Child Labour and Labour Market Outcomes in Tanzania: a Gender Perspective.

Sara Burrone

University of Turin

Abstract

Using the KHDS dataset from Kagera region, in Tanzania, we study both the main causes of child labour and its consequences on the labour market outcomes over 13 years horizon, highlighting the gender differences.

To study the determinants we use two different models: a Probit and OLS regression, in the former we analyze how the probability of children of being involved in works changes in base of some households and individuals' characteristics and, in the latter how these variables affect the hours of child labour. To analyze the consequences of child labour on the kind of employment in the adulthood we use two multinomial logistic regressions, while to study its effect on the adult earning we use an OLS regression.

The results show that the characteristic of the family are the main determinants of child labour, kind of employment and wage in the adulthood.

Studying the determinants we note that gender discrimination does not affect in significant way the parents' decision to send children to work, we only note that getting older makes the working hours increase especially for girls. An enhancement in the wealth of the family is significantly associated with a decrease in the probability of being involved in child labour, while in the farmer families this does not happen, and the "wealth paradox" is confirmed: child labour increases as the wealth increases. Finally, as the number of the components of the family increases the hours of child labour lower.

With regards to the consequences of child labour, our outcomes show that it avoids adult unemployment, informal and domestic works in favor of farm employment, however this is not true in the case of women. Generally, being female is significantly related to farm works in the adulthood and the employed women earn lower wages than the employed men, except for those that worked in family's farms during their childhood.

Moreover, child labour in family farms prevents people from becoming wage employees in the adult age in favor, again, of a job in the agricultural sector. The variables measuring the wealth of the origin family, and, in particular, of the farmer families, are very significant: as the wealth of the family increases, the probability of being a peasant in the adulthood decreases, while in the farmer family the opposite happens: it increases.

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1 Introduction

Child labour is widespread all over the world. Although in the last years the number of child labourers has declined, the problem of child labour remains a serious concern for the international organizations: in 2008 ILO estimated 215 million of child workers all over the world; more than half of them employed in hazardous works.

Child labour is not an homogeneous phenomenon: children are employed in various kinds of work, in very different social, hygienic and moral context: in addition, not all forms of child labour are considered harmful, especially in the 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.

Recently, there has been a renewed interest in child labor issues, and this has stimulated a huge number of studies on the causes of this phenomenon: in particular, they are identified especially in the family's characteristics (Togunde and Carter 2008, Claudia Goldin 1989).

For what concerns the consequences, there are empirical evidences that child labour is harmful, although the existing literature has some limitations: most of them focus on short horizon effect of child labour and give particular attention to the consequences on education (Patrinos and Psacharopoulos 1997). Despite schooling having a key role, it is also important to consider other outcomes that allows us to measure possible effects of child labour on economic activity in the long run. The literature examining this relationship is limited (Emerson and Souza 2011, Beegle, Dehejia and Gatti 2009). We try to overcome this issue using a dataset spanning 13 years and considering the effect of child labour on the labour market outcomes in the adulthood.

In particular, the aim of this paper is to understand the causes of child labour and if having worked during childhood affects the kind of job and earnings in the adulthood, giving particular attention to gender differences. We are interested in studying this relationship since it is surrounded by ambiguity: on one hand child labour 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 positive benefits: professional training, learning by doing, work experience, potential for making contacts. In other words, there are many reasons to expect that young labourers can gain some human capital from their work experience, leading them to more skilled and well paid jobs.

This work uses a unique longitudinal dataset for Tanzania: the Kagera Health and Development Survey (KHDS). Using the early wave, 1991, we study if the education of the parents, the wealth, the tribe of the households and the number of the components of the family can affect the decision of sending children to work instead of sending them to school and also if the gender and the age of children matter.

With respect to the last wave, 2004, we analyze the consequences of child labour; particularly, we study if being a working child during the 1991 makes

any difference on the labour market outcomes and if any gender discrimination applies. Moreover, we check if the wealth of the family of provenience, the age, the marital status and the education level of the individuals influence the labour market outcomes.

The paper is organized as follows: section 2 briefly sums up the relevant literature; section 3 describes the Kagera region and Tanzania, section 4 introduces the dataset, explains the main variables and presents some descriptive statistics, while the empirical strategy is discussed in Section 5. Section 6 presents the results about the determinants of child labour in 1991 and its consequences on the kind of employment and the wage in the adulthood (2004). Finally, Section 7 reports the conclusions.

2   Literature review

In recent years, there has been a growing interest in child labour among academics, professionals and the media. As a result, there has been a rapidly-expanding analytical and empirical literature on child labour: theoretically, the child labour phenomenon was analyzed by Basu and Van (1998) in the *"Economics of child labour"*, where they show that under some conditions, the luxury and substitution axiom, there are two possible equilibria: a "bad equilibrium", where wages are low and all 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.

Surely, studying the child labour problem, it is important to understand why child labour exists and which are the forces that give rise to it. A lot of works have focused on the causes of child labour, highlighting the importance of the family's characteristics: the study of Togunde and Carter (2008), on the urban Nigeria, showed that the parents of child laborers tend to have low educational, occupational, and income attainments.

Another study, conducted on Nigeria, in particular in Benin City, was that of Osiruemu (2007) who analyzed the nature and implications of poverty of parents on child labour, finding that they are significant and positively related.

Claudia Goldin (1989), using a micro-dataset on Philadelphia in 1880, showed that the unemployment of the father enhances child labour, and that boys are more likely to be involved in work than girls, while as the wage of the fathers increases, child labour decreases. Burke and Beegle (2003) found that mother's schooling raises attendance for all children, whereas father's schooling is associated with an attendance probability that is higher for boys but lower for girls, in the North-West Tanzania.

Although the literature about child labour is huge, little is known about the effect of child labor on adult outcomes. The assumption that child labor is harmful underpins both the theoretical literature and the policy debate. In particular, an extensive literature examines the trade-off between child labour and the schooling attendance, performance and attainment. This relationship, how-

ever, 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: Rodgers and Standing (1981) wrote: *"we have to be careful not to make an automatic assumption that work by children impairs education and intellectual development ... work itself may be an important component of "education" especially in household-based production systems.."*

Moreover, work and education are not mutually exclusive: often children engaged in work also attend school; therefore the negative implications of child labour on school attainment depend on the hours of work performed by children and on the age in which they begin it. There is even the doubt that education and child labour could have complementarities between them: Patrinos and Psacharopoulos (1997), studying a Peruvian dataset that shows that child labour is not damaging for education, are left speculating about the possibility that *"working actually makes it possible for the children to go to school"*.

The uncertainty surrounding the effect of child labour on the accumulation of human capital is observed also in the effect of child labour on the labour market outcomes, since the human capital is an important determinant of the kind of employment that an individual is able to obtain. On one hand child labour is likely to create a not healthy and unskilled labour force, since it lowers the schooling attendance preventing the human capital accumulation and it damages the health of people.

On the other hand, some form of child labour can be an important part of the development process of children: through it, children acquire work experiences and learn by doing, in this way it creates human capital. Moreover, poor people in the developing countries have access to low quality school, thus the returns to schooling can be lower than those to work. Therefore, child labour can also be associated with high wages.

The literature examining the link between child labour and subsequent labour market outcomes, other than being limited, confirms this ambiguity: Emerson and Souza (2011) estimated the impact of child labour on the adult earnings in Brazil. They found that child labour is associated with lower adult wages especially for male children because of the trade off with the 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 implication on adult wages, instead adolescent labor has a positive impact on them.

Ilahi, Orazem and Sedlacet (2009) work is about the consequences of child labour on the adult earnings and on the incidence of poverty in Brazil. Again, they found negative relationship between child labour and adult wages due to loss of schooling, and high probability of being in poverty for older children workers.

Finally, Beegle, Dehejia and Gatti (2009) used a panel data from Vietnam to study the consequences of child labour 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

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workers. Moreover, they show that child labour is associated with great probability of wage employment and with higher daily labor and farm earnings, which offsets the earnings loss due to reduced schooling. Instead, no significant effect on health is registered. In addition, they show that, over a long time span, from the age of thirty, the earning loss due to low education overcomes the earning gain due to child labour.

3   Tanzania and Kagera region

Tanzania is one of the poorest countries in the world. Its economy is heavily dependent on agriculture, which accounts for more than 25% of GDP, provides 85% of exports and employs 80% of the work force. Topography and climatic conditions, however, limit cultivated crops to only 4% of the land area. Industry is mainly limited to processing agricultural products and light consumer goods, it represents the 22,6% of GDP. Finally, Tanzania has vast amounts of minerals: in 2011, Tanzania was the fifteenth-largest producer of gold in the world.

According to the 2013 census, the total population was almost 48 million of which 44.8% are individual under 15 years old.

We chose this country because, despite the regulation against child labour[1], this phenomenon is common in Tanzania and represents a serious problem: 3,654,191 (32.1%) children aged 5-17 years were employed in economic activities in 2006. Moreover, nearly half (48.1%) of children aged 5-9 years, 57.3% of children aged 10-14 years, and 43.4% of children aged 15-17 years are reported to be involved in household chores. The industries that employ most of the children are agriculture, hunting, fishing and forestry (81.6%) and private households with employed persons (14.8%). In terms of gender differential the estimates show more boys than girls among the employed children, girls are commonly employed as domestic servants, while in the agriculture the number of boys overcomes that of girls. The majority of these children (79.0%) live in the rural areas[2].

The Tanzanian educational system is based on the 7-4-2-3 system: seven years of primary school, followed by four years of secondary ordinary school, followed by two years of secondary advanced school and finally there are three years or more of University. The education is compulsory for children above seven years old until they reach age 15; tremendous progress has taken place in education sector, with major growth in enrollment in primary and secondary schools: in 2011, 94% percent of children aged 7–13 years were enrolled in primary school, while in 2000 they represented only 59%. Net secondary school enrollment has also expanded quickly: from 6% in 2000 to over 30% in 2011[3]. However,this increase has not been accompanied by a proportional increase in

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[1] 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.

[2] Estimates from 2006 ILFS Integrated Labour Force Survey.

[3] Estimates from UNICEF.

resources for teachers, classrooms, and books, therefore the quality of schools has lowered significantly.

The Kagera region 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 million (the ninth most densely populated region). The region covers 40,838 km^2 of land surface and 11,885 km^2 of water surface: it is Tanzania's fifteenth largest region and accounts for approximately 3.3% of Tanzania's total land area. Agriculture accounts for 50% of the region GDP, while most inhabitants along the Lake Victoria undertake fishing activities as an economic activity.

4   Data and descriptive statistics

The data used in this paper comes from the Kagera Health and Development Survey (KHDS)[4], which was administered to more than 800 households from nearly 50 communities in all five districts of Kagera in 1991. In 2004, all household members in KHDS 1991 were re-interviewed using a questionnaire based on the original one: it was revised in order to take into account the 13-years passed and to capture the key transitions occurred since the previous interview. Moreover, those who had migrated to another location, over the 13 years, were re-contacted. In the end we have 6,210 respondents excluding 169 who died in the 13-years passed.

The term "child labour" is defined as *"work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development"*[5].

This definition underscores the fact that not every kind of work delivered by children is considered child labour, but only the ones harmful for their childhood.

Keeping this in mind and, since in Tanzania children are expected to start school at age of seven, we consider child labour any economic activity carried out by children in the age group 7-15. In particular, we chose to consider child labour also domestic chores because they are very likely to be extremely dangerous to children.

As indicator of child labour we use two different variables: the first measures the hours spent by children working in the family farm, in the family non-farm business, in domestic chores (collecting firewood, fetching water, cleaning the house, preparing meal) and as employee to someone else in the last 7 days. The second is a dummy variable that assumes value one when children worked more

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[4]KHDS was conducted for the research project on "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.

[5]Definition of child labour by ILO.

than 7 hours[6] in the last week and value zero otherwise.

Table 1: Summary statistics of the sample 1991 and 2004[7].

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Dataset 1991					
Age	1081	10.99722	2.580014	7	15
Female	1081	.493062	.5001833	0	1
Child labour	1081	.7215541	.4484415	0	1
Total hours of child labour of which:	1081	17.84884	16.70794	0	100
- Hours of domestic chores	1081	10.67946	10.26918	0	70
- Hours of work in household's business	1081	.0249769	.4814385	0	11
- Hours of work in household's farm	1081	7.079648	10.53059	0	78
- Hours of work as employee	1081	.0647549	1.017198	0	24
Value of household consumption expenditure	1022	356776.6	233219.8	27716.6	1468455
Value of home produced food	1054	144657.8	93127.88	0	723897.6
Father's education	798	.9047619	.2937276	0	1
Mother's education	878	.6765376	.4680641	0	1
Dataset 2004:					
Labour outcomes	845	3.295858	1.197369	1	5
Wage	179	45110.55	93517.88	3	1021699
Primary school	739	.8443843	.3627361	0	1
Secondary school	739	.1217862	.3272602	0	1
Married	844	.5450237	.498264	0	1

In the 1991 dataset we find 1081 children of which 533 are female[8] (49.3%). As we can see in Table 1, the mean of working hours is 17.85 per week, of which 10.68 are spent in domestic chores and 7.08 working in the household's farm while only 0.06 as employee and 0.02 working in the non-farm business of the household. This distribution was easily predictable because children are very likely to carry out home chores and help parents in their activities, who are presumably involved in the agricultural sector, since the majority of the population is employed in it.

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[6] Both Unicef and ILO define working children anyone, aged 5–11 years, engaged in at least 1 hour of economic work.

[7] The monetary values are in Tanzanian shillings.

[8] Female is a dummy variable acquiring value 1 when the child is female and value 0 when the child is male.

87% of children work at least 1 hour per week, while almost 72% of children work more than 7 hours per week.

The next table displays how the working hours of children increase or decrease in base of the gender of children and of the kind of employment in which they are involved.

As expected, girls work on average 2.56 hours more than boys, principally for domestic chores. Boys work more than girls only in the case of farm works, whereas no boys work in the household's business.

Table 2: Child labour by gender

	Total hours of child labour	Hours of domestic chores	Hours of work in household's farm	Hours of work as employee	Hours of work in household's business
Male	16.58431	9.365876	7.212956	.0054745	0
Female	19.14897	12.03002	6.942589	.1257036	.0506567
Total	17.84884	10.67946	7.079648	.0647549	.0249769

We use the logarithm of expenditure as measure of household's wealth since in the developing countries the expenditure is widely recognized to be more indicative variable than the income[9]. This variable includes expenditure in durable goods, food, funerals, education and health.

Since the 60% of working children in the world are employed in agricultural activities, we are interested in studying in which way an increase in the wealth of farmer families affects the child labour phenomenon. To do this we use a variable that measures the value of home produced foods[10], since families owning a farm are going to consume home produced foods instead of purchasing it. We associate the enhancement of level of home produced food to an increase in the wealth of these families.

Finally it is interesting to note that the 90.5% of the fathers went to school while this percentage drops for the mothers to 67.6%.

Considering the dataset of 2004, we want study the effect of child labour on the labour market outcomes. Our two outcomes variables are "Labour outcomes" and "Logarithm of wage".

The former is a categorical variable, it describes the job that individuals carry out. It acquires different values for different kinds of works: it takes value 1 for who works for someone else which is not a member of their household, for example an employer, a firm, the government and so on. Value 2 is associated to non-farm self-employed people, such as independent merchants or fishermen. Who works in a field or garden belonging to themselves or their household and raises livestock are part of the third category, farm self-employment.

Value 4 represents people that identify themselves in more than one of the categories, they are likely to have a second employment, most part of these

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[9]Lipton and Ravallion,1995; Deaton, 1997; McKay, 2000.

[10]In the regression we are going to use the logarithm of this variable.

individuals are farm owner and employed or farm owner and non-farm self-employed. Finally, the fifth category includes all people that are not defined in any of the previous groups, so it includes people involved in domestic chores, in the informal sector and unemployed people.

We can notice that out of a sample of 845 individuals, the biggest part of them, 42%, is farm self-employed. This outcome reflects the fact that Kagera is a rural area in which agriculture is the predominant activity.

The fifth group is the second most numerous, 175 people (20.7%) do not identify themselves in any of the precedent kinds of labour. This can be easily expected since this variable includes all the individuals in the informal sector and in domestic chores and all the unemployed people.

Considering the gender: more than half of the women, 52.4%, works in the family farms while 26.2% of them are engaged in domestic, informal works or unemployed. These results are intuitive since their poor consideration in the society.

Studying the labour outcomes with respect to child labour, in Table 3, we can see that the 42% of individuals, who worked in their childhood, is a peasant and the 20.7% is unemployed or a domestic or informal worker. This suggests that child labour has a negative impact on the opportunity to obtain a skilled job. However, these percentages are similar in the case of adult without a child labour history in their past, therefore there could be other determinants.

Table 3: Labour outcomes by child labour.

Labour outcomes	Non-child labour	Child labour	Total
Wage employment	33	57	90
Non-farm self-employment	23	49	72
Farm self-employment	128	228	356
More than one job	64	88	152
None of the previous	65	110	175
Total	313	532	845

The second labour market outcome is the monthly wage[11] of employed people to someone outside the family. Since in the developing countries the wage is often paid in the form of food or crops, we have computed the wage summing each kind of payment that the employed person can receive: salary, payment in the form of food, crops, animals and allowance or bonuses or incentives or overtime income[12].

In order to obtain more exact estimates about the wage, we take into account also the earnings of those people that are employees but have more than one job. We note that, on average, the women earn 44% less than men.

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[11] In the regression we are going to use the logarithm of this variable.
[12] The value of non-monetary measures is supplied in the dataset.

5   Empirical strategy

Considering the first wave (1991) we are going to study the main causes of child labour, in particular, we characterize the households' behavior through some observable features that can reveal interesting differences between households, affecting the decision to send their children to work or not. In particular, we analyze if parents' education, household's wealth, with especial attention to that of farmer families, tribe, number of the component and of children in the family, gender and age of the children matter in this choice.

Firstly, we study if these variables affect the probability of children to be involved in works through a Probit regression, therefore we can utilize this model:

$$Y_{i,t} = \beta_1 + \beta_2 X_{i,t} + \beta_3 hhchrtcs_{i,t} + \varepsilon_{i,t}$$

Where the dependent variable is the dummy variable of child labour previously explained; $X_{i,t}$, in order to simplify the exposition, represents the variables related to the child, while the variable $hhchrtcs_{i,t}$ includes the variable related to the family background and the interaction terms between the family's wealth and the sex of the child, while $\varepsilon_{i,t}$ is the error term.

In a second moment, we analyze if such independent variables cause the hours of child labour to increase or decrease, through an OLS regression that is equal to the one just described except for the dependent variable that now measures the hours of child labour in previous week.

We chose the independent variables according to the evidence of the literature.

In order to analyze exhaustively the relationship between child labour and the kind of employment in the adulthood, we use two multinomial logistic regressions: the former check if the hours of work in the childhood matters while the second studies if the kind of work during the childhood is important to determine the kind of job in the adult age.

The model that we estimate in the first case is:

$$Y_{i,t} = \beta_1 + \beta_2 X_{i,t} + \beta_3 clhrs_{i,t}$$

Where the dependent variable is the "Labour outcomes", the categorical variable previously explained, $X_{i,t}$ represents the variable characterizing the individual (age, female, education, marital status and the wealth of his origin

family) and $clhrs_{i,t}$ is the variable measuring the hours of child labour per week in 1991.

The second model is equal to the previous one, except for the independent variable regarding child labour: in this case we are going to use 4 different variables, each one measures the hours of child labour in a specific activity per week (domestic chores, work in own farm, work in a non-farm self-activity, and work as employee to someone else). Therefore, we will use this model:

$$Y_{i,t} = \beta_1 + \beta_2 X_{i,t} + \beta_3 farm_{i,t} + \beta_4 bu\sin ess_{i,t} + \beta_5 empl_{i,t} + \beta_6 domestic_{i,t}$$

We chose to include these variables in the study because when people work, even if in childhood, they learn by doing and acquire some specific skills related to their job, so, we think that the kind of job in which individuals are engaged during their childhood affects their employment in the adult age; for example, children working in farms are likely to become farmers in adulthood. This is explained also by Rosenzweig and Wolpin (1984), they show that child labor creates plot-specific experience that is difficult to transfer to other activities.

Finally we analyze the effect of child labour on the wage of the employed people in the adulthood. We use an OLS regression:

$$Y_{i,t} = \beta_1 + \beta_2 X_{i,t} + \beta_3 clhrs_{i,t} + \varepsilon_{i,t}$$

Where the dependent variable is the logarithm of the monthly wage perceived by the employed individuals, $X_{i,t}$ represents the same variable of the previous regression, $clhrs_{i,t}$ measures the hours of child work per week in 1991 and $\varepsilon_{i,t}$ is the error term.

In order to study more deeply this relation, we compute another OLS regression equal to the previous one except for the variable regarding child labour, as in the multinomial logistic regression, we use as independent variable the hours spent by children by kind of employment. Therefore we have a model like this:

$$Y_{i,t} = \beta_1 + \beta_2 X_{i,t} + \beta_3 farm_{i,t} + \beta_4 bu\sin ess_{i,t} + \beta_5 empl_{i,t} + \beta_6 domestic_{i,t} + \varepsilon_{i,t}$$

6 Results

6.1 The determinants of child labour

Table 4 presents the results from the Probit and OLS regressions of our outcomes in 1991: we are considering children aged 7 to 15 in order to study if a set of individual's characteristics and a set of parents' characteristics affect the probability for these children of being involved in work (Probit regression 1) and the amount of hours worked by them (OLS regression 3). Moreover, in both the regressions we use some interactions term to study if some gender discrimination is likely to affect these results.

In the Probit regression 2 and OLS regression 4 we check also if the tribe of provenience matters.

The outcomes show that as children grow up the probability of being involved in child labour tends to increase: growing up, children become good substitutes of adult in the labor market. This is especially true in the case of girls.

More numerous is the family, lesser will be the hours of child labour.

The education of the fathers has a bigger impact on child labour than the mothers' one, and, in contrast with our expectations, it makes the probability of child labour increase. This can be explained by the low quality of schools and therefore by the lower returns to education than those to work. An educated mother is associated with less hours of child labour, while it does not make the probability of being involved in it decrease. In contrast with the literature this variable is not significant.

According to our expectation, an increment in the wealth of the families is significantly associated with a decrease in the probability of being involved in child labour. This result is easy to explain: richer family can easily afford to send the children to school.

Interestingly, we find out that, in the case of farmer families, the hours of child labour and its probability tend to increase as their wealth increases; moreover this variable is completely significant. This leads us to think that the low culture and level of education of these families play an important role in the decision to send the children to work or to school and that they, again, value the future returns to education less than the returns to work. This outcome is in accordance with "the wealth paradox" by Bhalotra and Heady (2003).

Considering the gender of the children we note that this has not significant effect.

In the Mhaya, Mnyambo and Mhangaza tribe the hours of child labour decrease significantly, while there is no significant effect on the probability of being involved in labour during the childhood.

Table 4: OLS and Probit regressions (1991). Standard errors are in parenthesis[13]. ***$\rho < 0.01$ ** $\rho < 0.05$; * $\rho < 0.1$.

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[13]All coefficients are interpreted in relation with the probability of being farm owner or working in the family farm in the adulthood.

	Hours of child labour (OLS)	Hours of child labour (OLS)	Child labour (Probit)	Child labour (Probit)
Age	3.590	3.852	0.638***	0.631**
	(2.446)	(2.486)	(0.246)	(0.248)
Age^2	-0.0945	-0.106	-0.0200*	-0.0195*
	(0.112)	(0.114)	(0.0113)	(0.0114)
Female	8.965	17.18	-0.943	-0.897
	(30.96)	(30.99)	(2.802)	(2.840)
N. of components of family	-0.988**	-0.973**	-0.0517	-0.0680
	(0.469)	(0.475)	(0.0434)	(0.0453)
N. of children	0.778	0.655	0.0696	0.0819
	(0.635)	(0.655)	(0.0594)	(0.0623)
Father's education	1.469	2.481	0.464**	0.405*
	(2.372)	(2.301)	(0.212)	(0.224)
Mother's education	-1.009	-0.531	0.0232	0.0170
	(1.569)	(1.493)	(0.149)	(0.154)
Log of household's expenditure	-1.879	-1.647	-0.509**	-0.528**
	(2.113)	(2.143)	(0.218)	(0.223)
Log of value of home produced food	4.841***	5.177***	0.537***	0.545***
	(1.632)	(1.664)	(0.198)	(0.202)
Mhaya tribe		-7.369***		-0.105
		(2.806)		(0.216)
Mnyambo tribe		-6.554**		0.147
		(2.961)		(0.248)
Mhangaza tribe		-8.582***		-0.289
		(2.915)		(0.237)
Msubi tribe		-4.465		-0.202
		(4.242)		(0.411)
Kishubi tribe		-3.645		-0.234
		(5.686)		(0.458)
Log of household's expenditure.*female	-0.125	-1.849	0.326	0.298
	(3.029)	(2.985)	(0.302)	(0.309)
Log of value of home produced food*female	-2.452	-1.345	-0.348	-0.319
	(2.611)	(2.615)	(0.293)	(0.298)
Age*female	2.137***	2.162***	0.0916*	0.0904*
	(0.509)	(0.499)	(0.0523)	(0.0529)
Constant	-39.84	-42.49	-4.017*	-3.631
	(27.62)	(28.78)	(2.362)	(2.422)
Observations	557	557	557	557
R^2	0.210	0.231		
Pseudo R^2			0.200	0.206

6.2 Child labour's consequences on the labour market

In the next table we can see the result of the multinomial logistic regression through which we want to estimate the effect of the hours of child labour on the type of adult employment. We also examined age squared, tribe and interaction terms between the education, marital status and the sex of individuals.

Table 5: Multinomial Logistic regression (2004), base outcome: farm self-employment[14]. Standard errors are in parenthesis ***ρ <0.01 ** ρ <0.05; * ρ <0.1.

	Wage employment	Non-farm self-employment	More than one job	None of the previous
Age	0.155***	0.133**	0.137***	0.000126
	(0.0524)	(0.0553)	(0.0445)	(0.0431)
Female	-1.668***	-0.916**	-1.199***	-0.342
	(0.465)	(0.464)	(0.363)	(0.344)
Log of household's expenditure	1.011***	0.939***	0.322	0.995***
	(0.304)	(0.314)	(0.286)	(0.252)
Log of value of home produced food	-0.990***	-1.192***	-0.432	-0.845***
	(0.285)	(0.297)	(0.273)	(0.246)
Hours of child labour	-0.0116	0.00115	-0.0185*	-0.0293**
	(0.0120)	(0.0124)	(0.0106)	(0.0146)
Hours of child labour*female	0.0113	-0.00854	-0.0145	0.0304*
	(0.0189)	(0.0186)	(0.0177)	(0.0166)
Primary school	-0.916	-0.640	0.857	-1.992***
	(0.815)	(0.942)	(1.176)	(0.685)
Secondary school	-0.475	-0.108	0.169	-0.914
	(0.889)	(1.025)	(1.276)	(0.733)
Married	-1.447***	-0.180	-0.349	-0.604**
	(0.317)	(0.322)	(0.252)	(0.243)
Constant	-3.768	-1.338	-2.662	-0.885
	(3.250)	(3.409)	(2.913)	(2.687)
Observations	696	696	696	696
Pseudo R^2	0.1086			

We can note that as the wealth of the family increases, the probability for the individual of working in the family's farm decreases with respect to all the other kinds of job. Considering the farmer households the outcome is the opposite: an increment in their wealth is associated with an enhancement in the odds of owning a farm or working in the family's one.

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[14] All coefficients are interpreted in relation with the probability of being farm owner or working in the family farm in the adulthood.

The coefficient of child labour is negative in all the categories except for the one representing people self-employed in non-farm activities, it is statistically significant with respect to the fifth and the fourth category: this suggests that child labour prevents people from becoming unemployed or working in the informal sectors or having more than one job. However, for women that worked during their childhood, this is not true: they are significantly associated to unemployment, informal works and domestic chores in the adulthood.

Generally, being female is significantly associated to higher probability of working in family farm during adulthood than being employed to someone else, self-employed in non-farm activities and having more than one job.

As an individual becomes older, the possibility of owning a non-farm activity, having more than one job or being a wage employee, with respect to work in a family farm, increases and the variable is significant.

Primary education lowers significantly the chance of unemployment, informal employment and to carry out domestic chores.

Finally, being married lowers the probability of being a wage employee, an informal worker and unemployed with respect to being a farmer in the adulthood.

Now we are going to study more deeply this relationship, investigating if the kind of work in which an individual was employed in 1991 affects the kind of work in the adulthood. As it can be seen in the next table we report only the outcomes relative to the child labour hours in family farms and in domestic chores because the people re-interview in 2004 that worked in the family's non-farm activity and as employee are very few, respectively 2 and 4, so they are not significant and their standard error is high.

According with what previously explained, we see in the next table that when child labour hours in family farm increase, the odds of being farm owner in the adult age, with respect to all the other categories, increases as well. This variable is statistically significant with respect to being employed to someone else. The interaction terms between the sex of the individual and the kind of employment in the childhood have no significant effects.

As in the previous multinomial logistic regression, the effects related to the other variables are the same; in particular, the wealth variable is more statistically significant than those of child labour. This suggests that the parent's endowment play a key role in determining the work of the offspring.

Table 6: Multinomial Logistic regression (2004), base outcome: farm self-employment[15]. Standard errors are in parenthesis. ***ρ <0.01 ** ρ <0.05; * ρ <0.1.

	Wage employment	Non-farm self-employment	More than one job	None of the previous
Age	0.156***	0.132**	0.138***	-0.000897
	(0.0526)	(0.0553)	(0.0446)	(0.0431)
Female	-1.640***	-0.897*	-1.116***	-0.352
	(0.478)	(0.472)	(0.369)	(0.353)
Log of household's expenditure	1.003***	0.944***	0.335	0.996***
	(0.306)	(0.315)	(0.286)	(0.252)
Log of home produced food	-0.958***	-1.169***	-0.447	-0.843***
	(0.291)	(0.301)	(0.276)	(0.251)
Hours of child labour in domestic chores	0.00740	0.0158	-0.0154	-0.0290
	(0.0178)	(0.0191)	(0.0171)	(0.0230)
Hours of child labour in household's farm	-0.0331*	-0.0127	-0.0205	-0.0287
	(0.0199)	(0.0194)	(0.0151)	(0.0204)
Hours of child labour in domestic chores*female	-0.0108	-0.0255	-0.0402	0.0292
	(0.0303)	(0.0291)	(0.0299)	(0.0270)
Hours of child labour in household's farm*female	0.0402	0.0108	0.0154	0.0332
	(0.0335)	(0.0321)	(0.0293)	(0.0253)
Primary school	-0.830	-0.605	0.890	-2.007***
	(0.828)	(0.948)	(1.176)	(0.689)
Secondary school	-0.384	-0.0736	0.190	-0.936
	(0.900)	(1.029)	(1.276)	(0.736)
Married	-1.392***	-0.137	-0.349	-0.602**
	(0.320)	(0.326)	(0.254)	(0.244)
Constant	-4.194	-1.724	-2.702	-0.862
	(3.274)	(3.450)	(2.942)	(2.707)
Observations	696	696	696	696
Pseudo R^2	0.1108			

In the Table 7 we can see the result of two OLS regressions, the first shows the relation between the hours of child labour and the adult wage, the second one studies this relation accounting for the kind of employment in the childhood. We can see that women are associated in a significant way with lower wages than men, while a woman that worked in the household's farm during her childhood is significantly associated with higher wage in the future.

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[15] All coefficients are interpreted in relation with the probability of being farm owner or working in the family farm in the adulthood.

As the wealth of the family of origin increases the adult wage tends to increase as well and it is completely significant, while this does not happens in the farmer families.

People with primary education earn less than others, this result is significant and, again, it confirms the low returns to education.

We can see that as the hours of child labour increase, the wages tend to increase as well, in particular more hours of domestic chores make the adult wages increase, while as the hours of work in household's farm increase the adult wages lower. However these variables are not significant.

Table 7: OLS regressions (2004). Standard errors are in parenthesis. We controlled also age squared and tribe.***$\rho <0.01$ ** $\rho <0.05$; * $\rho <0.1$.

	Logarithm of wage (OLS)	Logarithm of wage (OLS)
Age	0.0406	0.0460*
	(0.0260)	(0.0266)
Female	-0.625***	-0.545***
	(0.229)	(0.245)
Log of household's expenditure	0.374** (0.171)	0.371** (0.169)
Log of value of home produced food	-0.207 (0.158)	-0.183 (0.156)
Hours of child labour	0.00221 (0.00413)	
Hours of child labour*female	0.00768 (0.00746)	
Hours of domestic chores		0.00908 (0.00612)
Hours of work in household's farm		-0.00736 (0.00922)
Hours of domestic chores*female		-0.0162 (0.0177)
Hours of work in household's farm*female		0.0390** (0.0179)
Primary school	-0.919***	-0.852***
	(0.206)	(0.227)
Secondary school	0.172	0.229
	(0.285)	(0.298)
Married	-0.193	-0.197
	(0.174)	(0.181)
Constant	7.853***	7.421***
	(1.566)	(1.627)
Observations	151	151
R^2	0.2267	0.2394

7 Conclusions

This paper aims to study the causes of child labour and its consequences on labour market outcomes in the long run, highlighting the gender differences.

We use the early wave (1991) of the Kagera Health and Development Survey to analyze the main determinants of child labour, in particular we study how children's and the family's characteristics affect the probability of being involved in child labour and their working hours.

With regards to the consequences of child labour in the labour market, we utilize the 2004 KHDS to study if child labour and the kind of employment in which children were involved during 1991 affect the wages and the kind of job of individuals 13 years later, with special attention to gender differences.

Summing up, we can say that the characteristic of the households, rather than those of the individual, affect significantly our outcomes both in 1991 and in 2004.

In the choice of sending children to works no particular gender discrimination applies, nevertheless we notice that as girls grow up the child labour hours and the odds to be involved in it tend to increase.

The number of family components, tribe, wealth and kind of activity of the households are important determinants of child labour. In particular, we want to highlight that as the wealth of the family increases, the phenomenon of child labour tends to decrease. However, we note that this does not happen in the farmer families: an increment in their wealth makes the odds of child labour and the hours of work increase as well, this confirms the "wealth paradox".

Gender discrimination affects particularly the market labour outcomes in the adulthood: women tend to earn less than men and are associated to unskilled job (farmer). Moreover, women that worked in their childhood are disadvantaged twice, since they tend to be unemployed or informal workers or to carry out domestic chores rather than being farmer. On the other hand, we note that female employees tend to have higher wages than male employees if they worked in farms during their childhood.

Generally speaking, we can explain all this by noticing the fact that education of girls tends to have a lower consideration, therefore the opportunity cost of sending girls to school instead of to work increases, lowering their education and their future chances of obtaining a job requiring skills and well paid.

Considering child labour, we note that, on the one hand, it has some positive effects: it discourages adult unemployment, informal works, and reduce the chance of doing domestic chores or having more than one job in favor of self-employment in the agricultural sector.

On the other hand, it prevents people from obtaining skilled jobs as an employment to someone else (government, firm).

These associations between child labour and farm activities in the adult age can be explained by the fact that the majority of child labour is in the farms and, since the work represents an important vehicle to learn by doing and acquire knowledge in a specific field, who works in a farm during his childhood benefits

from locking himself into farming rather than seeking opportunities in other sectors.

However child labour has some important implications, the wealth of the household of origin appears to be more significant in determining the kind of employment in the adulthood: people coming from rich households are more likely to escape from the agricultural sector becoming wage employees or self-employed in non-farm activities and are associated to higher wage in the case of employment to someone outside the family, while people coming from rich peasants' households tend to continue the activities of their parents.

Therefore, we think that parents are likely to bequest their activity and to confer their professional knowledge to the offspring and that this is more incisive than child labour in determining their future jobs and earnings.

Finally, we note that people value the future returns to education less than the returns to work, this is confirmed by the fact that individuals that completed the primary school are associated with lower wage than other people.

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