from domestic chores, we think that is because of girls are less physically strong than boys.

Table 2 Child labor hours by kind of activity and gender in 1992 and 1993

	1992						1993					
	MALE		FEMALE		TOT		MALE		FEMALE		TOT	
	Mean	S. D.	Mean	S. D.	Mean	S. D.	Mean	S. D.	Mean	S. D.	Mean	S. D.
Child labor hours *of which:*	17.560	15.193	18.377	14.706	17.962	14.953	17.600	12.514	20.360	14.671	18.948	13.673
• *Household farm*	8.254	11.739	6.158	8.164	7.224	10.190	8.044	9.063	7.375	8.717	7.717	8.897
• *Household business*	0.032	0.449	0.102	0.944	0.066	0.736	0.135	1.124	0.185	1.772	0.160	1.476
• *Domestic chores*	9.314	8.749	12.094	10.312	10.680	9.644	9.274	7.619	12.777	9.064	10.985	8.534
• *Employment*	0.008	0.185	0.022	0.471	0.015	0.355	0.146	1.827	0.021	0.325	0.085	1.327

4.2 Labor market

Labor market in developing countries differs from the one in developed countries because of some peculiarities. First, the majority of population in low-income countries live in rural area and, as consequence, the most part of them are employed in agriculture. Second, only a small share of people is employed in the so-called wage labor market: an alternative employment mode dominates agriculture and represents a big proportion in the non-agricultural sector. This alternative mode is the "household enterprise" and represents the core of low-income labor markets. Therefore, to be able to study the impact of child labor on the kind of employment in the adulthood, we are going to use an employment classification capturing features characterizing developing countries.

As result, we chose to follow the International Classification by Status in Employment (ICSE) approved by UN in 1958 and revised in 1991:

- *Own account workers: those workers who, working on their own account or with one or more partners, hold the type of job defined as "a self-employment job[11]", and have not engaged on a continuous basis any "employees" to work for them during the reference period.*

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[11] Jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced

- *Contributory family workers: those workers who hold "self-employment jobs" as own-account workers in a market-oriented establishment operated by a related person living in the same household. They are known also as "unpaid family workers".*

- *Employers: those workers who, working on their own account or with one or a few partners, hold the type of jobs defined as a "self-employment jobs" and, in this capacity, have engaged, on a continuous basis, one or more persons to work for them as employee(s).*

- *Employees: those workers who hold the type of jobs defined as "paid employment jobs", where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.*

- *Others, non-working: those people that cannot be included in any one of the previous categories.*

This classification is designed to group all together people facing the same type of economic risk in their work, like as the strength of institutional attachment between the person and the job, the presence of an implicit or explicit employment contract and so on.

From this classification, ILO derives the definition of vulnerable employment as the sum of own account workers and contributory family workers. This indicator provides information on how many persons are vulnerable to economic risk because of weak institutional employment arrangements. The categories of own-account workers and contributing family workers are thought to be particularly vulnerable when it comes to both economic risk and strength of the institutional arrangement, two qualities which are closely intertwined. Own-account workers and contributing family workers are more likely to (a) lack contractual arrangements which can lead to a lack of job security and (b) lack the degree of social protection and social safety nets that govern wage and salaried workers and are therefore not likely to benefit from social security, health or unemployment coverage. Therefore, who is less likely to have formal work arrangements and is more likely to lack decent working conditions, adequate social security and 'voice' through effective representation by trade unions and similar organizations is considered in vulnerable employment. Moreover, no adequate earnings, low productivity and difficult conditions of work that undermine workers' fundamental rights often characterize this kind of economic activities.

Finally, the non-vulnerable employment is given by the sum of employees and employers.

Next figure shows the kind of employments by gender, that children in our sample get in adulthood (2004 and 2010). Considering vulnerable employment, i.e. the sum of own account worker and contributory family worker, we note that the most part of women is in this category and that their share remains quite stable over time: in 2004, 62 per cent are in vulnerable employment and, in 2010, the percentage increases to 68. In the men sample, in 2004, people in vulnerable employment represents only the 35 per cent, while 6 years after

they are 53 per cent. Within the vulnerable employment, there is a certain mobility among the two occupations: in 2004, 20 per cent of men and 50 per cent of women are contributory family member, while their shares lower respectively to 1.8 and 4.7 per cent in 2010. This decrease is counterbalanced by an increase overtime of those owning an economic activity without employees, from 15 to 51 per cent in the male sample and from 12 to 63 per cent in the female sample. It suggests that getting older makes the probability of being contributory family worker decreases and the one of being own account worker increase. Also the share of people without a job tends to decrease overtime: among men this percentage decreases from 14 to 4.7 per cent and among female from 18 to 5.3 per cent.

The non-vulnerable employments show a quite stable trend overtime irrespectively of the gender, the percentage of people employed in them do not change more than 5 percentage points from 2004 to 2010. The only exception is the one of male employers: their percentage lowers considerably, from 23 to 11 per cent. In the women sample the opposite happens: their share increases from 12 per cent to 17 per cent. Looking at the employees' category, its share increases more among male than among female: in the former case it increases by almost 5 percentage points while in the latter by 3.

This suggest that the labor market is quite segmented. People in vulnerable employment do not escape from this condition. However, within vulnerable employment there is a slight improvement, people move from being unpaid family member to account workers.
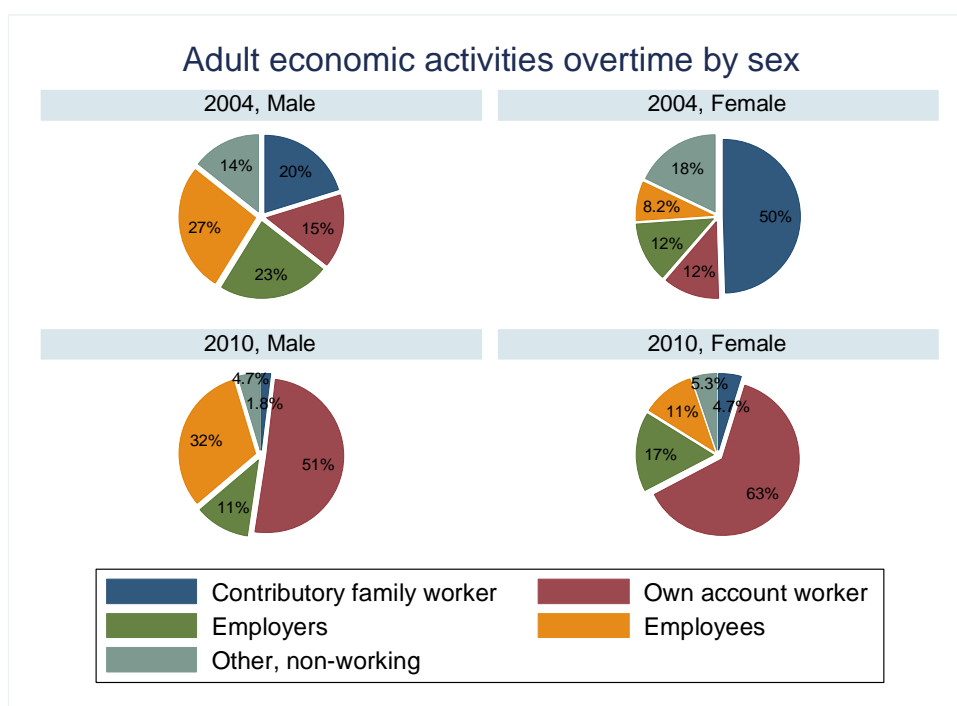

Figure 1

5. Methodology

Our analysis aims to establish a link between child labor and vulnerable or non-vulnerable employment in adulthood. Moreover, we want to be very specific and estimate the effect of child labor on each category of employment previously defined, i.e. contributory family workers, own account workers, employees, employers and non-working. Finally, we are going to analyze if the kind of work in which people were involved during childhood affects the type of economic activity in adulthood. To do this we exploit four waves of a unique longitudinal dataset spanning from 1991 to 2010.

Given the structure of our dataset, we have to deal with important issues. First, individual heterogeneity is likely to generate bias results: unobserved individual features can affect our dependent variables. In order to avoid this problem, we use a fixed effects model[12]. This methodology allows us to obtain results robust to unobserved heterogeneity.

Second, our dependent variables are dummies, therefore we have to choose between a linear probability fixed effects model and fixed effects logit model. We decide to use the former model for different reasons: we are interested in estimating the relationship between our dependent and independent variables, rather than in forecasting the probabilities. Moreover, logit model is more computationally complex, loses many observations and generates results that are not easy to interpret as marginal effect. Finally, fixed effect logit model is subject to the incidental parameters problem.

As a result, we estimate six linear probability models with fixed effects, where our dependent variable (Y_{it}) is a dummy acquiring value one if individual is in non-vulnerable employment, contributory family worker, own account worker, employer, employee and non-working. Child labor, our independent variables (X_{it}), is coded as total hours of child labor in the week before the interview and as hours of child labor in household farm, in non-farm household business, in domestic chores and as employee. In this way we study how the effect of child labor hours differs accordingly to the job in which children are involved in. We make this distinction because Rosenzweig and Wolpin (1984) showed that child labor is likely to create specific knowledge related to the job carried out and that they are difficult to transfer to other kind of activities.

Moreover, we are interested in analyze the impact of child labor conditioned to the age of children. Therefore, we include in each regression an interaction variable between children's age and hours of child labor $X_{it}age_{it}$, except in the case of variable measuring child labor in non-farm household business and as employee. This is because there are few children involved in these kind of jobs and, as previously showed in the descriptive statistics, they work, in mean, less than one hour per week. Therefore, to avoid multi-collinearity problem, we do not use the interaction variable.

Finally, we control for individual and household time variant characteristics (K_{it}), like as age, education, household size, marital status, number of worker in the household, household expenditures, partner's job, death of parents, job of father, area of residence, tribe and religion. We decide to control for the job of the father both in the case in which the father is alive or dead to capture the likelihood that siblings

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[12] The use of fixed effect model is supported by Hausman specification test (Hausman, 1978)

inherit or keep on parent's professions. This can easily happen since we have seen that the labor market is quite segmented. We think also that the partner's job can influence the kind of employment, especially if the individual is a female. To avoid some endogeneity problem, we are going to use quantile of expenditures as covariates rather than expenditure as itself, in this way we capture the difficult to escape from poverty and to jump from one quantile to another. The model is specified as follows:

$$Y_{it} = \beta_1 X_{it} + \beta_2 X_{it} age_{it} + \beta_3 K_{it} + \alpha_i + u_{it} \tag{1}$$
$$\text{with } \alpha_i = \beta_0 + \gamma_1 z_i$$

Where z_i is unobserved variable that varies among individuals but does not change overtime, it captures the unobserved individual characteristics and u_{it} is the error term.

Since the fixed effects model does not allow to include as regressors time-invariant variables, we repeat the estimates splitting the sample between males and females.

5.1   Robustness checks

As shown in the literature, child labor can have very different consequences depending on the amount of hours worked. We therefore test if the relationship between child labor and economic activity in adulthood is linear, or if it exists any threshold effect, i.e. if there is a particular number of child labor hours beyond which child labor becomes particularly harmful.

To do this, we run five specifications in which child labor variable is coded as a dummy variables acquiring value one if the individual works more than a specified cutoff. We define these thresholds accordingly to percentiles of child labor hours' distribution: 1 hours per week, 8 hours per week (25 percentile), 16 hours per week (50 percentile), 26 hours per week (75 percentile) and 38 hours per week (95 percentile).

Moreover, we create similar thresholds for each type of child labor hours, i.e. in household farm, domestic chores, non-farm household business and employee. However, in the last two cases, we get some problem because the majority of children are not involved in them and who is involved, works very few hours. As result, we build a threshold measuring if a child spends at least one hour per week in them, and, in the case of non-farm household business, we have another threshold for those who works more than 7 hours (98° percentile).

Despite the good properties of this model, we think that some time invariant variables, like tribe, economic activity of the household of provenience and gender, that is the focus of our paper, can affect our independent variables. Since the fixed effect methodology drops time invariant variables, we use the correlated random effects model, an econometric method developed by Mundlak in 1978. He showed that fixed effect model is a special case of random effect model. As a consequence, we can rewrite our model disaggregating the time variant variables in within component ($X_{it} - \bar{X}_i$), capturing fixed effects, and an individual mean component ($\bar{X}_i$) that corrects for between-individual differences in X_{it}. Thanks to this correction, we are able to estimate

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β_2 that measures the within effects, β_1 that estimates the difference of the within and between effects and β_7, the coefficient of time invariant variables (w_i). Finally, this model fits also to test for equivalence of within and between estimates. The resulting model is the following:

$$Y_{it} = \beta_1\bar{X}_i + \beta_2(X_{it} - \bar{X}_i) + \beta_3\overline{X_\iota age_\iota} + \beta_4(X_{it}age_{it} - \overline{X_\iota age_\iota}) + \beta_5\bar{K}_i + \beta_6(K_{it} - \bar{K}_i) + \beta_7w_i + \alpha_i + u_{it} \qquad (2)$$
$$\text{with} \quad \alpha_i = \beta_0 + \gamma_1 z_i$$

The model (2) is estimated through GLS random effects.

6. Results

Table 3 reports the results about child labor's effect on labor market outcomes in adulthood, using a linear probability models with fixed effects. Since we are interested in studying the relationship between child labor and vulnerability in employment and with each classification of employment previously described, i.e. contributory family worker, own account worker, employer, employee and non-working, we estimate six different regressions. Moreover, we do this, firstly, for the whole sample, boys and girls together, and, secondly, for the sample restricted to only girls and only boys. Finally, for each sample and dependent variable we run five different specifications: the first studies the impact of child labor, irrespectively to the kind of employment in which they were involved, while the others specifications make this distinction. We only report the coefficients of our dependent variables of interest.

Looking at column 6, an increment of child labor hours is negatively associated with the probability of getting a non-vulnerable employment during adulthood. It lowers by 2.1 percentage points and it is significant at 5 per cent level. This is confirmed when we analyze the effect of one hour more of child labor on each kind of employment. In fact, one hour more of child labor leads to 2.2 per cent increase in the estimated probability of becoming contributory family worker and to 1.7 per cent decrease in the estimated likelihood of becoming employer during adulthood. The former effect is significant at 5 per cent, while the latter at 10 per cent. The interaction variable reveals us that child labor becomes less disruptive among older children: the probability of getting a non-vulnerable employment increases by 0.2 percentage points.

Splitting the observations by gender, child labor has not a statistically significant impact on boys' sample, while it is very disruptive for girls. In this sample, the previous trends are not only confirmed but also stronger and more significant. The likelihood of being in non-vulnerable employment lowers by 4.2 per cent and it is significant at 1 per cent level. Moreover, the likelihood of being contributory family worker increases by 4.5 and it is significant at 1 per cent level. The probability of becoming an employer in adulthood decreases by 2.5 percentage points. Finally, in this sample, one hour more of child labor affects also the probability of working as employee, it decreases by1.7. Both of them are significant at 10 per cent level.

Looking at the kind of activities carried out by children, estimates show that one hour more of child labor in domestic chores increases the likelihood of being unpaid family worker by 3 percentage points. Working in non-farm household business during childhood has opposite effects on it: the percentage decreases

by 1.5 points. Both of them are significant at 5 per cent level. However, we do not find any statistically significant effect on non-vulnerable employment.

Considering a gender perspective and in particular the female sample, we note that child labor in almost all its form is detrimental for girls: one hour more of child labor in each activity, except to the one in non-farm business activity, increases the probability of being in vulnerable employment in adulthood. The most disruptive activity for girls is child labor as employee: it lowers the probability of escaping from vulnerable employment or being without a job by 19.4 percentage points. Moreover, child labor as employee increases the likelihood to being contributory family worker, by 9 percentage points, the one of being own account worker, by 7.2 percentage points, the one of non-having a work, by 3.2 points, while the probability of becoming an employer decreases by 18 percent. This is the first time that we find an increment in the probability of being own account workers for females. This is important because it represents an improvement with respect the usual association with unpaid family worker. Therefore, even if within the vulnerable employments, there is an improvement. Finally, one unit more of child labor in household farm and in domestic chores increase the probability of being contributory family worker during adulthood, respectively by 7.2 and by 4 percentage points. Moreover, they lower the likelihood of getting a non-vulnerable employment respectively by 5.3 and 4.1 percentage points.

It is interesting to note that male sample shows opposite results, child labor as employee and in non-farm household business lead to an increment in the probability of getting non-vulnerable employment, respectively by 6.5 and 6 per cent. In particular, boys working as employee are associate with higher probability of being employer by 11 percent while the one of being own account workers decreases by 7.2 per cent. However, being employee in childhood lowers the probability of being employee in adulthood by 4.7 percentage points; this is surprising. Finally, an increment in hours of child labor in non-farm household business makes the probability of being unpaid family worker decrease by 4.7 per cent.

Table 3 Impact of child labor in 1992 and 1993 on labor market outcomes in 2004 and 2010 (Linear probability model with fixed effects)

	(1) Contributory family worker	(2) Own account worker	(3) Employer	(4) Employee	(5) Non-working	(6) Non-vulnerable employment
Boys and Girls						
(a) Child labor hours	0.022**	-0.005	-0.017*	-0.003	0.004	-0.021*
	(0.009)	(0.011)	(0.010)	(0.009)	(0.007)	(0.012)
Child labor hours*age	-0.002**	0.000	0.001*	0.000	-0.000	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(b) Hours spent in household farm	0.020	-0.004	-0.020	0.003	0.001	-0.016
	(0.014)	(0.016)	(0.014)	(0.013)	(0.011)	(0.016)
Hours*age	-0.002	0.001	0.002	-0.000	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(c) Hours spent in domestic chores	0.030**	-0.012	-0.019	-0.008	0.009	-0.027
	(0.014)	(0.016)	(0.014)	(0.014)	(0.012)	(0.018)
Hours*age	-0.003**	0.001	0.002	0.001	-0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(d) Hours spent in household non-farm business	-0.015**	0.006	0.001	0.010	-0.003	0.011
	(0.007)	(0.014)	(0.012)	(0.011)	(0.003)	(0.013)
(e) Hours spent as employee	0.032	0.022	-0.059	-0.003	0.008	-0.062
	(0.028)	(0.058)	(0.080)	(0.017)	(0.012)	(0.071)
Girls						
(f) Child labor hours	0.045***	-0.004	-0.025*	-0.017*	0.001	-0.042***
	(0.014)	(0.014)	(0.013)	(0.009)	(0.010)	(0.015)
Child labor hours*age	-0.004***	0.000	0.002*	0.001**	0.000	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(g) Hours spent in household farm	0.072***	-0.008	-0.038*	-0.016	-0.011	-0.053**
	(0.024)	(0.025)	(0.022)	(0.014)	(0.016)	(0.024)
Hours*age	-0.006***	0.001	0.003	0.001	0.001	0.004**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
(h) Hours spent in domestic chores	0.040**	-0.006	-0.022	-0.019	0.007	-0.041**
	(0.019)	(0.019)	(0.016)	(0.014)	(0.016)	(0.020)
Hours*age	-0.003**	0.000	0.002	0.002	-0.000	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
(i) Hours spent in household non-farm business	-0.009	0.012	-0.002	0.000	-0.002	-0.001
	(0.008)	(0.014)	(0.014)	(0.005)	(0.005)	(0.012)
(j) Hours spent as employee	0.090***	0.072***	-0.186***	-0.008	0.032**	-0.194***
	(0.019)	(0.023)	(0.021)	(0.017)	(0.015)	(0.027)
Boys						
(k) Child labor hours	0.003	-0.008	-0.010	0.004	0.011	-0.006
	(0.011)	(0.015)	(0.015)	(0.016)	(0.007)	(0.017)
Child labor hours*age	-0.000	0.001	0.001	-0.000	-0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(l) Hours spent in household farm	0.005	-0.009	-0.023	0.015	0.011	-0.007
	(0.013)	(0.020)	(0.018)	(0.019)	(0.013)	(0.021)
Hours*age	-0.000	0.001	0.002	-0.001	-0.001	0.000
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)

(m)	*Hours spent in domestic chores*	-0.001	-0.015	0.007	-0.007	0.015	0.000
		(0.017)	(0.026)	(0.031)	(0.029)	(0.010)	(0.034)
	*Hours*age*	0.000	0.001	-0.000	0.000	-0.001	0.000
		(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
(n)	*Hours spent in household non-farm business*	-0.047***	-0.017	0.016	0.044	0.003	0.060*
		(0.013)	(0.034)	(0.024)	(0.036)	(0.005)	(0.035)
(o)	*Hours spent as employee*	-0.008	-0.072***	0.112***	-0.047*	0.015	0.065**
		(0.018)	(0.026)	(0.026)	(0.024)	(0.011)	(0.025)

Notes: Each group from (a) to (o) presents results from separate regressions, with a common specification across sets of rows: all children between 6 and 15 years old, all girls in the same age group and all boys satisfying the same age criteria. Additional controls include age, education, rural area of residence, quintile of household expenditures, number of household components and number of household components in employment, marital status, kind of job of partner, religion and loss of parents. Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

6.1 Robustness checks

Results of robustness checks are reported in appendix. Table 4 shows outcomes for specific thresholds of child labor hours per week. While table 5 and 6 report the same estimates for the sample restricted to only girls and to only boys.

Child labor becomes positively associated to vulnerable employment when children work more than 16 hours per week (50° percentile): who overcomes this threshold has the 59.6 per cent less of probability of getting a non-vulnerable employment in adulthood. Moreover, the probability of becoming unpaid family worker increases by 45 per cent and that of becoming employer lowers by 51 percentage points. All these effects are significant at 5 per cent level. Considering the next quantile, the effect on the probability of becoming unpaid family worker gets worse, the percentage increases to 57 per cent, while there is not a significant effect on the likelihood of getting a non-vulnerable employment. This is confirmed by the estimates in the sample of girls, while for boys we do not find any statistically significant thresholds. Moreover, the female's sample shows stronger effects than before and the thresholds are lower. Working more than 8 hours per week during childhood is significantly associate to be unpaid family worker during adulthood. In addition, who overcomes the threshold of 16 hours per week is statistically associated to vulnerable employment and, in particular, their probabilities of becoming employer and employed in adult age lower respectively by 73 and 40 per cent. All these effects are statistically significant at 1 per cent level.

Considering the interaction variable between the threshold and the age of children, we can see that in each specification it works as counter-balance of the effect of child labor. Therefore, if child labor has negative effects on our variables of interests, getting older makes less disruptive these effects.

Looking at the kind of activities in which children were involved, we note that job in household farm is negatively associated with being employer in adulthood for those people overcoming 11 hours per week (75 percentile), its probability decreases by 56 percentage points. In the sample of boys, this trend is stronger, now the probability of being employer lowers by 76 percentage points, however it is significant at 10 per cent.

Moreover, boys working more than 4 hours per week in the farm activity are more probable of being without a job during adulthood. Considering girls, working more than 11 hours per week decreases the probability of having a non-vulnerable employment in adulthood, the likelihood of obtaining such kind of job lowers by 92 percentage points. Finally, the probability of being unpaid family worker increases significantly when girls work more than 20 hours per week in the farm.

Carried out more than 9 hours per week (25° percentile) of domestic chores increases the likelihood of becoming unpaid family worker, by 61 percentage points. This activity becomes even more disruptive when children work more than 16 hours per week (75 percentile), the coefficient increases by almost 14 percentage points. Both these coefficients are statistically significant at 1 per cent. Moreover, overcoming this threshold is also associated with a lower probability of being in non-vulnerable employment, this effect is significant at 5 per cent and the coefficient is quite high: 0.75. Again, we find stronger results for girls: who works more than 16 hours per week shows 97 per cent more of probability of being unpaid family worker and 89 per cent less of likelihood of becoming employer during adulthood. Considering only boys, we do not find any statistically significant results.

To find significant thresholds of child labor as employee we have to split the sample by gender. Overcoming the threshold of 1 hour per week as employee generates opposite effects for boys and girls. The former are positively associated to non-vulnerable employment, while the latter are negatively associated to it. In male sample, working more than 1 hour per week as employee leads to 32.5 per cent increase in the estimated probability of getting a non-vulnerable employment. In particular, it increases the probability of becoming employer by 56 percentage points while it lowers the one of becoming own account worker and employee respectively by 36 and 23 percentage points. In the female sample child labor as employee decreases the probability of being in non-vulnerable employment by 97 percentage points. In particular, it leads to 45 per cent increase in the likelihood of becoming unpaid family, to 35 per cent increase in the one of being own account worker and to 16 per cent increase in the probability of not having a work during adulthood.

Finally, to find significant outcomes related to child labor in household non-farm business we have to consider only boys. Boys working more than 7 hours per week are more likely to be an employee and to escape from vulnerable employment, moreover it reduces the likelihood of being own account worker by 42 percentage points and the one of being unpaid family worker by 80 percentage points.

Table 7 in appendix reports the results of the correlated random effect model. As we find very different results for the only male and only female sample, we expect that gender affects in a significant way the probability of getting a vulnerable employment.

In particular, we expect to find gender discrimination in the labor market confining women to vulnerable employment. Moreover, we think that it is important also to control for other time invariant variables, like as tribe and jobs of father. We decide to include these regressors because, in the former case, some tribes can be associated with a specific work sector and, in the latter case, because we expect low mobility in the labor market, therefore the father's job can relegate his siblings to the same kind of employment.

Considering the gender, our expectations are confirmed: being female is significant in each specification. Women are positively associated with vulnerable employment in adulthood, their probability of being part of this category is higher of 22 percentage points than that of men. In particular, they are very likely to become contributory family worker, in this case their probability is higher of 15 percentage points than the one of men. These effects are significant at 1 per cent level. Finally, they are very unlikely to become employee in adulthood.

Considering tribe of individuals, we note that Haya people has 14 percent more of probability of being in non-vulnerable employment and, in particular, those people are positively associated with being an employee in adulthood. Hangaza people are less probable to fall in vulnerable employment too. Finally, Nyambo are more likely to become employer and therefore to be in non-vulnerable employment. This positive association between non-vulnerable employment and these tribes could be because they are the major tribes in Kagera. Contrary to our previsions, the father's job is not statistically significant in any specifications.

Finally, we are going to analyze the within and between effect of child labor hours. Considering the within effect, we see that it is the same as that estimated by means of the fixed effects model. Child labor has still a negative impact on non-vulnerable employment. It also increases the probability of being contributory family worker and decreases the probability of being employer during adulthood. We know that in the correlated random effects model, the coefficients of the mean variables do not represent directly the between effects but the difference of within and between effect. Therefore, we can use the results as an alternative to the Hausman specification test. The coefficient of the mean of child labor hours per week is significant only when the dependent variable is the likelihood of becoming contributory family worker. Therefore, the null hypothesis, namely the assumption that the difference of within and between estimates is equal to 0, is rejected and therefore the between effect must be considered. Analyzing our estimates, the within effect tell us that working one hour more makes the probability of being contributory family worker in adulthood increase by 2 per cent on average. The coefficient of the mean of child labor hours tells us that a child working one hour more than another has on average a lower probability of being contributory family member by 5 percentage points (0.022-0.027=0.05). Considering the within effect, we have that one hour more of domestic chores increases the probability of becoming unpaid family worker, however the between effect is different. A child working one unit more with respect to another has 1.6 percentage points less probability to become contributory family workers (0.030 -0.046). Therefore, it appears that the between effect of child labor is not so negative. This is interesting, since it can suggest that child labor can create some knowledge and know how that positively influence the kind of employment in adulthood, reducing the likelihood of becoming unpaid family worker.

7. Concluding remarks

This paper aims to study the consequences of child labor on the probability of being employed, and more specifically, on the ability to escape from vulnerable employment during adulthood. We explore this relationship focusing on gender differences.

We use the early waves (1992 and 1993) of the Kagera Health and Development Survey to select all children between 6 and 15 years old and the last waves (2004 and 2010) to find evidence on the consequences of child labor on labor market outcomes during adulthood. Moreover, since child labor could create specific knowledge related to the type of employment status, we also study in which way the child labor job affects the employment status during adulthood. We estimate fixed effects models for males and females, and the correlated random model developed by Mundlak, in order to include in our analysis also time invariant variables. With this correction, we are also able to disentangle within and between effects. Finally, we include robustness checks for non-linear effects of child labor hours, studying if there are some thresholds above which child labor has consequences that are more significant.

We adopt the International Classification by Status in Employment that defines as vulnerable labor contributing family members and own account workers, and as non-vulnerable labor salaried workers and employers.

Our results show that child labor is associated with vulnerable employment and, in particular with being contributory family members during adulthood. This is especially true for females, for whom it appears that child labor tends to amplify the usual association between women and vulnerable employment, in particular with unpaid family work. In fact, women that worked in their childhood are disadvantaged twice: (i) they are more subject to the detrimental effects of child labor and (ii) they are subject to gender discrimination in the labor market. Therefore, they are more likely to get a vulnerable employment and work unpaid. The only status of child labor that has less negative effects, is the one as employee because it increases the chances of becoming own account workers. As for males, child labor can have positive consequences, in particular having worked as employee or in non-farm household business during childhood can increase the probability to be in non-vulnerable employment in adulthood.

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9. Appendix

Table 4 Robustness checks: threshold effects of child labor hours (Linear probability model with fixed effects)

	(1) Contributory family worker	(2) Own account worker	(3) Employer	(4) Employee	(5) Non-working	(6) Non-vulnerable
CHILD LABOR						
Boys and girls						
(a) Works more than 1 hour						
>1 hours	-0.270	0.120	0.852	-0.648	-0.054	0.205
	(0.594)	(0.689)	(0.625)	(0.589)	(0.322)	(0.870)
>1 hours*age	0.028	-0.031	-0.079	0.075	0.007	-0.004
	(0.060)	(0.066)	(0.062)	(0.057)	(0.031)	(0.088)
(b) Works more than 8 hours (25° percentile)						
>8 hours	0.390	-0.238	0.028	-0.090	-0.090	-0.062
	(0.248)	(0.327)	(0.299)	(0.270)	(0.219)	(0.373)
>8 hours*age	-0.033	0.022	-0.005	0.006	0.010	0.001
	(0.022)	(0.029)	(0.026)	(0.023)	(0.018)	(0.033)
(c) Works more than 16 hours (50° percentile)						
>16 hours	0.449**	-0.033	-0.512**	-0.084	0.179	-0.596**
	(0.214)	(0.247)	(0.252)	(0.209)	(0.158)	(0.282)
>16 hours*age	-0.039**	0.009	0.038*	0.005	-0.013	0.043*
	(0.018)	(0.020)	(0.021)	(0.017)	(0.012)	(0.023)
(d) Works more than 26 hours (75° percentile)						
>26 hours	0.573**	0.036	-0.401	-0.103	-0.106	-0.504
	(0.278)	(0.312)	(0.299)	(0.282)	(0.225)	(0.319)
>26 hours*age	-0.047**	-0.001	0.030	0.009	0.009	0.039
	(0.022)	(0.025)	(0.024)	(0.022)	(0.017)	(0.026)
(e) Works more than 38 hours (90° percentile)						
>38 hours	0.340	-0.080	-0.236	-0.386	0.363	-0.623
	(0.373)	(0.550)	(0.415)	(0.601)	(0.330)	(0.668)
>38 hours*age	-0.033	0.009	0.021	0.030	-0.028	0.052
	(0.030)	(0.042)	(0.034)	(0.046)	(0.025)	(0.051)
CHILD LABOR IN HOUSEHOLD FARM						
(f) Works more than 1 hour						
>1 hours	0.167	-0.131	0.077	-0.067	-0.046	0.010
	(0.258)	(0.309)	(0.284)	(0.283)	(0.233)	(0.349)

*>1 hours*age*	-0.021	0.015	-0.004	0.008	0.003	0.003
	(0.022)	(0.026)	(0.024)	(0.024)	(0.019)	(0.029)

(g) **Works more than 4 hours (50° percentile)**

>4 hours	0.059	0.057	-0.103	-0.084	0.071	-0.187
	(0.223)	(0.268)	(0.247)	(0.201)	(0.146)	(0.292)
*>4 hours*age*	-0.007	0.000	0.007	0.006	-0.006	0.013
	(0.019)	(0.022)	(0.021)	(0.017)	(0.012)	(0.025)

(h) **Works more than 11 hours (75° percentile)**

>11 hours	0.336	0.027	-0.564**	0.112	0.088	-0.452
	(0.305)	(0.310)	(0.285)	(0.250)	(0.205)	(0.339)
*>11 hours*age*	-0.027	0.005	0.040*	-0.013	-0.006	0.027
	(0.025)	(0.025)	(0.024)	(0.021)	(0.016)	(0.028)

(i) **Works more than 20 hours (90° percentile)**

>20 hours	0.330	0.106	-0.380	0.010	-0.066	-0.370
	(0.387)	(0.473)	(0.402)	(0.460)	(0.341)	(0.472)
*20 hours*age*	-0.032	-0.006	0.035	-0.003	0.005	0.032
	(0.031)	(0.038)	(0.034)	(0.037)	(0.026)	(0.038)

CHILD LABOR IN DOMESTIC CHORES

(j) **Works more than 1 hour**

>1 hours	-0.205	-0.122	0.327	-0.096	0.095	0.232
	(0.412)	(0.445)	(0.509)	(0.423)	(0.234)	(0.541)
*>1 hours*age*	0.031	-0.011	-0.035	0.016	-0.001	-0.018
	(0.036)	(0.039)	(0.047)	(0.038)	(0.020)	(0.049)

(k) **Works more than 3.5 hours (25° percentile)**

>3.5 hours	0.066	-0.036	-0.065	-0.238	0.274	-0.303
	(0.290)	(0.336)	(0.284)	(0.296)	(0.177)	(0.372)
*>3.5 hours*age*	-0.007	-0.002	0.008	0.023	-0.022	0.031
	(0.025)	(0.029)	(0.024)	(0.024)	(0.014)	(0.031)

(l) **Works more than 9 hours (50° percentile)**

>9 hours	0.609***	-0.197	-0.208	-0.083	-0.120	-0.291
	(0.230)	(0.284)	(0.263)	(0.224)	(0.158)	(0.309)
*>9 hours*age*	-0.051***	0.013	0.020	0.007	0.011	0.027
	(0.019)	(0.023)	(0.021)	(0.019)	(0.012)	(0.025)

(m) **Works more than 16 hours (75° percentile)**

>16 hours	0.746***	-0.216	-0.497	-0.257	0.224	-0.754**
	(0.266)	(0.315)	(0.345)	(0.258)	(0.221)	(0.353)
*>16 hours*age*	-0.063***	0.018	0.041	0.022	-0.017	0.062**
	(0.021)	(0.025)	(0.027)	(0.020)	(0.017)	(0.028)

(n) **Works more than 27.5 hours (90° percentile)**

>27.5 hours	0.806	-0.553	-0.422	-0.005	0.174	-0.427
	(0.549)	(0.553)	(0.415)	(0.646)	(0.513)	(0.750)
	-0.072*	0.047	0.040	-0.000	-0.014	0.039

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	(0.043)	(0.043)	(0.033)	(0.049)	(0.039)	(0.058)

CHILD LABOR AS EMPLOYEE

(o) **Works more than 1 hour**

>1 hours	0.159	0.111	-0.297	-0.013	0.040	-0.310
	(0.140)	(0.291)	(0.400)	(0.084)	(0.061)	(0.357)

CHILD LABOR IN NON-FARM HOUSEHOLD BUSINESS

(p) **Works more than 1 hour**

>1 hours	0.034	-0.012	0.011	0.004	-0.037	0.015
	(0.097)	(0.144)	(0.112)	(0.104)	(0.032)	(0.138)

(q) **Works more than 7 hours (98° percentile)**

>7 hours	-0.355**	0.222	-0.114	0.270	-0.023	0.157
	(0.175)	(0.367)	(0.283)	(0.234)	(0.080)	(0.359)

Notes: Each group from (a) to (q) presents results from separate regressions, with a common specification across sets of rows: all children between 6 and 15 years old. Additional controls include age, education, rural area of residence, quintile of household expenditures, number of household components, number of household components in employment, marital status, kind of work of partner, religion and loss of parents. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 5 Robustness checks: threshold effects of child labor hours for female sample (Linear probability model with fixed effects)

	Contributory family worker	Own account worker	Employer	Employee	Non-working	Non-vulnerable
CHILD LABOR						
(a) Works more than 1 hour						
>1 hours	-0.755	1.322	0.856	-0.913*	-0.510	-0.057
	(0.759)	(0.938)	(0.847)	(0.465)	(0.597)	(1.090)
>1 hours*age	0.092	-0.141	-0.081	0.079*	0.051	-0.002
	(0.076)	(0.090)	(0.084)	(0.045)	(0.059)	(0.107)
(b) Works more than 8 hours (25° percentile)						
>8 hours	1.028**	-0.508	-0.019	-0.207	-0.293	-0.226
	(0.413)	(0.535)	(0.507)	(0.275)	(0.309)	(0.582)
>8 hours*age	-0.082**	0.040	-0.006	0.018	0.030	0.012
	(0.037)	(0.045)	(0.045)	(0.023)	(0.028)	(0.050)
(c) Works more than 16 hours (50° percentile)						
>16 hours	0.920***	0.047	-0.731**	-0.408**	0.172	-1.139***
	(0.305)	(0.348)	(0.345)	(0.179)	(0.233)	(0.369)
>16 hours*age	-0.075***	0.002	0.050*	0.034**	-0.011	0.084***
	(0.026)	(0.029)	(0.029)	(0.015)	(0.019)	(0.031)
(d) Works more than 26 hours (75° percentile)						
>26 hours	1.009**	0.156	-0.609*	-0.128	-0.429	-0.737*
	(0.416)	(0.410)	(0.359)	(0.312)	(0.324)	(0.440)
>26 hours*age	-0.080**	-0.012	0.043	0.014	0.035	0.056
	(0.032)	(0.032)	(0.029)	(0.024)	(0.025)	(0.035)
(e) Works more than 38 hours (90° percentile)						
>38 hours	0.512	0.037	-0.068	-0.916	0.435	-0.984
	(0.574)	(0.626)	(0.482)	(0.561)	(0.494)	(0.730)
>38 hours*age	-0.051	0.001	0.007	0.073*	-0.029	0.080
	(0.044)	(0.048)	(0.039)	(0.042)	(0.037)	(0.057)
CHILD LABOR IN HOUSEHOLD FARM						
(f) Works more than 1 hour						
>1 hours	0.682	0.077	-0.339	-0.015	-0.405	-0.354
	(0.423)	(0.470)	(0.413)	(0.338)	(0.325)	(0.541)
>1 hours*age	-0.067*	-0.011	0.031	0.003	0.043	0.034
	(0.037)	(0.039)	(0.037)	(0.028)	(0.028)	(0.047)
(g) Works more than 4 hours (50° percentile)						
>4 hours	0.392	-0.031	-0.121	-0.234	-0.006	-0.355
	(0.382)	(0.413)	(0.378)	(0.217)	(0.233)	(0.439)

>4 hours*age	-0.034	0.009	0.006	0.015	0.004	0.021
	(0.032)	(0.033)	(0.032)	(0.018)	(0.019)	(0.037)

(h) _Works more than 11 hours (75° percentile)_

>11 hours	0.826	0.250	-0.567	-0.359	-0.149	-0.926**
	(0.520)	(0.396)	(0.425)	(0.245)	(0.295)	(0.463)
>11 hours*age	-0.067	-0.023	0.039	0.034	0.016	0.073*
	(0.042)	(0.033)	(0.036)	(0.021)	(0.024)	(0.039)

(i) _Works more than 20 hours (90° percentile)_

>20 hours	1.486**	-0.280	-0.337	-0.344	-0.524	-0.682
	(0.645)	(0.771)	(0.484)	(0.323)	(0.424)	(0.567)
>20 hours*age	-0.127**	0.022	0.034	0.029	0.042	0.063
	(0.050)	(0.062)	(0.042)	(0.026)	(0.034)	(0.049)

CHILD LABOR IN DOMESTIC CHORES

(j) _Works more than 1 hour_

>1 hours	-0.584	0.641	0.393	-0.331	-0.118	0.062
	(0.615)	(0.655)	(0.691)	(0.323)	(0.489)	(0.767)
>1 hours*age	0.086	-0.083	-0.036	0.021	0.012	-0.014
	(0.057)	(0.063)	(0.064)	(0.032)	(0.045)	(0.071)

(k) _Works more than 3.5 hours (25° percentile)_

>3.5 hours	0.027	-0.205	0.038	-0.144	0.283	-0.105
	(0.513)	(0.520)	(0.497)	(0.178)	(0.256)	(0.541)
>3.5 hours*age	0.003	0.010	-0.000	0.014	-0.027	0.014
	(0.048)	(0.045)	(0.044)	(0.014)	(0.023)	(0.047)

(l) _Works more than 9 hours (50° percentile)_

>9 hours	1.059***	-0.293	-0.442	-0.188	-0.135	-0.631
	(0.378)	(0.421)	(0.360)	(0.235)	(0.250)	(0.459)
>9 hours*age	-0.087***	0.025	0.027	0.020	0.014	0.048
	(0.031)	(0.034)	(0.030)	(0.020)	(0.020)	(0.038)

(m) _Works more than 16 hours (75° percentile)_

>16 hours	0.973***	-0.194	-0.895**	-0.143	0.259	-1.038**
	(0.371)	(0.407)	(0.360)	(0.188)	(0.317)	(0.413)
>16 hours*age	-0.079***	0.016	0.068**	0.014	-0.019	0.082**
	(0.029)	(0.032)	(0.029)	(0.014)	(0.024)	(0.032)

(n) _Works more than 27.5 hours (90° percentile)_

>27.5 hours	0.734	-0.277	0.146	-0.725	0.123	-0.580
	(0.800)	(0.645)	(0.402)	(0.582)	(0.663)	(0.730)
>27.5 hours*age	-0.068	0.023	-0.008	0.059	-0.008	0.052
	(0.060)	(0.048)	(0.032)	(0.043)	(0.049)	(0.056)

CHILD LABOR AS EMPLOYEE

(o) _Works more than 1 hour_

>1 hours	0.452***	0.359***	-0.931***	-0.040	0.161**	-0.971***
	(0.094)	(0.113)	(0.107)	(0.083)	(0.076)	(0.136)

CHILD LABOR IN NON-FARM HOUSEHOLD BUSINESS

(p) **_Works more than one hour_**

>1 hours	0.087	-0.012	-0.128	0.081	-0.028	-0.047
	(0.133)	(0.179)	(0.176)	(0.092)	(0.058)	(0.200)

(q) **_Works more than 7 hours (98 percentile)_**

>7 hours	-0.182	0.454	-0.215	-0.052	-0.005	-0.267
	(0.165)	(0.416)	(0.338)	(0.119)	(0.143)	(0.253)

Notes: Each group from (a) to (q) present results from separate regressions, with a common specification across sets of rows: all girls between 6 and 15 years old. Additional controls include age, education, rural area of residence, quintile of household expenditures, number of household components and number of household components in employment, marital status, kind of job of partner, religion and loss of parents. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 6 Robustness checks: threshold effects of child labor hours for male sample (Linear probability model with fixed effects)

	Contributory family worker	Own account worker	Employer	Employee	Non-working	Non-vulnerable
CHILD LABOR						
(a) Works more than 1 hour						
>1 hours	0.386	-0.802	0.691	-0.653	0.377*	0.038
	(0.679)	(0.804)	(0.836)	(0.888)	(0.222)	(1.200)
>1 hours*age	-0.051	0.058	-0.060	0.084	-0.031	0.024
	(0.066)	(0.079)	(0.081)	(0.086)	(0.021)	(0.120)
(b) Works more than 8 hours (25° percentile)						
>8 hours	0.087	-0.142	-0.023	-0.251	0.329	-0.275
	(0.311)	(0.456)	(0.416)	(0.446)	(0.259)	(0.511)
>8 hours*age	-0.011	0.017	0.002	0.020	-0.027	0.022
	(0.027)	(0.042)	(0.036)	(0.039)	(0.020)	(0.045)
(c) Works more than 16 hours (50° percentile)						
>16 hours	0.100	-0.283	-0.282	0.218	0.247	-0.064
	(0.284)	(0.357)	(0.364)	(0.411)	(0.188)	(0.428)
>16 hours*age	-0.011	0.028	0.022	-0.020	-0.019	0.002
	(0.023)	(0.030)	(0.029)	(0.034)	(0.015)	(0.035)
(d) Works more than 26 hours (75° percentile)						
>26 hours	0.144	-0.123	-0.162	-0.108	0.250	-0.271
	(0.280)	(0.425)	(0.516)	(0.495)	(0.234)	(0.441)
>26 hours*age	-0.008	0.008	0.010	0.008	-0.018	0.018
	(0.022)	(0.034)	(0.041)	(0.040)	(0.018)	(0.036)
(e) Works more than 38 hours (90° percentile)						
>38 hours	0.244	-0.281	-0.285	0.001	0.321	-0.284
	(0.348)	(0.802)	(0.622)	(0.928)	(0.332)	(0.934)
>38 hours*age	-0.010	0.018	0.017	-0.001	-0.024	0.016
	(0.026)	(0.063)	(0.050)	(0.072)	(0.026)	(0.072)
CHILD LABOR IN HOUSEHOLD FARM						
(f) Works more than 1 hour						
>1 hours	-0.127	-0.264	0.228	-0.236	0.398	-0.008
	(0.342)	(0.377)	(0.462)	(0.441)	(0.294)	(0.455)
>1 hours*age	0.004	0.030	-0.019	0.022	-0.038	0.004
	(0.028)	(0.033)	(0.037)	(0.036)	(0.024)	(0.037)
(g) Works more than 4 hours (50° percentile)						
>4 hours	-0.109	0.047	-0.346	0.073	0.335**	-0.273

	(0.262)	(0.359)	(0.351)	(0.332)	(0.164)	(0.396)
*>4 hours*age*	0.008	-0.002	0.026	-0.003	-0.029**	0.023
	(0.021)	(0.031)	(0.029)	(0.028)	(0.013)	(0.033)
(h) Works more than 11 hours (75° percentile)						
>11 hours	0.261	-0.264	-0.768*	0.556	0.215	-0.213
	(0.319)	(0.465)	(0.405)	(0.419)	(0.253)	(0.526)
*>11 hours*age*	-0.020	0.034	0.054*	-0.052	-0.015	0.002
	(0.024)	(0.038)	(0.033)	(0.034)	(0.019)	(0.043)
(i) Works more than 20 hours (90° percentile)						
>20 hours	-0.006	0.199	-0.607	0.226	0.188	-0.381
	(0.328)	(0.570)	(0.492)	(0.667)	(0.385)	(0.624)
*>20 hours*age*	0.005	-0.017	0.045	-0.021	-0.011	0.024
	(0.026)	(0.045)	(0.041)	(0.053)	(0.029)	(0.049)

CHILD LABOR IN DOMESTIC CHORES

(j) Works more than 1 hour						
>1 hours	-0.013	-0.512	0.159	0.058	0.308*	0.217
	(0.442)	(0.576)	(0.645)	(0.627)	(0.166)	(0.703)
*>1 hours*age*	-0.002	0.027	-0.014	0.008	-0.019	-0.006
	(0.037)	(0.050)	(0.055)	(0.054)	(0.014)	(0.059)
(k) Works more than 3.5 hours (25° percentile)						
>3.5 hours	-0.053	0.223	0.039	-0.530	0.320	-0.490
	(0.313)	(0.429)	(0.369)	(0.482)	(0.215)	(0.515)
*>3.5 hours*age*	0.001	-0.024	-0.003	0.049	-0.023	0.046
	(0.025)	(0.037)	(0.030)	(0.039)	(0.016)	(0.042)
(l) Works more than 9 hours (50° percentile)						
>11 hours	0.095	-0.062	0.247	-0.268	-0.012	-0.021
	(0.283)	(0.411)	(0.390)	(0.386)	(0.143)	(0.444)
*>11 hours*age*	-0.008	-0.003	-0.010	0.020	0.002	0.009
	(0.022)	(0.034)	(0.031)	(0.032)	(0.011)	(0.036)
(m) Works more than 16 hours (75° percentile)						
>16 hours	0.125	-0.237	0.321	-0.477	0.268	-0.156
	(0.273)	(0.512)	(0.684)	(0.629)	(0.189)	(0.615)
*>16 hours*age*	-0.012	0.016	-0.022	0.039	-0.021	0.017
	(0.021)	(0.041)	(0.052)	(0.049)	(0.015)	(0.048)
(n) Works more than 27.5 hours (90° percentile)						
>27.5 hours	0.243	-1.118	-0.874	1.359	0.389	0.485
	(0.398)	(0.854)	(0.882)	(0.978)	(0.373)	(1.299)
*>27.5 hours*age*	-0.013	0.092	0.077	-0.121	-0.036	-0.044
	(0.031)	(0.073)	(0.071)	(0.080)	(0.035)	(0.104)

CHILD LABOR AS EMPLOYEE

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(o) **_Works more than 1 hour_**

>1 hours	-0.039	-0.360***	0.561***	-0.237*	0.075	0.325**
	(0.091)	(0.129)	(0.130)	(0.121)	(0.055)	(0.126)

CHILD LABOR IN NON-FARM HOUSEHOLD BUSINESS

(p) **_Works more than one hour_**

>1 hours	-0.194	0.058	0.231	-0.104	0.009	0.127
	(0.127)	(0.224)	(0.149)	(0.195)	(0.045)	(0.221)

(q) **_Works more than 7 hours (98 percentile)_**

>7 hours	-0.801***	-0.421***	-0.032	1.203***	0.050	1.171***
	(0.090)	(0.116)	(0.101)	(0.107)	(0.057)	(0.125)

Notes: Each group from (a) to (q) present results from separate regressions, with a common specification across sets of rows: all boys between 6 and 15 years old. Additional controls include age, education, rural area of residence, quintile of household expenditures, number of household components and number of household components in employment, marital status, kind of job of partner, religion and loss of parents. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 7 Robustness check: time invariant variables, Mundlak correction

	(1) Contributory family worker	(2) Own account worker	(3) Employer	(4) Employee	(5) Non-working	(6) Non-vulnerable
(a) CHILD LABOR						
Child labor hours	0.022**	-0.005	-0.017*	-0.003	0.004	-0.021*
	(0.009)	(0.011)	(0.010)	(0.009)	(0.006)	(0.013)
Child labor hours*age	-0.002**	0.000	0.001*	0.000	-0.000	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Female	0.153***	0.037	-0.048**	-0.167***	0.023	-0.214***
	(0.020)	(0.027)	(0.022)	(0.025)	(0.016)	(0.027)
Haya tribe	-0.003	-0.110**	0.037	0.090*	-0.017	0.130**
	(0.041)	(0.055)	(0.046)	(0.050)	(0.032)	(0.056)
Hangaza tribe	-0.068	-0.075	0.068	0.081	-0.007	0.144**
	(0.048)	(0.065)	(0.054)	(0.059)	(0.038)	(0.066)
Nyambo tribe	-0.031	-0.041	0.098*	0.010	-0.039	0.106*
	(0.045)	(0.061)	(0.051)	(0.056)	(0.035)	(0.062)
Mean of child labor hours	-0.027**	0.011	0.017	0.003	-0.003	0.019
	(0.011)	(0.013)	(0.012)	(0.011)	(0.007)	(0.015)
Mean of child labor hours*age	0.002***	-0.001	-0.001	-0.000	0.000	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(b) CHILD LABOR IN HOUSEHOLD FARM						
Hours spent in household farm	0.020	-0.004	-0.020	0.003	0.001	-0.016
	(0.014)	(0.017)	(0.015)	(0.013)	(0.009)	(0.019)
Hours*age	-0.002	0.001	0.002	-0.000	-0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Female	0.154***	0.044	-0.049**	-0.170***	0.019	-0.218***
	(0.020)	(0.027)	(0.022)	(0.025)	(0.016)	(0.027)
Haya tribe	-0.007	-0.109**	0.039	0.091*	-0.017	0.132**
	(0.041)	(0.055)	(0.046)	(0.050)	(0.032)	(0.056)
Hangaza tribe	-0.072	-0.072	0.069	0.081	-0.007	0.145**
	(0.048)	(0.065)	(0.054)	(0.059)	(0.038)	(0.066)
Nyambo tribe	-0.035	-0.048	0.102**	0.014	-0.037	0.114*
	(0.045)	(0.061)	(0.051)	(0.056)	(0.036)	(0.062)
Mean of hours spent in household farm	-0.011	0.014	0.020	-0.016	-0.006	0.002
	(0.016)	(0.020)	(0.018)	(0.017)	(0.011)	(0.022)
Mean of hours*age	0.001	-0.001	-0.002	0.001	0.000	-0.000
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)
(c) CHILD LABOR IN DOMESTIC CHORES						

Hours spent in domestic chores	0.030**	-0.012	-0.019	-0.008	0.009	-0.027
	(0.013)	(0.016)	(0.015)	(0.013)	(0.009)	(0.018)
Hours*age	-0.003**	0.001	0.002	0.001	-0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Female	0.157***	0.038	-0.052**	-0.168***	0.024	-0.220***
	(0.020)	(0.028)	(0.023)	(0.025)	(0.016)	(0.028)
Haya tribe	0.001	-0.107*	0.036	0.086*	-0.019	0.124**
	(0.041)	(0.055)	(0.046)	(0.050)	(0.032)	(0.056)
Hangaza tribe	-0.060	-0.071	0.066	0.075	-0.010	0.135**
	(0.048)	(0.065)	(0.054)	(0.060)	(0.038)	(0.066)
Nyambo tribe	-0.033	-0.038	0.099*	0.010	-0.041	0.107*
	(0.045)	(0.061)	(0.051)	(0.056)	(0.035)	(0.062)
Mean of hours spent in domestic chores	-0.046***	0.015	0.017	0.017	-0.002	0.033
	(0.015)	(0.019)	(0.017)	(0.016)	(0.010)	(0.021)
Mean of hours*age	0.004***	-0.001	-0.001	-0.001	0.000	-0.003
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)

(d) CHILD LABOR AS EMPLOYEE

Hours spent as employee	0.032	0.022	-0.059	-0.003	0.008	-0.062
	(0.079)	(0.097)	(0.090)	(0.076)	(0.052)	(0.109)
Female	0.153***	0.040	-0.047**	-0.167***	0.021	-0.214***
	(0.020)	(0.027)	(0.022)	(0.025)	(0.016)	(0.027)
Haya tribe	-0.019	-0.093	0.045	0.087*	-0.024	0.135**
	(0.042)	(0.057)	(0.048)	(0.052)	(0.033)	(0.058)
Hangaza tribe	-0.084*	-0.056	0.075	0.078	-0.014	0.148**
	(0.049)	(0.066)	(0.055)	(0.060)	(0.039)	(0.067)
Nyambo tribe	-0.046	-0.025	0.106**	0.007	-0.046	0.112*
	(0.046)	(0.062)	(0.052)	(0.057)	(0.036)	(0.064)
Mean of hours spent as employee	-0.079	0.024	0.088	-0.007	-0.028	0.083
	(0.088)	(0.109)	(0.099)	(0.088)	(0.059)	(0.121)

(e) CHILD LABOR IN NON-FARM HOUSEHOLD BUSINESS

Hours spent in non-farm household business	-0.015	0.006	0.001	0.010	-0.003	0.011
	(0.011)	(0.014)	(0.013)	(0.011)	(0.007)	(0.015)
Female	0.153***	0.039	-0.047**	-0.167***	0.021	-0.214***
	(0.020)	(0.027)	(0.022)	(0.025)	(0.016)	(0.027)
Haya tribe	-0.003	-0.104*	0.034	0.091*	-0.021	0.128**
	(0.041)	(0.055)	(0.046)	(0.050)	(0.032)	(0.057)
Hangaza tribe	-0.069	-0.067	0.064	0.082	-0.011	0.142**
	(0.048)	(0.065)	(0.054)	(0.060)	(0.038)	(0.067)

Nyambo tribe	-0.030	-0.036	0.095*	0.011	-0.043	0.105*
	(0.045)	(0.061)	(0.051)	(0.056)	(0.036)	(0.063)
Mean of hours spent in non-farm household business	0.020	-0.003	-0.008	-0.006	-0.002	-0.013
	(0.015)	(0.019)	(0.017)	(0.016)	(0.011)	(0.021)

Notes: Each group from (a) to (e) presents results from separate regressions, with a common specification across sets of rows: all children between 6 and 15 years old. Additional controls include age, education, rural area of residence, quintile of household expenditures, number of household components and number of household components in employment, marital status, kind of job of partner, religion and loss of parents. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.