

# Child Labor and Its Sectoral Distribution in Turkey\*

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**Abstract:** According to the International Labor Organization's statistics in 2013, there are 168 million children worldwide in the labor market. This number is much higher when we include children who work in unpaid jobs such as house chores and unpaid work in family businesses. The extent of problem is not different for the Turkey and it even got worse after the arrival of around 4 million Syrian refugees. This paper analyzes the Child Labor Survey in 2012 and finds that girls have higher probability of being child workers both in rural and urban areas. Moreover, the negative association between child labor and education is stronger for children aged between 15 to 17. Household size and parental education levels are found to be important determinants of child labor as it is already suggested by the literature in different contexts. In terms of sectoral distribution, we find a clear pattern with respect to gender. Girls have higher probability to work in the agricultural sector while boys have higher likelihood of working in manufacturing sector, irrespective of their ages. Furthermore, parental educational level which is used as a proxy for the (potential) income of the household head is found to be significantly associated with the work conditions of boys although it is not found to be statistically significant factor for girls' work conditions.

## Türkiye'de çocuk işçiliğinin sebepleri ve sektörel dağılımı

**Öz:** Uluslararası İş Örgütü'nün 2013 yılı istatistiklerine göre dünyada 168 milyon çocuk işçi bulunmaktadır. Ev işlerinde ve aile şirketlerinde ücretsiz çalışan çocuklar da dahil edildiğinde bu rakamın çok daha fazla olduğu anlaşılmaktadır. Türkiye'de çocuk işçiliği sorunu da özellikle 4 milyona yakın Suriye'li sığınmacı nüfusunun ülkeye yerleşmesinden sonra daha fazla gündeme gelmiştir. Bu makale 2012 yılı Çocuk İşgücü Anketini analiz edilerek, Türkiye'de kız çocuklarının erkeklerden daha yüksek bir olasılıkla işgücünde olduklarını tespit etmiştir. Ayrıca 15-17 yaş grubu için daha küçük yaş grubuyla

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karşılaştırıldığında eğitimle çocuk işçiliği arasında daha güçlü bir negatif ilişki bulunmuştur. Bunların yanı sıra hanehalkı büyüklüğü ve hane reisinin eğitim seviyesinin çocuk işçiliğini belirleyen önemli faktörler arasında olduğu tespit edilmiştir. Sektörel dağılıma baktığımızda ise yaş grubu farketmeksizin cinsiyetler arası net bir dağılım görülmektedir; kız çocuklarının daha büyük olasılıkla tarım sektöründe, erkek çocuklarının ise diğer sektörler nazaran yüksek olasılıkla sanayi sektöründe istihdam edildikleri tespit edilmiştir. Ayrıca, aile reisinin eğitim seviyesi azaldıkça erkek çocuklarının çalışma ortamlarının kötüleştiği; bir diğer deyişle kötü şartlara sahip işlerde çalışmak zorunda kaldıkları bulunmuştur.

**Key Words:** Child work, informality, agriculture, manufacturing, service, work conditions. JEL Codes: J1, J130, J18, J46, J81.

## Introduction

Child labor is one of the most challenging problems of the world today despite a considerable decline (21.8%) in the number of child workers (i.e. aged 5-17) globally, from 215 million in 2008 to 168 million in 2012. Still about one tenth of the total child population is actively involved in the labor market. (ILO, 2013) There is, despite all odds, a downward trend for child labor in the World between 2008 and 2012 but that should not overshadow the fact that there are still a staggering 168 million children whose labor are sold and bought in the market and this number is even not including the children who work in unpaid occupations such as house chores, child care, work in family farm/business and so on. In all regards, the number of children at work is alarmingly high, begging a thorough, scientific investigation and, necessary interventions designed according to the research findings.

Scholars have carried out various research to understand the factors behind child labor and how it is associated with certain labour market and educational outcomes. It is a widely-practiced approach for scholars to generalize child labor and present it in a negative sense but there are exceptions, too. Focusing on what he calls “light work,” Edmond (2008), for example, is one of those researchers who beg to differ, defending that “light work” might even be beneficial for children to some extent: “Light work is used to characterize the market work of children aged 12-14 that is non-hazardous and for less than 14 hours per week” which might improve the wellbeing of children under certain conditions. Moreover, Patrinos and Pscharopoulos (1997) and Myers (1989) indicate in some cases earnings of children from work are actually what make their schooling possible. Accordingly, understanding the work patterns of children and factors that lead them to work is critical because of the complex nature of the issue that might otherwise mislead observers. However, in less developed countries, the underlying

motive might differ as families suffer from amplified hardships as terrifying as starvation, that sending children to work is no longer regarded as a choice but a matter of survival. Unfortunately, though, those children are eventually required to carry out heavy tasks where they work, damaging their health, both physical and psychological. Therefore, it is crucial to examine not only the factors associated with child labour but also their work conditions.

According to ILO Convention 182 Article 3 (1999), worst forms of employment for child workers include all types of slavery, forced or compulsory labor such as prostitution and production of pornographic content in addition to production and trafficking of drugs and, recruitment of children by non-state armed groups for use in armed conflict. The same Article also leaves each signatory country to specify the sectors/occupations which can be included in these worst forms of employment given the conditions of work in specific countries. For example, in addition to the above mentioned worst forms of employment, Turkey also identifies auto-repairing jobs, mining, seasonal migratory agricultural work, street work and, work in small and medium sized enterprises as hazardous for child labor according to the National Program to Combat Child Labor<sup>1</sup>. However, there is an inconsistency between national program and regulations which creates confusion about the minimum age standard for child labor and sectors of their legal employment. For instance, the Regulation on the Principles and Procedures Governing the Employment of Children and Young Workers<sup>2</sup> does not prohibit vegetable or fruit picking for children and it also allows children aged above 15 to work in various manufacturing jobs. Also, the Regulation does not specify the working hours for light work categories.

Like many other developing countries, combatting child labor is one of the important targets of Turkey. Although we see a decreasing trend in the total amount of child labour between 1994 to 2008, according to the country's official statistics agency TURKSTAT, there is no decrease observed after. The problem of child labor is worsened and got more attention especially after the arrival of almost 4 million Syrian refugees which resulted in the year 2018 being officially announced as the "year of battle against child labor". According to TURKSTAT (2013), out of 15 million children aged 6-17, 890.000 individuals were in labor force in 2006 and this number went up to 893.000 in 2012.

In Turkey, 326.000 children were working in the field of agriculture alone in 2006 and six years later this number further increased by a troubling 22.4 percent to become nearly 400.000. Within industry and service sectors, however, there has been an opposite trend in the same period. The number of children at work in industrial jobs was 275.000 in 2006 and it dropped to 217.000 in 2012. Likewise,

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<sup>1</sup> The program is retrieved from [https://www.csgb.gov.tr/media/4755/cocuk\\_isciligi\\_rev\\_23032017.pdf](https://www.csgb.gov.tr/media/4755/cocuk_isciligi_rev_23032017.pdf)

<sup>2</sup> Government of Turkey. Regulation on the Principles and Procedures Governing the Employment of Child and Young Workers, No. 25425. Enacted: April 6, 2004.

the service sector recorded a decline in child labor from 289.000 in 2006 to 277.000 in 2012. TURKSTAT data also show that the number of boys was higher than the number of girls as child laborers in each sector, both in 2006 and 2012. Knowing that these statistics are not including the unpaid service jobs (both in and outside the household), one can argue that the actual numbers are much higher than the officially announced statistics.

In an attempt to protect children from occupational hazards and abuse, Turkey increased the year of compulsory education for its citizens from 5 to 8 years in 1997. The following year, it signed the ILO Convention 138 which rose the minimum age of employment to 15. In 2001, the country also ratified the ILO Convention 182 for elimination of worst forms of child labor. A year later, it began supplying students with course books for free to support education of children at elementary school. In 2006, this policy was expanded to cover secondary school students. In 2012, the government introduced what is termed as the '4+4+4 education system' which prescribed a 12-year compulsory education instead of previously required 8 years. Those steps were all in the right direction and helped reduce child labor in the country<sup>3</sup> but continued action and research is beyond necessity to ensure reliable protection for children from what might otherwise await them in workplaces.

This paper aims to contribute to the child labour research in Turkey by providing explanation about the likelihood of child work, work conditions and the sectoral composition of child labor through analyzing the Child Labor Survey in 2012. The remainder of this article is organized as the follows. In Section 2, we present a brief summary of the literature. Section 3 introduces data and the methodology used which is followed by the discussions about empirical findings in Section 4. Section 5 concludes.

## Literature Review

As theoretical framework, two kinds of approaches are used by researchers in order to analyze intra-household resource allocation. First one is the *household production theory*, which is based on maximizing common utility function of household with respect to the full income constraint. This concept has been widely used in child labor literature. It states that household consumes and produces at the same time, but household needs to allocate their time efficiently to maximize the common utility function. The second concept in theory is *bargaining model* which opposes the common household utility function. This concept defends that each member of household has different utility, so they can allocate more

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<sup>3</sup> Dayioglu and Kirdar (2018), for example, analyzes the impact of 1997 schooling reform on the child labor in Turkey using a difference-in-differences strategy and, they find that the 1997 educational reform caused a decline in the level of child labour.

household resources that they enjoy the most. (See Basu (1999); Bourguignon and Chiappori (1994) and Moehling (1995))

There are extensive research papers examining the problem of child labor through a theoretical lense. Basu (1999) emphasizes that policy intervention and public action to alter the economic environment is needed to battle the child labor, assuming that parents on their own prefer not to send their children to work. According to him, governments should enact minimal restrictions on child labor such as forbidding hazardous work and worst forms of jobs instead of imposing a general ban on all kinds of child labor. The reason is that a general ban could create even worse situations than child labor. For instance, in poor regions, children may suffer from acute hunger and starvation if their household income falls far below what they need for survival. Moreover, Basu and Van (1998) evaluates the child labor with two different models and propose that the rise in adult wages can help decrease child labor. However, Baland and Robinson (2000) study the determinants of child labor time efficiency by evaluating the social welfare implications. They argue that the effect of banning child labor will be 'Pareto improving' in general equilibrium. Grootaert and Kanbur (1995) emphasize the efficient time allocation from a different perspective and assert a trade off between child labor and education. They suggest that the welfare of children is based on decision making of household on allocation of labor and non-labor activities and, they argue that compulsory education would decrease child labor. Nevertheless, it may not entirely eliminate child labor. Basu (1999) states that society could boycott sectors which are using child labor intensively. Likewise, he suggests that financial penalties might also be imposed on those employing children. Ranjan (2001), however, opposes imposition of sanctions on third-world countries because, he argues, it might be counter-productive since those countries' trade volume will decrease as a result. Children there might then have no choice but to join the labor force instead of going to school. Another likely result of financial sanctions is that they can decrease the relative price of unskilled labor-intensive goods which is an important source of income for poor countries.

In addition to the theoretical research, there are numerous empirical studies on child labor with ambiguous findings. Patrinos and Psacharopoulos (1997), for instance, analyze the family size, schooling and employment status of child labor on the age-distortion of children with a logit model using Peru Living Standard Survey. They state that number of siblings, siblings' age structure and their activities have a significant impact on child schooling. Also, higher number of younger siblings results in less schooling and creates more age-distortion in the classroom, driving more children away from school. On the other hand, Chernichovsky (1985) surprisingly finds that the number of children in household and the schooling have positive relationship in rural Botswana.

Another important cause of the child labor is argued to be poverty. Salmon (2005) uses a probit model analyzing Bangladesh Labor Force Survey in order to

understand the relationship between poverty and child labor, and shows that poverty forces children to work. Ray (2000) tests the positive relation between the hours of child labor and poverty and, the negative association between child schooling and poverty using both the 1994 Peru Living Standards Measurement Survey and the 1991 Pakistan Integrated Household Survey. These hypotheses are confirmed for Pakistani data, but not for the Peruvian one. This is because the reduction in poverty rates owing to income from children's labor was higher in Pakistan than in Peru. Basu and Van (1998) have a similar result about the income of family and child labor. According to the luxury axiom of parents, they send their children to work only if their own income falls way below what they need to survive. Another study, conducted in Guatemala (Balderston, 1984), argues that parental education level positively affects school attendance. If the parents' education level is high, they are more willing to send their children to school because they are aware of the higher return of education. In parallel, Rossi and Rosati (2003) use the father's and mother's primary and secondary education as a regressor while deciding between sending a child to school or to work (or both) in Pakistan and Nicaragua. They suggest that parental education level affects both schooling and child labor.

Entering the labor market at early ages has many direct and indirect, yet often irreversible, impacts on the lives of children. It does not just remain extremely destructive for their health, social and cognitive skills – as if that is not bad enough- but also presents an insurmountable barrier for children to obtain formal education and improve their human capital, effectively condemning them to a life that does not actually offer much of a comfort to themselves or their loved ones<sup>4</sup>. For example, both Psacharopoulos (1997) and Jensen and Nielsen (1997) find a significant negative relationship between schooling and working. In the light of this finding, Weiner (1991) points out that one of the main complaints of managers in India, for instance, is that the available labor force is not sufficiently educated with too many workers are not even able to read manuals or simple instructions written on machines.

When we look at the studies about child labor in Turkey, we see an increasing interest in the topic parallel with the availability of micro survey data. Before summarizing the relevant literature, one must note that child labor in Turkey is mainly seen in small and informal firms (Bulutay (1995)). Dayıoğlu and Assaad (2003) use 1994 Income Distribution Survey (IDS) to find determinants of child labor in urban Turkey. They find that the parents' education level is a vital

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<sup>4</sup> For example, Beegle, Dehejia and Gatti (2009) find that child labor decreases the educational attainment, increases the probability of wage work for the case of Vietnam. Kayaoglu (2019), analyzing the long-term effects of child labor for the case of Turkey, argues that it increases the probability of informal work in adulthood. Uysal (2019) also found out that child labor has other long term effects on adulthood such as increase in teenage marriage in Turkey.

variable to understand the participation in child labor as other studies found similar results around the world (Grootaert, Kanbur and May (1995); Psacharopoulos (1997)). Tansel (2002) and Dayıoğlu (2006) also show that the level of education of parents has an effect on the education status of children in Turkey. Moreover, Tunalı (1996) analyzes the education and working experiences of children aged 6-14 in Turkey and concludes that children who are older and have uneducated parents are more likely to participate in labor force. Furthermore, Dayıoğlu (2005) studies the Child Labor Surveys conducted in 1994 and 1999 by TURKSTAT and, shows that negative association between work and schooling is strengthened over time as evidenced by increasing magnitude of correlation coefficient. Furthermore, the negative impact of poverty on the schooling of female children is found to be larger than male children because of parents' preference to send their male children to school. Acaroğlu (2010) finds a positive relationship between uneducated decision makers and level of child labor in urban and rural areas. In addition to empirical research summarized above which analyze the secondary data, there are a few papers analyzing the issue using the primary data. Sisman (2006), for example, collected primary data from Eskisehir city center which covers information about 198 children who work in the street. His data showed that most of the children who work in the street were mainly boys, aged between 9 and 14, from low income families and earning very low income in return although they work during the whole year. Lordoğlu and Etiler (2014) focuses on the situations of seasonal agricultural migrant workers and conclude that seasonal agricultural labor is unfortunately a social generational heritage to the children from their parents because this type of a job has a detrimental effect on the education of children which gives them no better options but continue to work in those jobs during adulthood. Moreover, they also discuss that seasonal agricultural work results in poor living and working conditions for children which negatively affect their well-being. There are also some anthropometric studies about child workers in Turkey. Those studies mainly try to understand the effect of child work on proportions and measures of children's bodies. Duyar and Özener (2003) had an extensive study in which they compared a sample of child workers with those who do not work and, they conclude that child workers in Turkey, on average, have shorter height, arm and leg length but have wider bones. They argue that this is because of the morphological reactions of their body against the heavy work conditions since early ages. These finding are also confirmed by Fişek (1996).

In this paper, we aim to test many of the relations discussed above using the recent available child labour survey data in Turkey. The next section describes the data and the methodology we employed.

## Data and Methodology

The data that is analyzed in this paper is 2012 Child Labor Force Survey<sup>5</sup> which was conducted by TURKSTAT and include many variables regarding possible reasons behind child labor. It covers information for 27,118 children of age 6 to 17. The total number of child workers in the sample is 1,560. Although this dataset is the latest available national data on child labour in Turkey, one must also note that it does not reflect the recent magnitude of the problem especially considering the effect of Syrian influx since 2011. That is, there is an urgent need of collecting a new data about this issue in order to understand the most recent size and characteristics of child labor in Turkey. Unfortunately, there are various changes in the country that might have increased the total number of child workers such as hosting almost 4 million Syrian refugees, deterioration in the national economy and so on. That is, the results in this paper should be interpreted cautiously knowing that these are the findings using the data in 2012.

We performed three main regression analyses. The first one aims to understand the role of various factors on child labor. Afterwards, sector of child labor is used as a dependent variable and we tried to understand if there are any individual-, household- or spatial-characteristics that has statistically significant relation with the sectoral distribution of child work. In this second model, dependent variable is a categorical variable which is equal to '1' if the respondents answer 'agriculture' to the question "If children are working, which sector are they working in?" and if the answer is 'industry', the value of this category is '2'. The last category for this question is 'services' with the value of three. Lastly, we tried to understand the factors which results in bad working conditions for the children who work. The definitions both dependent and independent variables are provided below.

### *Dependent Variables*

- **Child Work:** This is a binary variable which is 1 if child is either in an economic activity in the market or work in the house more than 8 hours in a week; 0 if child is not in working in the market or working less than 8 hours in a week at home.

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<sup>5</sup> The data was collected in the first weeks of October, November and December starting on Monday and ending on Sunday. The sampling method of this data is two-stage stratified clustered sample. The first stage of sampling consists of blocks with 100 households on average. National Address Database is used in sampling which is the basis of the Address Based Population Registry System in Turkey. If the villages do not have a municipality, they are regarded to consist a block themselves. 30 households were selected systematically within each selected PSU. Then, the selected households were systematically divided into two which are called form sets (A and B). Lastly, the stratification is based on Statistical Regions, Level 2 (26 Regions) and rural and urban settings. Moreover, in this data set, TURKSTAT employed the weighting method which is used to draw parameters from the data set resulting from sampling so as to represent the population of Turkey.

- Sector of Economic Activity: This is a categorical variable which takes value 1 if the child works in agriculture sector; 2 if economic activity is in manufacturing sector; and 3 if she/he works in service sector.
- Work Conditions: This is a dummy variable which is equal to 1 if the working conditions of child is physically bad (for example if the work place is reported to be too cold, too hot, extremely noisy etc.) and if the child got injured, became disabled or got sick because of his/her work place conditions, if she/he feels extremely tired after the work, if she/he experienced violence/abuse in the workplace. It is 0 if the above-mentioned conditions are not reported.

#### *Explanatory Variables*

- Household Size: Continuous variable with minimum value of '1' and maximum value of '23'<sup>6</sup>.
- Type of Residency: Dummy variable with value '0' for the rural area (whose population is below 20.000) and value '1' for the urban area (whose population is above 20.000).
- Gender: A dummy variable with value '0' for men and value '1' for women.
- Age Group: A dummy variable with value '0' for children aged between 6 and 14 and with value '1' for those aged between 15-17.
- Age of Household Head: Continuous variable with minimum value of 16 and maximum value of 97.
- Years of Schooling: This is a continuous variable from 0 to 13 where 0 resembles the children who either did not go to school or does not know to read.
- Education level of Household Head: This is a categorical variable. The category is equal to 1 if the household head has no diploma. It is 2 for primary and secondary school graduates; 3 for high school graduates and it is 4 for those with a diploma above high school.

Summary statistics of the variables are given in Table 1. The average household size in the sample is 5.31. Tansel (2002) stated that household income and schooling of children have positive association which is confirmed by many studies<sup>7</sup>. However, in our data, there is no information about the household income level, expenditure level and their hourly wages. Thus, only household size will be included in the empirical model. When we check the household size for

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<sup>6</sup> In some poor regions and rural households, more than 1 family lives in the same household which increases the total number of individuals living in the household. In the data there are 6 households with a household size of 23 and all of them lives in rural areas. Moreover, only 3 children who are all 15-17 years old reported to live alone. They are not excluded from the sample.

<sup>7</sup> Alderman et al. (1997) discuss the situations which increase the positive relationship between household income and demand for schooling of children.

children who are either involved in economic activity or work as unpaid housekeepers more than 8 hours a week, we see that they live in larger families with a mean of 5.65. In terms of the types of residency, the majority of individuals in the sample live in urban areas (71.5%). However, when we check cross tabulation, we observe that the prevalence of child work is higher in rural areas than urban areas (20.3% in rural areas and 13.7% in urban areas). Moreover, although the sample has almost equal share of boys and girls (51% male), there are more girls (19.7%) doing child work than boys (11.6%). However, if we restrict the sample only for children who are only in economic activity, this changes with a larger proportion of boys being in the economics activity than girls (7.9% for boys and 3.5% for girls). In terms of age groups information, we see that majority of children are aged between 6 to 14 (25.9%) although the likelihood of child work is much higher for children aged between 15 to 17 (33.7%) while it is 9.2% for younger children. Besides, average age of the household heads in the sample is 44.5 although again this mean is higher for child laborers. Average years of education concerning all the children in the dataset is 6.13. More interestingly, we observe that average year of schooling is lower for children who work. For example, for the age group 15-17, mean years of schooling is 8.8 for child workers although it is 10.02 for children who do not work. For the younger age group (between 6 to 14), however, the average year of education is larger for child workers (6.22) than children who do not work (4.78) which is expected as compulsory schooling law decreases the probability of dropping out of school at least in the first 8 years of education. Besides, assuming that children has higher probability of work as they grew up, the average year of education is expected to be higher at later ages for the children in the age group 6 to 14. With respect to the educational level of the household head, we observe that a large majority of households are having a diploma below high school or no diploma at all (73.3%). As expected, this situation even gets worse for the household head of a family with child labor. For children who work, this percentage goes up to 86% while children who do not work has parents with higher education levels (71% of the household heads have a diploma lower than high school or no diploma).

In terms of the sector of economic activity, we observe that majority of child labourers in the sample do work in the agricultural sector. However, the sectoral composition changes a lot depending on the age of children. For example, for age group 15-17, the majority of children in the sample work in service sector (39.63%) which is followed by agricultural sector (30.65%) and manufacturing sector (29.725). However, for the younger children who are aged between 6 to 14, a big majority of them works in the agricultural sector (64.38) and then in the service sector (20.62%) and manufacturing sector (15%). Overall 39% of child labourers report to work in bad conditions. When we look at the work conditions by sector, we see that 34.22% of children who work in the agricultural sector reported to have bad working conditions while this number is 50.64% for those

who work in manufacturing sector and 36.24 for those who work in the service sector. Although knowing these correlations is important, it would be more informative to understand how these correlations will change if we control for various relevant parameters. With this aim we run the regression models and depending on the type of the regressand, we used either logit or multinomial logit regression models in the empirical analysis. The following section explains the empirical models and their findings in detail.

**Table 1.** Summary statistics of the variables

Variables	Mean	Min	Max	#Obs
Household size	5.318	1	23	27,118
Types of Residency (Rural:0, Urban:1)	0.715	0	1	27,118
Gender (Male:1, Female:0)	0.510	0	1	27,118
Age Group (Between 6-14:0, between 15-17:1)	.2594	0	1	27,118
Age of Household Head	44.469	16	97	27,118
Years of Education	6.132	0	13	27,118
Education Level of Household Head				
No Diploma	13.01%	0	1	3,529
Below High School Diploma	60.38%	0	1	16,375
High School Diploma	15.65%	0	1	4,245
Above High School Diploma	10.95%	0	1	2,969
Sector of Economic Activity				
Agriculture	41.03%	0	1	640
Manufacturing	25.19%	0	1	393
Service	33.78%	0	1	527
Child Work (Economic activity+ >8hrs Domestic help per week)	.156	0	1	27,118
Work Conditions				
Not Bad	60.96%	0	1	609
Bad	39.04%	0	1	951

**Source:** 2012 Child Labour Force Survey, authors' own calculations.

## Empirical Findings

In this section, we present the results of three empirical models. In the first one, we try to understand the associations between child work<sup>8</sup> and various individual,

<sup>8</sup> As it is explained above, child workers are those who are either in economic activity or work as unpaid houseworker more than 8 hours per week.

household and spatial characteristics. In the second model, we aim to understand the sectoral choices of child work. Finally, in the last model, we would like to explain the factors associated with bad working conditions of the children who work.

### **The Role of Various Individual and Household Characteristics with the Child Work**

The analysis in this subsection investigates how various individual-, household- and spatial-level characteristics are associated with the prevalence of child work. We find that children aged between 15 to 17 are having comparatively a very high probability of being child workers. This is expected as they are physically more able to work and, according to the Turkish labour law, children above age 15 are allowed to work legally unless it is not one of the worst forms of occupations as defined in section 1. However, as we see from the Table 2, this correlation is higher in the rural areas. Moreover, both in urban and rural areas, we find that girls have higher probability to be in the labour market. This likelihood is even higher in the rural areas. It is found that girls on average have 10% higher probability to be in the labour market than boys in rural areas. This finding is against the view that it is mainly boys who work as child labour and this could be partly because we included unpaid domestic work in our definition of child labour which is most of the time neglected to be accounted as child work. Moreover, this might indicate a gender preference for schooling as household might prefer their boys to attend school while girls are preferred to do either unpaid housework or wage labor.

We also tried to see how child work and education of children are related and, we find a positive association between the years of education and child work which is the case both higher years of education also implies higher ages that make children more able to work. Besides, we know that school dropouts are legally forbidden for the first 8 years of compulsory schooling. To understand this relation better, we also included the interaction term between age group variable and years of education variable into our regression model. The results show that for the age group 15-17, the association between education and child work becomes negative although it is positive for the younger age group.

In addition to the characteristics of children, we investigated the association between household characteristics and child work. We see that larger households increases the children's likelihood of being child worker in urban areas although it has no correlation with it in rural areas. As our data do not include any variable about the income or living conditions of households, we believe the household size could be an important indicator of household welfare. We expect the larger households to have higher financial difficulty and it seems that this can be especially the case for households living in urban areas. Moreover, we find that children who have younger household heads have higher likelihood of being child work although economic significance if this finding is not big. Lastly, we included

the educational level indicator of the household head as a proxy for the (potential) earnings of her/him and also as a consciousness of allowing their child to work during their childhood. We find that higher level of education of the household head has a negative association with the probability of child work in ceteris paribus. This negative association is even more stronger in rural areas. We see that if the household head living in urban areas has an above high school diploma, his/her child has 8% lower probability of being child worker compared to a child who lives in urban area with a household head having no diploma, keeping all other variables constant. Lastly, we find that a child living in rural areas on average has a higher likelihood of being a child worker compared to a child living in urban areas.

**Table 2.** Marginal Effects of the Model (Binary Dependent Variable: Child Work)

Variables	TURKEY (1)	TURKEY (2)	URBAN	RURAL
<b>Characteristics of Child</b>				
Age Group (Between 6-14:0, between 15-17:1)	.818*** (.016)	.760*** (.020)	.735*** (.026)	.802*** (.027)
Gender (Male:1, Female:0)	-.075*** (.004)	-.072*** (.004)	-.063*** (.004)	-.099*** (.009)
Years of Education	.023*** (.001)	.023*** (.001)	.021*** (.001)	.029*** (.002)
Age Group X Years of Education	-.047*** (.002)	-.040*** (.002)	-.035*** (.002)	-.054*** (.004)
<b>Household Characteristics</b>				
Household size		.004*** (.001)	.006*** (.001)	.002 (.002)
Age of Household Head		-.001*** (.000)	-.001*** (.000)	-.001* (.000)
Education Level of Household Head (Reference Category: No Diploma)				
Below High School Diploma		-.026*** (.006)	-.026*** (.007)	-.024** (.012)
High School Diploma		-.061*** (.005)	-.056*** (.005)	-.068*** (.014)
Above High School Diploma		-.085*** (.004)	-.077*** (.005)	-.096*** (.015)
<b>Spatial Characteristics</b>				
Types of Residency (Rural:0, Urban:1)		-.039*** (.004)		
# of Obs.	27,118	27,118	19,392	7,726
Pseudo R-squared	0.147	0.167	0.159	0.168

**Notes:** Heteroscedasticity robust standard errors are in parantheses.

\*\*\*p-value<0.01, \*\*p-value<0.05, \*p-value<0.1

## Explaining the Economic Activity Distribution of Child Work

Table 3 presents the empirical results of this section in which try to explain the association between child work in different sectors of economic activity and various individual-, household- and spatial-level characteristics. The table presents the coefficients of multinomial logistic regression model in which the sector of economic activity is the dependent variable. Agriculture is the reference sector in this analysis so that the findings in the columns should be interpreted with respect to the reference category.

We find that boys are employed more in manufacturing and service sectors compared to agricultural sector which has on average more females in *ceteris paribus*. Another important individual-level factor is the years of education and, the results show that those children who work in the service sector have higher years of schooling than those who work in agriculture. Considering the interaction with education, age and gender, we find that girls on average have higher probability to work in service sector compared to agricultural sector as their educational level goes up, when keeping all other variables constant.

In terms of the household-level characteristics, we see that the only variable that is found to have a statistically significant relationship is household size. Controlling for all other variables including the one about the type of residency, we observe on average a higher likelihood of child work in agriculture as household size increases. Moreover, children who live in urban areas, as expected, has higher probability to work in manufacturing or service sectors compared to agricultural sector, in *ceteris paribus*.

Since the results presented in Table 3 enables us only to compare findings with the base category, we also checked the factor changes in the odds between all the sector categories in our dependent variable.<sup>9</sup> Results show that boys have higher probability to be employed mostly in manufacturing sector and then, respectively, in service and agricultural sector. Age group is not found to be statistically significant relation with the sector which means, unfortunately, that children work in all of the sectors irrespective of their ages. When we look at the association between the years of education and sectoral choice of child work, we observe that children who work in service sector have higher years of education on average. This could also be interpreted as the higher likelihood of dropping out of the school when child works in either manufacturing or agricultural sector. However, it must be noted that this finding is not implying a causality but rather an association. In terms of the household-level characteristics, we find that household size only matters in comparing agricultural sector with the other categories but it does not matter comparing for child work between manufacturing and service sectors. Interestingly, although we did not see a statistically significant association

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<sup>9</sup> We did not present the results here due to space limitation but they are available upon request.

between educational level of household head when we compare child workers who are in agricultural sector with those in manufacturing or service sectors, we see that it matters when we compare manufacturing and service sectors. For example, for a child with a household head having a diploma above high school, s/he has on average higher probability to work in the service sector compared to the manufacturing sector in *ceteris paribus*.

### **Explaining the Working Conditions of Child Work**

Since child labor is a mere fact of the Turkish labour market and, unfortunately, children work in various sectors irrespective of their age and, even in the worst forms of child labour such as seasonal agricultural work, one needs to also understand the factors behind bad working conditions of child work. This can help determining the groups of child workers who needs urgent intervention by policies given the limited government budget. Thus, this section aims to understand the types of children who work in bad conditions. Table 4 present the results.

The results show that there is no clear pattern between age of children and the probability of them having bad work conditions. The first columns presents the regression marginal effects considering all sample and it shows that children with low levels of education have on average higher probability of working in bad conditions. For children who continue their education, when controlling for age and other variables, kids who dropped out of school at early ages (either due to child work or other reasons) are obliged to work in bad conditions on average.

**Table 3.** Results of Multinomial Logistic Regression (Categorical Dependent Variable: Sector of economic activity)

Variables	MANUFACTURING	SERVICE
<b>Characteristics of Child</b>		
Age Group (Between 6-14:0, between 15-17:1)	.339 (.546)	.387 (.643)
Gender (Male:1, Female:0)	.951* (.539)	2.942*** (.812)
Years of Education	-.041 (.078)	.310*** (.117)
Age Group X Years of Education	.119 (.077)	.071 (.085)
Male X Years of Education	-.012 (.067)	-.254*** (.093)
<b>Household Characteristics</b>		
Household size	-.069* (.038)	-.109*** (.038)
Age of Household Head	-.011 (.009)	-.007 (.009)
Education Level of Household Head (Reference Category: No Diploma)		
Below High School Diploma	-.156 (.220)	-.017 (.210)
High School Diploma	-.509 (.438)	.039 (.401)
Above High School Diploma	-1.504 (1.673)	.822 (1.497)
<b>Spatial Characteristics</b>		
Types of Residency (Rural:0, Urban:1)	3.229*** (.186)	3.193*** (.177)
# of Obs.	1,560	1,560
Pseudo R-squared	0.280	0.280

**Notes:** Reference category for the equation is agricultural sector.

Heteroscedasticity robust standard errors are in parantheses.

\*\*\*p-value<0.01, \*\*p-value<0.05, \*p-value<0.

Another important factor behind work conditions is found to be the sector of economic activity. Children (both male and female) who work in the manufacturing sector have on average a higher probability of facing bad work conditions than those who work in agriculture or service sectors. Besides, household size seems to matter only for boys. In other words, boys who live in large households have on average higher probability of facing bad working conditions than girls in ceteris paribus. Financial desperation of large households

could be a factor which leads those boys to accept working even in such bad conditions. Furthermore, parental educational level which is used as a proxy for the (potential) income of the household head is found to be the associated with the work conditions of boys although it is not found to be statistically significant factor for girls. Thus, one can argue that keeping all other control variables constant, a higher level of (potential) earnings of a household head might give some options to male children who might prefer working in better conditions in case they need to work. This result is important because the majority of children in the sample argue to work because they have to contribute to their family income. Only 16.73% of them report that they work because they want to learn a profession. Moreover, when we check the percentage of them who reported to have bad work conditions, we see that the ones who have to work to contribute their family income are the ones who face a bad working condition with a higher probability. Therefore, helping families who are in financial need will help not only to decrease the prevalence of child labour but also to improve the working conditions of those who have to work. Lastly, boys who live in urban areas have higher likelihood of working in jobs with bad work conditions. However, type of residency found to be not correlated with work conditions of girls. One must also note the low Pseudo-R<sup>2</sup> statistic of these models which suggest that there are also some other important omitted factors which helps explaining the type of work conditions. Further research (both qualitative and quantitative) are required to understand those variables.

**Table 4.** Marginal Effects of the Model (Binary Dependent Variable: Work Conditions)

<b>Variables</b>	<b>ALL</b>	<b>BOYS</b>	<b>GIRLS</b>
<b>Characteristics of Child</b>			
Age Group (Between 6-14:0, between 15-17:1)	-.034 (.086)	-.014 (.110)	-.068 (.143)
Gender (Male:1, Female:0)	-.121 (.085)		
Years of Education	-.018* (.011)	-.001 (.012)	-.024 (.015)
Age Group X Years of Education	.006 (.011)	.004 (.015)	.010 (.019)
Male X Years of Education	.015 (.010)		
Sector of Economic Activity (Reference Category: Agriculture)			
Manufacturing	.120*** (.042)	.106** (.050)	.149* (.083)
Service	-.007 (.039)	-.009 (.047)	-.027 (.076)
<b>Household Characteristics</b>			
Household size	.011* (.006)	.017** (.007)	-.002 (.010)
Age of Household Head	-.000 (.001)	-.000 (.002)	-.000 (.003)
Education Level of Household Head (Reference Category: No Diploma)			
Below High School Diploma	-.060* (.036)	-.042 (.042)	-.079 (.069)
High School Diploma	-.101* (.054)	-.074 (.067)	-.137 (.092)
Above High School Diploma	-.207** (.087)	-.326*** (.069)	.017 (.207)
<b>Spatial Characteristics</b>			
Types of Residency (Rural:0, Urban:1)	.082** (.034)	.079** (.041)	.103 (.068)
# of Obs.	1,560	1,093	467
Pseudo R-squared	0.024	0.025	0.034

**Notes:** Heteroscedasticity robust standard errors are in parantheses.

\*\*\*p-value<0.01, \*\*p-value<0.05, \*p-value<0.15.

## Conclusion

Child labor is a very important issue worldwide. Recent estimates by ILO (2013) presents this dramatic situation as it indicates that almost 11% of child population in the world are in the labour market. This rate is much higher when we include unpaid child work such as house chores. Moreover, the same statistics present that half of those child labourers do work in hazardous jobs. There are of course regional differences in the distribution of child labor. In Sub Saharan Africa, for example, the rate of child labor raises up to 21.4% while the share of children in hazardous work is 10.4%. Furthermore, child labor is higher in poorer countries. ILO (2013) states that 23% of children in low-income countries are child labourers.

When we look at the total number of child labour in Turkey through years, we observe a clear decreasing trend from early 1990s to 2008. However, the comparison of the lastly available official statistics on child labor (2012 Child Labour Survey) with the 2008 data shows that this decrease in the number of child labor is no more seen. There is rather an increase in the number of children who work in the agriculture. Policy changes in Turkey after 1997 were all in the right direction and helped reduce child labor in the country but continued action and research is beyond necessity to ensure reliable protection for children from what might otherwise await them in workplaces. Besides, we know that the officially announced statistics do not include information about non-citizens which leads us to think that the situation got actually worse after the arrival of almost 4 million Syrian refugees into the country. Therefore, it is crucial to do more research on the topic of child labor as it seems to stay as an important problem for the human capital development, health, well-being and socio-economic welfare of total population in Turkey.

This paper aims to contribute to the literature through presenting the findings from the recent official data on child labour in Turkey. Since it is a cross-sectional data set, the findings here should not be interpreted as causal links but rather as associations. We argue that there is strong need of especially panel data on child labour in Turkey which should also include data about refugees and residents under temporary protection schemes. This kind of data together with extensive qualitative studies will help us to design better policies to combat the child labour. Saying that, we still believe that it is important to analyze a cross-sectional data to observe the relationship of various individual-, household- and spatial-level characteristics with child labour which will help understanding the extent and dimensions of this very important problem.

Our results show that girls have higher probability of being child workers both in rural and urban areas of Turkey. This could be due to various reasons which must be understood through further research. For example, it might be due to a gender preference in families as parent might have preferred to send their male

children to school than females given the limited household budget. Moreover, the negative association between child labor and education is stronger for children aged between 15 to 17. Household size and parental education levels are found to be important determinants of child labor as it is already suggested by the literature in different contexts. In terms of sectoral distribution, we find a clear pattern with respect to gender. Girls have higher probability to work in the agricultural sector while boys have higher likelihood of working in manufacturing sector, irrespective of their age. Furthermore, parental educational level which is used as a proxy for the (potential) income of the household head is found to be significantly associated with the work conditions of boys although it is not found to be statistically significant factor for girls.

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