UNDERSTANDING OF CHILD LABOUR IN TURKEY: AN EMPRICAL ANALYSIS

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Özet: Bu çalışma Türkiye'nin kentsel bölgesinde çocuk işgücünün belirleyicilerini araştırmaktadır. Çalışmada, Türkiye'de çocuk işgücüne katılım kararı için bir olasılık tahmin etmek amacıyla ikili cevap değişkenleri temelinde, konu ile ilgili çeşitli karakteristikler verilmiş, önceki çalışmaların bulguların özetlenmiş ve bu çerçevede Türkiye'de çocuk işçiliğinin belirleyicilerinin ortaya konulması hedeflenmiştir.

Bu amaçla, Türkiye İstatistik Kurumu tarafından toplanan 2006 yılına ait veri seti kullanılmıştır ve Probit Regresyon adı verilen bir regresyon yöntemi uygulanmıştır. Bulgularımıza göre çocuk işgücüne katılım kararı bireylerin karakteristiklerinin yanı sıra hane halkı üyelerinin mali kısıtlamaları tarafından belirlenmektedir. Özellikle, çocuk işgücü katılım kararı babanın geliri ile ilişkilidir. Bu nedenle bulgularımız, Türkiye'de çocuk işgücüne katılmama kararının bir lüks mal niteliğinde olduğunu göstermektedir.

Abstract: This paper investigates determinants of child labour in urban Turkey, on the basis of binary response variables in order to estimate a probability for child labour participation decision, given some sort of characteristics and reviews previous finds in this field with a newer data set. For this purpose, we use a newer data, collected by official statistic institution of Turkey and implement a regression procedure, namely, Probit Regression. According to our finds, there does exist significant relations between child labour participation decision and individuals' characteristics, as well as financial constraints of household members in Turkey. In particular, child labour participation decision is significantly associated with father's income. Therefore, we find implies about *luxury good* property of counter decision of child labour participation in Turkey.

Keywords: Child Labour Labour Participation, Probit Regression
JEL Classification C25 , J21, J22

I. Introduction

Child labour participation and its consequences have always been a great interest in economics theory. The fundamental reason why too much attention has been devoted to this field is the aftermaths and devastating effects of child labour upon development. The problem, child labour, has become even more crucial regarding globalization and the developing countries aiming to take the advantage of "cheap" labour, which they would like to supply in an ever-increasing manner. Turkey is among those countries in which considerable amount of child labour is employed, with its alike characteristics of developing

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economy, relatively less efficient official controlling mechanisms and young population.

The only way of preventing child labour participation is to comprehend the ultimate and decisive reasons laying behind this phenomenon and to make socio-economic policies afterwards. In this study, the child labour participation for Turkey is discussed on the basis of labour supply decisions by both theoretical and empirical analysis.

In this study, first we discuss concept of child labour definitions from different aspects. Besides current statistics about incident of child labour in Turkey are also presented. In the second chapter, the previous studies conducted in this field in Turkey are summarized. And in the final chapter, finds of an empirical study for the determinants of child labour in Turkey is exhibited.

II. Definition of Child Labour

Different definitions of child labour can be found from institutions working in this field. These definitions are "work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development" (United Nations, 1989), "work that exceeds a minimum number of hours, depending on the age of a child and on the type of work" (UNICEF 2010), and "work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development" (ILO 2010).

Although all these definitions consider the child labour phenomenon, there still is a disagreement about the works that are perceived as child labour. As discussed and reviewed by Edmonds (2008), child labour differences cause significant distinctions in theoretical sense, that, in turn, effects the implementation of empirical studies. In that sense, two major distinction can be noted; one of which Basu & Van's (1998) approach in which child labour is defined as an activity that is chosen by parents lacking the sources required for meeting subsistence needs, and second; Baland & Robinson's (2000) approach in which child labour is involved as a part of child's time constraint (Edmonds, 2008).

III. Child Labour in Turkey

In the Table 1 a simulation concerning the numbers of children taking place in labour market is presented. From Table 1 it is seen that in 2006 around one million children are involved in the labour market. According to statistics, number of working child is continuously decreasing between 1994 and 2006. One possible explanation of this decrease is regulation increasing compulsory school enrolment years from 5 to 8 in 1997 (Dayioglu 2005). Besides, according to the same survey research 66% of working children is made up by male and 34% by female children (TURKSTAT 2007).

Table 1: Child labour in Turkey

Non-institutional Population	October 1994	October 1999	2006 (October-November-December)
Aged between 0-5 (Percentage in 0-17 aged population)	8 469 36%	7 930 34%	8 479 34%
Aged between 6-17 (Percentage in 0-17 aged population)	14 968 64%	15 821 66%	16 264 66%
Employment (Aged between 6-17) (Percentage in 0-17 aged population)	2 269 9%	1 630 6%	958 3%

Source: TURKSTAT, 2007.

IV. Data and Previous Studies

For this study, data obtained from the survey "Working Child 2006". Data cover observations only from urban area in Turkey. Because of this nature of data, study is restricted for urban areas only, since incidence of working child is a common phenomenon, rather than exception, in rural areas of Turkey. 14439 children from 13537 households are involved by the survey and 4.2% of overall children are taking place in the labour market initially.

On the other hand, the data do have some deficiencies that prevent us to investigate some, possible, determinants of child labour, such as families' unearned income, availability of credit markets and the effect of regions households in the sample are chosen from.

A large body of economic research has been devoted to determinants of child labour and its implications most of which relied upon labour participation decision of rational economic parties.

Basu & Van (1998), suggest a doubled equilibrium state in the labour market; "one where children work and another where adult wage is high and children do not work". Besides, Basu & Van (1998), brings the concept of luxury axiom to the child labour literature, that is, "a family will send the children to the labour market only if the family's income from non-child-labour sources drops very low", by which nonworking stature and leisure of child can be interpreted as a luxury good.

Basu (1999), discusses the consequences of both child labour and alleviation programs against child labour, and under guide of his theoretical and empirical finds, concludes that alleviation programs' "bettering" effect depend crucially on the kind of child labour confronted. As an example, Basu (1999) highlights that, with a government lacking the sustainable funds for curbing

child labour, to ban child labour entirely would worse off poor households and trigger "worse things that can happen to children than having to work".

Basu & Ray (2001) evaluates women's position in decisions making processes, considering household budget, and discusses its implications over child labour participation. Ultimate point suggested by Basu & Ray (2001) is that, "as the woman's power [in household] rises, child labor will initially fall but beyond a point [where decision making process is dominated by woman] it will tend to rise again".

Brown & Deardorff & Stern (2002), provides a broad summary of theories regarding child labour and gives, discusses and reviews a wide variety of empirical studies from different researchers and part of the world.

Emerson and Knapp (2006), discusses the problematic from an opportunity and inequality perspective and question whether "the same amount of education for children with identical abilities always results in the same payoffs in the adult labour market [in future]". In that respect, Emerson and Knapp (2006), analyse households' access to better adult labour market payoffs and the dynamics through which it effects child labour incidence, poverty and income inequality. In their empirical analysis, Emerson and Knapp (2006), show that the cause of incidence of child labour is not only poverty but also perceptions that households have about the return of education.

Grossman & Michaelis (2007) considers the effect of trade sanctions over commodities produced by the contribution of child labour and adds that a firm-specific tariff is much more efficient in the sense of preventing child labour, rather than a uniform one implemented by developed countries on goods of which child labour is involved in production.

Roger & Swinnerton (2008), develops a model that "exploited" child labour occurs. According to Roger & Swinnerton (2008), in the case of exploited child labour, there still is some room for policy intervention, since exploited child labourers are not paid their marginal product, but less, and it is possible to bring an improvement on the working conditions and wages of children, while a complete elimination of child labour may result in worse conditions for working children.

Basu & Zarghamee (2009), question consumers' attitude behaving in such a way that it refuses to consume child-labour-oriented products all the way. Basu and Zarghamee (2009), concludes that the extend of boycott's efficiency in terms of reducing child labour is highly associated with its ability to rise adult wages that will cause children not to work even harder for meeting subsistence needs.

Deopke & Zillibotti (2010), examines the effect of trade sanctions and boycotts on commodities that are produced by child labourer contribution from a political-economy perspective and theoretically indicate that this kind of initiatives "tend to lower domestic political support within developing countries for banning child labor".

Fan (2011), discusses "the wealth paradox" which is defined as the case where children of land-rich (wealthier) families are more likely to work than the ones owning less land (wealth), on the basis of Basu & Van's (1998) *luxury* and *substitution axioms.* Fan (2011) clarifies that when parental income is low, children are more likely to participate in labour market and their participation decreases as parental income increases, that is, *the luxury axiom* holds, but when it comes to the case where parents are facing higher wage levels, the substitution axiom becomes the fundamental why in, relatively, higher parental income levels child labour participation, in some cases, still rises.

Apart from these theoretical studies, there are a number of empirical studies as well, some of which, Beegle & Dehejia & Gatti (2008), Kis-Katos & Sparrow (2009), Edmonds & Schady (2009), Guarcello & Mealli & Rosati (2010), and Joseph & Plaza (2010).

Also several empirical studies have been focused on child labour participation in Turkey.

Tansel (2002), investigates school attainment of children on a gender differences basis and underlines the lower education attainment of girls. Besides, Tansel (2002), in the same study, which is, from a reverse point of view, giving a glimpse of prospective child labour suppliers, although attending both school and labour market or not attending school and being nonworking at the same time is still possible, states that "effect of [household] income on schooling of girls [is] larger than that of boys in all three [primary, middle and high school] schooling levels".

Dayioglu (2005), discusses the effect of a new education legislation in Turkey setting out compulsory schooling years from 5 to 8 and determines to what extent pattern in child labour is effected as a result of this legislation. Dayioglu (2005), finds that the ultimate reason of drop in child labour caused by this legislation results from "the changing cost and benefit structures of work and schooling, rather than to changing population characteristics". In this sense, Dayioglu (2005) emphasizes that, as a result of an increase in the cost of employment, those parents who are more indifference between outcome from working and schooling, are more likely to pull out their children from labour market than those of less indifference.

In another emprical study, Dayioglu (2008), focuses on interdependence between child and woman labour participation. According to finds, Dayioglu (2008), reveals that "a disproportionately larger number of employed women are in households where there is at least one working child".

Dayioglu & Assad (2006) focuses on determinants of child labour in Turkey and points out that "employment of children is responsive to own and paternal wages but not to maternal wages." In addition find that fathers and sons are closer substitutes and a related find that micro-credit programs might

actually cause an increase in child labour participation are among Dayioglu & Assad's (2006) results.

V.Model Description

In the model we adopt *luxury axiom* approach, that is, household can effort child leisure only if it has enough income. As a dependent variable, labour participation decision has binary characteristic. For that reason, Probit regression model is employed to capture the relations between household/personal-specific characteristics and incidence of child labour. For estimation, we use Probit model using the normal cumulative distribution function;

$$U^* = \beta_1 + \beta_2 X + \varepsilon_i$$

where; U^* indicates Utility Index for Participation of Child Labour and X set of independent variables. Besides if;

$U^* > 0$ Y_1=1 , Y_1=0, otherwise.

Not least, the error term has the following properties;

$$E(\varepsilon_i) = 0$$
$$Var(\varepsilon_i) = 1$$

In the model, we use "Child labour participation" as a dependent variable and code it 1, depending on the question of "if child worked within last three months in order to make money". This binary variable coded in this fashion considers entire working-children aged between 6-17. It should be noted that, however, it is possible to drop out school after secondary school graduation and to attend apprenticeship training in which children are taught skills to acquire a profession and are paid modest amount of wages in Turkey. A drawback of the data is to include all working-children as child labour regardless of the source of child's gain.

Abbreviations and definitions of independent variables involved by the model we estimate are as follows; gender; coded as 1 for male children and 0 for otherwise, age; measured on the basis of three age groups 12-14, 15-17, and the reference group, 6-11, education of mother and father ; in terms of years spent in education, mother's and father's age grouped within three groups, 40-54, 55+ and the reference group, 18-39. Apart from these, three independent variables, parents exist; taking the value of 1 if both mother and father residing within household and 0 otherwise and father's and mother's monthly income, are also involved in the model.

Table 2: *Percentage Distributions*

	ALL CHILDREN	WORKING CHILDREN	NON-WORKING CHILDREN
Child Age;			
06-11	51.5%	6.9%	53.4%
12-14	25%	20.3%	25.26%
15-17	23.5%	72.8%	21.25%
Mother Age;			
18-39	65.69%	49.91%	66.39%
40-54	32.91%	46.76%	32.26%
55-65+	1.4%	3.33%	1.35%
Father Age;			
18-39	42.48%	23.14%	43.38%
40-54	52.99%	68.71%	52.24%
55-65+	4.53%	8.15%	4.38%
Child Gender;			
Male Child	51.78%	73.22%	50.85%
Female Child	48.22%	26.78%	49.15%

First point that can be inferred from summary Table 2 exhibiting patterns of discontinuous variables upon the groups, namely, all children, working children and non-working children, is decisive role of the age of children. It can be seen from Table 2 that incidence of child labour increases along with age; while 27.2 % of working children are aged between 06-14, that of 72.8% are made up by children aged between 15 and 17.

Another distinctive point regarding child labour participation is effect of gender. It is seen that a big proportion of working children is male with its 73.22% ratio as only 26.78% of them are female.

Table 3: *Descriptives*

	ALL CHILDREN		WORKING CHILDREN		NON-WORKING CHILDREN	
Variables	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Mother's Education (Years)	5.04	3.99	3.34	3.051	5.12	4.01
Father's Education (Years)	6.81	4.36	4.67	3.16	6.90	4.38
Father's Income	621.05	894	436.18	522.5	629.14	905.9
Mother's Income	77.64	335.2	52.48	163.35	78.71	340.7

When it comes to continuous variables, first point that pays our attention in Table 3 is the effect of mother's education years measured in term of education years. For non-working children, mean of mother's education years is 5.12, as the same mean appears to be 3.34 for working children. Father's education years exhibits the similar characteristics in comparison of

non-working and working children with the mean values of 6.90 and 4.67 respectively.

Father's monthly income also decreases along with the incidence of child labour. This pattern seems to be consistent with the theories describing "to be non-working" as a luxury good. In other words, "not to send child to labour market for additional income to family budget" can be regarded as a good, particularly, a luxury good, which is not a function of its price, but individuals' income level (Basu & Van 1998).

VI. Estimation Results

In Table 4, our estimation results obtained through STATA version 10.0 are presented. Most of our parameter estimates are statistically significant and their signs are consistent with theoretical expectations. Parameter estimates marked with asterisk indicate statistically significant ones at 0.05 level.

Table 4: *Estimation results*

	Labour Participation		
	Coefficients	**Test Statistics**	**Marginal Effects**
Constant	-2.7524	-26.07*	
Male Child	0.5215	11.12*	.0186919
Child Age 12-14	0.7654	10.59*	.0430872
Child Age 15-17	1.5295	21.99*	.1453565
Mother Education (year)	-0.0310	-4.14*	-.0010874
Father Education (year)	-0.0700	-8.93*	-.0024559
Mother Age 40-54	-0.1209	-2.39*	-.004054
Mother Age 55+	-0.1898	-1.23	-.0054395
Father Age 40-54	0.02	0.22	.0004631
Father Age 55+	-0.1670	-1.47	-.0049534
Parents in Household	0.4827	5.04*	.0109764
Father's Wage($x10^{-8}$) (monthly)	-0.00911	-2.02*	-.00319
Mother's Wage ($x10^{-5}$) (monthly)	0.00015	1.70	5.44
Log Likelihood	-1933.2651		

Effect of gender; being a male child has positive and significant effect on participation of child labour with its positive parameter value.

Effect of child age; biggest effect on participation of child labour resulting from child age is for the age group 15-17 ; it increases the possibility of child labour participation. Besides, based on our finds, other age group, 12-14, also has positive effect though it is relatively less than the group 15-17. Lastly, we can say that the reference age group, 6-11, has relatively less effect than other age groups over labour force participation.

Mother's education measured in terms of years spent at school has a negative effect over child labour participation. As number of years devoted to education by mother increases, possibility of child labour participation decreases. A possible reason lying behind such find may be more democratic family decision mechanisms, improving along, particularly, with education of mother, as well as the fact that higher education levels can be a proxy for potential earning level. As discussed by Basu & Ray (2001), more democratic family structures in the sense of decision mechanism, resulting from high education level of woman may cause an unwillingness over "initially" dominant member of family against sending children to labour market, since expenditure decisions, including allocation of would-be contribution of child to family budget, within family will be made collaboratively.

Father's education has similar effect. The magnitude of father's education , however, differs from that of mother's education. In other words, father's education year has more reducing effect upon possibility of child being employed compared to mother's.

Dummy variable employed for *mother age* group 40-54 is statistically significant and negatively associated with child labour participation. On the other hand, the case mother aged 55 and above has no effect over child labour participation. The reference group, has positive effect, since in this case negative effect resulting from age group 40-54 will be eliminated out of the model.

Although *father's age* is estimated to have no statistical relationship with child labour participation, considering the sign of the coefficients it can be concluded that father's age has positive and negative modest effect on child labour, for the age groups 40-54 and 55+, respectively.

Parents' existence within household is positively associated with child labour participation; if parents are in the family, child is more likely to work. This "surprising" find is consistent with the studies arguing the "facilitator role" of parents in the sense of enabling child to reach labour market (Levison 1997, Binder & Scrogin 1999).

Father's wage is negatively associated with child labour participation. This find suggests that if and only if father's earning is at a certain amount of income, it will be more likely that he prefers not to send his child to work, but to school. Father's wage parameter estimate's sign confirms consistency of , Basu & Van's (1998) theory, claiming luxury property of the good "not to send

children to labour market" for Turkey, its typical low magnitude, however, seems quite modest.

Finally, *mother's income* does not seem to have any effect over child labour participation decision.

VII. Conclusion

It can be seen from estimation results that child's gender, age group, parents' education and father's income are highly associated with child labour participation in Turkey. Among these, gender, age and parents' education have bigger effect while father's income has relatively smaller but still significant effect. On the other hand, significant determinant role of father's income underlines luxury good property of the decision of "not to send child to work".

An important find related to child age from model is the fact that possibility of child labour participation increases along with child age, making the sharpest move towards the labour participation decision in the age group of 15-17.

Another important determinant is parents education; both mother's and father's education years decreases as child labour participation decision is taken.

Based on the finds, the most risky group that might take the role of child labour supplying party more possibly is those children that are male, belonging to the group 15-17, owning less educated parents and whose his father earns less.

In this sense, conditional cash transfer programmes conducted and by which poor families are financially supported, provided that they send their children to school may bring affirmative contribution to the problematic.

There are other reasons lying behind child labour participation such as parent's inability to reach credit markets, anti-democratic family structures and internal migration background of household.

Besides, for a better understanding of the effect of parent's income, financial resources apart from regular wages like unearned income must be included in the model. Effect of these possible determinants will only be identified if suitable data are provided.

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