HOW DOES CHILDHOOD POVERTY AFFECT
FUTURE OUTCOMES OF CHILDREN?

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How does childhood poverty affect future outcomes of children?

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Abstract

Hundreds of studies have focused on the measurement of poverty, developed poverty indices and made policy evaluations. However, truly understanding the nature of poverty and developing policies that aim to reduce poverty mostly depend on uncovering the intergenerational linkages of poverty. Using a cross section data obtained from SILC-2011 with a module on intergenerational transmission of disadvantages, we examine whether poverty is transmitted from parents to children. In addition, we analyze the effects of experiencing poverty during childhood on certain future outcomes of children that are closely related to poverty status in the adulthood (such as wage, age for starting work, informality, household size and health status) in Turkey. We find that children growing up in poor economic conditions are more likely to become income poor in the adulthood. This finding shows that there is low intergenerational mobility in income levels in Turkey. Those children start to work at their early ages and earn less, are living in large households. They are also more likely to involve in informal jobs or have a chronicle health problem in the adulthood.

1. Introduction and Background

Studies have emphasized that poverty is not a state that only depends on the current economic and social conditions in a given country, but it is a state evolving over time and closely related to experienced events that would influence the probability of being poor in the future (Hoy and Zheng, 2011; Bossert et al., 2012). Most of previous studies have focused on the issues related to developing an accurate measurement of poverty, proposed poverty indices and made policy evaluations based on the index results, but a comparatively little literature has analyzed intergenerational linkages of poverty, i.e. the effects of childhood poverty on future outcomes of children. Therefore, in order to provide more accurate information on the problem of poverty, it is much needed to investigate the intergenerational linkages of poverty rather than to pursue its snapshot analysis.

In Turkey, approximately 5 million children (34 percent of Turkey's population) were living in poor families in 2011.[1] This high poverty rate among children compared to those in EU countries motivates the following critical question that is the major concern of this study[2]:

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[1] In this study, we follow the path of Turkish statistical Institute (TurkStat) and employ relative income poverty approach by using regional poverty lines for the identification of the income poor. Regional poverty line is set at 60 percent of the median equivalent household disposable income for each region.
[2] 27 percent of children, who are between 0 and 17 ages and living in the EU-27, were at risk of poverty (i.e. relative income poverty) or social exclusion in 2011 (Eurostat, Statistics in Focus, 4/2013).

What are the consequences/influences of growing up in a poor household? This is one of the key questions in this area; and its answer constitute one of the crucial themes of economic development and the important components of the process of developing effective policies that aim to give children the best possible start to their lives.

Families provide human, financial and social capital to children, and therefore, inequalities and disadvantages in various domains of life mostly come out during childhood. So, the childhood could be assumed as the most sensitive period for development of human being (Doyle et al., 2009). Conditions during childhood (such as family and community conditions) might critically affect children's development, their future psychological, health, behavioral outcomes, labor market and educational attainments (Duncan et al., 2012; D'Addio, 2007; Johnson, 2007). For instance, Brooks-Gunn and Duncan (1997) indicates that children growing up in extreme poverty or living in poverty for multiple years -all other things being equal- are observed to suffer the worst outcomes. Moreover, the inequalities and disadvantages that rose during childhood, also might reduce the socioeconomic attainment of own children in the next generation.[3] The cycle of poverty might perpetuate and unfortunately might be deepened in every new generation. Hence, family background during childhood is the most important dimension that shapes childhood of individuals and influences the future outcomes of children. It is mostly reflected in parental education and parental income to invest in their children (Hao and Matsueda, 2000). Studies relying on human capital theory (proposed by Becker in 1975[4]) emphasize that educational qualifications and skills are the essential contributors of socioeconomic attainments of individuals.[5] Heckman (2006) advocates that early investment in human capitals of children makes enormous contribution to children's development; and also skill-building investments in children have high returns. More educated parents are more likely to invest in children's future and regard children's education and development than the contribution of children to household budget/ income. These can be assumed as the direct effects of parental education on the outcomes of children, but there are its indirect effects as well.

Economic literature has emphasized that labor productivity increases with education and therefore the opportunity cost of the domestic activities increases. More educated parents are less likely to have large households since they are more likely to allocate time in favor of professional activities. Household size is an important determinant for poverty statuses of individuals since large families are more likely to move into poverty (Ravallion, 1996). Moreover, children who are born in large families are more likely to have lower educational attainment and earn less than children who are born in relatively small families (D'Addio, 2007). In addition, more educated parents might be more careful in the distribution of education opportunities among siblings, which will probably influence the learning

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[3] Low mobility at the bottom of the income distribution increases the probability of the inheritance of poverty across generations (Duncan et al. 1998).

[4] Human capital corresponds to the knowledge, experience, education and learning, health that increase individuals' productivity (and thus wages), improving the ability to perform certain tasks and is the core stone of economic models of intergenerational inheritance. It is purchased and maintained (through education and training) and also includes the composition of parental skills that influence children's outcomes.

[5] Undoubtedly, adult socioeconomic attainment is not only explained by the educational qualifications or skills, but it also depends on various domains of life such as health status, personality, physical appearance and experience (Osborne, 2005).

environment of children and related domains of their life. In addition, parental education might have an effect on consumption behaviors of families; implying more educated parents are more likely to buy more books and learning tools that might have a positive effect on children's cognitive abilities and achievements.

Since the beginning of economic literature, large-volume studies have shown that income is positively correlated with education, implying that more educated individuals are more likely to have higher incomes. This is like a chain that includes dependent reactions. Naturally, richer families have greater economic resources and are more able to acquire inputs into their children's development (such as living in safer neighborhoods, providing higher quality school and richer learning environment or buying better nutritious meals) compared to poor families (D'Addio, 2007). Growing up in neighborhoods with poor economic and social opportunities due to the being a low-income family decreases the probability of breaking poverty cycle. Quality of education is negatively correlated with high neighborhood poverty, which might deteriorate the outcomes of children (Brooks-Gunn and Duncan, 1997). Children who were grown up in areas characterized by high concentration of poverty or crime victimization are more likely to be poor or might commit crime in their adulthood.[6]

Low income or unemployment might create psychological pressure, stress on parents, and deteriorate mental health of parents, their relationships with the children and thus the development of children (Duncan et al., 2012). "Poor parenting" that influences the social and emotional development of children and their future life chances (Mayer, 2002).[7] In addition, parents who have health problems might not be successful in the labor market (such as obtaining low earnings) or might move out of the labor force. Consequently, children with low educational qualifications, poor cognitive skills, mental and physical development and poor health coming from poor family socioeconomic conditions might have low socioeconomic attainment in the adulthood, so they might continue to expose the disadvantages in their adulthood.

The aim of the study is to reveal the intergenerational linkages of poverty and to uncover the effects of childhood poverty on future outcomes of children that are closely related to the dynamics of poverty in Turkey. Particularly, we investigate whether poverty is transmitted from one generation (parents) to the next (children), children growing up in poor economic conditions earn less in their adulthood or they start to work at their early ages. We also aim to answer the question in which labor market conditions they are involved (particularly, we are interested in the question of whether they are involved in informal jobs). Finally, we aim to analyze the effects of childhood poverty on household size and health statuses of children in the adulthood. The variables of our interest are supposed to be determinants of poverty.

This study contributes to the literature in several ways. First, it provides a partial understanding of poverty in Turkey and its possible causes, in particular in form of childhood poverty. Second, there is no other study that analyzes the effects of childhood poverty on various outcomes of children in Turkey. In this regard, the study is the first study using

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[6] Moreover, areas with high economic inequality might create pressure on both parents and children, which deteriorates mental and physical health of children.
[7] Parenting behaviors, practices, values and standards might affect children's outcomes (culture of poverty) and hence behaviors are transmitted across generations (D'Addio, 2007).

Turkish data and contributes to the poverty literature by providing empirical evidence from a middle-income country. In this section, we presented the important sights into the mechanism underlying the role of the family background during childhood by reviewing the literature. The remainder of this paper is organized as follows: Section 2 is devoted to description of the data and the methodology; Section 3 discusses the empirical results. Section 4 concludes the paper by summing up the results.

2. Data and Methodology

The data that we used stems from 2011 Survey of Income and Living Survey (SILC-2011). This cross sectional data is annually conducted by Turkish Statistical Institute since 2006 and provides variables that show household and individual characteristics (such as labor market status, income types, health status, living standards, and region). The data includes a module on inter-generational transmission of disadvantages for individuals between the ages of 25 and 59 (in 2011), which makes such an analysis on the effect of childhood socioeconomic status of families and parental background on the current outcomes of children possible. The reference period in relation to the intergenerational module is when the interviewee was around the age of 14 years. The module consists of variables that indicate parent's education, occupation and age; household's economic status, home ownership and household type (such as living in a household with two parents, a single parent or living in an orphanage) in the childhood of individuals.

We identify the childhood poverty status of individuals by using two questions in the survey: (i) how was the economic status of your household around the age of 14 years, and (ii) was your household able to make ends meet with your monthly household disposable income when you are around the age of 14 years. The answer of the first question varies such as: very bad, bad, relatively bad, relatively good, good, very good, do not know, live in a place such an orphanage or with foster parents. Similarly, the answer of the second question varies such as: very difficult, difficult, relatively difficult, relatively easy, easy, very easy, do not know, live in a place such an orphanage-with foster parents). We define an individual as poor i.e. experiencing poverty during childhood; if the individual declares that s/he were living a very bad or a bad economic status during childhood; or his/her household is making ends meet with their monthly household disposable income in a very difficult or a difficult condition during childhood or s/he were living in an orphanage or a household with foster parents[8]. In this study, childhood poverty refers to experiencing of poor family economic conditions during respondents' childhood. Our main sample consists of 20,236 individuals between the ages of 25 and 59.

Table 1 presents both adulthood and childhood characteristics of the sample. When we look at the adulthood characteristics; we observe that the average years of schooling is 6.8 among the sample, which corresponds two the midst-of the secondary school. Most of the

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[8] We do not consider inconsistent answers such that: for instance if an individual may declare that s/he were living in very bad economic conditions during childhood, but s/he also declares that they were able to make ends meet with their monthly household disposable income in a very easy condition; we do not include the analysis that individual. However, for instance we consider the individuals that declare the mismatch answers below our threshold that indentify individuals as poor, even they declare inconsistent answers (such as to live in very bad economic condition and to make ends meet difficult). Consequently, we exclude from analysis 19 percent of the respondents that declare such inconsistent answers.

individuals are married and living in households with 4 members. The average age for starting work is 18 and the average years of working experience is 17. On the other hand, 43 percent of the individuals are employed in informal jobs and 60 percent of the individuals are home owner.

34 percent of the sample report that they were experiencing poverty during childhood. On the other hand, 20 percent of the sample is income poor in 2011. 44 percent of those who report that they were experiencing poverty during childhood are income poor in their adulthood. This finding implies that almost half of the sample were experiencing poverty and still confront poverty in their adulthood. Moreover, the finding shows that there is low intergenerational mobility in Turkey, which might increase the probability of inheritance of poverty. The average years of schooling of the respondents' fathers in the sample is 3.8, the average years of schooling of the respondents' mothers is approximately 2. On the other hand, 92 percent of the respondents in the sample were living in households with two-parents during their childhood.[9] 84 percent of the respondents were living in their own-homes. 64 percent of the respondents' fathers and 75 percent of the respondents' mothers were working as skilled manual worker.

Table 1: Characteristics of the sample

Adulthood Variables	Mean	Childhood Variables	Mean
Gender	0.51	Childhood poverty	0.34
Age	40.24	Father's years of schooling	3.81
Married	0.85	Mother's years of schooling	1.98
Years of schooling	6.79	The ratio of the number of children to the number of adult	1.30
Work experience	17.43	The ratio of worker to the number of adult	0.59
Age for starting to work	18.81	Working father	0.90
Wage	5066	Working mother	0.38
Health status	0.32	Father's occupation	
Household size	4.44	Highly skilled non-manual	0.14
Informality	0.43	Lower skilled non-manual	0.07
The number of adults with chronicle health problem in the household	0.92	Skilled manual	0.64
Home owner	0.6	Elementary occupation	0.15
The ratio of worker to the number of adult	0.33	Mother's occupation	
The ratio of agricultural worker to the number of adult	0.07	Highly skilled non-manual	0.03
The ratio of retiree to the number of adult	0.06	Lower skilled non-manual	0.02
The ratio of informal worker to the number of adult	0.49	Skilled manual	0.75
Income poor	0.2	Elementary occupation	0.19
TR1 Istanbul	0.11	Two parents	0.92
TR2 West Marmara	0.06	Single parent (father)	0.01
TR3 Aegean	0.13	Single parent (mother)	0.04
TR4 West Marmara	0.08	No parents	0.02
TR5 West Anatolia	0.09	Orphanage	0.01
TR6 Mediterranean	0.1	Home owner	0.84
TR7 Central Anatolia	0.06	Renter	0.11
TR8 West Black Sea	0.07		
TR9 East Black Sea	0.04		
TRA Northeast Anatolia	0.07		
TRB Central East Anatolia	0.08		
TRC Southeast Anatolia	0.1		

[9] In the survey, respondents reported their highest educational level. However, we transformed them into schooling years.

In order to investigate how childhood poverty affects the future outcomes of children in the adulthood, we run various estimations by using a series of probit and OLS (Ordinary Last Squares) regressions.

The first model analyzes whether poverty is a phenomenon that is reproduced and transmitted from one generation to the next. In other words, we investigate the effect of childhood poverty on the probability of being income poor in the adulthood. In order to identify the income poor, we use relative income poverty by using regional lines since drawing national income line for the identification of the poor is a somewhat problematic task in countries where inter-regional income inequality is remarkable. Income levels in the East regions of Turkey are much lower compared to the West regions of Turkey.[10] When the national line is used, most of individuals living in the East regions of Turkey are assumed as income poor. This will cause an overestimation problem in the poverty rates. Drawing a national poverty line in Turkey, more than 6 million children (36 percent of the population) were living in poor families in 2011. According to the regional poverty line approach, approximately 5 million children (34 percent of the population) were living in poor families, but we are not talking about the same families except 3.9 million of them.[11]

The model includes two groups of control variables: the first group is composed of individual characteristics, including age, gender (male= 0, female= 1), marital status (single=0, married=1), years of schooling, health status (no chronicle health problem=0, have a chronicle health problem=1), informality (formal employment=0, informal employment=1). The second group of control variables is composed of household's characteristics (the ratio of retired people to the number of adult; the ratio of the number of informal workers to the number of workers, the ratio of the number of worker in the agricultural sectors to the number of worker; the number of household members with chronicle health problem and region). The estimated equation is as follows:

$$Y_{i2011} = \beta_0 + \beta_1 X_{i2011} + \beta_2 Z_i + \varepsilon_{i2011}$$

where Y_{i2011} is the dependent variable observed for individual i showing poverty status at time 2011 (o=non-poor, 1=poor); X_{i2011} is a vector of explanatory variables for individual i at time 2011 (i.e. individual and household characteristics); β is vector of coefficients; Z_i shows childhood poverty status for individual; and ε_{it} is the error term.

In order to test the hypothesis that experiencing poverty in childhood might affect labor market outcome (wage) in the adulthood, we use standard wage equation, i.e. Mincerian earnings model, and apply OLS regression method. The wage equation model consists of logarithm of wage as a dependent variable and explanatory variables including individual characteristics (such as education, age, gender, marital status, experience, and region) and the variable indicating childhood poverty status.[12] The estimated equation is as follows:

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[10] For instance, average household disposable income is 32,872 Turkish liras in Istanbul in 2011, while it is 16,502 Turkish liras for Southeast Anatolia.

[11] This approach might remove the overestimation problem in poverty rates. In this study, as we indicated before, we use regional poverty lines in the identification of the income poor in order to somewhat deal with the overestimation problem.

[12] Note that wage is observed for wage, paid and casual workers.

$$ln(wage)_{2011} = \beta_0 + \beta_1 X_{i2011} + \beta_2 Z_i + \varepsilon_{i2011}$$

where the dependent variable is natural logarithm of yearly wage of individuals; X_{i2011} is a vector of explanatory variables for individual i at time 2011; β is vector of coefficients; Z_i shows childhood poverty status for individual; and ε_{i2011} is the error term.

For empirical purposes, it is useful to simplify the models where we analyze the effects of childhood poverty on the age that respondents started to work; informality status of job[13], health status[14] and household size of households in which they live as follows:

$$Outcome_{2011} = \beta_0 + \beta_1 X_{i2011} + \beta_2 Z_i + \varepsilon_{i2011}$$

where $Outcome_{2011}$ is employment, age for work, informality status, health status and household size as the dependent variables; X_{i2011} is a vector of explanatory variables for individual i at time 2011; β is vector of coefficients; Z_i shows childhood poverty status for individual; and ε_{i2011} is the error term.

In the model that analyzes the effect of childhood poverty on the age for starting work by controlling for gender, age, marital status, education and childhood poverty by applying OLS estimation method. In the model where informality is used as dependent variable, we control for health status, experience, age for starting work and region in addition to those that are used in the equation of age for starting work, by applying probit regression method. In the equation of health status, we use the same variables that we used for informality. Finally, in the household size equation, we perform OLS regression by control for the gender, age, marital status, education and region.

Economists have mostly analyzed the intergenerational effects of poverty on various outcomes by focusing variables based on family income. One indicator (such as family income) does not accurately capture economic conditions of families. It mostly tends to underestimate intergenerational stability of economic status (Bowles and Gintis, 2002). SILC does not provide information on family income that is obtained during respondents' childhood. Therefore, we define individuals as poor during childhood by using the variables based on subjective opinions on their childhood economic conditions of the respondents. Two crucial problems exist as a result of the utilization of these variables. The first is, people tend to report their income or economic status less than they are, so there is a need to correct income for underreporting (Psacharopoulos et al., 1995; Davern et al., 2005). The second is, even if they report the true, this can be a transitory state; e.g. they might have strong family background that could help them in moving out of poverty or vice versa. Considering the substantial critiques on the poverty measures based on self-reported information in the literature, it is needed to run an additional estimation for the sake of robustness check (See for methodological issues with self-reported poverty measures: Kapteyn et al, 1988).

In this robustness analysis, we take into account the family backgrounds of individuals in the childhood since they are less volatile and might give a more stable and comprehensive

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[13] Informality is coded as (0= formal employment, 1= informal employment)
[14] Health status is coded as (0= individual has no chronicle health problem, 1= individual has a chronicle health problem)

measure of economic status than the ones based on self-reported information. First, we uncover the determinants of child poverty by using probit regression and obtain the coefficients of variables parental characteristics (education and occupation) and the other household characteristics (child dependency ratio (the number of children/ the number of adults), the ratio of workers to the number of adults, homeownership and household type). Second, we calculate the probability of childhood poverty for each individual by multiplying these coefficients with the values of related variables in 2011. Using these values of childhood poverty, we repeat the previous models that analyze the effects of childhood poverty on the outcomes of children. To clarify, given certain family characteristics (parental education and occupation, child dependency ratio (the number of children/ the number of adults), the ratio of workers to the number of adults, homeownership and household type), we calculated the probability of experiencing childhood poverty in this method. We would like to note that this method assumes that the determinants of child poverty do not change over years in Turkey.

In order to pursue this analysis, we need to use another data, which is stemming from previous waves of SILC cross section data (pooled from 2006 to 2010). Indeed, in this task, a longitudinal data would provide more accurate information on the determinants of child poverty. However, SILC does not provide a longitudinal data (conducted annually since 2006), so we can only use the waves of the survey that have been available since 2006. The sample in the robustness analysis consists of 61,893 children (below the age of 15). On the other hand, we can observe parental characteristics (education level or occupation status) in the case that if one of the parents of both of two is living in the household. The equation as following:

$$Child\ poverty_{i,2006-2010} = \beta_0 + \beta_1 X_{i,2006-2010} + \varepsilon_{i2006-2010}$$

where dependent variable denotes income poverty status of children (non-poor=0, poor=1); $X_{i,2006-2010}$ is a vector of family characteristics for child i (such as parental education[15], parental occupation[16] child dependency ratio (the number of children/ the number of adults), the ratio of workers to the number of adults, homeownership and household type[17]; β is a vector of coefficients; and $\varepsilon_{i2006-2010}$ is the error term (For the probit regression results see App 6).

3. Econometric Results

The results of the estimation methodologies are presented in Table 2 and Table 3. Table 2 reports the results of a series of probit and OLS regressions, by using our first estimation methodology. The results of probit regression with being income poor in the adulthood as the dependent variable are presented in the first column of the table. According to the results, experiencing poverty in childhood increases the probability of being income

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[15] We use one dummy variable in order to control for parental education; if one of the parents in the households completed 11 years of schooling, which corresponds to being high school graduated, the education level of the household is above the threshold that identify educated parents.

[16] We use one dummy variable that shows parental occupation. We assume the occupation of one of the parents as a representative occupation of that household.

[17] Household type is coded as (1=a household with two parents, 0=otherwise).

poor in the adulthood, implying that growing up in families with poor economic conditions increases the probability of being poor in the adulthood. In other words, poverty is transmitted from one generation (parents) to the next (children) in Turkey; even we control for the adulthood characteristics. As for those, the probability of being income poor in the adulthood is lower for more educated individuals and tends to be higher if the individual is married or female. As far as the household characteristics are considered, the ratio of the number of people with health problem to the number of adult positively affects the probability of being income poor in the adulthood. Similarly, the ratio of the number of people employed in informal jobs and the ratio of the number of people employed in agricultural sector positively affect the probability of being income poor in the adulthood. On the contrary, the ratio of retired people negatively affects the probability of being income poor in the adulthood. Finally, we find that home owners correspond to a lower probability of being income poor in the adulthood.

When we look at the results of the wage equation, we observe that individuals experiencing childhood poverty earn less in their adulthood, even we control for years of schooling, age, gender, marital status, experience and region in which they live. We observe that individuals who are experiencing poverty in childhood enter the labor force during early ages, implying being poor in the childhood decreases the age for starting work, even we control for gender, age, marital status and education (Table 2).

Childhood poverty significantly and positively affects the probability of being employed in an informal job. Moreover, growing up in families with poor economic conditions increases the probability of having a chronicle health problem in the adulthood.[18] Similarly, we observe that children growing up in families with poor economic conditions are more likely to live in large households.

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[18] The finding is in line with López Vilaplana (2013)-Eurostat statistics in Focus and Conroy et al. (2010).

Table 2: The effects of childhood poverty on selected outcomes of children

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.120***	-0.042*	-0.428***	0.061*	0.196***	0.065*
	(0.031)	(0.020)	(0.094)	(0.029)	(0.028)	(0.030)
Control variables						
Female	-0.212***	-0.599***	1.947***	0.814***	0.251***	-0.377***
	(0.031)	(0.024)	(0.091)	(0.034)	(0.032)	(0.029)
Age	0.039*	0.048***	0.336***	-0.143***	0.064***	0.078***
	(0.015)	(0.012)	(0.043)	(0.017)	(0.014)	(0.014)
Age sq.	-0.001***	-0.001***	-0.003***	0.002***	-0.000*	-0.001***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Married	0.122*	0.093***	-1.162***	-0.115**	0.036	0.476***
	(0.049)	(0.027)	(0.129)	(0.043)	(0.044)	(0.040)
Years of schooling	-0.112***	0.133***	0.410***	-0.163***	-0.054***	-0.144***
	(0.005)	(0.002)	(0.011)	(0.004)	(0.004)	(0.004)
# of people with health problem	0.091***					
	(0.016)					
Home owner	-0.550***					
	(0.032)					
# of worker/ # of adult	-0.718***					
	(0.083)					
# of agricultural worker/ # of worker	0.528***					
	(0.052)					
# of retirees/ # of adult	-2.530***					
	(0.274)					
# of informal worker/ # of worker	0.132***					
	(0.019)					
Experience		0.063***		-0.011		
		(0.004)		(0.007)		
Experience sq.		-0.001***		0.000		
		(0.000)		(0.000)		
Age for starting work				-0.026***	-0.003	
				(0.004)	(0.002)	
Health status				0.108***		
				(0.033)		
Informal employment					0.112***	
					(0.032)	
Constant	-0.351	6.965***	8.351***	3.241***	-2.523***	4.193***
	(0.301)	(0.214)	(0.853)	(0.312)	(0.287)	(0.274)
N	13615	8192	16532	11473	11473	20236
R^2		0.397	0.104			0.239
pseudo R^2	0.175			0.301	0.125	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

Table 3 reports the results of the robustness analysis. We would like to remind that in this analysis we only replace the variable that indicates self-reported childhood poverty with the probability of being poor calculated by using coefficients obtained from the pooled data (2006-2010). We completely observe the same results compared to the previous model, except for the model where the age for starting work is used as dependent variable. We find that the coefficient of childhood poverty is significant and positive in this model, implying that children growing up in families with poor economic conditions increases the age for first entering labor force. The result with regard to age for starting work might be due to the compulsory education. In Turkey, the compulsory education was increased from 5 to 8 years in 1997, corresponding an age between fourteen and sixteen. Hence, the age for entering labor

force might be increased. Since the data that we used in the robustness analysis is pertaining period between 2006 and 2010, the individuals in the survey might mostly completed compulsory education. For this reason, we suppose that we observed a positive effect of childhood poverty on the age for starting work.

Table 3: The effects of childhood poverty on selected outcomes of children

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
The probability of being poor during childhood	0.085*	-0.101***	0.291**	0.108***	0.056*	0.227***
	(0.033)	(0.019)	(0.090)	(0.029)	(0.028)	(0.029)
Control variables						
Female	-0.223***	-0.605***	1.987***	0.821***	0.238***	-0.380***
	(0.031)	(0.024)	(0.092)	(0.035)	(0.032)	(0.029)
Age	0.037*	0.052***	0.336***	-0.143***	0.059***	0.070***
	(0.015)	(0.012)	(0.043)	(0.018)	(0.014)	(0.014)
Age sq.	-0.001***	-0.001***	-0.003***	0.002***	-0.000	-0.001***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Married	0.119*	0.097***	-1.178***	-0.117**	0.035	0.456***
	(0.049)	(0.027)	(0.130)	(0.043)	(0.044)	(0.041)
Years of schooling	-0.112***	0.131***	0.426***	-0.162***	-0.055***	-0.140***
	(0.005)	(0.002)	(0.011)	(0.004)	(0.004)	(0.004)
# of people with health problem	0.093***					
	(0.016)					
Home owner	-0.547***					
	(0.032)					
# of worker/ # of adult	-0.701***					
	(0.083)					
# of agricultural worker/ # of worker	0.532***					
	(0.052)					
# of retirees/ # of adult	-2.496***					
	(0.274)					
# of informal worker/ # of worker	0.128***					
	(0.020)					
Experience		0.062***		-0.011		
		(0.004)		(0.007)		
Experience sq.		-0.001***		0.000		
		(0.000)		(0.000)		
Age for starting work				-0.027***	-0.003	
				(0.004)	(0.002)	
Health status				0.118***		
				(0.033)		
Informal employment					0.123***	
					(0.032)	
Constant	-0.253	6.831***	8.232***	3.284***	-2.330***	4.479***
	(0.302)	(0.217)	(0.861)	(0.314)	(0.288)	(0.276)
N	13451	8049	16321	11304	11304	20020
R^2		0.397	0.102			0.241
pseudo R^2	0.172			0.302	0.122	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

In order to see how the results change when we vary the choice of the questions and the cut-offs that are used in the identification of childhood poverty, we need to run additional estimations. Hence, we run 5 estimations by changing the questions or the cut-offs that we used in order to identify childhood poverty:

The first:

We use only the first question in order to identify childhood poverty. Individuals declare if their economic statuses are "very bad or bad", we identify those individuals as poor (i.e. they were experiencing poverty during childhood) (See App 1).

The second:

We use only the second question in order to identify childhood poverty. Individuals declare if they were able to make ends meet with their monthly disposable income "very difficult or difficult", we identify those individuals as poor (See App 2).

The third and the fourth:

We only change the cut-offs that are used in the first and the second estimations. While the cut-off of the third estimation is "very bad, bad or relatively bad economic status", the cut-off of the fourth estimation is "very difficult, difficult or relatively difficult" (See App 3 and 4).

The fifth:

In this estimation, we expand the cut-off that we used in our benchmark model. We also include individuals who respond relatively bad economic status or making ends meet relatively difficult (See App 5).

We do not find sizeable differences with relation to the effects of childhood poverty on the outcomes. In the first estimation, childhood poverty has no effect on informality and household size, while childhood poverty is only insignificant for informality. The rest of the findings is the same with our benchmark model.

4. Conclusion

The purposes of the sequences of analyses presented above were to answer the questions of whether poverty is transmitted from the parents to the children in Turkey and how family economic conditions during childhood affect the long-term outcomes of children related to poverty statuses of individuals (such as age for starting work; wage, household size, informality and health status in the adulthood). To this end, we used two data: SILC-2011 data with a special module on intergenerational transmission of disadvantages, and pooled cross sectional SILC data from 2006 to 2010 for the robustness check. We performed a series of probit and OLS regressions, where dependent variables are income poverty status, logarithm of wage, household size, informality and health status in the adulthood as well as age for starting work. We controlled both individual (such gender, age, years of schooling, work experience, etc.) and household characteristics (such as the ratio of the number of workers by informality and sector to the number of worker, the number of household members with chronicle health problem, home ownership, region in which the respondent lives) pertaining to 2011.

The findings align well with the literature on the effects of childhood poverty on future outcomes of children and offer new important evidence for policy implications and further research. We found that experiencing poverty during childhood increases the likelihood of

being income poor in the adulthood; i.e. poverty is transmitted from the one generation to the next in Turkey. The descriptive findings show that 34 percent of the sample report that they were experiencing poverty during childhood. On the other hand, 20 percent of the sample is income poor in 2011. 44 percent of those who report that they were experiencing poverty during childhood are income poor in their adulthood. This finding implies that almost half of the sample were experiencing poverty and still confront poverty in their adulthood. Moreover, the finding shows that there is low intergenerational mobility in Turkey, which might increase the probability of inheritance of poverty. In addition, the childhood poverty decreases the wage earned in the adulthood and the age for starting work and increases the likelihood of being informally employed. Also, the childhood poverty increases the likelihood of living in a large household in the adulthood. Finally, we find evidence that individuals who experienced poverty during childhood are more likely to have a chronicle health problem in the adulthood.

Obviously childhood poverty matters for various outcomes of children in the adulthood. Children living in poor families do not seem to confront equal opportunity in education, are also exposed to lack of nutrition and power due to poor economic conditions. When they enter the labor force or at every stage of schooling, those poor children may do worse than their better off peers/classmates. Hence, they may enter into a poverty cycle that that can be difficult to break. Consequently, children might be exposed to violations of their rights due to the many forms of inequity and injustice (UNICEF Annual Report, 2011). The pathways through which poor economic conditions have effects on children suggest general recommendations.

In this regard, the findings underline the importance of interventions aimed at disadvantaged children of the community and their families. Even though programs that include these interventions (such as pre-school, conditional cash transfers, text-book support, nutrient supplementation, parenting support, etc.) are costly implemented, they have great impacts on children's development growing up in poor families, could reduce risk factors and prevent children to enter the labor market and hence to increase their years of schooling and educational attainment, help them break the cycle of poverty.[19] So, they are fairly effective means of reducing the inequalities (Doyle et al, 2009).

For instance, it is founded that malnutrition decreases school performance, and causes lower wages later in their adulthood (Grantham-McGregor et al., 2007). Hence, nutrition support programs that target the most undernourished poor positively influence both physical and cognitive outcomes of children (Brooks- Gunn and Duncan, 1997). Pre-schooling that influences positively children cognitive abilities and success in their life, should be more prevalent and accessible by government actions in Turkey. Education and early childhood care provided to parents mostly improve cognitive abilities and educational attainments which yield higher wages in their adulthood (Engle et al., 2011).

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[19] Conditional Cash Transfers (CCTs) programs are the welfare programs that aim to reduce poverty, break the cycle of poverty and increase human capital of future generations. The government transfers money to poor families and also provides the opportunities including children into public schools, getting regular check-ups at the doctor's office, receiving vaccinations etc. CCT exist in many countries such as Brazil, Mexico, Chile, Colombia, Honduras, Indonesia, Jamaica, Nicaragua, Panama, Philippines, Peru, Egypt, US, Bangladesh and Cambodia. Turkey established the program in 2003 and implemented by the Social Assistance and Solidarity General Directorate.

On the other hand, education quality and opportunity equality in education in the East regions of Turkey are not comparable with the West regions of Turkey. Policies that aim to reduce the inequalities could be developed and efficiently implemented by the government or social policy institutions.

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Appendix

App 1:The results of the first model

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.119***	-0.044*	-0.314***	0.049	0.153***	0.052
	(0.027)	(0.019)	(0.082)	(0.027)	(0.025)	(0.029)
Control variables						
Female	-0.147***	-0.517***	1.565***	0.684***	0.208***	-0.315***
	(0.022)	(0.019)	(0.065)	(0.026)	(0.025)	(0.022)
Age	-0.023***	0.075***	0.348***	-0.144***	0.054***	-0.060***
	(0.004)	(0.006)	(0.011)	(0.009)	(0.005)	(0.004)
Age sq.	0.000	-0.001***	-0.003***	0.002***	-0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.057	0.162***	-0.767***	-0.221***	0.040	0.240***
	(0.031)	(0.021)	(0.085)	(0.032)	(0.033)	(0.028)
Years of schooling	-0.095***	0.127***	0.410***	-0.161***	-0.053***	-0.145***
	(0.003)	(0.002)	(0.008)	(0.003)	(0.003)	(0.003)
# of people with health problem	0.099***					
	(0.011)					
Home owner	-0.529***					
	(0.023)					
# of worker/ # of adult	-0.913***					
	(0.060)					
# of agricultural worker/ # of worker	0.547***					
	(0.037)					
# of retirees/ # of adult	-2.882***					
	(0.190)					
# of informal worker/ # of worker	0.090***					
	(0.013)					
Experience		0.057***		0.007		
		(0.003)		(0.005)		
Experience sq.		-0.001***		-0.000***		
		(0.000)		(0.000)		
Age for starting work				-0.022***	-0.000	
				(0.003)	(0.002)	
Health status				0.116***		
				(0.027)		
Informal employment					0.122***	
					(0.026)	
Constant	0.808***	6.371***	7.350***	3.278***	-2.322***	7.149***
	(0.082)	(0.094)	(0.236)	(0.135)	(0.115)	(0.079)
N	25314	12916	30247	18513	18513	40679
*R*²		0.403	0.114			0.265
pseudo *R*²	0.154			0.307	0.161	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

App 2: The results of the second model

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.126***	-0.051**	-0.294***	0.061*	0.165***	0.070*
	(0.026)	(0.018)	(0.078)	(0.026)	(0.024)	(0.028)
Control variables						
Female	-0.147***	-0.517***	1.566***	0.685***	0.209***	-0.314***
	(0.022)	(0.019)	(0.065)	(0.026)	(0.025)	(0.022)
Age	-0.023***	0.076***	0.349***	-0.145***	0.052***	-0.061***
	(0.004)	(0.006)	(0.012)	(0.009)	(0.005)	(0.004)
Age sq.	0.000*	-0.001***	-0.003***	0.002***	-0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.056	0.162***	-0.767***	-0.221***	0.039	0.239***
	(0.031)	(0.021)	(0.085)	(0.032)	(0.033)	(0.028)
Years of schooling	-0.095***	0.127***	0.410***	-0.161***	-0.053***	-0.144***
	(0.003)	(0.002)	(0.008)	(0.003)	(0.003)	(0.003)
# of people with health problem	0.099***					
	(0.011)					
Home owner	-0.528***					
	(0.023)					
# of worker/ # of adult	-0.916***					
	(0.061)					
# of agricultural worker/ # of worker	0.546***					
	(0.037)					
# of retirees/ # of adult	-2.887***					
	(0.190)					
# of informal worker/ # of worker	0.089***					
	(0.013)					
Experience		0.057***		0.007		
		(0.003)		(0.005)		
Experience sq.		-0.001***		-0.000***		
		(0.000)		(0.000)		
Age for starting work				-0.022***	-0.000	
				(0.003)	(0.002)	
Health status				0.115***		
				(0.027)		
Informal employment					0.121***	
					(0.026)	
Constant	0.820***	6.361***	7.339***	3.289***	-2.303***	7.158***
	(0.082)	(0.095)	(0.236)	(0.135)	(0.115)	(0.079)
N	25314	12916	30247	18513	18513	40679
R^2		0.403	0.114			0.265
pseudo R^2	0.155			0.307	0.162	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

App 3: The results of the third model

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.155***	-0.061***	-0.170*	0.078**	0.133***	0.120***
	(0.025)	(0.017)	(0.073)	(0.024)	(0.023)	(0.025)
Control variables						
Female	-0.144***	-0.519***	1.570***	0.686***	0.208***	-0.311***
	(0.022)	(0.019)	(0.065)	(0.026)	(0.025)	(0.022)
Age	-0.027***	0.077***	0.347***	-0.147***	0.051***	-0.064***
	(0.004)	(0.006)	(0.012)	(0.009)	(0.005)	(0.004)
Age sq.	0.000**	-0.001***	-0.003***	0.002***	-0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.053	0.164***	-0.767***	-0.223***	0.037	0.237***
	(0.031)	(0.021)	(0.085)	(0.032)	(0.033)	(0.028)
Years of schooling	-0.094***	0.127***	0.412***	-0.160***	-0.053***	-0.144***
	(0.003)	(0.002)	(0.008)	(0.003)	(0.003)	(0.003)
# of people with health problem	0.099***					
	(0.011)					
Home owner	-0.529***					
	(0.023)					
# of worker/ # of adult	-0.916***					
	(0.061)					
# of agricultural worker/ # of worker	0.546***					
	(0.037)					
# of retirees/ # of adult	-2.892***					
	(0.191)					
# of informal worker/ # of worker	0.090***					
	(0.013)					
Experience		0.057***		0.007		
		(0.003)		(0.005)		
Experience sq.		-0.001***		-0.000***		
		(0.000)		(0.000)		
Age for starting work				-0.022***	-0.001	
				(0.003)	(0.002)	
Health status				0.115***		
				(0.027)		
Informal employment					0.121***	
					(0.026)	
Constant	0.860***	6.344***	7.359***	3.313***	-2.300***	7.189***
	(0.083)	(0.095)	(0.237)	(0.136)	(0.115)	(0.079)
N	25314	12916	30247	18513	18513	40679
R^2		0.403	0.114			0.265
pseudo R^2	0.155			0.307	0.161	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

App 4: The results of the fourth model

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.138***	-0.052**	-0.183*	0.046	0.135***	0.114***
	(0.025)	(0.017)	(0.071)	(0.024)	(0.023)	(0.025)
Control variables						
Female	-0.146***	-0.519***	1.570***	0.684***	0.208***	-0.312***
	(0.022)	(0.019)	(0.065)	(0.026)	(0.025)	(0.022)
Age	-0.027***	0.077***	0.349***	-0.146***	0.050***	-0.065***
	(0.004)	(0.006)	(0.012)	(0.009)	(0.005)	(0.004)
Age sq.	0.000**	-0.001***	-0.003***	0.002***	-0.000**	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.052	0.163***	-0.765***	-0.222***	0.037	0.236***
	(0.031)	(0.021)	(0.085)	(0.032)	(0.033)	(0.028)
Years of schooling	-0.095***	0.127***	0.412***	-0.161***	-0.054***	-0.144***
	(0.003)	(0.002)	(0.008)	(0.003)	(0.003)	(0.003)
# of people with health problem	0.100***					
	(0.011)					
Home owner	-0.529***					
	(0.023)					
# of worker/ # of adult	-0.918***					
	(0.061)					
# of agricultural worker/ # of worker	0.547***					
	(0.037)					
# of retirees/ # of adult	-2.893***					
	(0.191)					
# of informal worker/ # of worker	0.090***					
	(0.013)					
Experience		0.057***		0.007		
		(0.003)		(0.005)		
Experience sq.		-0.001***		-0.000***		
		(0.000)		(0.000)		
Age for starting work				-0.022***	-0.001	
				(0.003)	(0.002)	
Health status				0.116***		
				(0.027)		
Informal employment					0.123***	
					(0.026)	
Constant	0.863***	6.340***	7.335***	3.296***	-2.287***	7.196***
	(0.083)	(0.095)	(0.238)	(0.136)	(0.116)	(0.079)
N	25314	12916	30247	18513	18513	40679
R^2		0.403	0.114			0.265
pseudo R^2	0.155			0.307	0.161	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

App 5: The results of the fifth model

Covariate	Income poverty	Wage	Age for starting work	Informal employment	Health status	Household size
Childhood poverty	0.166***	-0.075***	-0.402***	0.099***	0.169***	0.144***
	(0.030)	(0.019)	(0.090)	(0.028)	(0.028)	(0.029)
Control variables						
Female	-0.206***	-0.602***	1.944***	0.817***	0.250***	-0.368***
	(0.031)	(0.024)	(0.091)	(0.035)	(0.032)	(0.029)
Age	0.040**	0.047***	0.335***	-0.142***	0.065***	0.079***
	(0.015)	(0.012)	(0.043)	(0.017)	(0.014)	(0.014)
Age sq.	-0.001***	-0.001***	-0.003***	0.002***	-0.000*	-0.002***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Married	0.120*	0.094***	-1.157***	-0.116**	0.032	0.474***
	(0.049)	(0.027)	(0.129)	(0.043)	(0.044)	(0.040)
Years of schooling	-0.111***	0.132***	0.409***	-0.162***	-0.054***	-0.142***
	(0.005)	(0.002)	(0.011)	(0.004)	(0.004)	(0.004)
# of people with health problem	0.091***					
	(0.016)					
Home owner	-0.552***					
	(0.032)					
# of worker/ # of adult	-0.717***					
	(0.083)					
# of agricultural worker/ # of worker	0.523***					
	(0.052)					
# of retirees/ # of adult	-2.546***					
	(0.274)					
# of informal worker/ # of worker	0.133***					
	(0.020)					
Experience		0.063***		-0.011		
		(0.004)		(0.007)		
Experience sq.		-0.001***		0.000		
		(0.000)		(0.000)		
Age for starting work				-0.026***	-0.003	
				(0.004)	(0.002)	
Health status				0.106**		
				(0.033)		
Informal employment					0.110***	
					(0.032)	
Constant	-0.432	7.008***	8.450***	3.173***	-2.565***	4.104***
	(0.302)	(0.215)	(0.855)	(0.313)	(0.287)	(0.274)
N	13615	8192	16532	11473	11473	20236
R^2		0.398	0.104			0.240
pseudo R^2	0.177			0.301	0.124	

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001
Note: We control for regions in the models whose dependent variables are wage, informal, health, household size.

App 6: The determinants of child poverty in the years 2006-2010

	The probability of child poverty	Marginal effects
The education level of household	-0.88***	-0.25***
	(0.016)	(0.004)
The ratio of the number of children to the number of adults	0.26***	0.08***
	(0.007)	(0.002)
The ratio of the number of worker to the number of adults	-0.72***	-0.23***
	(0.027)	(0.008)
The occupation of the household (Highly skilled non-manual)	-0.47***	-0.16***
	(0.019)	(0.007)
The occupation of the household (Low skilled non-manual)	-1.32***	-0.23***
	(0.144)	(0.008)
The occupation of the household (Skilled manual)	-0.85***	-0.18***
	(0.082)	(0.010)
Home ownership	-0.23***	-0.07***
	(0.012)	(0.004)
A household with two parents	-0.81***	-0.30***
	(0.025)	(0.010)
Constant	0.97***	
	(0.039)	
Observations	61,893	61,893
r2_p	0.106	

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05