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Three Essays on Dynamics of Poverty

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- 1) Dynamics of poverty
- 2) Childhood poverty
- 3) Multidimensional poverty
- 4) Relative income poverty
- 5) Poverty in Turkey

Abstract

This dissertation includes three essays on dynamics of poverty in Turkey.

Essay one addresses the question of what are the main factors and events monetary poverty transitions of households in Turkey in the years 2007-2010. Using a balanced panel data set drawn from Survey of Income and Living Conditions (SILC) and applying binary choice models that assess the relative importance of these factors in contributing to a change in the poverty status of the households, the findings reveal that factors such as the employment status of the household head and changes in household composition are associated with poverty status changes, but changes in the amounts of income types have greater explanatory power.

Essay two focuses on the multidimensional aspect of poverty. Using a panel data drawn from SILC, the essay firstly aims to propose a multidimensional poverty measure for Turkey. Second, it aims to compare the new measure with the other existing common measures (relative income poverty and European severe material deprivation measure) by using random effects probit models. The findings indicate that the new measure is partially consistent with the other measures. In addition, they indicate that higher years of schooling, homeownership or being a rental/asset income recipient decreases the probability of being poor (irrespective of the measure), while large household size, attachment to agricultural employment or being a social welfare income recipient increases the probability of being poor.

Essay three focuses on the intergenerational linkages of poverty. Using a cross section data obtained from SILC-2011 with a module on intergenerational transmission of disadvantages, it analyzes whether poverty is transmitted from parents to children, and the effects of experiencing poverty during childhood on future outcomes of children. The findings indicate that children grown up in families with poor economic conditions are more likely to become income poor in the adulthood, which shows that there is low intergenerational mobility in income levels in Turkey. Those children start to work at their early ages, earn less and are living in large households. Also, they are more likely to involve in informal jobs and have a chronicle health problem in the adulthood.

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Abbreviations

TurkStat: Turkish Statistical Institute

Eurostat: The Statistical Office of the European Union

EU: European Union

SILC: Survey of Income and Living Conditions

OPHI: Oxford Poverty and Human Development Initiative

PCA: Principal Component Analysis

MIMIC: Multiple Indicators Multiple Causes

OECD: Organization for Economic Cooperation and Development

MDG: Millennium Development Goal

PISA: Program for International Student Assessment

HIECS: Household Income, Expenditure and Consumption Surveys

OLS: Ordinary Least Squares

UNICEF: United Nations International Children's Emergency Fund

CCTs: Conditional Cash Transfers

Introduction

Due to the momentous achievements in many economic domains during the past decade, Turkey is now classified as an upper middle-income country and is the 18th largest economy in the world, with a population of 75 million (Worldbank, 2014). Even though Turkey is one of the success stories among developing countries and might offer valuable lessons to most developing countries, big issues are still on the agenda of economists and policy makers that should be dealt with as a part of the country's development process. The problem of poverty is one of the most important of these issues and requires the attention of scholars, policy makers and institutions.

According to the official poverty rates released by the Turkish Statistical Institute (TurkStat), the relative income poverty rate has declined moderately from 25.4 percent in 2006 to 22.7 percent in 2012. Despite this 2.7 point decline, approximately 17 million individuals were living in households whose income failed to exceed the official poverty line of 5,500 thousand Turkish liras in 2012 (equivalent of approximately 3,100 US dollars at the time). This sizable number of poor individuals emphasizes the importance of poverty reduction policies and questions the effectiveness of current strategies and policies in Turkey. In order to reduce poverty and alleviate its detrimental consequences, efforts are needed in the social security, social transfers and labor market areas. Accordingly, Turkey has made considerable efforts, including a major change in the education system

in 1997, which increased the years of compulsory schooling from 5 to 8 years. It is known that education is regarded as an important instrument of the eradication or at least reduction of poverty, as education investments will lead to the formation of human capital that positively influences economic growth in a given country (Becker, 1964; Mincer, 1972; Tilak, 2002). Investment in human capital also helps lift labor incomes above the poverty line (Duryea and Pagés, 2002), fulfills basic needs (such as health, shelter, sanitation, etc.) and improves quality of life (Tilak, 2002). In addition, social transfers are known to be effective in reducing poverty. Accordingly, Turkey established a program — implemented by the Social Assistance and Solidarity General Directorate — in 2003 to provide conditional cash transfers to poor families. Nutritional and textbook supports have been also provided to poor families. On the other hand, households with dependents (children, disabled spouses, elderly parents, or other dependents) have been paid a monthly salary by the Government. The poverty rate decreased from 30 percent to 25 percent (in 2005) due to social transfers including conditional cash transfers, old-age, invalidity and disability assistance, etc. (Tepav 2010).¹ Moreover, the Government started to issue “green cards” to poor families for health insurance at the beginning of the 1990s, but the program was abolished in 2011. Instead, a system

¹ The decreasing effect of Conditional Cash transfers (CCTs) in poverty rates is higher among the EU-25. In 2005, the poverty rate before the transfer program was 25 percent in the EU-25, but it decreased to 16 percent after the implementation of the program. On the other hand, social transfers led to a 13 percentage point decline in poverty rates in Poland, while the decline was about 14 percentage points in France (Şener, 2010).

called General Health Insurance was implemented in Turkey in January 2012. It covers 11.4 million Green card holders who make income-test. At the same time, various interventions and subsidies were provided to agricultural producers, entrepreneurs and investors (such as tax reduction, premium support for employers and employees, tariff privileges, and land assignment). As we indicated, another important component of social policy is labor market policy, comprised of active labor market policies (aiming to reduce unemployment and increase labor force participation via vocational training, increasing skills, lifelong learning, reducing unemployment duration, etc) and passive labor market policies (providing unemployment insurance and severance payments, etc). Also, female labor force participation rates, which can be taken as an indicator of development in any given country, increased from 23.3 percent in 2005 to 29.5 percent in 2012. However, it is still considerably low not only compared to developed countries, but also compared to the relatively less developed countries of Southern Europe (Gursel et al, 2011). The Government has provided certain incentives to increase female and youth participation in the labor force. The incentives have been in effect since 2008 and will be in effect until 2015. These include reducing the insurance premium for firms when they employ females or youth. Uysal (2013) finds that registered employment among females between ages 30 and 44 has increased more than males thanks to the incentives. Also, in the National Employment Strategy Report (2013), policies are underlined in order to increase female labor force participation rates in Turkey: to decrease the institutional and cultural barriers to

participation in the labor market that women face, to support a micro credit system to strengthen entrepreneurship and to provide incentives to firms to increase kindergartens and childcare opportunities. These policies could help to increase female labor force participation rates.

On the other hand, in the years 2003-2010, the Government constructed approximately 500 thousand homes (called as TOKİ) for low and middle-income households. This opportunity to become a home owner could be seen as a route out of poverty since the current study finds that home ownership is an important factor to move out of poverty.

Despite all these valuable efforts for reducing poverty in the country, it is still a big problem. Turkey is in the process of integrating with the European Union; comparatively high poverty will affect Turkey's position among developed countries and therefore the prosperity of future generations. Hence, fighting poverty in all of its dimensions lies at the core of the development efforts in Turkey and requires extensive research. Several theoretical and methodological issues need to be analyzed to offer a coherent picture of the poverty problem.

A large body of literature has focused on the measurement of poverty; indices have been developed based on monetary and non-monetary indicators to measure poverty and make policy evaluations with the results. Possibly due to the growing attention on the problem of poverty, the world has seen poverty be reduced at an unprecedented pace. The number of individuals living on less than \$1.25 a day was half the population of the developing world in 1981. Despite a 59 percent increase in the developing

world's population, this number significantly decreased to 21 percent in 2010 (Worldbank, 2013).² However, economists still do not have a consensus on the definition and measurement of poverty, and therefore, poverty is still a big problem, especially in low or middle-income countries.

Conventional poverty measurements are based on monetary indicators (such as income or expenditure). In a monetary poverty measurement, poverty lines are commonly used to identify the poor. The lines are the thresholds below which individuals are considered poor and above which they are considered not in poverty. There are typically two kinds of poverty lines: absolute and relative. The absolute poverty line is mostly set as an absolute level that needs to be surpassed. Since indicators used in measurement can vary across individuals, regions or dates, the most critical issue with this approach is the identification of what constitutes the basic needs for a household. Although absolute poverty lines might not provide relevant information regarding the poor in developed or middle-income countries, they make cross-country or over-time comparisons between poverty rates of different countries easier. Relative poverty lines are usually set at a percentage of median/mean equivalent household disposable income or mean consumption. In European Commission methodology, the most commonly-used relative income poverty definition worldwide, individuals are assumed to be at-risk-of poverty if they are falling below 60 percent of the median equivalent household disposable

² See <http://www.worldbank.org/en/news/press-release/2013/04/17/remarkable-declines-in-global-poverty-but-major-challenges-remain>

income. Indeed, the relative income poverty concept is a measurement of income inequality and implies that a decline in the poverty rate corresponds to an improvement in income inequality at the bottom of the income distribution. In addition, the relative poverty line is only dependent on the distribution of income or consumption (i.e. overall well-being is not considered). So, if individual income or consumption levels double in a given country, poverty might not change. Moreover, the relative poverty lines do not provide the opportunity for cross-country or over-time comparisons as they do not represent the same welfare level.

To solve this problem, money is assumed to be an efficient way to measure poverty since it is translated into the ability to meet other needs. As it is a universally convertible asset, a cross-country comparison in poverty analysis could be an easier task. Moreover, the one-dimensionality of money-metric measurements can allow for a complete ordering of individuals according to their poverty levels. Given these reasons, monetary measurements are assumed to be well-defined and less complex ways of identifying the poor. However, the utilization of monetary measurements in poverty analysis is not as easy a task as it looks; one might argue its certain theoretical and methodological shortcomings. For instance, income is recently assumed to not always be a good well-being measurement since it disregards command over certain resources (such as non-cash transfers from the government, support from family and friends, etc; Bossert et al, 2009). Even though resources available to a household can be measured by household disposable income, income and resources do not refer to the same

thing even when they are closely related to each other. Household disposable income might partially correspond to individual well-being since access to free or subsidized public goods and services (such as health care, education and housing, etc) are the resources of individuals. Support of family, friends or neighbors are other sustaining resources (Eurostat, 2010). A household can borrow certain consumption goods or can make use of accumulated savings to increase their consumption capacity. Past investments in housing and durables or current states of housing cannot always reflect current household income. Moreover, even though individuals are observed with the same income level at a point in time, their living standards may differ.

Given these shortcomings of monetary measurements of identifying the poor, and the pioneering work of Sen (1985) on the capability approach, the poverty phenomenon has recently been perceived as a non-monetary issue that incorporates various dimensions of human life (such as the labor market, housing, health, etc). Hence, the focus of the literature has shifted from one-dimensional (i.e. monetary) poverty to multidimensional poverty (Tsui, 2002; Atkinson, 2003; Bourguignon and Chakravarty, 2003 and Alkire and Foster; 2010). The multidimensional poverty measurement has several shortcomings as well. For example, Alkire and Foster's (2010) commonly used and most recent multidimensional poverty measurement does not give relevant information on the poverty in Turkey since it includes certain insufficient and irrelevant dimensions (such as education) and indicators to measure poverty in Turkey (such as not having a radio, bike or

motorbike, etc). Accordingly, a multidimensional measurement needs to be developed that incorporates more relevant dimensions of individual well-being.

Each of the measurements (either one-dimensional or multidimensional) has provided a certain amount of information on poverty, but none has accurately covered the issue. Different measurements have mostly identified dissimilar individuals as poor so that there has been a growing body of literature on mismatch between monetary and non-monetary poverty measurements (Whelan et al., 2004; Perry, 2002). Moreover, the existing issues with the measurements have become more complex, as the dimensions used in the identification of the poor increase (such as the arbitrariness in the identification of the poor). At this point, we would like to note that a certain amount of arbitrariness is unavoidable in defining any poverty line practice (as indicated in the paper of Ravallion released in 1992). All things considered, the questions of how we measure poverty (either based on monetary or non-monetary indicators) and identify the “poor”, what the dynamics of poverty are and how we develop policies to combat poverty still have no clear-cut answers. Hence, carrying out poverty analysis that focus on the identification of the poor and recommend related policies based on the results are not straightforward tasks.

Even though poverty is still a major problem in Turkey, studies that examine the poverty problem and recommend related policy implications have remained scarce due to various reasons, including the unavailability of data for detailed poverty analysis. Considering various angles of poverty,

this dissertation elaborates on the essential questions addressing who the poor are (i.e. identification of the poor) and what the dynamics of poverty are (what factors are more likely to make households poor and whether past poverty status influences present status). Hence, the dissertation aims to fill the gap in the literature by proposing a new multidimensional measurement and providing a deeper understanding of the dynamics of the poverty phenomenon in Turkey.

The dissertation consists of three essays that focus on the various aspects of the poverty phenomenon. The first uncovers the factors and events that move households into and out of monetary poverty. The second proposes a new multidimensional measurement for identifying the poor and analyses how the measurement differs from other existing poverty measurements in a dynamic framework. The third moves from the causes of poverty to the consequences of poverty and focuses on intergenerational poverty links, investigating the effects of childhood poverty on children's futures. These analyses are fairly crucial for a better understanding of the nature of poverty as well as developing policies for poverty reduction and their efficient implementation. We would like to note that each essay could be seen as a good starting point for poverty literature in Turkey since each of them is the first instance of Turkish data in these areas.

In the first essay, we focus on the transition of households into and out of income poverty in Turkey. Poverty has declined moderately in Turkey from 2007 to 2010, implying that the number of individuals moving out of poverty is higher than those who move into poverty. This motivated

the major questions of the study: What events or factors moved households into and out of poverty in Turkey during the years 2007-2010 and what were the main characteristics of those who changed their poverty status? The period under examination is a critical period for poverty analysis since it includes the effects of the 2008 global crisis and the latest available panel data which covers those years. Understanding the factors behind the transitions offers valuable insights for developing policies that aim to reduce poverty in Turkey. To analyze the determinants of poverty transitions, we run a series of probit models by controlling for the characteristics of head of household (such as gender, age, years of schooling, labor market status) and household characteristics (household size, number workers, income types) and by considering three different points in time when households exit or enter poverty, namely 2008, 2009 and 2010. Longitudinal data is not available in Turkey, so we could not perform duration or spell analysis. Based on the findings of all versions of models and the periods, we can conclude that the years of education of the head of household, home ownership and income increases have positive effects on the probability of exiting poverty, while household size has a negative effect on the probability of exiting poverty and a positive effect on entry. While the increase in the number of inactive adults, full-year and seasonal workers have negative effects on the probability of exiting poverty, an increase in the number of retired household members has a positive effect on the probability of exiting. As intuitively expected, we also find that home ownership increases the probability of exiting poverty, while its effect on

the probability of poverty entry is negative. This finding might imply that congregate housing (named as TOKI) could help households move out of poverty. As for the findings on changes in monetary amounts of income types, we find that income events are critically important for poverty transitions in Turkey. We also find that increases in monetary amounts of labor, entrepreneurial, social welfare and retirement incomes positively affect poverty exit and negatively affect poverty entry. In addition, rental and asset income have a positive effect on the probability of exiting poverty; its effect on the probability of entering poverty is negative but not consistent. In conducting the study, we confronted certain limitations. First, longitudinal data for analyzing the poverty phenomenon considering various domains of well-being is not available in Turkey yet. For this reason, in the first essay, we could not perform a duration analysis to examine transition into and out of poverty. Should longitudinal data for Turkey become available, more comprehensive research on poverty dynamics can be conducted. In addition, the panel data does not provide regional information; we could not observe the effect of using regional income poverty lines in the identification of the income poor. Should regional information become available, it would be very informative in terms of policy implications to use regional lines in the identification of the poor and to compare the results with those from the national line.

The second essay deals with the multidimensional notion of poverty. As we indicated previously, a growing body of literature has focused on the shortcomings of monetary measurements of poverty and emphasized that

individual well-being cannot be captured by one dimension (such as income or expenditure). Hence, in recent years, poverty has begun to be conceived as a multidimensional rather than one-dimensional phenomenon. The existing multidimensional measurements do not provide relevant information on poverty in Turkey due to the indicators that are used to measure poverty. No measurement exists that reveals the various dimensions of poverty in Turkey. In the second essay, considering the critiques on the shortcomings of monetary measurements of poverty and the necessity of a multidimensional measurement for Turkey, we move beyond the one-dimensional measurement of poverty and focus on its multidimensional notion. We propose a new multidimensional measurement that incorporates various domains of well-being (such as health, labor market conditions, housing and living standards) and analyze how the new measurement differs from the other existing poverty measurements (income poverty and severe material deprivation according to European Union (EU) definition) by taking into account the dynamic nature of poverty and using the same data in the first essay.³ The descriptive findings reveal that relative

³ We use the relative income poverty methodology of the European Commission and set the poverty line as the 60 percent of the equivalent median household disposable income at the national level. Also, in EU material deprivation methodology, people are supposed to be threatened by “severe material deprivation”, if they cannot afford at least 4 items out of 9 (EU Social Protection Committee, 2009): (i) to pay rent, mortgage, other loans and utility bills, (ii) to keep their home adequately warm, (iii) to face unexpected expenses, (iv) to eat meat (or another adequate source of proteins) regularly, (v) to go on holiday, (vi) audio-

income poverty slightly declined during the period under examination (from 25.2 percent in 2007 to 22.5 percent in 2010). However, EU severe material deprivation slightly increased from 59.0 percent in 2007 to 59.3 percent in 2010.⁴ With respect to the poverty rates calculated by using the new measurement, we obtain similar results with relative income poverty and EU severe material deprivation. Multidimensional poverty declined during this period as well. However, we would like to note that we calculate multidimensional poverty rates by using different cut-offs and weighting methods for the sake of robustness. In our benchmark model, we do not use a weighting method. Cut-offs to identify the multidimensional poor varies from 6 to 9 indicators out of 15 indicators. In addition, to analyze whether the results are robust, we weights dimensions and indicators equally. Also, in another weighting method, we use weights obtained from polychoric principal component analysis. Multidimensional poverty calculated by using possible cut-offs and weights declined during the period under examination, except for the multidimensional poverty rate calculated by using equal weighting and the lowest cut-off. On the other hand, we obtain

video equipment (orig. 'TV set'), (vii) a washing machine, (viii) a car, (ix) a phone (regular or GSM) (Guio, 2009).

⁴ Note that relative income poverty rate has been calculated by using Survey of Income and Living Conditions. The reference period of income information in the data is the preceding calendar year, while the reference period of living conditions or possession of assets etc. is the survey year. For instance, relative income poverty rate in 2007 is indeed pertaining to 2006. However, material deprivation rate in 2007 is pertaining to 2007. So, there is a time inconsistency between measures.

comparatively high overlapping ratios (over 53 percent) between our measure and the other measures. So, we might point that the new measurement is partially consistent with the others, implying that it mostly identifies similar individuals as poor.

The empirical findings show that while more years of schooling, home ownership or being a rental/asset income recipient decreases the probability of being multidimensionally poor, large household size, high number of worker involved in agricultural employment or being a social welfare income recipient increases the probability of being multidimensionally poor (irrespective of the weighting method and the cut-off). One critical challenge that we have confronted in the process of conducting research is the vagueness around the concept of poverty. In recent years, the concept of poverty has broadened to be conceived as a phenomenon incorporating various domains of human life. Hence, certain questions in poverty analysis (such as identification and aggregation problems) have become more complex as dimensions considered in the identification of the poor increase. Even though we made a considerable effort in order to diminish the arbitrariness in the identification of the poor and analyzed multidimensional poverty by using possible cut-offs and weighting schemes obtained from a statistical method, we still confront a certain amount of arbitrariness. Accordingly, we suppose that multidimensional measurement approaches to poverty have critical methodological issues that are not easily overcome and require further research. In addition, due to the unavailability of certain variables regarding

dimensions that we considered, we could not include in the multidimensional analysis various important aspects such as health, education and housing expenditures, or access to health and education, which would provide critical information on the identification of the poor.

In the third essay, we focus on the intergenerational transmission of disadvantages in Turkey. Another aspect of the poverty problem, in addition to the question of who the poor are, is the question of what the consequences of poverty are. Individual poverty status not only depends on current determinants, since poverty evolves over time and also is closely related to experienced events (Dercon and Calvo, 2007). Intergenerational poverty links also need to be investigated in order to provide more accurate information on the poverty problem, rather than pursuing a snapshot analysis. In this context, children could be assumed to be the most vulnerable group to poverty since they have no power to exit or enter poverty. Moreover, childhood is the most sensitive period for human development, since inequalities and disadvantages in various domains of life mostly emerge during this period (Doyle et al., 2009). Therefore, we need to analyze the effects of childhood poverty and to uncover the intergenerational poverty links in order to implement policies that ensure the prosperity of future generations and provide for sustainable development. Like the issues related to poverty measurements, literature on the intergenerational origins of poverty is not well-documented in Turkey. In 2011 in Turkey, approximately 5 million children (34 percent of the population) were living in families in which income failed to exceed official

regional poverty thresholds. This high poverty rate among children compared to those in EU countries motivates the following critical questions that are the major concerns of this study: What are the consequences/influences of growing up in a poor household? Are children able to move out of the cycle of poverty? What disadvantages are transmitted from the parents and how does the transmission of poverty work? Particularly, we investigate the effects of poor family economic conditions on future children and aim to answer the question of the poverty phenomenon being transmitted from one generation to the next. In addition, we focus on various outcomes of children that are closely related to poverty status of individuals (wage, age at work, informality, health status and household size). Moreover, we test the hypothesis that children growing up in poor families are more likely to enter the labor force earlier. We apply probit and OLS regression models to analyze the possible effects. The most crucial step in the empirical analysis is the process of dealing with the self-reporting bias in actual data (i.e. self-reported family economic conditions during childhood). We pursue additional analysis to reduce the bias by using other data. Considering family characteristics (such as parent education and occupation, number of workers in the household, home ownership status) we uncovered the determinants of child poverty by using pooled, cross-sectional Survey of Income and Living Conditions (SILC) data from 2006 to 2010. Then we multiplied these coefficients with the values of variables in question in the 2011-SILC data. In other words, given family characteristics during individuals' childhoods, we calculated the probability of being poor.

Even though this method strongly assumes that the determinants of child poverty do not change over years, we consider that it is a reasonable way to reduce the bias in question. We repeat the regression by replacing self-reported childhood poverty status with the probability of being poor. The findings show that poverty is transmitted from parents to children in Turkey. 44 percent of those who reported experiencing poverty during their childhood are also income poor in adulthood. This finding implies that there is low intergenerational mobility in Turkey. We also find that children growing up in poor families start working earlier, earn less in the labor market and live in large households. They are also more likely to become involved in informal jobs or have a chronic health problem in adulthood. These findings show that childhood poverty in Turkey mostly creates a poverty cycle that cannot be easily broken in adulthood. Furthermore, we obtained the same results from additional analysis, except for the age at which people start work. In this analysis, we found that childhood poverty (i.e. probability of being poor) increases the age for starting work. We suppose that this result is due to the effect of increased years of schooling during the period 2006-2010. As we indicated, the other results are the same compared to the benchmark models.

Our findings provide valuable insights and policy implications for poverty reduction. First of all, poverty reduction should become an overriding objective that is pursued based on the dual strategy of labor-intensive growth and investment in human capital. The strategy could be conceived as an amalgamation of three different approaches: direct transfer,

human capital and production function. Direct transfer to the poor refers to cash transfers (such as social assistance, old-age, widow or disability pension payments, etc) or in-kind transfers (such as price subsidies, school feedings, food stamps and nutritional support, etc). The first-order effect of the transfer could be reflected by itself. Also, second-order effects could emerge, i.e. nutrition subsidies build human capital which increases productivity, etc. Hence, the transfers could be assumed to be efficient ways of combating poverty in Turkey.

On the other hand, the findings indicate that years of schooling is the most important determinant of poverty, regardless of which poverty measurement is used, and also influences the children's futures. Hence, the findings indicate that another critical strategy could be to focus on human capital in order to reduce poverty and ensure the prospects of future generations. Major human capital interventions include education and health interventions with the allocation of nutrition. While education interventions focus on regional differences in access to education, primary education, basic literacy programs, reducing opportunity inequalities in education and gender biases in education access, etc, health interventions consist of access to pre- and post-natal care, immunization and population and family planning programs. We assume that poverty reduction policies should focus on these interventions.

The findings also show that monetary events experienced by individuals/households are the crucial determinants of their poverty status. Hence, the production function approach that focuses on the mechanisms

aiming to increase the primary income of the poor could help poverty reduction. The policies could centre on changing factor inputs to increase the level or price of output of the poor: land (land reform, subsidized input packages, increased producer prices), labor (increasing employment opportunities, increasing participation rates — via kindergartens, population policy, etc — eliminating barriers to work entry, improving workplace conditions-health and safety, developing techniques of production; minimum wage and child labor legislation) and physical and financial capital (Shaffer, 2008). Our findings emphasize the crucial importance of those kinds of interventions to reduce poverty.

Further research might address the challenges that we underlined and improve upon the limitations of the current analyses in several ways. First, should longitudinal data that provides much more information on individual well-being become available, it could be analyzed by using more advanced techniques. Second, a much more comprehensive multidimensional poverty measurement that includes other relevant indicators of poverty (such as individual access to healthcare or education, health or education expenditures, etc) could be proposed. Third, should data on childhood poverty that covers a much longer period pertaining to the childhoods of individuals or that includes certain indicators in relation to individual schooling, migration status, etc, become available, it could be analyzed for the other factors that influence adulthood outcomes.

References

- Alkire, S., Santos M.E. (2010). Acute multidimensional poverty: A new index for developing countries. Human development research paper, 2010/2011. UNDP, USA.
- Atkinson, A.B. (2003). Multidimensional deprivation: contrasting social welfare and counting approaches. *Journal of Economic Inequality* 1:51–65, 2003.
- Becker, G. (1964). Human Capital. NBER, New York.
- Bourguignon, F. and Chakravarty, S.R. (2003). The measurement of multidimensional poverty. *Journal of Economic Inequality*, 1, 25-49.
- Bossert, W., Chakravarty, S.R., D'Ambrosio, C. (2009). Multidimensional poverty and material deprivation. Working Papers 129, ECINEQ, Society for the Study of Economic Inequality.
- Çalışma ve Sosyal Güvenlik Bakanlığı (2013). Ulusal İstihdam Stratejisi.
- Duryea, S., Pagés, C. (2002). Human Capital Policies: What they Can and Cannot Do for Productivity and Poverty Reduction in Latin America. Inter-American Development Bank, Working Paper #468.
- Dercon, S., Calvo, C., (2007). Chronic Poverty and All That: The Measurement of Poverty Over Time. Chronic Poverty Research Centre, Working Paper No. 89.
- Doyle, O., Harmon, C.P., Heckman, J.J., Tremblay, R.E. (2009). Investing in early human development: Timing and economic efficiency.
- Eurostat (2010). Income Poverty and Material Deprivation in European Countries. Eurostat Methodologies and Working Papers.

- Gursel, S., Uysal, G., Acar, A. (2011). Women Face Institutional and Cultural Barriers to Participation in the Labor Market. Betam Research Brief 115.
- Mincer, J. (1972). Schooling, Experience and Earning. NBER, New York.
- Uysal, G. (2013). Kadın İstihdamına Verilen Teşvikler İşe Yarıyor. Betam Araştırma Notu 13/151.
- Ülker, Ş. (2010). Yoksullukla Mücadelede Sosyal Güvenlik, Sosyal Yardım Mekanizmaları ve İş Gücü Politikaları. Tepav Politika Notu.
- Perry, B. (2002). The Mismatch Between Income Measures and Direct Outcome Measures of Poverty. Social Policy Journal of New Zealand. Issue 19.
- Ravallion, M. (1992). Poverty Comparisons: A Guide to Concepts and Methods. Living Standards Measurement Study Working Paper No. 88.
- Shaffer, P. (2008). New Thinking on Poverty: Implications for Globalization and Poverty Reduction Strategies. DESA Working Paper No. 65.
- Sen, A. (1985). *Commodities and capabilities*. Amsterdam: North-Holland.
- Tilak, Jandhyala B. G. (2002). Education and Poverty. Journal of Human Development: A Multi-Disciplinary Journal for People-Centered Development, 3:2, 191-207.
- Tsui, K.Y. (2002). Multidimensional poverty indices. Social Choice and Welfare, 19: 69-93.

Whelan, C.T., Layte, R., Maitre, B. (2004). Understanding the mismatch between income poverty and deprivation: A dynamic comparative analysis. *Eur. Social. Rev.* 20(4), 287–302.

Worldbank (2014). World Bank Group –Turkey Partnership: Country Program Snapshot.

Essay 1: Drivers of the Transitions of Households into and out of Monetary Poverty in Turkey

Abstract

In this study, using a balanced panel data drawn from Survey of Income and Living Conditions (SILC), we aim to answer the question of what role do factors such as changes in household composition, employment status of the household head and changes in income received by households play in households' entries into and exits from poverty. The relative income poverty rate has declined moderately in Turkey during the 4 year period (2007-2010) that we considered, implying that households were more likely to exit than enter poverty. We present a descriptive analysis where poor, non-poor, entrant and exitor households are compared in terms of basic household characteristics. In addition, the empirical work uncovers the estimation of binary choice models that analyze the relative importance of these factors. These models reveal that factors such as the employment status of the household head and changes in household composition are closely associated with poverty status changes as well as changes in the amounts of income types (such as labor, entrepreneurial, social welfare and retirement income).

1. Introduction and Literature

The issue of poverty and the question of how poverty can be reduced are the essential themes of the economic literature. Even though considerable literature has focused on a snapshot analysis of poverty, the poverty phenomenon should be analyzed in a dynamic perspective rather than static one since it is a state that evolves over time and mostly depends on past events (Polin and Raitano, 2012). The availability of longitudinal data in different countries around the world (especially in developing countries) have allowed for the analyses on poverty transitions. Hence, there is a growing literature on the dynamics of poverty. Particularly, the factors behind transitions of the households into and out of poverty offer valuable sights in relation to the question of how poverty can be reduced through government policies and social welfare programs.

Bane and Ellwood's paper (published in 1986) is considered as one of the pioneering works in the literature on poverty transition. Using Panel Study of Income Dynamics (PSID) data for the U.S., the study contributes to the literature by identifying events related to poverty spell beginnings and endings. They indicate that declines in household head's earnings, a transition to a female headed family, a new birth in the household, departure of an individual from household, declines in the unearned income of the households (i.e., transfer payments etc.) are critical events that might move households into poverty. Marriage, transfers, and increases in household head's income are found as main routes for moving out of poverty. Stevens (1995) extends the analysis of Bane and Ellwood and controls for the impact

of education of household head on poverty transitions, and finds education as an additional factor for the likelihood of moving out of poverty as in many other studies.⁵ However, in some cases, it is found that while higher education of the household head increases the probability of exiting poverty, it does not prevent re-entering poverty (Devicienti, 2002; Andriopoulou and Tsakloglou, 2011).

McKernan and Ratcliffe (2002) uses data obtained from PSID and find that having a child increases the likelihood of moving into poverty. On the other hand, Devicienti (2002) demonstrates that having children under the age of 6 reduces the risk of re-entering poverty, which is a reflection of poverty alleviation programs targeted at poor households in the UK in that period. Hence, having children can be a route of moving out of poverty of households in certain countries due to the child benefits received by poor households or other reasons. For instance, Andriopoulou and Tsakloglou (2011) find that while households with children dependents are less likely to exit poverty in the Netherlands, Italy, France, the UK, Greece, Portugal, and Spain; the opposite is the case for Denmark, Finland, Austria, and Ireland. Similarly, Valetta (2006) shows individuals living in households with two adults and children are less likely to exit poverty in Canada and the US.

On the other hand, Jarvis and Jenkins (1997) find that one of the groups that have persistently low income is single pensioners by focus on the dynamics of low income by using British Household Panel Survey.

⁵ (See Addabbo, 2000; McKernan and Ratcliffe, 2002; Cappellari and Jenkins, 2002; Devicienti, 2002; Cantó, 2003; Buddelmeyer and Verick, 2007; Polin and Raitano, 2012)

However, becoming a retiree increases the probability of moving out of poverty in certain countries (Dubois et. al., 2003).

Social transfers seem to have controversial effects on poverty transitions. While some studies indicate that receiving transfers has good consequences on poverty (Bane and Ellwood, 1986), there are studies emphasizing that people receiving transfers can also be more likely to fall in poverty (Polin and Raitano, 2012).

Labor market events are also critical for poverty transitions. Despite the fact that being in employment is a pushing factor for moving out of poverty as indicated in many studies (For examples see: Devicienti, 2002; Andriopoulou and Tsakloglou, 2011), there are findings saying the number of workers in the household is not always statistically significant for poverty persistence. For instance, according to Cappellari and Jenkins (2002), the number of workers in the household has a large and significant association with initial poverty status rather than poverty persistence in Britain. However, the same condition is not valid for poverty entry rates, which are higher among people who are not involved in full time work as well as those who are younger, living in a household with single parent, with many children, or have no educational qualifications. On the other hand, according to Andriopoulou and Tsakloglou (2011), employment events are more related with poverty exits than unemployment events with poverty entries in EU countries. However, one should note that the impact of employment, income, and demographic events on poverty transition mostly depend on the type of welfare regime in a given country (Layte and Whelan, 2003).

Contrary to the findings indicating that female headed households are less likely to escape poverty or experience poverty persistence (Cappellari and Jenkins, 2002; Polin and Raitano, 2012), certain studies show that female headed households are not living in poor economic conditions. For instance, Devicienti (2002) finds that female headed households are not under significantly higher risk of having low income by using BHPS. Indeed, living in female headed household can be a way for moving out of poverty, but in the same time it has no effect on moving into poverty: According to Andriopoulou and Tsakloglou (2011), while the probability of exiting poverty decreases with female headship, there is no significant difference between re-entering rates of female headed and male headed households in certain EU countries. On the other hand, the puzzle becomes more complex with the finding that decreased mobility out of poverty is not easily explained by changes in the personal characteristics of female household heads (Stevens, 1995).

Even though several studies focusing on poverty phenomenon has been conducted in Turkey, there is a limited literature on poverty that uses Turkish data. The studies similar to our study that we are aware of are Seker (2011) and Seker and Dayioglu (2014). By using panel data from years 2006 to 2007 of SILC released by TurkStat, Seker (2011) analyzes the transitions into and out of poverty in Turkey during two-year period and investigates the trigger events for the transitions of individuals. In addition, she provides some individual and household level characteristics of individuals who are moving into and out of poverty in a descriptive framework. She finds that

changes in the income types (labor income, rental and property income, transfer payments) are most important events for the transitions. She notes that the characteristics of the transitory poor are similar to the characteristics of the non-poor. However, according to the findings, the characteristics of the persistent poor are considerably different: the group mostly comprises of less-educated individuals, casual or own account workers, individuals living in rural and individuals living in the households with few numbers of employed members. Our study differs from Seker (2011) in three ways: (i) by using the same survey, we analyze the poverty transitions of households during the 4 year period instead of the 2-year period, (ii) we observe the transitions of households "from 2007 to 08" "from 2008 to 09" and "from 2009 to 10", and (iii) we estimate binary choice models that control for the characteristics of household head, variables that measure change in household composition and the variables that measure the changes in monetary amounts.

On the other hand, using a 4-year balanced panel data obtained from SILC (2006-2009), Seker and Dayioglu (2014) analyzes the events related to poverty spell endings and beginnings by applying a duration analysis. They follow the pioneering path of Bane and Ellwood (1986) and find that a decline in household head's earnings is the most important event leading to poverty entries of individuals. The other next critical event for poverty entry with a 21 percent share is decline in other household members' earnings. Then, the percentages of individuals who enter poverty due to declines in rental and property incomes make up 16.1 percent, while a decline in social

assistance income accounts for 7.8 percent of the poverty entry. However, the transitions due to the demographic events make up 5.1 percent.

Even though the duration of poverty spells and state dependence are two critical aspects that have been analyzed frequently in poverty transition literature by using spell analysis techniques and hazard models since poverty status in a year mostly depends on the poverty status in the previous year, it can be truly analyzed only in case of the availability of longitudinal panel data.⁶ Many studies cannot perform duration or spell analysis due the unavailability of longitudinal data.⁷ So, due to the fact that perform a duration analysis by using a 4-year panel data is somewhat a difficult and unreliable task, we choose another way to analyze the factors behind transitions in consecutive years during the 2007-2010 period and estimate binary choice models that control for various characteristics of the household head and the household in order to reveal the factors and main events behind the transitions of households into and out of poverty in

⁶ (See the studies that use these techniques: Bane and Ellwood, 1986; Duncan et. al., 1993; Stevens, 1994, 1999; Canto, 1996; Oxley et. al., 2000; Devicienti, 2002; McKernan and Ratcliffe, 2002; Biewen, 2003, 2006; Cappellari and Jenkins, 2004; Fouarge and Layte, 2005; Poggi, 2007; Callens and Croux, 2009; Damioli, 2010; Andriopolou and Tsakloglou, 2011; Seker and Dayioglu, 2014)

⁷ Several studies use binary choice models to estimate the probability of moving out of or into poverty (See Addabbo, 2000; Cappellari and Jenkins, 2002; Dubois et. al., 2003; Valetta, 2006; Polin and Raitano, 2012). On the other hand, certain studies use the multinomial logit model, which permits identifying more than two categories in analysis of poverty dynamics (See Lawson et al., 2006; McKay and Okidi, 2006).

Turkey. Hence, our study differs from Seker and Dayioglu (2014) in this way.

In this section, we provided important findings and insights into poverty transitions by criticizing important findings in the poverty literature. The rest of the paper is organized as follows: Section 2 is devoted to the description of the data. Section 3 presents the empirical methodology and Section 4 discusses the results from the empirical models. Section 5 elaborates policy recommendations and Section 6 concludes the paper by summing up the main findings.

2. Data

In order to explore the main factors behind transitions of households into and out of poverty in Turkey, we use data from the Survey of Income and Living Conditions Panel covering years 2007, 2008, 2009 and 2010.⁸ The survey contains, beside standard socio-economic characteristics of households, detailed information on various kinds of incomes and pension payments received by each household member aged 15 and over years. The data distinguishes between the wage and salaries of employees and the entrepreneurial incomes of employers and the self-employed, which allows for the examination of the impact of the labor market earnings of individuals with different employment statuses on entry into and exit from poverty. In

⁸ The survey has been annually conducted by Turkish Statistical Institute (TurkStat) since 2006. Even though the period under examination is a critical period since it includes the effects of 2008 global crisis, the latest available panel data that allows poverty transition analysis is the current data covers 2007-2010 period.

addition, respondents also report non-labor income (such as incomes obtained from social welfare programs, financial assets, and real estate rentals) that they received. This distinction between income types allows a poverty impact analysis to be performed using the changes in the amount of each type of income received by the households. The data also provides information on main activity of individuals in the previous calendar year. The reference period for income information is “the previous calendar year”. For instance, income information of the 2006 refers to the income obtained in 2005. Also, the explanatory variables that we used are also pertaining to the previous calendar year. Thus, we do not permit a time inconsistency between variables in order to truly identify which events have led to poverty transitions of households.

Table 1 presents the sample shares households classified according to their poverty statuses in each year. A household receiving an equivalent income that is less than 60 percent of the median household equivalent income in the data is classified as poor for the year in question.⁹ Since a

⁹ Household net annual disposable income is calculated as the total of individual income of all members of the household (total of the in cash or in kind income such as salary-wage, daily wage, enterprises income, pension, widowed-orphan salary, old-age salary, unpaid grants, etc.), plus the total of yearly income for the household (such as real property income, unreturned benefits, incomes gained by household members less than age 15, etc.), and minus the taxes paid during the reference period of income and regular transfers to the other households or persons. In order to calculate equivalent income, we use modified OECD scale which gives a weight of 1 to the reference person in the household, 0.5 to other household members aged 14 and over, and 0.3 to each child aged less than 15. Then,

household can be either above or below the poverty line in each year. Hence, we have 16 different scenarios that can be observed. 68 percent of the households in the sample are above the poverty line in all survey years while 8.7 percent are poor in all 4 survey years. Households were initially non-poor in 2007 but enter poverty and remain there until 2010 constitutes 6.2 percent of the sample. Another 7.2 percent of the sample comprises of households that are observed as poor in 2007 but exit poverty and remain

the equivalent household disposable income is calculated by dividing household disposable income to this weight that is the sum of the weights of the individuals in the household. In accordance with the European Commission methodology, we use the relative income poverty approach and set the poverty line as the 60 percent of equivalent median household disposable income at national level. Official poverty rates released by TurkStat are calculated based on national poverty lines. However, when national lines are used in the calculation of poverty rates somewhat problematic in countries where regional income inequalities are remarkable, like Turkey. Income levels in the East regions of Turkey are lower compared to the West regions of Turkey. Drawing a national line assumes most of individuals living in the East regions as poor, which implies that there is an overestimation problem in poverty rates. On the other hand, it assumes a little proportion of individuals living in the West regions of Turkey as poor, which implies an underestimation problem. For this reason, the regional line for the calculation of poverty rates could be more accurate measurement of poverty, which means that one poverty line is calculated for each region. However, panel data structure of SILC does not provide regional information, so we could not use regional poverty lines. Instead, we identify individuals as poor by using a national poverty line.

that way until 2010. Finally, households whose poverty status changes more than once make up 10 percent of the sample (Table 1).¹⁰

Table 1: Categorization of households according to poverty status during 2007-10

	Poverty status in each year				Frequency	Sample share (%)
	2007	2008	2009	2010		
1	No	No	No	No	1673	68.0
2	No	No	No	Yes	41	1.7
3	No	No	Yes	Yes	46	1.9
4	No	Yes	Yes	Yes	65	2.6
5	No	No	Yes	No	42	1.7
6	No	Yes	No	No	46	1.9
7	No	Yes	No	Yes	14	0.6
8	No	Yes	Yes	No	42	1.7
9	Yes	No	No	Yes	13	0.5
10	Yes	No	Yes	No	17	0.7
11	Yes	No	Yes	Yes	38	1.5
12	Yes	Yes	No	Yes	33	1.3
13	Yes	No	No	No	79	3.2
14	Yes	Yes	No	No	47	1.9
15	Yes	Yes	Yes	No	52	2.1
16	Yes	Yes	Yes	Yes	214	8.7
All					2462	100

*"Yes" indicates being poor in a given year, conversely "No" corresponds to being non-poor in a given year.

3. Empirical Methodology

During the 4 year period that we considered, there are 3 different points in time at which households exit or enter poverty; namely 2008, 2009 and 2010. In the empirical work, we estimate binary choice models to identify the determinants of entry and exit at each of these three years. In other words, we compare non-poor (i.e. not poor in both two years) and entrant households; and, poor (i.e. poor in both two years) and exitor

¹⁰ These households could have been excluded from the econometric work in order to identify the factors that lead to more permanent changes poverty status. Also, we could not include the analysis due to the small sample sizes.

households with respect to various household characteristics that are assumed as closely related to factors behind poverty transitions of the households in the poverty literature. We expect to have impacts of the changes in the monetary amounts of income levels, the changes in household composition and home ownership status on poverty transitions of the households. For this reason, in the empirical work, we estimate various versions of our models that include (i) only control variables that reflect the current situation of the household (such as home ownership, household size etc.) (ii) variables that represent transition events in terms of changes in the household composition (such as change in the number of inactive adult, children, full-year workers), as well as homeownership status of the households (such as becoming home owner) (iii) variables that measure the changes in terms of monetary amounts of income types received by the households.

The control variables we make use of in the basic version of our model are the age, gender¹¹, marital status¹², years of schooling, and the part/full year employment status of the household head, household size, and dummy variables that indicate households that are home owners and recipients of wage and salary, entrepreneurial, rental/ asset, retirement and social welfare income.¹³ In a slightly more complex variant of this

¹¹ Gender is coded as 0=male and 1=female.

¹² Marital status is coded as 0=single (including widow, divorced, unmarried etc), and 1=married.

¹³ The variable controlling for home ownership is derived from the variable showing imputed rents which are predicted annual figures home owners would have had to pay if

specification (i.e. Model 1b), we replace the household size variable with the number of members falling into one of the six following categories: a full-year worker, a part-year worker, a retiree, an inactive adult or a child.¹⁴

In Model 2a, the household size variable used in Model 1a is replaced with the change observed in it from the previous year. In Models 2b, household size components used in Model 1b, are replaced with the change observed in it from the previous year. These variables are meant to reflect the changes in the composition of the household. The change in home ownership status is also considered as a potential determinant of poverty transitions. Since only a small number of households have lost their homes, the only dummy variables used are those that indicate new home owners and home owners in both years. On the other hand, we do not replace the dummy variables showing the reciprocity of income types with the change in reception status since this would require the introduction of large number variables into the model.

Otherwise, the transition events can be measured as the changes in the amount of various types of income. In Model 3a, we use same control variables of household head that are used in the previous models as well as change in household size and changes in monetary amounts of labor, rental/

they had rented the housing units they reside in. On the other hand, social welfare income is the sum of unemployment benefits (including severance payment), widowed-orphan and old-age salaries, unpaid grants, and child benefits, housing allowance, and benefits from other persons or households as unreturned benefits in cash or kind received by households.

¹⁴ In other words, a household member could be one of these categories: a full-year worker, a part year worker, an inactive adult, a retiree or a child.

asset income, retirement, and social welfare income. In defining the transition events that are introduced in Model 3b, we tried to come up with the smallest number of variables that reflect both the changes in the composition of the household and the monetary gains or losses that are likely to be associated with them. These variables are the changes in the numbers of full and part year workers, retirees, unemployed, children and inactive adult.¹⁵ Another potential determinant of poverty transitions is the change in home ownership status.

In Tables 2, 3 and 4, we observe the means of the explanatory variables by poverty status for each of the three two-year periods under examination. According to the 2007-08 figures, there are considerable differences with respect to household head characteristics across poor, non-poor, entrant, and exitor households. The years of schooling of the household head is the highest among the non-poor households. Non-poor households are also more likely to be headed by older individual. With respect to employment status, non-poor households are the least likely to be

¹⁵ The effect of household headship on poverty transitions is worth to be researched. In identifying the cases where household headship changes from one individual to another, it is also important to distinguish between situations where the change is due to the departure of the household head, the death of the household head, and a newcomer member becoming household head, as these situations are of different natures in terms of their possible impact on the likelihood of entering or exiting poverty. However, when we controlled for changes in household headship, we could not obtain significant results, possibly due to the small sample sizes.

headed by an inactive adult or a part-year worker and the most likely to be headed by a full-year worker or a retiree.

The average household size in the full sample is close to 3.9 with figures of 5.8 and 3.4 in poor and non-poor households, respectively. These two types of households are at the opposite ends of the spectrum with respect to the number of children as well. While poor households have 2.5 children on average, the corresponding figure for the non-poor is only 1. The rate of home ownership is the lowest among the exitor households, but this group also has the highest rate of new home ownership. The rate of new home ownership is the lowest among entrant households. These suggest that becoming a home owner is critical for many low-income families in terms of making it over the poverty line. As expected, the rate of home ownership among non-poor households is higher than the rate among poor households.

In terms of receiving the various types of income, we find that households that enter poverty have the lowest rate of labor income reception. While reciprocity of entrepreneurial income is the least common among the non-poor, social welfare income is the least common among the entrant households. Retirement and rental/asset incomes are the most commonly received by the non-poor families. In terms of the amounts of various types of income received, we observe that households that enter poverty have experienced declines in all types of income received (with the exception of retirement) while the exitor households have seen the largest amounts of increase in all types of income (especially labor income).

Table 2: Means of variables: 2007-08

Variables	Poor	Exitor	Non-poor	Entrant	All
<i>Household head characteristics</i>					
Female	0.07	0.18	0.14	0.13	0.13
Age	45.28	45.23	49.76	48.11	48.75
Years of schooling	4.25	5.42	7.21	4.76	6.52
Marital status	0.94	0.85	0.84	0.89	0.86
Inactive adult	0.21	0.22	0.15	0.25	0.17
Part-year worker	0.3	0.24	0.1	0.25	0.15
Full-year worker	0.47	0.5	0.56	0.47	0.53
Retiree	0.01	0.03	0.2	0.04	0.15
<i>Household characteristics</i>					
Household size	5.83	4.31	3.43	4.54	3.9
Number of inactive adults	1.6	1.2	1.11	1.5	1.21
Number of part-year workers	0.69	0.59	0.28	0.5	0.37
Number of full-year workers	1	1.03	0.99	0.95	0.99
Children dependents	2.53	1.45	0.8	1.54	1.13
Number of retirees	0.01	0.04	0.25	0.05	0.19
Home owner	0.79	0.75	0.81	0.78	0.8
<i>Reciprocity of types of income</i>					
Labor	0.67	0.65	0.59	0.53	0.6
Entrepreneurial	0.52	0.45	0.33	0.48	0.37
Social welfare	0.63	0.62	0.61	0.54	0.61
Retirement	0.14	0.17	0.4	0.17	0.33
Rental/asset	0.09	0.07	0.21	0.08	0.18
<i>Change in monetary amounts of income types</i>					
Labor	0.43	2.46	1.25	-0.66	1.08
Entrepreneurial	0.28	2.24	0.08	-1.25	0.15
Social welfare	-0.01	0.78	0.21	-0.74	0.15
Retirement	0.07	0.19	0.5	0.06	0.39
Rental/asset	0.04	0.11	0.23	-0.03	0.18
New owner	0.01	0.08	0.01	0.01	0.02
Home owner in both two periods	0.77	0.67	0.79	0.78	0.78
No. of observations	346	147	1802	167	2462

When we look at 2008-09 figures presented in Table 3, we do not observe a large difference between years of schooling of heads of exitor households and entrant households. The years of schooling of the household head is the largest among non-poor households, but is also large among exitor households. The figures corresponding to the employment status of household head show that poor and entrant households are more likely to be headed by an inactive adult. Exitor and non-poor households are more likely to be headed by a full-year worker. Being a social welfare income recipient is the most common among poor households. We observe that certain

households enter poverty even though they have seen an increase in their rental/asset income. The rest of the findings are similar with the 2007-08 figures.

Table 3: Means of variables: 2008-09

Variables	Poor	Exitor	Non-poor	Entrant	All
<i>Household head characteristics</i>					
Female	0.09	0.12	0.15	0.09	0.14
Age	47.49	46.12	50.4	49.13	49.64
Years of schooling	4.1	5.09	7.3	4.78	6.54
Marital status	0.91	0.89	0.83	0.87	0.85
Inactive adult	0.22	0.16	0.14	0.23	0.16
Part-year worker	0.29	0.25	0.11	0.2	0.15
Full-year worker	0.47	0.53	0.53	0.51	0.52
Retiree	0.02	0.06	0.21	0.06	0.17
<i>Household characteristics</i>					
Household size	5.69	4.37	3.43	4.74	3.9
Number of inactive adults	1.57	1.34	1.08	1.36	1.19
Number of part-year workers	0.69	0.62	0.35	0.48	0.42
Number of full-year workers	1.05	0.93	0.94	1.21	0.97
Children dependents	2.35	1.4	0.78	1.6	1.1
Number of retirees	0.03	0.08	0.28	0.08	0.22
Home owner	0.82	0.76	0.81	0.81	0.81
<i>Reciprocity of types of income</i>					
Labor	0.65	0.64	0.6	0.53	0.6
Entrepreneurial	0.5	0.53	0.33	0.5	0.38
Social welfare	0.65	0.54	0.34	0.49	0.41
Retirement	0.18	0.21	0.41	0.16	0.35
Rental/asset	0.08	0.11	0.22	0.13	0.19
<i>Change in monetary amounts of income types</i>					
Labor	0.17	2.04	1.09	-1.13	0.88
Entrepreneurial	-0.14	1.58	0.19	-2.72	0.05
Social welfare	0.13	0.74	0.03	-0.6	0.05
Retirement	0.11	0.38	0.46	0.02	0.37
Rental/asset	-0.02	0.15	0.23	0.13	0.18
New owner	0.02	0.03	0.02	0.01	0.02
Home owner in both two periods	0.8	0.73	0.8	0.8	0.79
No. of observations	373	140	1806	143	2462

The 2009-10 figures indicate that exitor and non-poor households are more likely to be home owner. Poor and entrant households are more likely to receive labor income. The rest of the findings exhibit similar patterns with the figures pertaining to the previous years.

Table 4: Means of variables: 2009-10

Variables	Poor	Exitor	Non-poor	Entrant	All
<i>Household head characteristics</i>					
Female	0.08	0.11	0.15	0.13	0.14
Age	49.1	48.39	51.37	46.19	50.64
Years of schooling	4.11	4.78	7.26	5.07	6.55
Marital status	0.91	0.86	0.84	0.85	0.85
Inactive adult	0.24	0.18	0.14	0.25	0.16
Part-year worker	0.24	0.2	0.11	0.26	0.14
Full-year worker	0.48	0.56	0.53	0.43	0.52
Retiree	0.03	0.05	0.23	0.07	0.18
<i>Household characteristics</i>					
Household size	5.63	4.75	3.39	5.02	3.87
<i>Household size</i>					
Number of inactive adults	1.7	1.41	1.06	1.74	1.21
Number of part-year workers	0.68	0.52	0.34	0.65	0.42
Number of full-year workers	1.01	1.25	0.94	0.75	0.96
Children dependents	2.2	1.52	0.74	1.77	1.05
Number of retirees	0.04	0.06	0.3	0.1	0.23
Home owner	0.8	0.86	0.82	0.73	0.82
<i>Reciprocity of types of income</i>					
Labor	0.61	0.6	0.58	0.61	0.59
Entrepreneurial	0.52	0.56	0.34	0.4	0.38
Social welfare	0.66	0.63	0.35	0.51	0.42
Retirement	0.2	0.2	0.43	0.17	0.37
Rental/asset	0.11	0.12	0.22	0.15	0.2
<i>Change in monetary amounts of income types</i>					
Labor	0.12	1.75	0.26	-3.06	0.2
Entrepreneurial	0.31	2.62	0.25	-3.3	0.26
Social welfare	0.35	0.94	0.1	-0.43	0.17
Retirement	0.12	0.5	0.44	-0.23	0.37
Rental/asset	-0.04	0.07	-0.11	0.08	-0.08
New owner	0.01	0.03	0.02	0	0.02
Home owner in both two periods	0.79	0.84	0.8	0.73	0.8
No. of observations	363	153	1845	101	2462

4. Empirical Findings

The probit estimates for poverty exit and entry of the households are presented in Tables 5 through 10. The tables are organized such that the effect of an explanatory variable on both exit and entry in all three two-year periods can be observed across a single row of the table. If the variable in question has a statistically significant coefficient in more than one instance, we deduce this as evidence that it has significant effect on poverty transitions of the households.

In Table 5, where we controlled for household head characteristics, household size, and dummy variables for home owners and recipients of

various types of income, we find that the model has more explanatory power in the exit equation with R-square values of around 0.2 as opposed to around 0.1 in the entry equation. The effects of age and marital status are not significant for poverty transitions. We find that female headed households are more likely to exit poverty (only significant for 2007-08), they are less likely to enter poverty. We find that the years of schooling of the household head has a positive effect on the probability of poverty exit, and a negative effect on entry, which are in line with many studies in the poverty transition literature.¹⁶ We observe a negative effect of the full-year employment of the household head on poverty entry; which is line with Valetta (2006) and Buddelmeyer and Verick (2007). It has also a positive effect on the probability of poverty exit for the period 2007-08. Home ownership decreases the probability of moving into poverty. It also increases the probability of poverty exit, which is line with Polin and Raitano (2012) who find that home owners have higher exit probabilities. However its effect is not consistent. On the other hand, household size has a very consistent negative effect on the probability of poverty exit, and a positive effect on entry, which imply that larger households are less likely to exit poverty and more likely to enter poverty.

With regard to the types of income received, we find that reciprocity of labor, retirement or rental/asset income decreases the probability of moving into poverty. However, their effects on poverty exit are not that

¹⁶ (See Addabbo, 2000; McKernan and Ratcliffe, 2002; Cappellari and Jenkins, 2002; Devicienti, 2002; Cantó, 2003; Buddelmeyer and Verick, 2007; Polin and Raitano, 2012)

consistent, we only find a significant and positive effect of reciprocity of rental/asset income on poverty exit for the 2008-09 period. On the other hand, the finding pertaining to retirement income may come as a surprise since households relying on this type of income are known to have difficulties in making ends meet.¹⁷ However, we observe that these households relatively better off than the households that do not have such a steady source of income.

Table 5: Determinants of poverty exit and entry (Model 1a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-09	2008-09	2009-10
<i>Household head:</i>						
Female	0.932** (0.301)	0.407 (0.299)	0.296 (0.287)	-0.556** (0.215)	-1.180*** (0.252)	-0.870** (0.292)
Age	-0.052 (0.033)	0.070 (0.038)	-0.008 (0.032)	0.010 (0.023)	-0.046 (0.024)	-0.044 (0.028)
Age sq.	0.060 (0.034)	-0.087* (0.039)	0.004 (0.031)	-0.011 (0.023)	0.050* (0.022)	0.030 (0.027)
Married	-0.049 (0.314)	0.055 (0.302)	-0.308 (0.275)	0.185 (0.197)	0.045 (0.215)	-0.200 (0.250)
Years of schooling	0.128*** (0.027)	0.067* (0.028)	0.077** (0.027)	-0.113*** (0.018)	-0.127*** (0.020)	-0.123*** (0.022)
Part-year worker	0.318 (0.230)	0.066 (0.213)	0.128 (0.209)	0.120 (0.173)	0.022 (0.194)	0.063 (0.211)
Full-year worker	0.527* (0.217)	0.133 (0.209)	0.343 (0.199)	-0.582*** (0.155)	-0.491** (0.170)	-0.559** (0.196)
Retiree	0.824 (0.467)	0.959* (0.373)	0.563 (0.356)	-0.822*** (0.245)	-0.655** (0.241)	-0.416 (0.254)
Household size	-0.119*** (0.031)	-0.190*** (0.035)	-0.108*** (0.029)	0.152*** (0.026)	0.177*** (0.027)	0.214*** (0.031)
Home owner	0.187 (0.167)	-0.062 (0.162)	0.458* (0.184)	-0.255* (0.121)	-0.148 (0.133)	-0.252 (0.137)
<i>Types of income:</i>						
Labor	0.163 (0.167)	0.185 (0.162)	0.301 (0.157)	-0.453*** (0.128)	-0.432** (0.131)	-0.424** (0.153)
Entrepreneurial	0.009 (0.161)	0.264 (0.159)	0.193 (0.161)	-0.009 (0.132)	0.069 (0.129)	-0.190 (0.155)
Social welfare	-0.055 (0.135)	-0.134 (0.135)	0.039 (0.133)	-0.042 (0.103)	0.255* (0.111)	0.105 (0.123)
Retirement	0.088 (0.218)	0.400 (0.206)	0.174 (0.193)	-0.607*** (0.143)	-0.852*** (0.155)	-0.609*** (0.182)
Rental/asset	-0.092 (0.243)	0.561* (0.225)	0.056 (0.203)	-0.538*** (0.152)	-0.357* (0.145)	-0.178 (0.152)
Constant	-0.179 (0.839)	-1.688 (0.965)	-0.760 (0.867)	-0.455 (0.616)	0.551 (0.659)	0.938 (0.756)
<i>N</i>	490	513	516	1959	1948	1941
pseudo R²	0.126	0.120	0.065	0.210	0.238	0.229

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001

¹⁷ This finding is line with that of Dubois et al (2003) from European Household Panel data.

Moving on to Table 6, where the household size variable is replaced with a series of variables that indicate the number of members falling into six categories, we find that the number of children is significantly associated with both poverty exit and poverty entry. Having high number of children decreases the probability of poverty exit, while it increases the probability of poverty entry. In addition to the number of children, the number of inactive adults is also positively related with the probability of entry, which are line with Capellari and Jenkins (2002) and Devicienti (2002). Also, we observe that the number of full year and part year worker in the household increases the probability of poverty entry, while the number of retiree increases the probability of poverty exit. Parallel to this finding, recipiency of retirement income increases the probability of poverty exit.¹⁸

¹⁸ The rest of the findings are mainly in line with those discussed above.

Table 6: Determinants of poverty exit and entry (Model 1b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	1.014** (0.310)	0.414 (0.304)	0.430 (0.292)	-0.571** (0.220)	-1.246*** (0.256)	-0.854** (0.302)
Age	-0.081* (0.035)	0.043 (0.041)	-0.042 (0.035)	0.024 (0.025)	-0.032 (0.025)	-0.029 (0.030)
Age sq.	0.080* (0.035)	-0.066 (0.041)	0.031 (0.033)	-0.020 (0.024)	0.038 (0.023)	0.020 (0.028)
Married	0.074 (0.325)	0.093 (0.307)	-0.217 (0.277)	0.147 (0.201)	0.025 (0.217)	-0.195 (0.259)
Years of schooling	0.121*** (0.028)	0.063* (0.028)	0.074** (0.028)	-0.118*** (0.019)	-0.127*** (0.020)	-0.127*** (0.022)
Part-year worker	0.291 (0.264)	-0.005 (0.241)	0.330 (0.245)	0.246 (0.203)	0.108 (0.228)	-0.009 (0.247)
Full-year worker	0.369 (0.251)	0.385 (0.243)	0.213 (0.219)	-0.425* (0.176)	-0.586** (0.189)	-0.264 (0.222)
Retiree	-5.149 (0.000)	1.010 (0.711)	0.770 (0.832)	-0.388 (0.532)	-0.853* (0.367)	-0.515 (0.387)
<i>Household size components:</i>						
Inactive adults	-0.078 (0.065)	-0.093 (0.062)	-0.037 (0.057)	0.180*** (0.051)	0.123* (0.052)	0.235*** (0.051)
Part-year workers	0.026 (0.104)	-0.007 (0.106)	-0.177 (0.107)	-0.011 (0.094)	0.017 (0.101)	0.231* (0.106)
Full-year workers	0.106 (0.078)	-0.278** (0.107)	0.098 (0.073)	-0.017 (0.068)	0.183** (0.059)	-0.093 (0.092)
Child dependents	-0.217*** (0.047)	-0.257*** (0.048)	-0.175*** (0.042)	0.213*** (0.041)	0.240*** (0.045)	0.290*** (0.052)
Retirees	5.879*** (0.475)	-0.127 (0.604)	-0.116 (0.740)	-0.298 (0.480)	0.299 (0.267)	0.292 (0.303)
Home owner	0.164 (0.171)	-0.041 (0.164)	0.451* (0.186)	-0.245* (0.123)	-0.146 (0.134)	-0.225 (0.139)
<i>Reciprocity of income:</i>						
Labor	0.024 (0.175)	0.110 (0.171)	0.336* (0.166)	-0.314* (0.136)	-0.376** (0.137)	-0.328* (0.164)
Entrepreneurial	-0.148 (0.175)	0.304 (0.174)	0.120 (0.177)	0.133 (0.142)	0.057 (0.137)	-0.031 (0.167)
Social welfare	-0.010 (0.138)	-0.119 (0.137)	0.075 (0.136)	-0.053 (0.104)	0.273* (0.112)	0.105 (0.125)
Retirement	0.065 (0.224)	0.433* (0.209)	0.136 (0.197)	-0.561*** (0.150)	-0.840*** (0.160)	-0.559** (0.195)
Rental/asset	-0.049 (0.247)	0.562* (0.228)	0.066 (0.205)	-0.567*** (0.155)	-0.374* (0.147)	-0.202 (0.156)
Constant	0.645 (0.882)	-1.108 (1.032)	-0.026 (0.936)	-0.948 (0.653)	0.211 (0.697)	0.338 (0.808)
<i>N</i>	490	513	516	1959	1948	1941
pseudo R²	0.151	0.134	0.084	0.221	0.244	0.248

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

In Table 7, we observe that education has the largest impact on poverty entry and exit, while households headed by a full-year worker are less likely to move into poverty, the coefficients are not significant in the exit equation (except for the 2007-08 period). Also, we observe a more consistent effect of being a retiree on the probability of poverty exit and entry. The change in household size has a negative effect on the probability of poverty exit for 2007-08 and a positive effect on poverty entry for 2008-09 period, but its coefficient is insignificant in both exit and entry equations of other periods. Being home owner has a positive effect on the probability of poverty exit for the 2008-2009 period, while becoming home owner is expectedly significant and negative for the exit equations. Similar to the findings obtained previous models, we observe that while households receiving labor, retirement, rental income are less likely to move into poverty. We would also like to note that the effects of labor and rental/asset income are not consistent as the effect of retirement income.

Table 7: Determinants of poverty exit and entry (Model 2a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	1.041*** (0.307)	0.585* (0.292)	0.393 (0.286)	-0.597** (0.212)	-1.355*** (0.252)	-0.968*** (0.278)
Age	-0.072* (0.034)	0.037 (0.036)	-0.022 (0.031)	0.025 (0.023)	-0.030 (0.024)	-0.033 (0.027)
Age sq.	0.087* (0.034)	-0.045 (0.037)	0.023 (0.030)	-0.030 (0.022)	0.029 (0.022)	0.014 (0.026)
Married	-0.108 (0.324)	-0.116 (0.294)	-0.351 (0.273)	0.372 (0.194)	0.152 (0.211)	0.053 (0.232)
Years of schooling	0.144*** (0.027)	0.090*** (0.027)	0.090*** (0.027)	-0.126*** (0.018)	-0.143*** (0.020)	-0.137*** (0.021)
Part-year worker	0.407 (0.232)	0.068 (0.207)	0.203 (0.208)	0.054 (0.170)	-0.059 (0.191)	-0.072 (0.201)
Full-year worker	0.534* (0.218)	0.137 (0.202)	0.366 (0.198)	-0.631*** (0.152)	-0.500** (0.167)	-0.714*** (0.187)
Retiree	0.959* (0.465)	0.965** (0.369)	0.629 (0.352)	-0.802*** (0.237)	-0.717** (0.239)	-0.523* (0.248)
Change in household size	-0.209* (0.086)	-0.121 (0.064)	-0.075 (0.074)	0.109 (0.063)	0.243*** (0.062)	-0.113 (0.079)
<i>Reciprocity of income:</i>						
Labor	0.031 (0.163)	-0.007 (0.154)	0.155 (0.151)	-0.301* (0.122)	-0.302* (0.129)	-0.124 (0.140)
Entrepreneurial	-0.009 (0.162)	0.182 (0.154)	0.102 (0.158)	0.150 (0.125)	0.182 (0.125)	0.098 (0.139)
Social welfare	-0.052 (0.136)	-0.223 (0.130)	-0.040 (0.131)	-0.030 (0.101)	0.252* (0.109)	0.141 (0.119)
Retirement	0.052 (0.213)	0.262 (0.196)	0.064 (0.187)	-0.596*** (0.141)	-0.876*** (0.154)	-0.561** (0.175)
Rental/asset	-0.260 (0.248)	0.338 (0.211)	0.021 (0.199)	-0.481** (0.147)	-0.289* (0.142)	-0.086 (0.144)
New home owner	1.273*** (0.382)	0.313 (0.425)	1.348* (0.567)	-0.167 (0.490)	-0.029 (0.393)	Omitted
Home owner in both two periods	0.015 (0.168)	-0.120 (0.161)	0.388* (0.183)	-0.206 (0.120)	-0.074 (0.133)	-0.193 (0.133)
Constant	-0.373 (0.865)	-1.733 (0.948)	-0.942 (0.858)	-0.371 (0.611)	0.810 (0.649)	1.300 (0.740)
<i>N</i>	490	513	516	1959	1948	1909
pseudo R²	0.128	0.071	0.048	0.184	0.213	0.171

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

When we replace the household size variable with a series of variables that indicate the number of members falling into six categories, we find that the probability of poverty exit decreases with the increases in the number of inactive adult in the household and the probability of poverty

entry increases with the increases in the number of inactive adult (Table 8).

Interestingly, although households receiving retirement payment are less likely to move into poverty, the increase in the number of retirees in the household increases the probability of poverty entry (for the 2008-09 period).

Table 8: Determinants of poverty exit and entry (Model 2b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.977** (0.314)	0.571 (0.294)	0.404 (0.288)	-0.588** (0.213)	-1.216*** (0.254)	-0.892** (0.283)
Age	-0.067 (0.035)	0.039 (0.037)	-0.019 (0.032)	0.026 (0.023)	-0.041 (0.024)	-0.042 (0.028)
Age sq.	0.079* (0.035)	-0.047 (0.038)	0.020 (0.031)	-0.030 (0.022)	0.041 (0.023)	0.024 (0.026)
Married	-0.134 (0.331)	-0.118 (0.298)	-0.289 (0.279)	0.352 (0.195)	0.186 (0.215)	0.042 (0.235)
Years of schooling	0.137*** (0.028)	0.091*** (0.027)	0.089** (0.027)	-0.125*** (0.018)	-0.137*** (0.020)	-0.135*** (0.021)
Part-year worker	0.346 (0.242)	0.073 (0.215)	0.063 (0.224)	0.094 (0.182)	0.194 (0.206)	0.209 (0.225)
Full-year worker	0.462* (0.227)	0.105 (0.209)	0.304 (0.201)	-0.565*** (0.158)	-0.352* (0.177)	-0.523** (0.198)
Retiree	0.958 (0.502)	1.137** (0.410)	0.890* (0.385)	-0.828*** (0.246)	-0.734** (0.266)	-0.382 (0.271)
<i>Change in the number of household size components:</i>						
Inactive adults	-0.318** (0.104)	-0.182* (0.087)	-0.140 (0.093)	0.157 (0.085)	0.373*** (0.080)	0.056 (0.100)
Part-year workers	-0.057 (0.129)	-0.167 (0.103)	0.029 (0.112)	0.043 (0.097)	0.050 (0.097)	-0.253* (0.108)
Full-year workers	0.036 (0.136)	-0.137 (0.107)	-0.041 (0.126)	-0.004 (0.094)	0.178 (0.099)	-0.198 (0.110)
Child dependents	-0.100 (0.137)	-0.029 (0.104)	-0.041 (0.109)	0.154 (0.101)	0.148 (0.105)	-0.109 (0.132)
Retirees	-0.558 (0.444)	-0.763 (0.472)	-0.640 (0.366)	0.433 (0.250)	0.701** (0.255)	-0.013 (0.244)
<i>Reciprocity of income:</i>						
Labor	-0.062 (0.167)	-0.003 (0.157)	0.130 (0.154)	-0.309* (0.124)	-0.274* (0.130)	-0.101 (0.142)
Entrepreneurial	-0.018 (0.164)	0.188 (0.155)	0.078 (0.160)	0.130 (0.127)	0.198 (0.127)	0.103 (0.142)
Social welfare	-0.076 (0.138)	-0.243 (0.132)	-0.004 (0.133)	-0.025 (0.101)	0.258* (0.111)	0.152 (0.120)
Retirement	0.020 (0.218)	0.207 (0.199)	0.012 (0.190)	-0.591*** (0.141)	-0.868*** (0.154)	-0.581** (0.178)
Rental/asset	-0.197 (0.249)	0.362 (0.212)	-0.011 (0.202)	-0.473** (0.148)	-0.316* (0.145)	-0.073 (0.146)
New home owner	1.254** (0.386)	0.345 (0.432)	1.307* (0.566)	-0.245 (0.509)	0.009 (0.392)	
Home owner in both two periods	0.021 (0.170)	-0.101 (0.162)	0.383* (0.184)	-0.200 (0.121)	-0.074 (0.134)	-0.160 (0.136)
Constant	-0.301 (0.887)	-1.790 (0.963)	-0.950 (0.876)	-0.443 (0.614)	0.808 (0.657)	1.239 (0.751)
<i>N</i>	490	513	516	1959	1948	1909
pseudo R²	0.149	0.077	0.059	0.188	0.230	0.188

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

In the equation for poverty entry and exit presented in Table 9, we use change in monetary amounts of income types received by household as well as household head characteristics and change in household characteristics. We observe greater explanatory power with R-square values of around 0.40 in the exit equation and around 0.22 in the entry equation. We still find that years of schooling of household head has positive effect on poverty exit and negative effect on poverty entry. Change in household size has similar effect with years of schooling of household head. While becoming home owner has positive effect on the probability of poverty exit. As expected, becoming home owner has no significant effect on the probability of moving into poverty but has a positive effect on the probability of poverty exit. While the increases in labor, entrepreneurial, social welfare and retirement income increases the probability of poverty exit, declines in those types increases the probability of poverty entry. However, we observe change in rental/ asset income does not have a consistent effect such that: we find a positive and significant effect on poverty exit for the 2008-09 and 2009-10 periods, while there is a negative and significant effect on poverty entry only for the 2007-08 period. Consequently, almost all of the coefficients measuring the changes in monetary amounts of income types are significant and have effects on both poverty exit and entry, which means that income events are more closely related with poverty transitions of households in Turkey compared to the labor market events. These findings are line with in many studies from different countries (See Bane and Ellwood, 1986; Cantó, 2003; Layte and

Whelan, 2003; Valetta, 2006; Neilson et al., 2008; Seker, 2011; Polin and Raitano, 2012; Seker and Dayioglu, 2014).

Table 9: Determinants of poverty exit and entry (Model 3a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.726 (0.406)	0.564 (0.328)	0.280 (0.321)	-0.525* (0.209)	-1.106*** (0.240)	-0.718** (0.277)
Age	-0.176*** (0.043)	-0.032 (0.043)	-0.063 (0.034)	0.012 (0.023)	-0.067** (0.023)	-0.060* (0.028)
Age sq.	0.193*** (0.043)	0.034 (0.042)	0.063 (0.032)	-0.020 (0.023)	0.053* (0.022)	0.033 (0.027)
Married	-0.613 (0.414)	-0.280 (0.322)	-0.544 (0.314)	0.373 (0.197)	-0.051 (0.207)	0.083 (0.244)
Years of schooling	0.105** (0.035)	0.117*** (0.034)	0.083** (0.031)	-0.139*** (0.019)	-0.164*** (0.020)	-0.173*** (0.023)
Part-year worker	0.478 (0.320)	0.186 (0.253)	0.299 (0.241)	0.024 (0.171)	-0.156 (0.183)	-0.029 (0.203)
Full-year worker	0.738* (0.301)	0.315 (0.234)	0.576** (0.222)	-0.504*** (0.148)	-0.418** (0.156)	-0.524** (0.187)
Retiree	1.152* (0.556)	1.269** (0.457)	1.118** (0.394)	-1.109*** (0.223)	-1.139*** (0.223)	-0.813*** (0.241)
Change in household size	-0.537*** (0.126)	-0.307*** (0.076)	-0.218* (0.087)	0.202** (0.069)	0.309*** (0.061)	0.027 (0.080)
<i>Change in the monetary amount of income:</i>						
Labor	0.450*** (0.047)	0.335*** (0.037)	0.210*** (0.027)	-0.050*** (0.008)	-0.057*** (0.010)	-0.056*** (0.009)
Entrepreneurial	0.414*** (0.051)	0.294*** (0.037)	0.227*** (0.029)	-0.030*** (0.007)	-0.022*** (0.004)	-0.029*** (0.007)
Social welfare	0.453*** (0.072)	0.411*** (0.057)	0.247*** (0.046)	-0.156*** (0.024)	-0.109*** (0.026)	-0.087*** (0.022)
Retirement	0.407*** (0.107)	0.488*** (0.084)	0.173** (0.053)	-0.128** (0.040)	-0.047* (0.019)	-0.049** (0.017)
Rental/asset	-0.041 (0.215)	0.527** (0.166)	0.849** (0.297)	-0.072* (0.030)	-0.015 (0.030)	0.023 (0.030)
New home owner	1.286* (0.500)	0.046 (0.489)	1.261* (0.635)	-0.018 (0.507)	-0.090 (0.425)	
Home owner in both two periods	0.208 (0.215)	-0.129 (0.188)	0.090 (0.197)	-0.260* (0.120)	-0.066 (0.132)	-0.134 (0.141)
Constant	1.174 (1.096)	-1.223 (1.127)	-0.133 (0.976)	-0.251 (0.619)	1.946** (0.632)	1.934** (0.730)
<i>N</i>	490	513	516	1959	1948	1909
pseudo R²	0.496	0.405	0.304	0.218	0.223	0.233

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

When we replace the change in household size with change in household size components, we find that the increases in the numbers of inactive adults, full-year, part-year workers or retirees decrease the probability of poverty exit, which is line with Buddelmeyer and Verick (2007); while their effects on poverty entry are in the opposite direction but not consistent. Indeed, we would like to expect a positive effect of the number of full-year worker on the probability of poverty exit. When we consider the labor market structure in Turkey, we concern that this finding might be due to the effect of agricultural employment. Our variable with relation to employment status covers both agricultural and non-agricultural employment. In Turkey, agricultural product has still mostly done by unpaid family workers in family enterprises. Therefore, to be involved in agricultural employment might decrease the probability of poverty exit. For this reason, we concerned that the finding in relation to negative effect of an increase in the number of full-year household members on the probability of poverty exit might be due to this effect of agricultural employment. In order to capture the pure effect of the non-agricultural employment on the poverty transitions, we run a model that includes a variable showing to be full-year worker in non-agricultural employment. In this model, we find that the number of full-year worker has a negative effect on the probability of poverty exit for 2007-08 period as well. However, the effect is insignificant for the other periods compared (See App 1).¹⁹ The findings related to

¹⁹ While 26.1 percent of part-year workers are involved in agricultural employment, this rate is 38.8 percent among full-year workers in 2010.

income events are line with the findings obtained from Model 3a, which are presented in Table 9.

Table 10: Determinants of poverty exit and entry (Model 3b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.710 (0.404)	0.596 (0.336)	0.288 (0.321)	-0.517* (0.209)	-1.010*** (0.242)	-0.663* (0.279)
Age	-0.174*** (0.044)	-0.037 (0.044)	-0.060 (0.035)	0.012 (0.023)	-0.075** (0.024)	-0.070* (0.028)
Age sq.	0.191*** (0.044)	0.043 (0.044)	0.060 (0.033)	-0.020 (0.023)	0.062** (0.022)	0.043 (0.027)
Married	-0.667 (0.415)	-0.332 (0.334)	-0.522 (0.318)	0.355 (0.197)	-0.023 (0.209)	0.077 (0.245)
Years of schooling	0.096** (0.036)	0.127*** (0.035)	0.084** (0.031)	-0.138*** (0.018)	-0.159*** (0.020)	-0.170*** (0.023)
Part-year worker	0.491 (0.332)	0.422 (0.276)	0.293 (0.259)	0.069 (0.186)	0.068 (0.199)	0.199 (0.228)
Full-year worker	0.860** (0.306)	0.490 (0.253)	0.570* (0.226)	-0.458** (0.155)	-0.321 (0.168)	-0.410* (0.196)
Retiree	1.381* (0.588)	1.620** (0.530)	1.235** (0.426)	-1.131*** (0.231)	-1.164*** (0.244)	-0.720** (0.260)
<i>Change in the number of household size components:</i>						
Inactive adults	-0.634*** (0.149)	-0.386*** (0.116)	-0.251* (0.107)	0.218* (0.089)	0.420*** (0.080)	0.149 (0.101)
Part-year workers	-0.811*** (0.204)	-0.609*** (0.141)	-0.250 (0.132)	0.119 (0.106)	0.169 (0.099)	-0.068 (0.112)
Full-year workers	-0.968*** (0.220)	-0.679*** (0.157)	-0.260 (0.153)	0.094 (0.105)	0.315** (0.103)	0.030 (0.115)
Child dependents	-0.243 (0.185)	-0.003 (0.123)	-0.163 (0.126)	0.233* (0.105)	0.186 (0.104)	-0.056 (0.135)
Retirees	-1.512* (0.762)	-1.921** (0.676)	-0.563 (0.442)	0.487 (0.258)	0.673** (0.242)	0.055 (0.241)
<i>Change in the monetary amount of income:</i>						
Labor	0.494*** (0.052)	0.386*** (0.043)	0.211*** (0.029)	-0.047*** (0.008)	-0.056*** (0.010)	-0.054*** (0.009)
Entrepreneurial	0.447*** (0.055)	0.332*** (0.042)	0.225*** (0.029)	-0.028*** (0.007)	-0.021*** (0.004)	-0.029*** (0.007)
Social welfare	0.454*** (0.074)	0.445*** (0.060)	0.245*** (0.046)	-0.158*** (0.024)	-0.110*** (0.026)	-0.088*** (0.023)
Retirement	0.467*** (0.128)	0.556*** (0.096)	0.169** (0.054)	-0.130** (0.040)	-0.051** (0.019)	-0.047** (0.017)
Rental/asset	-0.004 (0.252)	0.695*** (0.174)	0.824** (0.302)	-0.069* (0.030)	-0.017 (0.031)	0.021 (0.031)
New home owner	1.245* (0.520)	0.197 (0.498)	1.290* (0.639)	-0.087 (0.526)	-0.094 (0.429)	
Home owner in both two periods	0.189 (0.216)	-0.068 (0.198)	0.102 (0.199)	-0.252* (0.121)	-0.063 (0.133)	-0.106 (0.143)
Constant	1.130 (1.108)	-1.427 (1.184)	-0.217 (0.988)	-0.326 (0.622)	1.969** (0.641)	1.988** (0.739)
<i>N</i>	490	513	516	1959	1948	1909
pseudo R²	0.510	0.436	0.306	0.220	0.236	0.241

Standard errors in parentheses
* p<.05, ** p<.01, *** p<.001

5. Policy Recommendations

In this study, we analyze what type of events and factors moved the households out of and into poverty during 2007-2010 period in Turkey. We presented the results by 2-year period in order to analyze the robustness of the results. Descriptive findings revealed that non-poor households are more likely to be headed by an individual with higher years of schooling, a full-year worker, or a retiree and less likely to be headed by an inactive adult or a part-year worker. Given the high rate of homeownership among the non-poor and the high rate of new home ownership among the exiting households and the low rate among entrant households, we conclude that becoming a home owner is critical for many low-income families in terms of making it over the poverty line. We also find that households that enter poverty have the lowest rate of labor income reception; and entrepreneurial and social welfare incomes are the least common among the non-poor whereas retirement and rental/asset incomes are the most common. The general pattern in terms of the amounts of various types of income received is that movements into poverty are closely related with declines in almost all types of income, while movements out of poverty are closely related with increases in almost all types of income.

We run a series of probit models in order to analyze the events that move households into and out of poverty by considering three different points in time when households exit or enter poverty; namely 2008, 2009, and 2010. All the findings considered, we can obviously emphasize that the years of education of the household head, home ownership, and the

increases in amount of income have positive effects on the probability of poverty exit, while household size has a negative effect on the probability of poverty exit, and a positive effect on entry. The increases in the number of inactive adults, full-year and part-year workers reduce the probability of poverty exit, which is line with (Buddelmeyer and Verick, 2007). As for the findings in relation to changes in monetary amounts of income types, we find that income events are critically important for poverty transitions of household in Turkey. We find that the increases in monetary amounts of labor, entrepreneurial, social welfare and retirement incomes positively affect the poverty exits of the households and negatively affect poverty entry. In addition, rental and asset income has also positive effect on the probability of poverty exit, its effects is not consistent.

Even though Turkey has made considerable progress to reduce poverty, the findings contribute to the debate on the effectiveness and limitation of current poverty reduction strategies & policies in Turkey. Therefore, the findings offer valuable sights in relation to policies that aim to reduce poverty.

First of all, poverty reduction should be seen as an essential issue, requires everyone's attention and mainstreamed into the national policies and actions in accordance with international development goals. With regard to the critical findings in terms of policy implications, the years of schooling seems as far as the most important factor behind poverty exit in Turkey. This finding indicates to the necessary of focusing on the current education policies and education system. As known, years of compulsory

education in Turkey was increased from 5 years to 8 years in 1997, which is still low compared to developed countries and has negative effects on critical components or policies of development process. One of the policy recommendations in order to prevent households move into poverty could be that the years of compulsory education should be increased above 8 years. In addition, the quality of education and opportunity inequality in education differs among regions of Turkey. Especially, education quality in the East regions of Turkey is lower than the West of Turkey. In this regard, current education policies should be revised and policies that reduce regional differences in quality of education and opportunity inequality in education should be designed with their effective implementation in order to be poor, to prevent poverty entry and to increase the probability of poverty exit.

On the other hand, we found that poor families are typically larger, corresponding to high fertility among poor households. High poverty and high fertility may create a vicious poverty cycle in the next generation. Because children living in poor families do not seem to face equal opportunity in education and are also exposed to lack of nutrition and power due to poor economic conditions. Children growing up in poverty can still confront various disadvantages in their adulthood. When they enter the labor force at every stage of schooling, those poor children might have low educational attainments compared to the other classmates or peers. Hence, they may enter into a poverty cycle that that can be difficult to break. All things considered, we suggest that welfare policies should not deny the

families with young children and their mothers for ensuring prosperity of future generations and for providing sustainable development. We suppose that policies should be designed to increase the prevalence of preschool education that makes enormous contributions to children cognitive abilities and educational attainments. Also, policies for conditional cash transfers or nutritional support to poor families with young children could help to exit poverty and also prevent children growing up in poor families to enter labor market at their early ages, which positively influence their years of schooling.

On the other hand, the findings underline the critical aspects of labor market in Turkey. As we criticized previous section, we find that the increase in number of inactive household member decreases the probability of poverty exit and increases the probability of poverty entry. So, inactivity can be seen as one of the causes of poverty entry. In this regard, the government might revise job creations schemes as well as active labor market policies to increase employability (such as *via* education and training). In addition, labor market participation (especially female labor force participation) should be encouraged by *welfare-to-work* schemes.

Interestingly, the findings show that the increases in the number of full-year workers in a household have negative effects on the probability of exiting and becoming retired individual increases the probability of exiting. As for the finding regarding retired individuals, common belief in Turkey is that retired people cannot able to make ends meet easily and suffer from poverty. However, the reverse findings bring certain question marks

concerning the effectiveness and limitations of labor market regulations (such as retirement payments, retirement age, minimum wage) and demonstrate that we need to deepen research on Turkish labor market.

On the other hand, the findings with regard to the change in monetary amounts of income types emphasize that poverty reduction policies and actions should not only focus on structural and steady factors but also focus on the flowing factors like changes in income received by the households. In this context, policies that aim to increase the income of the poor have critical importance in terms of precluding poverty entry and encouraging poverty exit of the households in Turkey. These policies could centre on changing factor inputs to increase the level or price of output of the poor: land (land reform, subsidized input packages, increased producer prices), labor (increasing employment information; increasing participation rates (kindergartens, population policy); eliminating barriers to entry; improving workplace health and safety; developing labor-using techniques of production; minimum wage legislation and child labor legislation; physical capital and financial capital (Shaffer, 2008). In addition, we found that monetary gains in social welfare income increase the probability of poverty exit. This finding highlights the significance of the policies that provide direct payments to low-income families (cash payments, child benefits, pensions for widows, etc).

6. Conclusions

In this study, we aimed to identify the types of event closely related with the transitions of households into and out of poverty in Turkey by using panel SILC panel data covering 2007-2010 period. We provided a set of models that control for the household and household head characteristics. The results of our models reveal that years of schooling of the household head is as far as most important factor behind poverty exit and poverty entry; we find that households with higher years of schooling are more likely to exit poverty and less likely to enter poverty. Home ownership is an important and positive factor for poverty exit, while larger households are more likely to be poor. We found that households headed by a retiree individual are more likely to exit poverty, while households with an inactive adult less likely to exit poverty. The findings underline that changes in household compositions are another important events for poverty transitions. On the other hand, changes in monetary amounts of income types play critical roles in household transitions into and out of poverty. For instance, we found that the monetary gains in labor, entrepreneurial, social welfare and retirement income increase the probability of poverty exit and decrease the probability of poverty entry.

As we emphasized in the previous section, the findings underline the importance of policies targeting poor families in order to prevent their entry to poverty or increase the probability of poverty exit. Policies to increase years of schooling and reduce opportunity inequality in education have fundamental importance in this regard. The years of compulsory education

increased above 8 years in order to prevent households move into poverty. On the other hand, the government might revise job creations schemes as well as active labor market policies to increase employability. In addition, labor market participation (especially female labor force participation) should be encouraged by *welfare-to-work* schemes.

The findings also emphasize that the policies centering on changes in factor inputs to increase the level or price of output of the poor: land (land reform, subsidized input packages, increased producer prices), labor (increasing employment information; increasing participation rates (crèches, population policy); eliminating barriers to entry; improving workplace health and safety; developing labor-using techniques of production; minimum wage legislation and child labor legislation; physical capital and financial capital. In addition, the finding highlights the significance of the policies that provide direct payments to low-income families (cash payments, child benefits, pensions for widows, etc).

In the process of conducting the research, we confronted certain limitations. For instance, panel data structure of SILC does not provide regional information; so we could not use the regional lines in the identification of the poor. In case of availability the data that provides regional information, this analysis should be pursued by using regional lines and made comparison with the results of those which are obtained by using national line. On the other hand, a longitudinal data is not available in Turkey yet; we could not perform a duration analysis or a spell analysis to uncover the factors behind poverty transitions of households. Moreover, we

could not focus on the factors behind transitions of the switcher households (i.e households whose poverty status changes more than once) due to the small sample size of those. Such an analysis would provide an informative picture regarding to poverty in Turkey.

Appendix

App 1: Marginal effects (Model 1a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.35** (0.115)	0.14 (0.110)	0.11 (0.108)	-0.04*** (0.010)	-0.04*** (0.007)	-0.03*** (0.006)
Age	-0.02 (0.011)	0.02 (0.012)	-0.00 (0.011)	0.00 (0.002)	-0.00 (0.002)	-0.00 (0.001)
Age sq.	0.02 (0.011)	-0.03* (0.012)	0.00 (0.010)	-0.00 (0.002)	0.00* (0.001)	0.00 (0.001)
Married	-0.02 (0.106)	0.02 (0.090)	-0.11 (0.103)	0.01 (0.014)	0.00 (0.014)	-0.01 (0.017)
Years of schooling	0.04*** (0.009)	0.02* (0.008)	0.03** (0.009)	-0.01*** (0.002)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.11 (0.081)	0.02 (0.067)	0.04 (0.073)	0.01 (0.018)	0.00 (0.013)	0.00 (0.012)
Full-year worker	0.17* (0.070)	0.04 (0.065)	0.12 (0.066)	-0.06*** (0.017)	-0.03** (0.013)	-0.03* (0.012)
Retiree	0.31 (0.182)	0.36* (0.144)	0.21 (0.141)	-0.05*** (0.010)	-0.03*** (0.009)	-0.02* (0.008)
Household size	-0.04*** (0.010)	-0.06*** (0.010)	-0.04*** (0.010)	0.01*** (0.003)	0.01*** (0.002)	0.01*** (0.002)
Home owner	0.06 (0.051)	-0.02 (0.051)	0.14** (0.050)	-0.03 (0.014)	-0.01 (0.011)	-0.02 (0.010)
Labor	0.05 (0.053)	0.06 (0.048)	0.10* (0.051)	-0.04** (0.014)	-0.03** (0.011)	-0.02* (0.010)
Entrepreneurial	0.00 (0.053)	0.08 (0.049)	0.07 (0.054)	-0.00 (0.012)	0.00 (0.009)	-0.01 (0.007)
Social welfare	-0.02 (0.045)	-0.04 (0.043)	0.01 (0.045)	-0.00 (0.009)	0.02* (0.009)	0.01 (0.007)
Retirement	0.03 (0.074)	0.13 (0.073)	0.06 (0.069)	-0.05*** (0.011)	-0.05*** (0.010)	-0.03** (0.009)
Rental/asset	-0.03 (0.076)	0.20* (0.085)	0.02 (0.070)	-0.04*** (0.008)	-0.02** (0.007)	-0.01 (0.006)
Observations	490	513	516	1,959	1,948	1,941

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

App 2: Marginal effects (Model 1b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.38** (0.116)	0.14 (0.111)	0.16 (0.112)	-0.03*** (0.009)	-0.04*** (0.007)	-0.02*** (0.006)
Age	-0.03* (0.012)	0.01 (0.012)	-0.01 (0.012)	0.00 (0.002)	-0.00 (0.002)	-0.00 (0.001)
Age sq.	0.03* (0.012)	-0.02 (0.012)	0.01 (0.011)	-0.00 (0.002)	0.00 (0.002)	0.00 (0.001)
Married	0.02 (0.102)	0.03 (0.088)	-0.08 (0.101)	0.01 (0.014)	0.00 (0.014)	-0.01 (0.016)
Years of schooling	0.04*** (0.009)	0.02* (0.009)	0.02** (0.009)	-0.01*** (0.002)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.10 (0.092)	-0.00 (0.073)	0.12 (0.089)	0.02 (0.024)	0.01 (0.018)	-0.00 (0.012)
Full-year worker	0.12 (0.081)	0.12 (0.074)	0.07 (0.073)	-0.04* (0.017)	-0.04** (0.015)	-0.01 (0.011)
Retiree	-0.30*** (0.024)	0.37 (0.273)	0.29 (0.326)	-0.03 (0.030)	-0.04** (0.011)	-0.02 (0.011)
<i>Household size components:</i>						
Inactive adults	-0.03 (0.021)	-0.03 (0.019)	-0.01 (0.019)	0.02*** (0.004)	0.01* (0.004)	0.01*** (0.003)
Part-year workers	0.01 (0.034)	-0.00 (0.032)	-0.06 (0.036)	-0.00 (0.008)	0.00 (0.007)	0.01* (0.005)
Full-year workers	0.03 (0.026)	-0.08** (0.032)	0.03 (0.024)	-0.00 (0.006)	0.01** (0.004)	-0.00 (0.004)
Child dependents	-0.07*** (0.015)	-0.08*** (0.014)	-0.06*** (0.014)	0.02*** (0.004)	0.02*** (0.003)	0.01*** (0.003)
Retirees	0.78*** (0.020)	-0.04 (0.168)	-0.04 (0.248)	-0.03 (0.040)	0.02 (0.018)	0.01 (0.015)
Home owner	0.05 (0.052)	-0.01 (0.051)	0.14** (0.050)	-0.02 (0.013)	-0.01 (0.011)	-0.01 (0.009)
<i>Reciprocity of income:</i>						
Labor	0.01 (0.057)	0.03 (0.051)	0.11* (0.052)	-0.03* (0.013)	-0.03* (0.011)	-0.02 (0.009)
Entrepreneurial	-0.05 (0.057)	0.09 (0.052)	0.04 (0.059)	0.01 (0.013)	0.00 (0.009)	-0.00 (0.008)
Social welfare	-0.00 (0.045)	-0.04 (0.042)	0.03 (0.045)	-0.00 (0.009)	0.02* (0.009)	0.01 (0.006)
Retirement	0.02 (0.075)	0.14 (0.074)	0.05 (0.069)	-0.04*** (0.011)	-0.05*** (0.010)	-0.03** (0.009)
Rental/asset	-0.02 (0.078)	0.20* (0.086)	0.02 (0.071)	-0.04*** (0.008)	-0.02** (0.007)	-0.01 (0.006)
Observations	490	513	516	1,959	1,948	1,941

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

App 3: Marginal effects (Model 2a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.39*** (0.113)	0.21 (0.113)	0.14 (0.110)	-0.04*** (0.010)	-0.05*** (0.007)	-0.03*** (0.006)
Age	-0.02* (0.011)	0.01 (0.012)	-0.01 (0.011)	0.00 (0.002)	-0.00 (0.002)	-0.00 (0.002)
Age sq.	0.03* (0.011)	-0.01 (0.012)	0.01 (0.010)	-0.00 (0.002)	0.00 (0.002)	0.00 (0.002)
Married	-0.04 (0.114)	-0.04 (0.100)	-0.13 (0.104)	0.03* (0.012)	0.01 (0.012)	0.00 (0.013)
Years of schooling	0.05*** (0.009)	0.03*** (0.009)	0.03*** (0.009)	-0.01*** (0.002)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.14 (0.083)	0.02 (0.068)	0.07 (0.075)	0.01 (0.017)	-0.00 (0.012)	-0.00 (0.011)
Full-year worker	0.18* (0.072)	0.04 (0.065)	0.12 (0.066)	-0.06*** (0.018)	-0.04** (0.014)	-0.05*** (0.014)
Retiree	0.37* (0.174)	0.36** (0.140)	0.24 (0.139)	-0.05*** (0.011)	-0.03*** (0.009)	-0.02** (0.009)
Change in household size	-0.07* (0.029)	-0.04 (0.020)	-0.03 (0.025)	0.01 (0.006)	0.02*** (0.005)	-0.01 (0.005)
<i>Reciprocity of income:</i>						
Labor	0.01 (0.054)	-0.00 (0.050)	0.05 (0.050)	-0.03* (0.013)	-0.02* (0.010)	-0.01 (0.009)
Entrepreneurial	-0.00 (0.054)	0.06 (0.049)	0.03 (0.053)	0.01 (0.013)	0.01 (0.010)	0.01 (0.009)
Social welfare	-0.02 (0.046)	-0.07 (0.043)	-0.01 (0.045)	-0.00 (0.010)	0.02* (0.009)	0.01 (0.008)
Retirement	0.02 (0.073)	0.09 (0.069)	0.02 (0.065)	-0.05*** (0.012)	-0.06*** (0.010)	-0.03** (0.010)
Rental/asset	-0.08 (0.071)	0.12 (0.078)	0.01 (0.068)	-0.04*** (0.009)	-0.02* (0.007)	-0.00 (0.008)
New home owner	0.48*** (0.125)	0.11 (0.159)	0.50** (0.168)	-0.01 (0.035)	-0.00 (0.026)	
Home owner in both two periods	0.00 (0.056)	-0.04 (0.054)	0.12* (0.053)	-0.02 (0.014)	-0.01 (0.010)	-0.01 (0.010)
Observations	490	513	516	1,959	1,948	1,909

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

App 4: Marginal effects (Model 2b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.37** (0.118)	0.21 (0.114)	0.15 (0.111)	-0.04*** (0.010)	-0.04*** (0.007)	-0.03*** (0.006)
Age	-0.02 (0.011)	0.01 (0.012)	-0.01 (0.011)	0.00 (0.002)	-0.00 (0.002)	-0.00 (0.002)
Age sq.	0.03* (0.012)	-0.02 (0.012)	0.01 (0.010)	-0.00 (0.002)	0.00 (0.001)	0.00 (0.001)
Married	-0.05 (0.117)	-0.04 (0.101)	-0.10 (0.105)	0.03* (0.012)	0.01 (0.011)	0.00 (0.013)
Years of schooling	0.05*** (0.009)	0.03*** (0.009)	0.03** (0.009)	-0.01*** (0.002)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.12 (0.086)	0.02 (0.071)	0.02 (0.077)	0.01 (0.019)	0.01 (0.018)	0.01 (0.018)
Full-year worker	0.15* (0.074)	0.03 (0.067)	0.10 (0.068)	-0.06** (0.018)	-0.02 (0.013)	-0.03* (0.013)
Retiree	0.36 (0.189)	0.43** (0.147)	0.34* (0.147)	-0.05*** (0.011)	-0.03*** (0.009)	-0.02 (0.010)
<i>Change in the number of household size components:</i>						
Inactive adults	-0.11** (0.034)	-0.06* (0.028)	-0.05 (0.032)	0.01 (0.008)	0.02*** (0.006)	0.00 (0.006)
Part-year workers	-0.02 (0.043)	-0.05 (0.033)	0.01 (0.038)	0.00 (0.009)	0.00 (0.006)	-0.01* (0.006)
Full-year workers	0.01 (0.045)	-0.04 (0.034)	-0.01 (0.043)	-0.00 (0.009)	0.01 (0.007)	-0.01 (0.006)
Child dependents	-0.03 (0.046)	-0.01 (0.034)	-0.01 (0.037)	0.01 (0.010)	0.01 (0.007)	-0.01 (0.008)
Retirees	-0.19 (0.148)	-0.25 (0.152)	-0.22 (0.124)	0.04 (0.023)	0.05** (0.017)	-0.00 (0.014)
<i>Reciprocity of income:</i>						
Labor	-0.02 (0.056)	-0.00 (0.050)	0.04 (0.051)	-0.03* (0.013)	-0.02* (0.010)	-0.01 (0.008)
Entrepreneurial	-0.01 (0.055)	0.06 (0.049)	0.03 (0.054)	0.01 (0.013)	0.01 (0.010)	0.01 (0.009)
Social welfare	-0.03 (0.046)	-0.08 (0.044)	-0.00 (0.045)	-0.00 (0.010)	0.02* (0.009)	0.01 (0.008)
Retirement	0.01 (0.073)	0.07 (0.069)	0.00 (0.065)	-0.05*** (0.012)	-0.05*** (0.010)	-0.03** (0.010)
Rental/asset	-0.06 (0.074)	0.13 (0.079)	-0.00 (0.068)	-0.04*** (0.009)	-0.02* (0.007)	-0.00 (0.008)
New home owner	0.47*** (0.128)	0.12 (0.163)	0.49** (0.174)	-0.02 (0.031)	0.00 (0.026)	
Home owner in both two periods	0.01 (0.056)	-0.03 (0.054)	0.12* (0.053)	-0.02 (0.014)	-0.01 (0.010)	-0.01 (0.010)
Observations	490	513	516	1,959	1,948	1,909

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

App 5: Marginal effects (Model 3a)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.25 (0.154)	0.18 (0.117)	0.10 (0.116)	-0.03*** (0.009)	-0.04*** (0.006)	-0.02*** (0.006)
Age	-0.05*** (0.012)	-0.01 (0.011)	-0.02 (0.011)	0.00 (0.002)	-0.00** (0.001)	-0.00* (0.001)
Age sq.	0.06*** (0.012)	0.01 (0.011)	0.02 (0.010)	-0.00 (0.002)	0.00* (0.001)	0.00 (0.001)
Married	-0.21 (0.156)	-0.08 (0.102)	-0.19 (0.120)	0.02* (0.010)	-0.00 (0.014)	0.00 (0.010)
Years of schooling	0.03** (0.010)	0.03*** (0.009)	0.03** (0.010)	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.15 (0.103)	0.05 (0.072)	0.10 (0.084)	0.00 (0.014)	-0.01 (0.009)	-0.00 (0.009)
Full-year worker	0.21* (0.084)	0.08 (0.062)	0.18** (0.068)	-0.04** (0.014)	-0.03* (0.011)	-0.03* (0.010)
Retiree	0.42* (0.209)	0.46** (0.170)	0.42** (0.144)	-0.05*** (0.008)	-0.04*** (0.007)	-0.02*** (0.006)
Change in household size	-0.15*** (0.036)	-0.08*** (0.020)	-0.07* (0.027)	0.02** (0.006)	0.02*** (0.004)	0.00 (0.004)
<i>Change in the monetary amount of income:</i>						
Labor	0.13*** (0.014)	0.09*** (0.010)	0.07*** (0.009)	-0.00*** (0.001)	-0.00*** (0.001)	-0.00*** (0.000)
Entrepreneurial	0.12*** (0.015)	0.08*** (0.010)	0.07*** (0.010)	-0.00*** (0.001)	-0.00*** (0.000)	-0.00*** (0.000)
Social welfare	0.13*** (0.021)	0.11*** (0.016)	0.08*** (0.015)	-0.01*** (0.002)	-0.01*** (0.002)	-0.00*** (0.001)
Retirement	0.12*** (0.031)	0.13*** (0.023)	0.05** (0.017)	-0.01*** (0.003)	-0.00* (0.001)	-0.00** (0.001)
Rental/asset	-0.01 (0.061)	0.14** (0.045)	0.27** (0.094)	-0.01* (0.002)	-0.00 (0.002)	0.00 (0.001)
New home owner	0.47** (0.180)	0.01 (0.135)	0.47* (0.215)	-0.00 (0.040)	-0.01 (0.023)	
Home owner in both two periods	0.06 (0.056)	-0.04 (0.053)	0.03 (0.060)	-0.02 (0.013)	-0.00 (0.009)	-0.01 (0.008)
Observations	490	513	516	1,959	1,948	1,909

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

App 6: Marginal effects (Model 3b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.24 (0.152)	0.19 (0.119)	0.10 (0.116)	-0.03*** (0.009)	-0.03*** (0.006)	-0.02*** (0.006)
Age	-0.05*** (0.012)	-0.01 (0.011)	-0.02 (0.011)	0.00 (0.002)	-0.00** (0.001)	-0.00* (0.001)
Age sq.	0.05*** (0.012)	0.01 (0.011)	0.02 (0.010)	-0.00 (0.002)	0.00** (0.001)	0.00 (0.001)
Married	-0.22 (0.157)	-0.10 (0.107)	-0.18 (0.121)	0.02* (0.010)	-0.00 (0.013)	0.00 (0.010)
Years of schooling	0.03** (0.010)	0.03*** (0.009)	0.03** (0.010)	-0.01*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
Part-year worker	0.15 (0.106)	0.12 (0.083)	0.10 (0.090)	0.01 (0.016)	0.00 (0.013)	0.01 (0.014)
Full-year worker	0.24** (0.083)	0.13 (0.066)	0.18** (0.069)	-0.04** (0.014)	-0.02 (0.011)	-0.02 (0.010)
Retiree	0.50* (0.204)	0.58*** (0.171)	0.46** (0.148)	-0.05*** (0.008)	-0.04*** (0.007)	-0.02*** (0.006)
<i>Change in the number of household size components:</i>						
Inactive adults	-0.18*** (0.041)	-0.10*** (0.030)	-0.08* (0.034)	0.02* (0.007)	0.03*** (0.006)	0.01 (0.004)
Part-year workers	-0.23*** (0.055)	-0.16*** (0.036)	-0.08 (0.042)	0.01 (0.009)	0.01 (0.006)	-0.00 (0.005)
Full-year workers	-0.27*** (0.060)	-0.18*** (0.041)	-0.08 (0.049)	0.01 (0.008)	0.02** (0.007)	0.00 (0.005)
Child dependents	-0.07 (0.052)	-0.00 (0.032)	-0.05 (0.040)	0.02* (0.009)	0.01 (0.006)	-0.00 (0.006)
Retirees	-0.42 (0.216)	-0.50** (0.175)	-0.18 (0.141)	0.04 (0.021)	0.04** (0.015)	0.00 (0.011)
<i>Change in the monetary amount of income:</i>						
Labor	0.14*** (0.015)	0.10*** (0.011)	0.07*** (0.009)	-0.00*** (0.001)	-0.00*** (0.001)	-0.00*** (0.000)
Entrepreneurial	0.12*** (0.016)	0.09*** (0.011)	0.07*** (0.010)	-0.00*** (0.001)	-0.00*** (0.000)	-0.00*** (0.000)
Social welfare	0.13*** (0.021)	0.12*** (0.016)	0.08*** (0.015)	-0.01*** (0.002)	-0.01*** (0.002)	-0.00*** (0.001)
Retirement	0.13*** (0.037)	0.14*** (0.025)	0.05** (0.017)	-0.01*** (0.003)	-0.00** (0.001)	-0.00** (0.001)
Rental/asset	-0.00 (0.071)	0.18*** (0.046)	0.26** (0.096)	-0.01* (0.002)	-0.00 (0.002)	0.00 (0.001)
New home owner	0.45* (0.193)	0.06 (0.151)	0.48* (0.213)	-0.01 (0.036)	-0.01 (0.022)	
Home owner in both two periods	0.05 (0.056)	-0.02 (0.053)	0.03 (0.060)	-0.02 (0.013)	-0.00 (0.009)	-0.00 (0.007)
Observations	490	513	516	1,959	1,948	1,909

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

App 7: Determinants of poverty exit and entry (Model 3b)

Covariate	Poverty Exit			Poverty Entry		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
<i>Household head:</i>						
Female	0.399 (0.377)	0.323 (0.333)	0.691 (0.363)	-0.655** (0.238)	-1.032*** (0.264)	-0.213 (0.272)
Age	-0.099* (0.040)	-0.120** (0.043)	-0.045 (0.036)	-0.031 (0.027)	-0.104*** (0.026)	-0.073* (0.028)
Age sq.	0.093* (0.040)	0.109** (0.041)	0.051 (0.034)	0.015 (0.025)	0.087*** (0.024)	0.049 (0.026)
Married	-0.410 (0.399)	-0.795* (0.332)	-0.023 (0.355)	0.262 (0.219)	-0.070 (0.220)	0.345 (0.256)
Years of schooling	0.052 (0.031)	0.075* (0.036)	0.061 (0.032)	-0.163*** (0.023)	-0.121*** (0.020)	-0.166*** (0.023)
Part-year non-agricultural worker	-0.137 (0.282)	-0.034 (0.282)	0.222 (0.270)	-0.194 (0.206)	0.037 (0.209)	0.421 (0.229)
Full-year non-agricultural worker	0.372 (0.280)	0.231 (0.299)	0.489 (0.274)	-0.870*** (0.187)	-0.488** (0.184)	-0.272 (0.213)
Retiree	1.471*** (0.430)	1.639*** (0.427)	0.784* (0.377)	-0.784*** (0.218)	-0.846*** (0.236)	-0.172 (0.236)
<i>Change in the number of household size components:</i>						
Inactive adults	-0.368** (0.128)	-0.337** (0.130)	-0.129 (0.119)	0.182 (0.100)	0.473*** (0.088)	0.353*** (0.097)
Part-year workers	-0.348* (0.155)	-0.453** (0.141)	0.001 (0.138)	0.192 (0.111)	0.128 (0.097)	0.081 (0.106)
Full-year workers	-0.460* (0.217)	-0.282 (0.237)	-0.239 (0.221)	0.194 (0.122)	0.221 (0.117)	0.221 (0.125)
Child dependents	0.010 (0.192)	-0.120 (0.132)	0.065 (0.178)	0.365** (0.119)	0.111 (0.125)	0.108 (0.132)
Retirees	-1.040 (0.662)	-1.405** (0.511)	0.001 (0.416)	0.461 (0.255)	0.512* (0.249)	0.044 (0.224)
<i>Change in the amount of income:</i>						
Labor	0.405*** (0.049)	0.345*** (0.043)	0.196*** (0.030)	-0.053*** (0.009)	-0.058*** (0.011)	-0.053*** (0.009)
Entrepreneurial	0.346*** (0.053)	0.357*** (0.046)	0.207*** (0.038)	-0.027*** (0.008)	-0.013* (0.005)	-0.035*** (0.009)
Social welfare	0.372*** (0.065)	0.427*** (0.059)	0.263*** (0.052)	-0.156*** (0.027)	-0.113*** (0.027)	-0.069** (0.023)
Retirement	0.419*** (0.102)	0.374*** (0.083)	0.263*** (0.078)	-0.109* (0.044)	-0.043* (0.020)	-0.035* (0.017)
Rental/asset	0.355** (0.124)	0.619*** (0.141)	0.412 (0.282)	-0.063 (0.034)	-0.047 (0.032)	0.002 (0.015)
New home owner	0.305 (0.433)	0.091 (0.477)	0.958 (0.548)	-0.205 (0.552)	-0.219 (0.444)	
Home owner in both two periods	-0.019 (0.185)	-0.030 (0.205)	0.025 (0.200)	-0.301* (0.140)	-0.253 (0.134)	-0.342* (0.138)
Constant	0.734 (1.004)	1.596 (1.163)	-1.085 (1.056)	1.257 (0.748)	2.721*** (0.685)	1.735* (0.784)
<i>N</i>	440	431	430	1629	1637	1607
pseudo R²	0.419	0.436	0.287	0.256	0.249	0.241

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

References

- Addabbo, T. (2000). Poverty Dynamics: Analysis of Household Incomes in Italy. *Labour*, 14(1): 119-144.
- Andriopoulou, E., Tsakoglou P. (2011). The Determinants of Poverty Transitions in Europe and the Role of Duration Dependence. IZA DP No. 5692.
- Bane, M. J., Ellwood, D.T. (1983). Slipping into and Out of Poverty: The Dynamics of Spells. NBER Working Paper Series, Working Paper No. 1199.
- Biewen, M. (2003). Who Are the Chronic Poor? Evidence on the Extent and the Composition of Chronic Poverty in Germany. IZA Discussion Papers 779, Institute for the Study of Labor (IZA).
- Bourreau-Dubois, C., Jean-Didier, B., Berger, F. (2003). Poverty Dynamics, Family Events, Labour Market Events in Europe: Are There any Differences between Women and Men?. Paper presented at the Conference European Panel Users Network, 3-5 June, Colchester, UK.
- Buddelmeyer, H., Verick, S., (2007). Understanding the Drivers of Poverty Dynamics in Australian Households. IZA Discussion Paper Series No. 2827, Institute for the Study of Labor, Bonn.
- Callens, M., Croux, C. (2009). Poverty Dynamics in Europe. *International Sociology* 24(3):368- 396.
- Cantó, O. (2003). Finding Out the Routes to Escape Poverty: The Relevance of Demographic vs. Labor Market Events in Spain. *Review of Income and Wealth*, Series 49, Number 4, December 2003.

- Cappellari, L., Jenkins, S.P. (2002). Who stays poor? Who becomes poor? Evidence from the British Household Panel Survey. *The Economic Journal*, 112, C60-C67.
- Damioli, G. (2010). How and Why the Dynamics of Poverty Differ across European Countries. Paper presented at the 31st General Conference of The International Association for Research in Income and Wealth, St. Gallen, Switzerland, August 22-28.
- Devicienti, F. (2002). Poverty Persistence in Britain: A Multivariate Analysis Using the BHPS, 1991-1997. *J.Econ. Suppl.* 9: 307-340.
- Duncan, G. J., Gustafsson, B., Hauser, R., Schmauss, G., Messinger, H., Muffels, R., Nolan, B., Jean-Claude, R. (1993). Poverty dynamics in eight countries. *J Popul Econ* (1993) 6:215-234.
- Eurostat (2010). Income Poverty and Material Deprivation in European Countries. Eurostat Methodologies and Working Papers.
- Fouarge, D., Layte, R. (2005). Welfare Regimes and Poverty Dynamics: The Duration and Recurrence of Poverty Spells in Europe. *Journal of Social Policy* Volume 34, Issue 03, pp 407-426.
- Jarvis, S., Jenkins, S.P. (1997). Low Income Dynamics in 1990s Britain. *Fiscal Studies* Vol. 18, No. 2, pp. 123-142.
- Jenkins, S.P. (2000). Modeling household income dynamics. *Journal of Population Economics* 13: 529-567.
- Jenkins, S.P., Rigg, J.A. (2001). The Dynamics of Poverty in Britain. Department for Work and Pensions, Research Report No 157.

- Layte, R., Whelan, C. (2003). Moving in and out of poverty. *European Societies*, 5:2, 167-191.
- McKernan, S.M., Ratcliffe, C. (2002). Transition Events in the Dynamics of Poverty. The Urban Institute, September 2002.
- McKernan, S.M., Ratcliffe, C. (2005). Events that Trigger Poverty Entries and Exits. *Social Science Quarterly*, Supplement to Volume 86.
- Oxley, H., Thanh T., Antolín P. (2000). Poverty dynamics in six OECD countries. *OECD Economic Studies* No. 30, 2000/I.
- Poggi, A. (2007). Does persistence of social exclusion exist in Spain?. *Journal of Economic Inequality* 5:53-72.
- Polin, V., Michele R. (2012). Poverty Dynamics in Clusters of European Union Countries: Related Events and Main Determinants. University of Verona, Working Paper Series, WP Number: 10.
- Seker, S.D. (2011). The Dynamics of Poverty in Turkey. PhD Thesis, the Middle East Technical University.
- Seker, S.D., Dayioglu, M. (2014). Poverty Dynamics in Turkey. *Review of Income and Wealth* 2014. DOI: 10.1111/roiw.12112.
- Stevens, A. H. (1995). Climbing Out of Poverty, Falling Back in: Measuring The Persistence of Poverty over Multiple Spells”, NBER Working Paper Series, Working Paper 5390.
- Valletta, R. (2006). The Ins and Outs of Poverty in Advanced Economies: Poverty Dynamics in Canada, Germany, Great Britain, and the United States. *Review of Income and Wealth*, 52(2): 261-284.

Essay 2: The Dynamics of Multidimensional Poverty: A New Proposal for Turkey

Abstract

Poverty phenomenon has recently conceived as a multidimensional issue, not only one-dimensional issue based on conventional indicators (i.e., income or expenditure). On the other hand, while a huge literature has focused on the dynamic analysis of one-dimensional poverty, relatively little attention has been given to the dynamics of multidimensional poverty. Using a balanced panel data drawn from the SILC (2007-2010) data, this study focuses on the dynamics of multidimensional poverty in Turkey and aims to fill the gap in the literature. Hence, the main purposes of the study are twofold: the first is to identify the "poor" in Turkey by proposing a new multidimensional poverty measure that incorporates various dimensions closely related to the well-being of individuals (such as labor market, housing, health and living standards), and the second is to investigate how the new measure differentiates from existing poverty measures (i.e., income poverty and material deprivation) by using random effects probit models. The findings show that the new measure partially consistent with the other existing measures. In addition, they indicate that higher years of schooling, homeownership or being a rental/asset income recipient decreases the probability of being poor (irrespective of the measure), while large household size, attachment to agricultural employment or being a social welfare income recipient increases the probability of being poor.

1. Introduction and Background

Since the problem of poverty and the poverty reduction strategies are the essential themes of international development efforts, a vast of literature has focused on the poverty phenomenon. Specifically, two issues are at the heart of the poverty studies: to define "poverty" and to identify the "poor". Despite the vast literature that has focused on the measurement of poverty, there is no consensus on the definition of poverty and its measurement.

Conventional measures of poverty are based on money-metric indicators (i.e. household income or consumption expenditure). In this approach, poverty lines are commonly used to solve identification problems, which are the thresholds below which individuals are considered poor and above which they are considered non-poor. Basically, there are two kinds of poverty lines: absolute poverty and relative poverty lines.

The absolute poverty line is mostly set as an absolute level that is required to meet minimum level, which can be based on either the cost of basic needs method or food energy method. In the first method, the cost of a bundle of basic consumption needs is estimated. In the second method, the food expenditure that is necessary to attain recommended food energy intake is calculated. The most important issue with this approach is the identification of the indicators what constitutes basic needs or food bundle (Bidani and Ravallion, 1993) since indicators that are used can vary across individuals, regions or dates. Although the absolute poverty lines mostly might not provide the relevant information regarding the poor in rich

countries, they make cross-country or over time comparisons between poverty rates of different countries easier.¹

Relative poverty lines are usually set at a percentage of median/mean equivalent household disposable income or mean consumption. In EU methodology, which is the most used one worldwide, individuals are assumed to be at-risk-of poverty, if they are falling below 60 percent of median equivalent household disposable income. Relative income poverty concept is indeed a measure of income inequality and implies that a decline in poverty rate corresponds to an improvement in income inequality in the bottom of the income distribution. On the other hand, since relative poverty line is only dependent to the distribution of income or consumption (i.e. it is insensitive to overall well-being), for instance, if income or consumption levels of the individuals are doubled in a given country, poverty might not change. Moreover, relative poverty lines do not provide the opportunity for cross-country or over time comparisons as they do not represent the same welfare level. It can be said that absolute lines are mostly used in developing countries, while relative lines are dominated in developed countries (Ravallion, 2012).

As a result, in order to identify the poor using money-metric measures is assumed easier way since money is assumed to be translated into affording the other needs and is universally convertible asset, which

¹ The World Bank uses national absolute poverty lines, which are the \$/day poverty lines. For instance, the \$1 per day poverty line might be appropriate for a low-income country, while it might not picture the poor in a rich country.

make cross-country comparison in poverty analysis easier task. Moreover, the one-dimensionality of money-metric measures can allow for a complete ordering of individuals according to their poverty levels. Given these reasons, monetary measures are assumed well-defined and less complex ways of the measurement of poverty, and therefore, they are fairly widespread measures. However, the utilization of the monetary measures in a poverty analysis is not an easy task as it looks; one might argue its certain theoretical and methodological shortcomings.

Income is recently supposed to be not always a good measure for well-being analysis since it disregards command over certain resources (such as non-cash transfers from the government, support from family and friends, etc.) (Bossert et al, 2009). Even though resources that are available to a household can be measured by household disposable income, the income and the resources do not refer to the same thing even they are closely related to each other. Household disposable income might partially correspond to the well-being of individuals since access to free or subsidized public goods and services (such as health care, education and housing, etc.) are the recourses of individuals. Also, being a possibility to have supports of family, friends or neighbors is other resources to sustain their (EuroStat, 2010). Households can also borrow certain consumption goods or can use accumulated savings in order to increase their consumption capacities. In addition, past investments in housing and durables or current states of housing cannot always reflect the current household income. Moreover, even though individuals are observed with the same income level

at a point in time, living standards of them may differ.² For these reasons, using income or consumption (i.e. monetary measures) may not a sufficient way to analyze living conditions of individuals.

Since no one indicator alone can truly capture the multiple aspects of the poverty issue and the shortcomings of money-metric measures of poverty, scholars have focused on developing alternative measures of poverty. Based on the pioneering study of Sen (1985) on capability approach, there have been extending research in this area and studies have focused on the multidimensionality of poverty (See; Sen, 2000; Tsui, 2002; Atkinson, 2003; Bourguignon and Chakravarty, 2003 and Alkire and Foster; 2011).³ Multidimensional poverty literature defines poverty as a state that

² There are also other reasons: for instance, income may be sensitive to time, i.e. it may vary over time. An individual or household is observed as poor at a point in time due to the just a temporary shock rather than a structural arrear. Also, it is needed to distinguish whether if an individual experience the absence of consumption of a good due to the preference of the individual or the inability to afford. Moreover, people are more likely to underreport income that they obtained (it is also collected for the previous calendar year), which will lead to measurement errors. This is misleading for policy purposes devoted to those who are currently poor as well.

³ The core concept of capability approach is to assess individuals' welfare in terms of their functioning and capabilities (beings and doings). Functionings are defined as the achieved states of being and activities of an individual (such as being healthy, being intelligent, being well nurtured etc.) while capabilities are defined as the set of potentially achievable functionings of an individual (Kuklys, 2005).

reflects insufficiency or failure in various dimensions.⁴ The identification of the multidimensional poor can be based on two broad frameworks: axiomatic and non-axiomatic framework.

Axiomatic framework was proposed by Chakravarty et al. (1998) and many studies have followed (Bourguignon and Chakravarty, 2003; Battiston et al., 2009; Bossert et al., 2009; and Alkire and Foster, 2007, 2011; Ataguba et al., 2011).⁵ In the framework, individuals possess vector of a number of traits related various domains of human life. In order to measure multidimensional poverty, it is needed to check whether the individual has minimally acceptable levels that represent cut-offs that are necessary for survival standard of living. If the individual has a consumption level of the dimension below its cut-off, s/he is assumed as

⁴ (See the studies on multidimensional measurement of poverty: Asselin, 2002; Atkinson, 2003; Bourguignon and Chakravarty, 2003; Dekkers, 2003; Wagle, 2005; Duclos et al., 2006; Batana, 2013; Battison et al., 2013; Guio et al., 2009; Belhadj and Limam, 2012; Bossert et. al, 2012; Coromaldi and Zoli, 2012; Alkire and Santos, 2013; Brück and Kebede, 2013).

⁵ The studies using non-axiomatic methods can be classified into 4 groups (Batana, 2008): those that focus on the fuzzy set approach (See Szeles, 2004; Deutsch and Silber, 2005; Betti and Verma, 2008; Belhadj and Limam, 2012), those that focus on the distance function method (See Deutsch and Silber, 2005), those that focus on information theory (See Maasoumi and Lugo, 2008) and those that focus on the statistical methods. The most common statistical methods are factor analysis (Nolan and Whelan, 1996), principal component analysis (Maasoumi and Nickelsburg, 1988), cluster analysis (Ferro-Luzzi et al., 2006), multiple correspondence analysis (Notten, 2008), Multiple Indicators Multiple Causes (MIMIC) model and latent class analysis (Moisio, 2004; Perez-Mayo, 2005).

poor in that dimension. It can be said that the individual is experiencing a functioning failure, and poverty is an increasing function of the failures. The indicators that can be different scale or magnitude are standardized at a threshold value, which is the main advantage of the method. The main disadvantage is the arbitrariness in the choosing of the cut-offs (Asselin, 2002; Dekkers, 2003). It should be noted that the most important point of the poverty measurement discussion is to recognize a certain amount of arbitrariness which is unavoidable in defining any poverty line practice (Ravallion, 1992).

As a result of the studies on the measurement of poverty, poverty has been begun to be perceived as not only a monetary issue, but also an issue that is dependent to various non-monetary dimensions of human life (such as health, housing or labor market). There are already studies on low overlapping ratio between income poor and materially deprived individuals (Whelan et al., 2004, 1996; Perry, 2002). Such findings in the literature imply that different poverty measures might identify dissimilar individuals as poor, which might lead to recommend misleading diagnosis for poverty reduction policies and strategies. All things considered, the measurement of poverty has begun to shift from a one-dimensional to a multidimensional framework.

On the other hand, even though the standard poverty literature (either one-dimensional or multidimensional) have frequently analyzed poverty as a static and timeless state, poverty is a state evolving over time and mostly depends on experienced histories that influences the probability of being

poor in the future (Cappellari and Jenkins, 2004; Calvo and Dercon, 2007; Hoy and Zheng, 2011). Various studies have focused on the dynamic analysis of the monetary measurement of poverty.⁶ However, literature on the dynamic analysis of multidimensional poverty is comparatively limited.⁷

This study focuses on the dynamic characteristics of the multidimensionality of poverty issue in Turkey by using panel data drawn from SILC that covers the years between 2007 and 2010. The purposes of the study are twofold. The first is to identify the "poor" in Turkey by proposing a new multidimensional poverty measure that incorporates various dimensions closely related to the well-being of individuals (i.e., labor market, housing, health and living standards). The second is to investigate how the new measure differentiates from existing poverty measures (such as income poverty and material deprivation). The study contributes to the literature on multidimensional poverty by proposing a new multidimensional poverty measure for an upper-middle income

⁶ There are various studies that analyze the dynamics of one dimensional poverty (See Calvo and Dercon, 2007, 2009; Hoy and Zheng, 2011; Gradin et al. 2011).

⁷ There is a recent literature on constructing a multidimensional poverty index that incorporates inter-temporal poverty, i.e. inter-temporal poverty measure (See Bossert et al., 2012; Nicholas and Ray, 2011). The degree of poverty of two individuals who are poor today with the same degree might not be the same if one of them was poor in any of the previous two periods, while the other was not. Similarly, one of the individuals could be non-poor last year but in poverty the year before and the second individual could be poor only last year, then these two individuals may not have the same degree of poverty today. The degree of poverty depends on both the amount of periods spent in poverty and its persistence (Bossert et al., 2012).

country. It makes an enormous contribution to the literature by dynamically analyzing how the new measure differentiates from the existing measures of poverty. Also, we would like to note that this study is the first analyzing multidimensional poverty in Turkey.

The rest of the study is organized as follows: Section 2 is devoted to the data and identification strategy. Section 3 explains estimation methodology and discusses the econometric results. Finally, Section 4 concludes the study summing up the findings. In addition, certain tables are presented in the Appendix.

2. Data and Identification

2.1. Data

The study employs a panel data obtained from SILC that covers the period 2007-2010.⁸ SILC provides a set of variables related to the characteristics of households and individuals (such as labor market status, health, living standard, income) that make a detailed multidimensional poverty analysis possible.

2.2. Identification of the Poor

Like many other topics and issues of economics, the famous statement “one size fits all” is not valid for the identification of the poor as

⁸ The SILC have been collected annually starting from 2006 by TurkStat. The minimum duration is 4 years in the SILC design and the latest available panel data is pertaining to 2007-2010 period. Even though the period under examination includes the effects of 2008 global crisis, the data is the only available one to pursue a dynamic analysis of poverty.

well, i.e. one measure of poverty worldwide. Naturally, a poverty measure for a given society might not provide relevant information in relation to the issue of poverty in another country. Before moving on to the description of our methodology, we briefly discuss three prominent measures of poverty: monetary poverty, EU severe material deprivation and Alkire-Foster multidimensional poverty measure. After this brief discussion, we introduce our new multidimensional poverty measure proposal for Turkey.

2.2.1. Identification of the Monetary Poor

In accordance with the European Commission methodology, we set the relative income poverty line as the 60 percent of median equivalent household income at national level.⁹ Household net annual disposable income is calculated as the total of individual income of all members of the household (total of the in cash or in kind income such as salary-wage, daily wage, enterprises income, pension, widowed-orphan salary, old-age salary, unpaid grants, etc.), plus the total of yearly income for the household (such as real property income, unreturned benefits, incomes gained by household members less than age 15, etc.), and minus the taxes paid during the reference period of income and regular transfers to the other households or persons. In order to calculate the equivalent household disposable income, we use modified OECD (Organization for Economic Cooperation and Development) scale which gives a weight of 1 to the reference person in the

⁹ Unfortunately we cannot calculate the poverty lines at regional level since the panel data does not provide any regional information.

household, 0.5 to other household members aged 14 and over, and 0.3 to each child aged less than 15. Then, the equivalent household disposable income is calculated by dividing household disposable income to this weight that is the sum of the given weights of the individuals in the household. As we indicated before, relative income poverty measure is a measure income inequality, hence it is inefficient measure for poverty.

2.2.2. Identification of the Non-Monetary Poor

2.2.2.1. EU Material Deprivation Measure

The measurement of poverty has been on the agenda of EU since 2004 as well. EU reached a consensus in 2009 on the indicators of material deprivation. The indicators that are equally weighted are the parts of the EU set of commonly agreed social indicators. 27 EU member States and the European Commission use the indicators in order to monitor and to fight against poverty.

In EU material deprivation methodology, people are supposed to be threatened by “severe material deprivation”, if they cannot afford at least 4 items out of 9 (EU Social Protection Committee, 2009): (i) to pay rent, mortgage, other loans and utility bills, (ii) to keep their home adequately warm, (iii) to face unexpected expenses, (iv) to eat meat (or another adequate source of proteins) regularly, (v) to go on holiday, (vi) audio-video

equipment (orig. 'TV set'), (vii) a washing machine, (viii) a car, (ix) a phone (regular or GSM).¹⁰

Even though EU material deprivation measure is well-defined, less complex identification method of the poor, it does not give an accurate picture of poverty, especially for many other developing countries or middle income countries and Turkey. For instance, deprivation in holiday item in the EU criterion is measured such a question "are you able to afford paying for one week annual holiday away from home?". However, the term "holiday" might correspond to "visiting parents or families in urban area" for most of the households in Turkey. This implies that there is a probability of misunderstanding of the question, and therefore, the measure could lead to an underestimation or overestimation in the poverty rates.

In addition, there is a little proportion of individuals that does not have TV set (1.5 percent in 2010). EU severe material deprivation rate in Turkey is 51.7 percent in 2010, implying that more than half of the population is assumed as poor. Obviously, the method overestimates the poverty rate in Turkey. On the other hand, the methodology does not include indicators as to health or labor market dimensions that are assumed closely related to poverty statuses of individuals, which we underlined in the background section of the study. For these reasons, we do not suppose that severe material deprivation provides lucid information on poverty in Turkey, and therefore, it is needed to develop an alternative measure of

¹⁰ For a discussion on the indicators and choice of cut-off see Guio et al., 2009 and Guio, 2009.

multidimensional poverty for Turkey and the other middle-income or developing countries.

2.2.2.2. Alkire-Foster Multidimensional Poverty Measure

In 2010, a research team from Oxford Poverty and Human Development Initiative (OPHI) proposed a methodology to identify the multidimensional poor, which is named as Alkire and Foster methodology. The method produces a new class of dimension-adjusted multidimensional poverty that is sensitive to both frequency and the breadth of multidimensional poverty.

The measurement relies on two crucial steps, which are called as “dual cut-off” identification process. While the first cut-off is dimension specific, the other cut-off is the minimum number of dimensions needed to identify a household as multidimensional poor household. One method for the identification is to define a household as poor if it is deprived in all dimensions. This method is called as intersection method, which underestimates the poverty rate since it is too restrictive. In addition, a household could be deprived/poor in one dimension and non-deprived/ non-poor in the other one. It is not possible to trade between dimensions in this case. For instance, poor health status cannot be compensated by the dimensions “labor market status” or “housing”. The other method is to define a household as poor if that household is deprived at least in one dimension. This is called as union method, which overestimates the poverty

rate. A third method is proposed to deal with these two extreme cut-offs, called as intermediate method.¹¹

The method uses 10 indicators at household level that are grouped into 3 dimensions: “living standards”, “health” and “education”. Health dimension is measured by using 2 indicators: nutrition (if any adult or child in the family is malnourished) and child mortality (if any child has died in the family). Education dimension has 2 indicators: years of schooling (if no household member has completed 5 years of schooling) and child enrolment (if any school-aged child is out of school in years 1 to 8). Living standard has 6 indicators: cooking fuel (if they cook with wood, charcoal, or dung), sanitation (if does not meet Millennium Development Goal-MDG definitions, or the toilet is shared), drinking water (if does not meet MDG definitions, or is more than 30 minutes walk), electricity (if household does not have electricity), flooring (if the floor is dirt, sand, or dung) and assets (if do not own more than one of: radio, TV, telephone, bike, motorbike or refrigerator and do not possess a car or truck) (Alkire and Santos, 2010). Each dimension is treated as equally important, called as equal weighting. Total weight of the dimensions is equal to 1, implying that each dimension is assigned with 1/3 weight. The indicators are also equally weighted, implying that the dimension weight is divided by the number of indicators in that dimension. The second stage is to determine the number of

¹¹ For the studies that use the intermediate method: See Alkire and Foster, 2007, 2011; Lugo and Maasoumi, 2008; Alkire and Santos, 2010; Bossert et al., 2012; Brück and Kebede, 2013.

deprivations in order to identify multidimensional poor. The cut-off is set as 30 percent of weighted 10 indicators. So if a household is deprived in at least the equivalent of 30 percent of the weighted indicators (3 indicators), the household is considered as multidimensional poor. For instance, if a household is only deprived in nutrition and in assets, its weighted deprivation score is equal to $0.222 = (1/6) + (1/18)$. The household is not multidimensional poor, since the deprivation score (0.222) is less than the cut-off (0.333).

The method provides a good starting point for understanding the multidimensional poor and is mostly used in the indentifying of the multidimensional poor. However, there are certain basic problems with the method. First, given the indicators that constitute the multidimensional measure, it is an appropriate model for underdeveloped countries rather than middle-income or upper middle-income countries. For instance, we suppose that the method do not accurately measure the deprivation in health by using only two indicators: child mortality and nutrition. As known, only one indicator (malnutrition) is not sufficient for measuring health statuses of individuals. A household member could be disabled, have a limitation in daily and professional activities, or have a health problem that precludes involving in labor market, which will negatively influence well-being of individuals. On the other hand, we suppose that housing conditions of households are not also efficiently measured the indicators in question. In addition, given the indicators that show asset status of households (radio, TV, telephone, bike, motorbike, car or tractor), we suppose that the

indicators are not appropriate for Turkey. Possessions of radio, TV, telephone are quite high in Turkey. Moreover, the cut-off of the indicator is being deprived in more than one item of them, which is unrealistic. Also, we suppose that the indicators with regard to housing conditions are more appropriate for underdeveloped countries rather than middle-income or upper middle-income countries (such as dirt, sand, or dung flooring). In Turkey, households that have these flooring types have been fairly marginally used. Considering the economic and demographic structure of Turkey; these indicators are not appropriate for the poverty in Turkey, and therefore, the measure does not provide the relevant information about the poor in Turkey. Like severe material deprivation methodology, the measure does not include any indicator or dimension regarding labor market statuses or conditions of households. There is another problem with the measure, which is the utilization of education as an indicator in order to measure poverty. We suppose that education is a determinant of poverty rather than its indicator. Having said that proposing a multidimensional poverty measure is fairly a difficult task due to the reasons above mentioned, it is needed to develop a new multidimensional measure for Turkey.

Building upon the Alkire-Foster methodology, we propose a new multidimensional poverty measure. In accordance with the socioeconomic structure of Turkey, we make certain changes in the indicators of the measure. We suppose that it is more reasonable measure for Turkey that covers various domains of human life related to well-being.

2.2.2.3. A New Proposal for Multidimensional Poverty

2.2.2.3.1. Choosing indicators

As in line with many studies, we suppose that the well-being of individuals are dependent to various dimensions such as health, labor market status, living standards and housing conditions. Considering the demographic and economic structure in Turkey and using Polychoric Principal Component Analysis, we choose 15 indicators in order to identify the multidimensional poor.¹² Standard Principal Component Analysis (PCA) method includes the normality assumptions and uses the overall variance of the data matrix (Dekkers, 2003).¹³ However, standard PCA is a linear method used only for continuous data samples from multivariate normal distribution. Hence, it is not an appropriate method for the analysis of discrete data. Pearson and Pearson (1922) developed Polychoric PCA as an alternative approach termed that uses maximum likelihood method in order

¹² Some of the indicators can be broadly classified into two broad groups: the items that respondents possess (dish washer, internet, clothes etc.) and the variables that indicate whether respondents are able to afford basic expenses (mortgage credits, utility bills, unexpected expenses etc). In other words, in the questionnaire, respondents are asked if they possess the item or not. If they answer “no”, then they asked if it is by choice or whether they cannot afford it. So, the survey distinguishes the reason of lacking an item, whether it is based on a “preference” or based on “inability to pay”. We only focus on the “inability to pay”, in order to capture deprivations of individuals accurately. So we use both the items that individuals do not possess since they cannot afford and basic expenses that they are not able to face (Coromaldi and Zoli, 2012).

¹³ A correlation of 0.30 may be considered moderate (Weinberg and Abramowitz, 2002); so we choose indicators with correlations greater than 0.30.

to estimate the correlation between the unobserved normally distributed continuous variables from their discrete version. Due to the taking into account the orderings of the categories, this method is more advantageous and the coefficients are more accurate than the results that are estimated with PCA.¹⁴ In addition, we pursue a reliability analysis as to the indicators. App 1 shows Cronbach's alpha reliability coefficients.¹⁵ We observe that the reliability level is fairly satisfactory (0.78).¹⁶

In order to measure health statuses of individuals, we have two indicators: living in a household with at least one individual who has a chronic health problem or living in a household with at least one individual who experiences a limitation of daily activities due to a health problem.¹⁷ Indicators show that individuals are living in a household with at least one unemployed individual or informally employed individual are

¹⁴ Kolenikov and Angeles (2004) underline that the splitting ordinal data into binary variables distorts the correlation matrix since variables are perfectly negatively correlated with each other. In addition, the ordinal information is lost since PCA treats all variables equally. However, *“polychoric PCA solves these problems by assigning each value of a discrete variable and ensuring that the coefficients of an ordinal variable follow the order of its values”* (Moser and Felton, 2007).

¹⁵ For a sample study that uses Cronbach's alpha coefficient see Whelan and Maitre (2012).

¹⁶ The alpha coefficient is calculated with the following formula: $[\frac{N-1}{N} (1 + p)]$. While N denotes the number of indicators and p denotes the mean inter item correlation.

¹⁷ Indicators that show health statuses of individuals are available only for individuals at age of 15 and over. Though we suggest that access to healthcare or health consumption is other good indicators of the health status of the individuals, we cannot include the analysis due to the unavailability of the corresponding variables.

supposed as the indicators that are related to dimension of labor market status.¹⁸ In Turkey, informality is a still one of the major problems in the labor market. According to the official labor market series released by TurkStat, the percentage of regular and casual workers who are informally employed is 19.9 percent in 2013. Informality and poverty can be regarded as correlated phenomena since informal jobs could lead to lower wages and thus poverty (Devicienti et al., 2009).

Four indicators that we choose (to keep their home adequately warm, to face unexpected expenses, to eat meat -or another adequate source of proteins- regularly and washing machine) are the same indicators compared to those that constitute EU severe material deprivation measure. All the reasons criticized in the previous sub-section considered, we replace the indicators “to pay rent, mortgage, other loans and utility bills, to go on holiday, audio-video equipment (orig. ‘TV set’) and a car” with “ability to purchase clothes and possession of a dish washer”. We also include possession of indoor toilet as a multidimensional poverty indicator (the percentage of those who do not possess an indoor toilet is 16 percent in 2010). The percentage of individuals who are not able to afford to purchase new clothes is 38 percent, while the percentage of those who do not possess a dish washer is 47 percent in 2010. We choose 4 indicators related to

¹⁸ Permanency status of the job can be seen one of indicators that show labor market status. Nevertheless, we suggest that permanency status is closely related to informality. To clear, approximately 85 percent of individuals who are employed in permanent jobs are also informally working in the sample. For this reason, the analysis does not include the variable showing the permanency status of the job.

housing conditions of individuals: payment arrears (excl. housing), payment arrears (housing), bath or shower in dwelling, and hot water in dwelling.

The percentage of individuals who do not possess bath or shower in dwelling is 7 percent, those who do not have hot water in dwelling is 27 percent, those who face payment arrears excluding housing is 27 percent and those who face payment arrears related to housing is 27 percent in 2010 (Table 1).

Table 1: Mean values of indicators of the new measure¹⁹

Indicators	2007	2008	2009	2010
No capacity to afford meal with meat	0.61	0.59	0.61	0.62
No ability to keep home adequately warm	0.41	0.41	0.37	0.36
No ability to purchase clothes	0.50	0.46	0.45	0.38
No capacity to face unexpected expenses	0.71	0.71	0.63	0.66
Not possession of dish washer	0.53	0.50	0.50	0.47
Not possession of washing machine	0.14	0.12	0.09	0.08
At least one household member who has limitation in activities because of health problems	0.44	0.53	0.54	0.54
At least one household member who has chronicle health problem	0.53	0.55	0.59	0.58
Have payment arrears (excl. housing)	0.32	0.25	0.30	0.27
Have payment arrears (housing)	0.24	0.25	0.29	0.27
Not possession of bath or shower in dwelling	0.09	0.08	0.07	0.07
Not access to hot water in dwelling	0.31	0.29	0.28	0.27
Not possession of indoor toilet	0.17	0.16	0.16	0.15
At least one unemployed household member	0.11	0.12	0.15	0.13
At least one informally employed household member	0.48	0.47	0.47	0.47

¹⁹ In fact, we suppose that the unit of any poverty measure should be individual as different dimensions are closely related to gender and age group (Asselin, 2002). However, it is very difficult to propose an individual level measure since variables to be used in the conduction of the measure are not available for children in any survey, -including the current one. We compulsory propose the measure at household level like many others.

2.2.2.3.2. Dimensions

There is no agreed process to determine which indicator belongs to which dimension in the identification of the poor. It can be based on international consensus, personal expertise, human rights, empirical evidence or statistical methods (Guio, 2009; Coromaldi and Zoli, 2012; Alkire and Santos, 2009, 2013; Battiston et al., 2013).²⁰ Slottje (1991) underlines that the indicators that are taken into account could be weighted by the variances in the individual attributes.

Following the works of Dekkers (2003) and Coromaldi and Zoli, (2012), we use polychoric PCA in grouping of the indicators. The results show that the indicators should be grouped into 4 dimensions (For the results see App 2). The dimensions are entitled as “living standards”, “health status”, “housing”, and “labor market status”. Labor market status contains two indicators: (i) living in a household with at least one unemployed household member or (ii) at least one informally employed household member. In order to measure “health status”, two indicators are used: (i) s/he is living in a household with at least one household member whose health status is a limiting factor in the daily activities of the individual and (ii) s/he is living in a household with at least one household member who has a chronic health problem. The dimension of “housing” includes 4 indicators: (i) financial burden of mortgage, housing credit etc., (ii) financial burden of utility bills, (iii) bath or shower in dwelling, and (iv)

²⁰ Factor analysis and linear principal component analysis are the most common statistical techniques that are used in the determination process.

indoor toilet. “Living standards” dimension includes: (i) the capacity to afford meal with meat, (ii) ability to keep home adequately warm, (iii) ability to purchase clothes, (iv) capacity to face unexpected expenses, (v) possession of dish washer, (vi) possession of washing machine, and (vii) access to hot water in dwelling

2.2.2.3.3. Weighting

To weight the dimensions is another important stage of identification of the multidimensional poor.²¹ In the study, we compare the results obtained by using different weighting schemes. In our benchmark scheme, we do not use a weighting method. In the first scheme; first, the dimensions are equally weighted, and then indicators are equally weighted, which is in line with the Alkire-Foster methodology. In the second scheme, indicators are weighted with the factor loadings of polychoric PCA analysis. Table 2 presents the indicators, the dimensions and the weights.

²¹ There are three weighting systems that are mostly used in the literature: Data-driven weights (frequency, statistical and most-favorable); Hybrid weights (self-stated and hedonic) and Normative weights (equal or arbitrary, expert opinion, price based) (Decanq and Lugo, 2013). Equal weighting is a method that is widely used in the literature (See Alkire and Foster, 2007, 2011). It implies that the dimensions are treated as equally important. Even though the results can be simply interpreted in this weighting scheme, the main problem is to assume that there is no discrimination about dimensions or items. Certain dimensions could capture the same effect; therefore, it is possible to confront a “double-counting” problem. However, it can be thought as a benchmark method (Guio et al., 2009; Nicholas and Ray, 2012, Battiston et. al, 2013).

Table 2: Indicators, Weights and Dimensions

Dimension	Indicator	The 1st weighting: Equally weighted dimensions and indicators	The 2nd weighting: Polychoric PCA weights
Living standards	No capacity to afford meal with meat	0.04	0.3077
	No ability to keep home adequately warm	0.04	0.2707
	No ability to purchase clothes	0.04	0.3064
	No capacity to face unexpected expenses	0.04	0.3201
	Not possession of dish washer	0.04	0.3137
	Not possession of washing machine	0.04	0.3112
	Not access to hot water in dwelling	0.04	0.3105
Health Status	At least one household member who has limitation in activities because of health problems	0.125	0.6404
	At least one household member who has chronicle health problem	0.125	0.6727
	Have payment arrears (excl. housing)	0.0625	0.3726
Housing	Have payment arrears (housing)	0.0625	0.4268
	Not possession of bath or shower in dwelling	0.0625	0.3327
	Not possession of indoor toilet	0.0625	0.3601
Labor market status	At least one unemployed household member	0.125	0.7591
	At least one informally employed household member	0.125	0.495

2.2.2.3.4. Cut-offs

We still confront with the identification problem: What is the appropriate cut-off or threshold whose above is assumed as non-poor and below is assumed as poor. Even though we suppose that the intermediate method is more reasonable method in order to determine that how many deprivations should be experienced in order to be considered as “multidimensional poor”, we do not decide any *de facto* cut-off since there

is no an agreed principle to set the cut-offs. Instead, we use possible cut-offs and make comparisons of poverty dynamics.²²

In order to understand how the new measure differentiates from the other existing measures, Table 3 presents poverty status match (i.e. overlapping ratio) between our measures (at different weighting scheme and possible cut-offs) and relative income poverty. According to the results, we observe fairly high overlapping ratios between measures (varies from 53 percent to 82 percent). However, we find that when we increase the cut-off, the overlapping ratios between multidimensional poverty and relative income poverty increases as well. Contrary to this finding, the overlapping between multidimensional poverty and EU severe material deprivation decreases, when we increase the cut-off for multidimensional poverty.

²² The cut-off that is used in the benchmark model is just above the mean deprivation. Since the mean deprivation is 5.5, the cut-offs vary from being deprived in 6 indicators to 9 indicators. We would like to note that being deprived in 9 or over is fairly marginal. The cut-offs that are used in the second and the third weighting schemes are the percentage of the maximum total weight. For instance, maximum total weight can equal to 1 in the second weighting scheme. The first cut-off is the 20 percent of 1 (i.e. 0.20), the second cut-off is 30 percent of 1 (i.e. 0.30) etc.

Table 3: Poverty status match between measures (in total sample)

Weighting scheme	Cut-offs	Poverty Status	Relative income poverty		EU Severe material deprivation		
			Non-poor	Poor	Non-poor	Poor	
Benchmark	6 indicators	Non-poor	56.2	5.3	39.6	21.9	
		Poor	20.1	18.4	1.9	36.7	
	7 indicators	Non-poor	63.6	7.8	40.7	30.7	
		Poor	12.7	15.9	0.7	27.9	
	8 indicators	Non-poor	69.2	11.0	41.2	39.1	
		Poor	7.1	12.7	0.2	19.5	
	9 indicators	Non-poor	72.8	14.9	41.4	46.4	
		Poor	3.5	8.8	0.0	12.2	
	1 st weighting scheme	(30 percent) 0.3	Non-poor	36.1	2.2	27.4	10.8
			Poor	40.3	21.5	14.0	47.8
		(40 percent) 0.4	Non-poor	49.1	4.7	33.6	20.2
			Poor	27.2	19.0	7.8	38.4
(50 percent) 0.5		Non-poor	60.9	8.4	38.7	30.6	
		Poor	15.4	15.3	2.7	28.0	
(60 percent) 0.6		Non-poor	69.4	12.7	40.7	41.4	
		Poor	6.9	11.0	0.8	17.2	
2 nd weighting scheme		(30 percent) 1.86	Non-poor	37.3	2.3	29.7	9.9
			Poor	39.0	21.4	11.7	48.7
		(40 percent) 2.48	Non-poor	51.1	5.0	36.6	19.5
			Poor	25.2	18.7	4.8	39.1
	(50 percent) 3.10	Non-poor	62.7	8.8	40.0	31.6	
		Poor	13.6	14.9	1.4	27.0	
(60 percent) 3.72	Non-poor	70.8	14.1	41.1	43.7		
	Poor	5.5	9.6	0.3	14.9		
Poverty status match*	Benchmark	6 indicators	74.6		76.2		
		7 indicators	79.4		68.6		
		8 indicators	81.9		60.7		
		9 indicators	81.6		53.6		
	1 st weighting scheme	(30 percent) 0.3		57.6		75.2	
					68.1	72.0	
		(50 percent) 0.5		76.2		66.7	
				80.4		57.8	
		(60 percent) 0.6			58.7	78.4	
					69.8	75.7	
	2 nd weighting scheme	(40 percent) 2.48		77.6		67.0	
				80.4		56.0	
(50 percent) 3.10							

*Poverty statuses match denotes the sum of the percentages of the non-poor and poor individuals according to the two measures.

Table 4 reports poverty headcount rates. During period under examination, relative income poverty declined from 25.2 percent to 22.5 percent, while EU severe material deprivation slightly increased from 59.0 percent to 59.3 percent.

As for the findings with respect to the multidimensional poverty rates, we find that multidimensional poverty decreased for all cut-offs. However, when we use equal weighting we observe that multidimensional poverty slightly increased according to the cut-off 20 percent (from 60 percent to 61.2 percent), but it decreased for the cut-offs. When we use the weights obtained from polychoric PCA (i.e. the second weighting scheme), we find similar patterns compared to those that are obtained by equal weighting scheme. The only different finding is that multidimensional poverty calculated by the lowest cut-off (30 percent) slightly decreased (from 59.8 percent to 59.6 percent).

Table 4: Poverty headcount rates (%)

		2007	2008	2009	2010
	Income poor	25.2	23.6	24.5	22.5
	EU Severe material deprivation	59.0	58.6	57.7	59.3
	Multidimensional Poverty				
	6 indicators	41.2	39.6	39.3	36.3
Benchmark	7 indicators	32.2	28.7	29.4	26.5
	8 indicators	23.1	19.6	20.4	18.2
	9 indicators	15.3	12.2	12.7	11.0
	(30 percent) 0.3	60.0	61.2	63.2	61.2
1st weighting scheme	(40 percent) 0.4	45.6	46.3	47.5	45.2
	(50 percent) 0.5	31.6	30.7	31.6	29.4
	(60 percent) 0.6	18.7	17.8	18.6	17.1
	(30 percent) 1.86	59.8	60.3	61.4	59.6
2^{n^d} weighting scheme	(40 percent) 2.48	44.5	44.3	45.1	42.2
	(50 percent) 3.10	30.1	28.6	29.5	26.8
	(60 percent) 3.72	16.4	14.9	16.0	14.2

3. Empirical Analysis

3.1. Empirical Methodology

In order to analyze the dynamics of poverty, we estimate a series of probit models, where each dependent variable denotes poverty statuses of individuals (1=poor (deprived), 0=non-poor (non-deprived)) calculated by

all the measures at the possible cut-offs and the weights. The estimation sample consists of individuals who are 15 years old and over.

We use a set of variables that captures individual characteristics (such as age, gender, marital status and years of schooling), household characteristics (such as the household size, number of children and the ratio of the number of worker employed in agricultural sectors to the number of worker in the household²³) and dummy variables that indicate whether households are home owners²⁴ or recipients of labor, entrepreneurial, rental/asset income²⁵, retirement income and social welfare income.²⁶ It is useful

²³ Turkey has not completed the modernization process of agriculture yet. According to the labor market series released by TurkStat, the share of agricultural employment in total employment is 25.2 percent in 2010. In addition, the agricultural production in Turkey is mostly done by family establishments, so individuals in agriculture sector are usually working as unpaid family workers. We suppose that the attachment to agricultural employment is closely related to the poverty statuses of individuals. Therefore, when we calculate the number of workers in the household, we distinguish employment as employment in agricultural sectors in order to observe the genuine effect of being employed like the work of Sen (2003).

²⁴ Households living in company-provided free housing units (i.e. “lojman”) are also treated as home owners here, since they do not pay any rents (or pay small amounts not recorded in the survey).

²⁵ We do not include in the models imputed rents which are predicted annual figures home owners had to pay if they had rented the housing units they reside in. Instead, we use the variable that controls for the homeownership.

²⁶ Social welfare income is the sum of unemployment benefits (including severance payment), widowed-orphan benefits and elderly salaries, unpaid grants, and child benefits,

to note that income data in SILC is collected for the preceding calendar year, i.e. income data is provided with a time lag in the survey. On the contrary, other variables that we are interested in (such as variables related to living standards, health status etc.) are collected for the survey year. This reveals a time mismatch between income data and the others. We do not suppose that a time adjustment is a better way in order to analyze the determinants of multidimensional poverty. Instead, we suggest that income types received by the household in the preceding year might be more explanatory for the understanding current poverty status. Our suggestion is line with the report "Income Poverty and Material Deprivation" released by European Union in 2010 that underlines that even though the difference in reference years raises certain technical and theoretical issues, it also addresses the potential lagged effect between income and deprivation. Adopting this methodology, we specify the following equation:

$$Y_{it} = \beta_1 X_{it} + \varepsilon_{it}$$

where Y_{it} is the dependent variable observed for individual i at time t ; X_{it} is a vector of explanatory variables for individual i at time t ; β is vector of coefficient; and ε_{it} is the error term.

housing allowance, and benefits from other persons or households as unreturned benefits in cash or kind received by households.

3.2. Empirical Results

The estimation results are presented in Tables 5 through Table 7, which are organized such that the effect of an explanatory variable on multidimensional poverty can be observed easily across a single row of the table.²⁷ If the variable in question has a statistically significant coefficient in more than one instance, we interpret this finding as evidence that it has a statistically significant effect on the probability of being poor.

Table 5 provides the results for the first estimation. The first three columns show the results of our benchmark model. We would like to remind that we do not use a weighting scheme in the benchmark model. The fourth column of the table is devoted to the results of the model where dependent variable shows EU severe material deprivation status (1= severely materially deprived, 0=non-deprived), while the last column presents the results of income poverty model where dependent variable shows income poverty status (1= poor, 0=non-poor).

According to the results, while the coefficients of years of schooling, homeownership are statistically significant and negative, the coefficients of household size and the ratio of agricultural worker to the number of worker in the household are significant and positive for all measures. This finding implies that lower years of schooling or homeownership decreases the likelihood of being multidimensional poor (irrespective of what the cut-off is), severely materially deprived or income poor, while higher household

²⁷ We would like to remind that the empirical analysis is only run for individuals who are 15 years old and over since information on education is only available for those individuals.

size or attachment to agriculture employment increases the likelihood of being poor.²⁸

On the other hand, we find that female or married individuals are less likely to be poor. The number of children in the household is significant and positive for income poverty and EU severe material deprivation, implying that living in household with higher number of children increases the probability of being income poor or severely materially deprived. Also, its coefficient is significant and positive for the probability of being multidimensionally poor (only significant for the cut-offs 7 and 9). So, individuals who are living in households with higher number of children are more likely to be multidimensionally poor.

When we look at the results with relation the income types received by households, being a social welfare income recipient is significant and positive for all measures. So, individuals who are living in households that receive social welfare income are more likely to be poor. However, the being an entrepreneurial or a rental/asset income recipient has significant and negative effect on the probability of being poor (for all measures and cut-offs). We observe a similar effect of being a retirement income recipient, but note that it is insignificant for the cut-off 6. On the other hand, while we find that the coefficient of being a labor income recipient is significant and negative for the probability of being income poor, it is significant and positive for the probability of being severely materially

²⁸ The result with relation to agriculture is an expected result since agricultural production is mostly done by unpaid family workers in family establishments.

deprived. It is only significant for the multidimensional poverty calculated by using the cut-off 6 and it has a positive effect on the probability of being multidimensionally poor.

Table 5: Probit regression results of the multidimensional poverty, income poverty and EU severe material deprivation

Covariate	MP-cut-off 6	MP-cut-off 7	MP-cut-off 8	MP-cut-off 9	EU severe material deprivation	Income poor
Female	-0.33*** (0.022)	-0.35*** (0.024)	-0.38*** (0.027)	-0.43*** (0.033)	-0.31*** (0.021)	-0.34*** (0.030)
Age	-0.01 (0.004)	-0.01* (0.004)	-0.02*** (0.004)	-0.03*** (0.005)	-0.01* (0.004)	-0.05*** (0.005)
Age sq.	-0.00 (0.000)	-0.00 (0.000)	0.00 (0.000)	0.00** (0.000)	-0.00* (0.000)	0.00*** (0.000)
Married	-0.39*** (0.029)	-0.42*** (0.031)	-0.35*** (0.035)	-0.29*** (0.041)	-0.22*** (0.028)	-0.11** (0.040)
Years of schooling	-0.18*** (0.004)	-0.18*** (0.004)	-0.19*** (0.005)	-0.20*** (0.006)	-0.17*** (0.003)	-0.18*** (0.005)
No. of children	-0.01 (0.010)	0.03** (0.011)	0.02 (0.011)	0.06*** (0.013)	0.04*** (0.010)	0.22*** (0.013)
Household size	0.15*** (0.007)	0.13*** (0.007)	0.13*** (0.007)	0.09*** (0.008)	0.06*** (0.006)	0.20*** (0.008)
# of agri. worker/ # of worker	1.03*** (0.030)	1.03*** (0.031)	1.03*** (0.034)	1.00*** (0.039)	0.60*** (0.029)	1.43*** (0.039)
Homeownership	-0.22*** (0.023)	-0.17*** (0.025)	-0.18*** (0.028)	-0.12*** (0.034)	-0.41*** (0.022)	-0.54*** (0.032)
Type of income						
Labor	0.06* (0.025)	0.02 (0.026)	-0.02 (0.028)	-0.06 (0.034)	0.11*** (0.024)	-0.37*** (0.031)
Social	0.23*** (0.018)	0.25*** (0.019)	0.33*** (0.022)	0.38*** (0.027)	0.15*** (0.017)	0.17*** (0.024)
Entrepreneurial	-0.17*** (0.024)	-0.17*** (0.026)	-0.19*** (0.029)	-0.19*** (0.035)	-0.31*** (0.024)	-0.51*** (0.033)
Retirement	-0.04 (0.024)	-0.11*** (0.026)	-0.16*** (0.029)	-0.17*** (0.035)	-0.22*** (0.023)	-0.87*** (0.037)
Rental/asset	-0.44*** (0.026)	-0.39*** (0.029)	-0.37*** (0.033)	-0.36*** (0.040)	-0.53*** (0.024)	-0.42*** (0.037)
Constant	0.46*** (0.085)	0.14 (0.090)	-0.19 (0.101)	-0.44*** (0.120)	2.14*** (0.084)	0.43*** (0.114)
Insig2u	0.21*** (0.031)	0.27*** (0.033)	0.36*** (0.037)	0.50*** (0.043)	0.19*** (0.029)	0.61*** (0.036)
Observations	60,020	60,020	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601	24,601	24,601

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

When we use equal weighting scheme in order to identify the multidimensional poor, which is the same weighting method with the Alkire-Foster methodology, we find somewhat different results compared to

the benchmark. Table 6 presents the results of the models where dependent variables show multidimensional poverty status calculated by equal weighting scheme at the different cut-offs. We would like to remind that this weighting scheme refers to equally weighted dimensions and indicators, while the first weighting scheme refers to only equally weighted dimensions. The effects of years of schooling, household size, and the attachment to agricultural employment, homeownership, the reciprocity of rental / asset and social welfare income show the same pattern compared to the benchmark scheme. However, we find that the number of children on the likelihood of being multidimensional poor has a negative effect for all cut-offs.

With respect to the other income types received by households, while we find that being a labor income recipient is significant and positive for all measures, being an entrepreneurial income recipient is only significant and positive for the cut-off 40 percent and being a retirement income recipient is significant and positive for the cut-off (except for the cut-off 60 percent).

Table 6: Probit regression results of the multidimensional poverty by the first weighting scheme and possible cut-offs

Covariate	MP-cut-off 0.3	MP-cut-off 0.4	MP-cut-off 0.5	MP-cut-off 0.6
Female	-0.25*** (0.023)	-0.27*** (0.022)	-0.28*** (0.022)	-0.33*** (0.026)
Age	0.01* (0.004)	0.01 (0.004)	0.00 (0.004)	-0.01 (0.004)
Age sq.	-0.00* (0.000)	-0.00* (0.000)	-0.00 (0.000)	0.00 (0.000)
Married	-0.55*** (0.032)	-0.50*** (0.030)	-0.47*** (0.030)	-0.39*** (0.034)
Years of schooling	-0.16*** (0.004)	-0.16*** (0.004)	-0.15*** (0.004)	-0.15*** (0.004)
No. of children	-0.17*** (0.012)	-0.13*** (0.011)	-0.10*** (0.010)	-0.09*** (0.011)
Household size	0.29*** (0.008)	0.24*** (0.007)	0.21*** (0.007)	0.20*** (0.007)
# of agri. worker/ # of worker	1.27*** (0.035)	1.23*** (0.031)	1.08*** (0.030)	0.95*** (0.033)
Homeownership	-0.10*** (0.023)	-0.11*** (0.023)	-0.11*** (0.023)	-0.14*** (0.027)
Type of income				
Labor	0.11*** (0.027)	0.12*** (0.025)	0.12*** (0.024)	0.04 (0.027)
Social	0.22*** (0.018)	0.23*** (0.018)	0.25*** (0.018)	0.27*** (0.021)
Entrepreneurial	0.02 (0.025)	0.11*** (0.024)	0.02 (0.024)	-0.02 (0.028)
Retirement	0.35*** (0.026)	0.29*** (0.025)	0.11*** (0.024)	-0.01 (0.028)
Rental/asset	-0.35*** (0.026)	-0.34*** (0.025)	-0.37*** (0.026)	-0.38*** (0.031)
Constant	0.37*** (0.090)	-0.24** (0.086)	-0.66*** (0.085)	-1.03*** (0.097)
Insig2u	0.24*** (0.031)	0.25*** (0.030)	0.14*** (0.032)	0.27*** (0.037)
Observations	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

Table 7 presents the results of the models where dependent variables show multidimensional poverty status calculated by the second weighting scheme at the different cut-offs. We would like to remind that we use the weights obtained from polychoric PCA in this weighting scheme. There are two different findings from the results obtained by using the first weighting method: (i) being an entrepreneurial income recipient decreases the

probability of being multidimensionally poor, which is line with the results of benchmark model, and (ii) being a retirement income recipient decreases the probability of multidimensionally poor (for the highest cut-off), while it increases the probability of being multidimensionally poor (for the lower cut-offs). The finding with relation to the effect of being a retirement income recipient could be due to the fact that we include in the multidimensional measure the indicators regarding health. Individuals who receive retirement payment are older compared to those who do not. So, older individuals are more likely to have any health problem, which could be a reason of the positive effect of the retirement income.

Table 7: Probit regression results of the multidimensional poverty by using the second weighting scheme and possible cut-offs

Covariate	MP-cut-off 1.86	MP-cut-off 2.48	MP-cut-off 3.10	MP-cut-off 3.72
Female	-0.27*** (0.022)	-0.27*** (0.021)	-0.30*** (0.022)	-0.35*** (0.027)
Age	0.01** (0.004)	0.01 (0.004)	-0.00 (0.004)	-0.01** (0.004)
Age sq.	-0.00*** (0.000)	-0.00** (0.000)	-0.00 (0.000)	0.00 (0.000)
Married	-0.51*** (0.030)	-0.45*** (0.028)	-0.44*** (0.029)	-0.35*** (0.035)
Years of schooling	-0.16*** (0.004)	-0.15*** (0.003)	-0.15*** (0.004)	-0.15*** (0.005)
No. of children	-0.12*** (0.011)	-0.10*** (0.010)	-0.06*** (0.010)	-0.08*** (0.011)
Household size	0.25*** (0.007)	0.21*** (0.007)	0.18*** (0.006)	0.17*** (0.007)
# of agri. worker/ # of worker	0.99*** (0.032)	0.96*** (0.029)	0.87*** (0.029)	0.81*** (0.033)
Homeownership	-0.15*** (0.022)	-0.12*** (0.022)	-0.10*** (0.023)	-0.10*** (0.028)
Type of income				
Labor	0.16*** (0.025)	0.13*** (0.024)	0.09*** (0.024)	0.05 (0.029)
Social	0.24*** (0.017)	0.21*** (0.017)	0.22*** (0.018)	0.29*** (0.022)
Entrepreneurial	-0.08** (0.024)	-0.10*** (0.023)	-0.09*** (0.024)	-0.06* (0.029)
Retirement	0.23*** (0.025)	0.13*** (0.023)	0.02 (0.024)	-0.09** (0.029)
Rental/asset	-0.41*** (0.025)	-0.41*** (0.024)	-0.38*** (0.026)	-0.32*** (0.033)
Constant	0.49*** (0.085)	-0.01 (0.081)	-0.47*** (0.084)	-1.02*** (0.100)
Insig2u	0.17*** (0.031)	0.10** (0.030)	0.08* (0.033)	0.25*** (0.040)
Observations	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601

Standard errors in parentheses

* p<.05, ** p<.01, *** p<.001

4. Conclusion

The notion of poverty is fundamentally determined in two different kinds of concepts: monetary or non-monetary concept. Correspondingly, the indicators that constitute poverty measures differ as well. Different measures might identify dissimilar individuals as poor, and therefore, poverty reduction policies might be inefficient since it is not truly known who the poor is. Hence, the measurement of poverty is at the heart of the

poverty analyses.

Conventionally, lack of income is assumed as a standard element of the definition of poverty. However, since it does not take into account various aspects of poverty, the notion of poverty has been recently taken as a multidimensional phenomenon that includes various dimensions of well-being (such as health, living standards, labor market, etc.). There are ongoing debates in the literature on multidimensional poverty. So, we criticized the other existing measures that are common used (relative income poverty, EU severe material deprivation criterion and Alkire-Foster multidimensional poverty measure) by considering the nature of poverty in Turkey. Accordingly, we proposed a multidimensional measure that incorporates various dimensions of well-being (such as health, housing, labor market and living conditions) by taking into account the socioeconomic and demographic structure of Turkey. Even though we used possible weighting schemes and cut-offs in order to avoid from the arbitrariness in the identification of the multidimensional poor (i.e. choice of the weights and the cut-offs), we confront a certain amount of arbitrariness, which is expressed to be unavoidable according to the paper of Ravallion (1992).

Given the overlapping ratios between the measures (over 53 percent), the new measure is partially consistent with the existing measures. The overlapping between multidimensional poverty and relative income poverty increases as the cut-off of the multidimensional measure increases. However, the overlapping between multidimensional poverty and EU severe

material deprivation decreases when we increase the cut-off of the multidimensional measure. Given the new measure incorporates various dimensions of poverty; we think that it gives more comprehensive information on poverty in Turkey.

On the other hand, we aimed to identify the "poor" in Turkey by proposing a new multidimensional poverty measure that incorporates various dimensions closely related to the well-being of individuals (i.e., labor market, housing, health and living standards) and to reveal how the new measure differentiates from existing poverty measures (i.e., relative income poverty measure and EU severe material deprivation criterion). We estimated a set of probit regressions, where dependent variables are EU severe material deprivation, income and multidimensional poverty.

When we look at the descriptive findings, we observe that relative income poverty declined during the period under examination (from 25.2 percent in 2007 to 22.5 percent in 2010). However, EU severe material deprivation slightly increased from 59.0 percent in 2007 to 59.3 percent in 2010. With respect to the poverty rates calculated by using the new measure, we observe that multidimensional poverty also decreased during the period (except for the multidimensional poverty calculated by using the first weighting method and the lowest cut-off).

The findings are important to the debate surrounding the policies that aim to identify the "poor" and reduce poverty in Turkey. The overarching policy objective of this research is to provide a comprehensive measure that covers various dimensions of well-being of individuals, and subsequently

the emerging framework of poverty, with evidence of how a multidimensional poverty measure can be implemented in Turkey. Moving from the finding indicating that higher years of schooling of individuals has a significant and negative effect on the probability of being poor (regardless of the measure and for all the cut-offs and the weighting), we can point out that in a policy design that aims to reduce poverty in Turkey principally considers the education policies in the country. In addition, given the number of household size has a significant and positive effect on the probability of being poor; this gives rise to thought of existing fertility policies in Turkey. Also, given children living in larger households are more likely to drop out from high school, we suppose that there are two basic positive effects of household size on the probability of being poor. When we look at the results with regard to household characteristics, we find that the home ownership decreases the likelihood of being multidimensional poor (irrespective of the weighting and the cut-off); the attachment of agriculture, high household size or being a social welfare income recipient increases the likelihood of being multidimensional poor.

On the other hand, the findings with respect to income types received by the households indicate that being a non-labor income recipient is more relevant factor than labor income for the probability of being multidimensional poor. This finding emphasizes that it is needed to revise current labor market policies and deepen research further. In addition, it underlines vital importance of policies to increase income of the poor. These policies could centre on changing factor inputs to increase the level or price

of output of the poor: land (land reform, subsidized input packages, increased producer prices), labor (increasing employment information; increasing participation rates (via kindergartens, population policy); eliminating barriers in labor market; improving workplace health and safety; developing labor-using techniques of production; minimum wage legislation; physical capital and financial capital (Shaffer, 2008).

In the process of conducting the study, we confronted certain limitations. For instance, since the data does not provide indicators in relation to the dimensions that are closely related to the multidimensional poverty statuses of individuals (such as access to health or education), we could not include those dimensions in the measure. On the other hand, the panel data have not regional information. In case of the availability of the variables in question, further research could focus on the extension of the measure and analyze how the measure differentiates from the existing measures by taking into account the regional differences in Turkey. In addition to this, as we indicated previously, there is a recent literature on inter-temporal poverty measures since poverty degrees of individuals might not be the same (i.e. the degree of an individual who is experiencing poverty in previous years are not the same compared to the other who is experiencing poverty once). Further research could also focus on the inter-temporal poverty in Turkey. Such an analysis could provide valuable policy implications for understanding the nature of poverty and ensuring sustainable development of the country.

References

- Alkire, S., Foster, J. (2007). Counting and multidimensional poverty measurement. OPHI working paper series No. 07, Oxford Poverty and Human Development Initiative (OPHI), University of Oxford.
- Alkire, S., Santos M.E. (2010). Acute multidimensional poverty: A new index for developing countries. Human development research paper, 2010/2011. UNDP, USA.
- Alkire, S., Foster J. (2011). Counting and multidimensional poverty measurement. *Journal of public economics*, 95(7-8): 476-487.
- Alkire, S., Santos M.E. (2013). A Multidimensional Approach: Poverty Measurement and Beyond. *Social Indicators Research*. 112: 239-257.
- Alkire, S., Seth, S. (2013). Multidimensional Poverty Reduction in India between 1999 and 2006: Where and How?. OPHI Working Paper No. 60.
- Asselin, L. M. (2002). Multidimensional Poverty Theory. CECI, June 2002.
- Ataguba, J.E., Ichoku, H.E., Fonta, W.M. (2013). Multidimensional poverty assessment: applying the capability approach. *International Journal of Social Economics*. Vol. 40 No.4, 2013, pp.331-354.
- Atkinson, A.B. (2003). Multidimensional deprivation: contrasting social welfare and counting approaches. *Journal of Economic Inequality* 1:51–65, 2003.
- Baulch, B., Masset, E. (2003). Do Monetary and Nonmonetary Indicators Tell the Same Story About Chronic Poverty? A Study of Vietnam in the 1990s. *World Development* Vol. 31, No.3, pp. 441-453.

- Batana, Y.M. (2013). Multidimensional Measurement of Poverty Among Women in Sub-Saharan Africa. *Social Indicators Research*, 112: 337-362.
- Batana, Y.M. (2008). Multidimensional Measurement of Poverty in Sub-Saharan Africa. OPHI Working Paper 13.
- Battiston, D., Cruces, G., Calva, L.F., Lugo, M.A., Santos, M.E. (2013). Income and Beyond: Multidimensional Poverty in Six Latin American Countries. *Social Indicators Research*, 112: 291-314.
- Belhadj, B., Limam, M. (2012). Unidimensional and multidimensional fuzzy poverty measures: New approach. *Economic Modeling* 29 (2012) 995-1002
- Berthoud, R., Bryan, M. (2011). Income, Deprivation and Poverty: A Longitudinal Analysis. *Journal of Social Policy*, 40, pp. 135-156.
- Betti, G., Verma V. (2008). Fuzzy measures of the incidence of relative poverty and deprivation: a multi-dimensional perspective. *Stat. Meth. & Appl.* (2008) 17:225–250.
- Bidani, B., Ravallion, M. (1993). A regional poverty profile for Indonesia. *Bulletin of Indonesian Economic Studies*. Volume 29, Issue 3.
- Bossert, W., Chakravarty, S.R., D'Ambrosio, C. (2009). Multidimensional poverty and material deprivation. Working Papers 129, ECINEQ, Society for the Study of Economic Inequality.
- Bossert, W., Chakravarty, S.R., D'Ambrosio, C. (2012). Poverty and time. *J Econ Inequal* (2012) 10: 145-162.

- Bossert, W., Ceriani, L., Chakravarty, S., and C.D'Ambrosio (2012). Inter temporal material deprivation. Mimeographed.
- Bourguignon, F. and Chakravarty, S.R. (2003). The measurement of multidimensional poverty. *Journal of Economic Inequality*, 1, 25-49.
- Brück, T., Kebede S.W., (2013). Dynamics and Drivers of Consumption and Multidimensional Poverty: Evidence from Rural Ethiopia. IZA DP No. 7364.
- Dercon, S., Calvo, C., (2007). Chronic Poverty and All That: The Measurement of Poverty Over Time. Chronic Poverty Research Centre, Working Paper No. 89.
- Dewilde, C. (2004). The multidimensional measurement of poverty in Belgium and Britain: A categorical approach. *Social Indicators Research*, 68, 331-369.
- Cappellari, L., Jenkins, S.P. (2004). Modelling low income transitions. *Journal of Applied Econometrics*, John Wiley & Sons, Ltd., vol. 19(5), pages 593-610.
- Cellini, S.R., McKernan, S.M., Ratcliffe, C. (2009). The Dynamics of Poverty in the United States: A Review of Data, Methods, and Findings. *Journal of Policy Analysis and Management*, Volume 27, Issue 3, Date: Summer 2008, Pages: 577-605.
- Ceroli, A., Zani, S. (1990). A fuzzy approach to the measurement of poverty. In C. Dagum and M. Zenga (EDS.), *Income and Wealth inequality and poverty* (pp. 272-284). Berlin: Springer.

- Cheli, B., Lemmi, A. (1995). A “totally” fuzzy and relative approach to the multidimensional analysis of poverty. *Economic notes*, 24, 115-134.
- Clark, D., Hulme, D. (2010). Poverty, time and vagueness: integrating the core poverty and chronic poverty frameworks. *Cambridge Journal of Economics* 2010, 34, 347-366.
- Coromaldi, M., Zoli M. (2012). Deriving Multidimensional Poverty Indicators: Methodological Issues and an Empirical Analysis. *Social Indicators Research* 107: 37-54.
- Chakravarty, S.R., Mukherjee D., Ranade R. (1998). On the Family of Subgroup and Factor Decomposable Measures of Multi-dimensional Poverty”, *Research on Economic Inequality* 8, 175-194.
- Decanq, K., Lugo, M.A. (2013). Weights in Multidimensional Indices of Wellbeing: An Overview. *Econometric Reviews*, 32:1, 7-34.
- Dekkers, G. (2003). Financial and Multidimensional Poverty in European Countries: can the former be used as a proxy of the latter?. IRISS Working Paper Series 2003-13, IRISS at CEPS/INSTEAD.
- Devicienti, F., Groisman, F., Poggi, A. (2009). Informality and poverty: Are these processes dynamically interrelated? Evidence from Argentina. *ECINEQ* 2009-146.
- Devicienti, F., Gualtieri V., Rossi, M. (2012). The Persistence of Income Poverty and Lifestyle Deprivation: Evidence from Italy. *Bulletin of Economic Research*, 0307-3378.

- Deutsch, J., Silber, J. (2005). Measuring multidimensional poverty: An empirical comparison of various approaches. *Review of Income and Wealth*, 51: 145-174.
- Duclos, J.-Y., Sahn, D. E., Younger, S. D. (2006). Robust Multidimensional Poverty Comparisons. *The Economic Journal*, 116: 943–968.
- Ferreira, F.H.G., Lugo, M.A. (2012). Multidimensional Poverty Analysis: Looking for a Middle Ground. World Bank Policy Research Working Paper 5964.
- Ferro-Luzzi G., Fluckiger Y., Weber S. (2006). A cluster analysis of Multidimensional poverty in Switzerland, University of Geneva Working Paper Series.
- Foster, J., J. Greer, and E. Thorbecke. (1984). Notes and comments: A class of decomposable poverty measures. *Econometrica*, 52(3), 761-766.
- Gradin, C., del Rio, C. And Canto, O. (2012). Measuring Poverty Accounting for Time. *Review of Income and Wealth*. Volume 58, Issue 2, pages 330–354.
- Guio, A.C. (2009). What can be learned from deprivation indicators in Europe?. Eurostat methodologies and working paper, Eurostat, Luxembourg.
- Guio, A.C., Fusco, A., Marlier E. (2009). A European Union Approach to Material Deprivation using EU-SILC and Euro-barometer data. IRISS WP 2009-19.
- Hoy, M., Zheng, B. (2011). Measuring lifetime poverty. *Journal of Economic Theory* 146 (2011) 2544-2562.

- Krishnakumar, J., Nagar, A.L. (2008). On Exact Statistical Properties of Multidimensional Indices Based on Principal Components, Factor Analysis, MIMIC and Structural Equation Models. *Social Indicators Research* 86: 481-496.
- Kolenikov, S., Angeles, G. (2004). The Use of Discrete Data in Principal Component Analysis: Theory, Simulations, and Applications to Socioeconomic Indices. Working Paper of MEASURE/Evaluation Project, No. WP-04-85, Carolina Population Center, University of North Carolina.
- Kuklys, W. (2005). *Amartya Sen's Capability Approach: Theoretical Insights and Empirical Applications, Studies in Choice and Welfare*, Springer-Verlag.
- Maasoumi, E., Nickelsburg, G. (1988). Multivariate Measures of Well-being and an Analysis of Inequality in the Michigan Data". In: *Journal of Business and Economic Statistics*, Vol. 6: 327-334.
- Maasoumi, E., Lugo, M.A. (2008). The information basis of multivariate poverty assessments. In N. Kakwani and J. Silber (Eds.), *Quantitative approaches to multidimensional poverty measurement* (pp. 1-29). New York: Palgrave-MacMillan.
- Moisio, P. (2004). A Latent Class Application to the Multidimensional Measurement of Poverty. *Quality & Quantity* 38: 703–717, 2004.
- Moser, C., Felton, A. (2007). The Construction of an Asset Index Measuring Asset Accumulation in Ecuador. CPRC Working Paper 87. Global

Economy and Development the Brookings Institution 1775

Massachusetts Avenue, NW Washington DC, 20036, USA.

Nolan, B., Whelan, C.T. (1996). Resources, deprivation and poverty.

Clarendon Press, Oxford.

Notten, G. (2008). Multidimensional Poverty in the Republic of Congo:

Being Poor Simultaneously in Many Ways. BWPI Working Paper 65.

Nicholas, A., Ray, R. (2011). Duration and persistence in multidimensional

deprivation: methodology and Australian application. *Economic Record*

88, 280, 106-126.

Perry, B. (2002). The Mismatch Between Income Measures and Direct

Outcome Measures of Poverty. *Social Policy Journal of New Zealand*.

Issue 19.

Perez-Mayo, J. (2005). Identifying deprivation profiles in Spain: a new

approach. *Applied Economics*, 37, 943–55.

Ravallion, M. (1992). Poverty Comparisons: A Guide to Concepts and

Methods. Living Standards Measurement Study Working Paper No.

88.

Ravallion, M. (2012). Poverty Lines across the World. *Oxford Handbook of*

the Economics of Poverty, edited by Philip N. Jefferson, Oxford

University Press, forthcoming.

Sen, A. (1976). Poverty: an ordinal approach to measurement.

Econometrica, 44, 219-231.

Sen, A. (1985). *Commodities and capabilities*. Amsterdam: North-Holland.

- Shaffer, P. (2008). *New Thinking on Poverty: Implications for Globalisation and Poverty Reduction Strategies*. DESA Working Paper No. 65.
- Slottje, D. (1991). Measuring the quality of life across countries. *The Review of Economics and Statistics*, 73 (4), 684–693.
- Szeles, M. (2004). *Multidimensional Poverty Comparisons within Europe: Evidence from the European Community Household Panel*. IRISS Working Paper Series No:2004-05.
- Townsend, P. (1979). *Poverty in the United Kingdom*. Penguin Books, Middlesex.
- Tsui, K.Y. (2002). Multidimensional poverty indices. *Social Choice and Welfare*, 19: 69-93.
- Wagle, U. (2005). *Multidimensional Poverty Measurement with Economic Well-being, Capability, and Social Inclusion: A Case from Kathmandu, Nepal*. *Journal of Human Development*, Vol. 6, No. 3.
- Weinberg, S.L., Abramowitz, S.K. (2002). *Data Analysis for the Behavioral Sciences Using SPSS*. Cambridge University Press.
- Whelan, C.T., Layte, R., Maitre, B. (2004). Understanding the mismatch between income poverty and deprivation: A dynamic comparative analysis. *Eur. Sociol. Rev.* 20(4), 287–302.
- Whelan, C.T. (2007). Understanding the implications of choice of deprivation index for measuring consistent poverty in Ireland. Working Paper No.181, Economic and Social Research Institute, Dublin.

Whelan, C.T., Nolan, B., Maitre, B. (2012). Multidimensional Poverty Measurement in Europe: An Application of the Adjusted Headcount Approach. GINI Discussion Paper 40.

Whelan, C.T., Maitre, B. (2012). Identifying Childhood Deprivation: How Well Do National Indicators of Poverty and Social Exclusion in Ireland Perform?. *The Economic and Social Review*, Vol. 43, No.2, Summer, 2012, pp. 251-272.

Appendix

App 1: Cronbach alpha estimates

Item	Obs	Sign	item-test correlation	item-rest correlation	interitem covariance	alpha
No capacity to afford meal with meat	107719	+	0.6355	0.5345	0.0355536	0.7595
No ability to keep home adequately warm	107719	+	0.5687	0.4568	0.0367685	0.7667
No ability to purchase clothes	107719	+	0.6372	0.5348	0.0354318	0.7593
No capacity to face unexpected expenses	107719	+	0.637	0.5401	0.0357326	0.7593
Not possession of dish washer	107719	+	0.633	0.5288	0.0354524	0.7598
Not possession of washing machine	107719	+	0.4546	0.3797	0.0403022	0.7752
Not access to hot water in dwelling	107719	+	0.4816	0.3534	0.0382151	0.7763
At least one household member who has limitation in activities because of health problems	107719	+	0.426	0.2924	0.0392455	0.7817
At least one household member who has chronicle health problem	107719	+	0.4744	0.3593	0.0386869	0.7752
Have payment arrears (excl. housing)	107719	+	0.3182	0.1908	0.0412547	0.7886
Have payment arrears (housing)	107719	+	0.4318	0.3639	0.0408576	0.7768
Not possession of bath or shower in dwelling	107719	+	0.5694	0.4664	0.0371191	0.7662
Not possession of indoor toilet	107719	+	0.4955	0.4052	0.0390968	0.7722
At least one unemployed household member	107719	+	0.2608	0.1624	0.0422794	0.7875
At least one informally employed household member	107719	+	0.434	0.3001	0.0390812	0.7811
Test scale					0.0383385	0.78

App 2: Weights obtained from polychoric PCA

Indicators	Comp 1	Comp 2	Comp 3	Comp 4
No capacity to afford meal with meat	0.3077	0.1845	-0.0878	-0.0454
No ability to keep home adequately warm	0.2707	0.1984	-0.1584	0.0666
No ability to purchase clothes	0.3064	0.1623	-0.1218	0.0365
No capacity to face unexpected expenses	0.3201	0.2192	-0.1273	-0.0479
Not possession of dish washer	0.3137	0.0082	-0.0749	-0.011
Not possession of washing machine	0.3112	-0.2554	-0.1145	0.1141
Not access to hot water in dwelling	0.1797	0.1252	0.6404	0.0012
At least one household member who has limitation in activities because of health problems	0.1474	0.1327	0.6727	-0.0194
At least one household member who has chronicle health problem	0.2099	0.3726	-0.1341	-0.1563
Have payment arrears (excl. housing)	0.1069	0.4268	-0.0921	-0.3447
Have payment arrears (housing)	0.3057	0.3327	-0.0137	0.0856
Not possession of bath or shower in dwelling	0.3105	-0.2941	-0.0296	0.0671
Not possession of indoor toilet	0.293	0.3601	0.0201	0.0041
At least one unemployed household member	0.121	0.2228	0.0701	0.7591
At least one informally employed household member	0.2015	-0.237	0.1481	0.495

App 3: Marginal effects

Covariate	MP-cut-off 0.3	MP-cut-off 0.4	MP-cut-off 0.5	EU Severe Material Deprivation	Income Poverty
Female	-0.11*** (0.007)	-0.08*** (0.005)	-0.04*** (0.003)	-0.12*** (0.008)	-0.03*** (0.002)
Age	-0.00 (0.001)	-0.00* (0.001)	-0.00*** (0.000)	-0.00* (0.001)	-0.00*** (0.000)
Age sq.	-0.00 (0.000)	-0.00 (0.000)	0.00 (0.000)	-0.00* (0.000)	0.00*** (0.000)
Married	-0.14*** (0.011)	-0.10*** (0.008)	-0.04*** (0.004)	-0.08*** (0.010)	-0.01* (0.003)
Years of schooling	-0.06*** (0.001)	-0.04*** (0.001)	-0.02*** (0.001)	-0.07*** (0.001)	-0.01*** (0.001)
No. of children	-0.00 (0.003)	0.01** (0.002)	0.00 (0.001)	0.01*** (0.004)	0.02*** (0.001)
Household size	0.05*** (0.002)	0.03*** (0.001)	0.01*** (0.001)	0.02*** (0.002)	0.01*** (0.001)
# of agri. worker/ # of worker	0.35*** (0.010)	0.22*** (0.007)	0.10*** (0.004)	0.23*** (0.011)	0.11*** (0.005)
Homeownership	-0.08*** (0.008)	-0.04*** (0.006)	-0.02*** (0.003)	-0.15*** (0.008)	-0.05*** (0.004)
Type of income					
Labor	0.02* (0.008)	0.00 (0.005)	-0.00 (0.003)	0.04*** (0.009)	-0.03*** (0.003)
Social	0.08*** (0.006)	0.05*** (0.004)	0.03*** (0.002)	0.06*** (0.006)	0.01*** (0.002)
Entrepreneurial	-0.06*** (0.008)	-0.04*** (0.006)	-0.02*** (0.003)	-0.12*** (0.009)	-0.04*** (0.003)
Retirement	-0.01 (0.008)	-0.02*** (0.005)	-0.01*** (0.002)	-0.08*** (0.009)	-0.05*** (0.003)
Rental/asset	-0.13*** (0.007)	-0.07*** (0.005)	-0.03*** (0.002)	-0.21*** (0.010)	-0.02*** (0.002)
Observations	60,020	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601	24,601

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

App 4: Marginal effects

Covariate	MP-cut-off 0.3	MP-cut-off 0.4	MP-cut-off 0.5	MP-cut-off 0.6
Female	-0.08*** (0.007)	-0.11*** (0.009)	-0.08*** (0.006)	-0.03*** (0.003)
Age	0.00* (0.001)	0.00 (0.002)	0.00 (0.001)	-0.00 (0.000)
Age sq.	-0.00* (0.000)	-0.00* (0.000)	-0.00 (0.000)	0.00 (0.000)
Married	-0.16*** (0.008)	-0.20*** (0.012)	-0.14*** (0.009)	-0.05*** (0.004)
Years of schooling	-0.05*** (0.001)	-0.06*** (0.001)	-0.04*** (0.001)	-0.02*** (0.001)
No. of children	-0.06*** (0.004)	-0.05*** (0.004)	-0.03*** (0.003)	-0.01*** (0.001)
Household size	0.09*** (0.003)	0.10*** (0.003)	0.06*** (0.002)	0.02*** (0.001)
# of agri. worker/ # of worker	0.41*** (0.011)	0.49*** (0.012)	0.30*** (0.008)	0.10*** (0.004)
Homeownership	-0.03*** (0.007)	-0.04*** (0.009)	-0.03*** (0.007)	-0.01*** (0.003)
Type of income				
Labor	0.03*** (0.009)	0.05*** (0.010)	0.03*** (0.006)	0.00 (0.003)
Social	0.07*** (0.006)	0.09*** (0.007)	0.07*** (0.005)	0.03*** (0.002)
Entrepreneurial	0.01 (0.008)	0.04*** (0.010)	0.01 (0.007)	-0.00 (0.003)
Retirement	0.11*** (0.007)	0.12*** (0.010)	0.03*** (0.007)	-0.00 (0.003)
Rental/asset	-0.12*** (0.009)	-0.13*** (0.010)	-0.09*** (0.006)	-0.03*** (0.002)
Observations	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

App 5: Marginal effects

Covariate	MP-cut-off 1.86	MP-cut-off 2.48	MP-cut-off 3.10	MP-cut-off 3.72
Female	-0.09*** (0.008)	-0.10*** (0.008)	-0.07*** (0.005)	-0.02*** (0.002)
Age	0.00** (0.001)	0.00 (0.001)	-0.00 (0.001)	-0.00** (0.000)
Age sq.	-0.00*** (0.000)	-0.00** (0.000)	-0.00 (0.000)	0.00 (0.000)
Married	-0.17*** (0.009)	-0.17*** (0.011)	-0.11*** (0.008)	-0.03*** (0.003)
Years of schooling	-0.06*** (0.001)	-0.06*** (0.001)	-0.04*** (0.001)	-0.01*** (0.000)
No. of children	-0.04*** (0.004)	-0.04*** (0.004)	-0.01*** (0.002)	-0.01*** (0.001)
Household size	0.09*** (0.003)	0.08*** (0.002)	0.04*** (0.002)	0.01*** (0.001)
# of agri. worker/ # of worker	0.35*** (0.011)	0.37*** (0.011)	0.21*** (0.007)	0.06*** (0.003)
Homeownership	-0.05*** (0.008)	-0.05*** (0.008)	-0.02*** (0.006)	-0.01*** (0.002)
Type of income				
Labor	0.06*** (0.009)	0.05*** (0.009)	0.02*** (0.006)	0.00 (0.002)
Social	0.08*** (0.006)	0.08*** (0.006)	0.05*** (0.004)	0.02*** (0.002)
Entrepreneurial	-0.03** (0.009)	-0.04*** (0.009)	-0.02*** (0.006)	-0.00* (0.002)
Retirement	0.08*** (0.008)	0.05*** (0.009)	0.00 (0.006)	-0.01*** (0.002)
Rental/asset	-0.15*** (0.010)	-0.15*** (0.008)	-0.08*** (0.005)	-0.02*** (0.002)
Observations	60,020	60,020	60,020	60,020
Number of id	24,601	24,601	24,601	24,601

Standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

Essay 3: How does childhood poverty affect future outcomes of children?

Abstract

Hundreds of studies have focused on the measurement of poverty, developed poverty indices and made policy evaluations, but a comparatively little literature has documented the intergenerational linkages of poverty. To understand the nature of poverty and to develop policies that aim to reduce poverty 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

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 comparatively little literature has analyzed intergenerational linkages of poverty, i.e. the effects of childhood poverty on future outcomes of children.

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.²⁹ 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 the population) were living in poor families in 2011.³⁰ This high poverty rate

²⁹ (See Calvo and Dercon, 2007; Hoy and Zheng, 2011; Bossert et al., 2012)

³⁰ Turkish Statistical Institute (TurkStat) has annually announced relative income poverty rates by national and regional poverty lines calculated from SILC data since 2006. Relative income poverty lines are set at 60 percent of equivalent median household disposable income. In order to calculate equivalent income, TurkStat uses modified OECD scale which gives a weight of 1 to the reference person in the household, 0.5 to other household members aged 15 and over, and 0.3 to each child aged less than 15. In this study, we follow the path of 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. As we

among children compared to those in EU countries motivates following critical questions that are the major concerns of this study³¹: What are the consequences/influences of growing up in a poor household? Are children able to move out of poverty cycle? What are the structural changes revealed due to these disadvantages transmitted from the parents? And how does the transmission mechanism of poverty works? These are somewhat key questions in this area; and their answers constitute 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).³² 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

mentioned before, SILC provides regional information at NUTS1 level. So, we have 12 different poverty lines.

³¹ 27 percent of children, who are between 0 and 17 ages and living in the EU-27, were at risk of poverty or social exclusion in 2011 (Eurostat, Statistics in Focus, 4/2013).

³² Moreover, those children are supposed to be at risk of deprivation of the child rights.

being equal- are observed to suffer the worst outcomes. Obviously, inequalities and disadvantages prevail into the adulthood as well (Caro, 2014). Moreover, the inequalities and disadvantages that rose during childhood, also might reduce the socioeconomic attainment of own children in the next generation.³³ Hence, the cycle of poverty might perpetuate and unfortunately might be deepened in every new generation.

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 1975³⁴) emphasize that educational qualifications and skills are the essential contributors of socioeconomic attainments of individuals.³⁵ 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

³³ Low mobility at the bottom of the income distribution increases the probability of the inheritance of poverty across generations (Duncan et al. 1998).

³⁴ 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.

³⁵ 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).

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 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.³⁶

³⁶ More educated parents have higher resources to protect children from health problems and are also more careful in health awareness. On the other hand, more educated parents have social networks that could help their children in their job-search process (D'addio, 2007).

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). In addition, intergenerational wealth transfers (via transfers, gifts, inheritances or bequests) can positively affect the children's outcomes in their adulthood due to the return of the wealth transfer and the income flowing from assets could help providing better nutrition, health, education, learning environment, living in good housing and neighborhood conditions.³⁷ 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.³⁸

³⁷ Boehm and Schlottmann (2004) indicate that children of homeowners are more likely to have higher years of schooling in the United States.

³⁸ Moreover, areas with high economic inequality might create pressure on both parents and children, which deteriorates mental and physical health of children.

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).³⁹ 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.

Inequality of opportunity is another aspect of this issue that is mostly addressed in the literature, which is a concept popularized by Roemer (1998). He emphasized two types of inequalities in advantages: the inequalities in advantages that due to the circumstances (such as race, ethnicity, family background, etc.) and inequalities in advantages that are due to the efforts (such as choices, etc.). For that reason, inequality of opportunity is defined by Roemer as a state where the distribution of the advantages is not dependent to the circumstances the inequalities that are due to circumstances can be tolerated, while the inequalities that are due to

³⁹ Parenting behaviors, practices, values and standards might affect children’s outcomes (culture of poverty) and hence behaviors are transmitted across generations (D’Addio, 2007).

the efforts are acceptable (Tansel, 2014). Literature on inequality of opportunities regard various advantages, one of them is Inequality of opportunity in educational achievement. By using test results of Program for International Student Assessment (PISA) conducted by the OECD, Tansel (2014) examines the inequality of opportunity in education in Turkey in the years 2003-2012. She finds that the inequality in educational achievement is mostly due to inequality of opportunity and moreover the family background makes enormous contribution to the inequality of educational achievement even it is found that it slightly decreases over time. In a similar vein, by using Household Income, Expenditure and Consumption Surveys (HIECS) from a number of MENA (Middle East and North Africa) counties, Assad et al. (2014) analyze inequality of opportunity in achievement. They indicate that family background plays a larger role in determining the inequality of opportunity education since better off families in terms of wealth provide their children the incentive and tools to learn, which positively affect the education attainments of children. However, there is another effect that might counterbalance the adverse effect of family background. Governments could provide public schools that enable children coming from different families with various backgrounds to attend school. So, the negative role of family background could be smaller. Ferriera and Gignoux (2010) analyze the inequalities of opportunities in education in Turkey by using PISA test scores for 2006 and underline that gender matters in terms of school enrollment by finding that girls are more unfavorably affected by disadvantageous circumstances compared to boys. In addition,

Salehi-isfahani et al. (2012) focus on the inequality of educational achievement in the MENA and find that family background plays great role in inequality of opportunity in education in Turkey.

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. Studies have found that large households are more likely to be poor and move into poverty, or less likely to move out of poverty. Individuals involved in informal jobs are more likely to be poor (OECD, 2009). On the other hand, individuals who started to work at their early ages might have the lack of human capital (education, training, skills) that can be assumed as the main driver of moving out of poverty, and moreover they are more likely to have health problem if they are involved in hazardous conditions of labor. All things considered, these outcomes have critical importance in terms of determining of poverty statues of individuals.

There are various methods to analyze the effects of childhood poverty on such that outcomes of children in the literature: sibling method (Duncan et al., 1998), cohort analysis (Huang, 2013; Boyden and James, 2014), binary choice models (Aaronson, 1998; Whelan et al., 2013; Caro et al., 2014), quintile regression for earnings (Cho and Heshmati, 2013). In this study, we use binary choice and ordinary least square regression methods. Similarly, Whelan et al. (2013) use micro-data from the EU-SILC (2005) with a module on intergenerational transmission of disadvantages in order to analyze the intergenerational influences on income 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 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 parents⁴⁰. 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 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

⁴⁰ 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 1 point close answers below our threshold that identify individuals as poor, even they declare inconsistent answers (such as to live in very bad economic condition and to make ends meet difficult). Hence, we exclude from analysis 19 percent of the respondents that declare such inconsistent answers.

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.⁴¹ 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.

⁴¹ In the survey, respondents reported their highest educational level. However, we transformed them into schooling years.

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	<i>Father's occupation</i>	
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	<i>Mother's occupation</i>	
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		

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 lower compared to the West regions of Turkey.⁴² 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. 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.

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

⁴² 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.

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 (0=non-poor, 1=poor); 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_{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.⁴³

⁴³ Note that wage is observed for wage, paid and casual workers.

The estimated equation is as follows:

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

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, health status 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.⁴⁴ In the equation of health status, we replace the variable that shows health status with informality.⁴⁵ 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

⁴⁴ Informality is coded as (0= formal employment, 1= informal employment)

⁴⁵ Health status is coded as (0= individual has no chronicle health problem, 1= individual has a chronicle health problem)

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 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:

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

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 education⁴⁶, parental occupation⁴⁷ child dependency ratio (the number of children/ the number of adults), the ratio of workers to the number of adults, homeownership and household type⁴⁸; β is a vector of

⁴⁶ 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.

⁴⁷ 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.

⁴⁸ Household type is coded as (1=a household with two parents, 0=otherwise).

coefficients; and $\varepsilon_{i2006-2010}$ is the error term (For the probit regression results see App 6).

3. 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 poor in the adulthood, implying that children growing up in families with poor economic conditions are more likely to be 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 or the ratio of the number of people employed in informal jobs to the number of adult or the ratio of the number of people employed in agricultural sector to the number of adult the significantly and positively affect the probability of being income poor in the adulthood. On the contrary, the ratio of retired people to the number of adult significantly and 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.⁴⁹ Similarly, we observe that children growing up in families with poor economic conditions are more likely to live in large households.

⁴⁹ 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*** (0.031)	-0.042* (0.020)	-0.428*** (0.094)	0.061* (0.029)	0.196*** (0.028)	0.065* (0.030)
<i>Control variables</i>						
Female	-0.212*** (0.031)	-0.599*** (0.024)	1.947*** (0.091)	0.814*** (0.034)	0.251*** (0.032)	-0.377*** (0.029)
Age	0.039* (0.015)	0.048*** (0.012)	0.336*** (0.043)	-0.143*** (0.017)	0.064*** (0.014)	0.078*** (0.014)
Age sq.	-0.001*** (0.000)	-0.001*** (0.000)	-0.003*** (0.001)	0.002*** (0.000)	-0.000* (0.000)	-0.001*** (0.000)
Married	0.122* (0.049)	0.093*** (0.027)	-1.162*** (0.129)	-0.115** (0.043)	0.036 (0.044)	0.476*** (0.040)
Years of schooling	-0.112*** (0.005)	0.133*** (0.002)	0.410*** (0.011)	-0.163*** (0.004)	-0.054*** (0.004)	-0.144*** (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*** (0.004)		-0.011 (0.007)		
Experience sq.		-0.001*** (0.000)		0.000 (0.000)		
Age for starting work				-0.026*** (0.004)	-0.003 (0.002)	
Health status				0.108*** (0.033)		
Informal employment					0.112*** (0.032)	
Constant	-0.351 (0.301)	6.965*** (0.214)	8.351*** (0.853)	3.241*** (0.312)	-2.523*** (0.287)	4.193*** (0.274)
N	13615	8192	16532	11473	11473	20236
R²		0.397	0.104			0.239
pseudo R²	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)
<i>Control variables</i>						
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
R²		0.397	0.102			0.241
pseudo R²	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.⁵⁰ So, they are fairly effective means of reducing the inequalities (Doyle et al, 2009).

⁵⁰ 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

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). On the other hand, Turkey should broad the usage of successful teaching techniques like Guatemala (UNICEF Annual Report, 2011). These could increase educational attainment and primary school completion rates.

On the other hand, years of compulsory education was increased from 5 years to 8 years in 1997, which is still low compared to developed countries. Also, education quality and opportunity equality in education in the East regions of Turkey is not comparable with the West regions of Turkey. Policies that aim to reduce these inequalities should be developed and efficiently implemented by the government or social policy institutions. So, current education policies should be revised and should be strengthened.

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.

All things considered, we suppose that welfare and development policies should not deny the families with young children and their mothers for ensuring prosperity of future generations and for providing sustainable development.

In the process of the conduction of this study, we confronted certain challenges and limitations. For instance, due to the unavailability of longitudinal data, we could not perform a cohort analysis or sibling method and also could not observe household income of respondents pertaining to their childhood. Therefore, we had to use self-reported economic conditions of respondents during childhood in order to identify childhood poverty. On the other hand, the data does not provide region where respondents live in during childhood, so we could not include the models a variable in relation to migration. We suppose that migration have an impact on the current outcomes of children who were grown up in poor families. In case of availability of longitudinal Turkish data that provides additional related variables, further research could analyze more comprehensive the effects of childhood poverty on various domains of life of children by using advanced econometric techniques.

References

- Assad, R. Salehi Isfahani, D., Hendy, R. (2014). Inequality of Opportunity in educational attainment in Middle East and North Africa: Evidence from Household Surveys. Economic Research Forum Working Paper No: 834.
- Boehm, T., Schlottmann, A.M. (2004). The dynamics of race, income and homeownership", *Journal of Urban Economics*, Vol. 55(1), pp. 113–130.
- Bossert, W., Chakravarty, S.R., D'Ambrosio, C. (2012). Poverty and time. *J Econ Inequal* (2012) 10: 145-162.
- Bowles, S., Gintis, H. (2002). Social Capital And Community Governance. *The Economic Journal*, 112 (November), F419–F436.
- Bowles, S., Gintis, H. (2002). The Inheritance of Inequality. *Journal of Economic Perspectives—Volume 16, Number 3—Summer 2002—Pages 3–30.*
- Brooks-Gunn, J., Duncan, G.J. (1997). The Effects of Poverty on Children. *The Future of Children*, Vol. 7, No. 2, Children and Poverty (Summer - Autumn, 1997), pp. 55-71.
- Calvo, C., Dercon, S. (2007). Chronic Poverty and All That: The Measurement of Poverty Over Time. Chronic Poverty Research Centre, Working Paper No. 89.
- Cho, S., Heshmati, A. (2013). What if you had been less fortunate: The effects of poor family background on current labor market outcomes. IZA DP No. 7708.

- Conroy, K., Sandel, M., Zuckerman, B. (2010). Poverty Grown Up: How Childhood Socioeconomic Status Impacts Adult Health. *J Dev Behav Pediatr* 31: 154–160, 2010.
- D'Addio, A.C. (2007). Intergenerational Transmission of Disadvantage: Mobility or Immobility across Generations? A Review of the Evidence for OECD Countries. DELSA/ELSA/WD/SEM(2007).
- Davern, M., Rodin, H., Beebe, T. J., Call K. T. (2005). The Effect of Income Question Design in Health Surveys on Family Income, Poverty and Eligibility Estimates. Health Research and Educational Trust DOI: 10.1111/j.1475-6773.2005.00416.x, 2005.
- Doyle, O., Harmon, C.P., Heckman, J.J., Tremblay, R.E. (2009). Investing in early human development: Timing and economic efficiency.
- Duncan, G., Yeung, W. (1998). How much does childhood poverty affect the life chances of children? *American Sociological Review*, 63(3), 406–423.
- Duncan, G. J., Ziol-Guest, K. M., Kalil, A. (2010). Early-childhood poverty and adult attainment, behavior, and health. *Child development*, 81(1), 306–325.
- Duncan, G.J, Kathleen, M. Ziol-Guest (2010). Early-Childhood Poverty and Adult Attainment, Behavior, and Health *Child Development*. January/February 2010, Volume 81, Number 1, Pages 306–325.
- Duncan G.J, Magnuson K., Kalil A., Kathleen Ziol-Guest (2012). The Importance of Early Childhood Poverty. *Soc Indic Res* (2012) 108:87–98.

- Engle P.L., Fernald L. CH., Alderman H., Behrman J., O'Gara C.,
Yousafzai A., Mello M. C., Hidroba M., Ülküer N., Ertem I., Iltus S.
(2011). Strategies for reducing inequalities and improving
developmental outcomes for young children in low-income and middle-
income countries. *The Lancet*, Volume 378, Issue 9799, Pages 1339 -
1353.
- Ferreira, F.H. G., Gignoux, J. (2010). Inequality of Opportunity for
Education: Turkey. in Ravi Kanbur and Michael Spence (eds), *Equity in
a Globalizing World*, Commission on Growth and Development,
Washington, 131–56.
- Grantham-McGregor, S., Cheung, Y.B., Cueto, S., Glewwe, P., Richter, L.,
Strupp, B. (2007). Developmental potential in the first 5 years for
children in developing countries The International Child Development
Steering Group, *The Lancet*, Volume 369, Issue 9555, 6–12 January
2007, Pages 60-70.
- Hao, L., Matsueda, R. L. (2000). Family Dynamics Through Childhood: A
Sibling Model of Behavior Problems. Center for Statistics and the Social
Sciences University of Washington. Working Paper no. 7.
- Hoy, M., Zheng, B. (2011). Measuring lifetime poverty. *Journal of
Economic Theory* 146 (2011) 2544-2562.
- Johnson, R.C., Schoeni, R.F. (2007). The Influence of Early-Life Events on
Human Capital, Health Status, and Labor Market Outcomes over the
Life course. *Population Studies Center Research Report 07-616*.

- Kapteyn, A., Kooreman, P., Willemse, R. (1988). Some Methodological Issues in the Implementation of Subjective Poverty Definitions. *The Journal of Human Resources*, Vol. 23, No. 2 (Spring, 1988), pp. 222-242
- López Vilaplana, C. (2013). Population and social conditions. *Eurostat Statistics in Focus*. 4/2013.
- Mayer, S.E. (2002). The Influence of Parental Income on Children's Outcomes. Report, Knowledge Management Group, Ministry of Social Development, Wellington, New Zealand.
- Psacharopoulos, G., S. Morley, A. Fiszbein, H. Lee, W. Wood (1995). Poverty and Income Inequality in Latin America During the 1980s, *Review of Income and Wealth*, Series 41, No. 3, pp. 245-64.
- Ravallion, M. (1996). Issues in Measuring and Modeling Poverty. *Policy Research Working Paper*, 1615.
- Roemer, J. (1998). *Equality of Opportunity*. Cambridge, MA: Harvard University Press.
- Salehi-Isfahani, D., BelhajHassineSr, N., Assaad, R. (2012). Equality of Opportunity in Education in the Middle East and North Africa. *Economic Research Forum Working Paper No: 689*, Cairo, Egypt.
- Tansel, A. (2014). Inequality of Opportunities of Educational Achievement In Turkey Over Time. Paper presented at Economic Research Forum Conference, Cairo, Egypt.
- UNICEF (2011). Annual Report.

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*** (0.027)	-0.044* (0.019)	-0.314*** (0.082)	0.049 (0.027)	0.153*** (0.025)	0.052 (0.029)
<i>Control variables</i>						
Female	-0.147*** (0.022)	-0.517*** (0.019)	1.565*** (0.065)	0.684*** (0.026)	0.208*** (0.025)	-0.315*** (0.022)
Age	-0.023*** (0.004)	0.075*** (0.006)	0.348*** (0.011)	-0.144*** (0.009)	0.054*** (0.005)	-0.060*** (0.004)
Age sq.	0.000 (0.000)	-0.001*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Married	0.057 (0.031)	0.162*** (0.021)	-0.767*** (0.085)	-0.221*** (0.032)	0.040 (0.033)	0.240*** (0.028)
Years of schooling	-0.095*** (0.003)	0.127*** (0.002)	0.410*** (0.008)	-0.161*** (0.003)	-0.053*** (0.003)	-0.145*** (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*** (0.003)		0.007 (0.005)		
Experience sq.		-0.001*** (0.000)		-0.000*** (0.000)		
Age for starting work				-0.022*** (0.003)	-0.000 (0.002)	
Health status				0.116*** (0.027)		
Informal employment					0.122*** (0.026)	
Constant	0.808*** (0.082)	6.371*** (0.094)	7.350*** (0.236)	3.278*** (0.135)	-2.322*** (0.115)	7.149*** (0.079)
<i>N</i>	25314	12916	30247	18513	18513	40679
<i>R</i> ²		0.403	0.114			0.265
pseudo R²	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*** (0.026)	-0.051** (0.018)	-0.294*** (0.078)	0.061* (0.026)	0.165*** (0.024)	0.070* (0.028)
<i>Control variables</i>						
Female	-0.147*** (0.022)	-0.517*** (0.019)	1.566*** (0.065)	0.685*** (0.026)	0.209*** (0.025)	-0.314*** (0.022)
Age	-0.023*** (0.004)	0.076*** (0.006)	0.349*** (0.012)	-0.145*** (0.009)	0.052*** (0.005)	-0.061*** (0.004)
Age sq.	0.000* (0.000)	-0.001*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Married	0.056 (0.031)	0.162*** (0.021)	-0.767*** (0.085)	-0.221*** (0.032)	0.039 (0.033)	0.239*** (0.028)
Years of schooling	-0.095*** (0.003)	0.127*** (0.002)	0.410*** (0.008)	-0.161*** (0.003)	-0.053*** (0.003)	-0.144*** (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*** (0.003)		0.007 (0.005)		
Experience sq.		-0.001*** (0.000)		-0.000*** (0.000)		
Age for starting work				-0.022*** (0.003)	-0.000 (0.002)	
Health status				0.115*** (0.027)		
Informal employment					0.121*** (0.026)	
Constant	0.820*** (0.082)	6.361*** (0.095)	7.339*** (0.236)	3.289*** (0.135)	-2.303*** (0.115)	7.158*** (0.079)
<i>N</i>	25314	12916	30247	18513	18513	40679
<i>R</i> ²		0.403	0.114			0.265
pseudo <i>R</i>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*** (0.025)	-0.061*** (0.017)	-0.170* (0.073)	0.078** (0.024)	0.133*** (0.023)	0.120*** (0.025)
<i>Control variables</i>						
Female	-0.144*** (0.022)	-0.519*** (0.019)	1.570*** (0.065)	0.686*** (0.026)	0.208*** (0.025)	-0.311*** (0.022)
Age	-0.027*** (0.004)	0.077*** (0.006)	0.347*** (0.012)	-0.147*** (0.009)	0.051*** (0.005)	-0.064*** (0.004)
Age sq.	0.000** (0.000)	-0.001*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Married	0.053 (0.031)	0.164*** (0.021)	-0.767*** (0.085)	-0.223*** (0.032)	0.037 (0.033)	0.237*** (0.028)
Years of schooling	-0.094*** (0.003)	0.127*** (0.002)	0.412*** (0.008)	-0.160*** (0.003)	-0.053*** (0.003)	-0.144*** (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*** (0.003)		0.007 (0.005)		
Experience sq.		-0.001*** (0.000)		-0.000*** (0.000)		
Age for starting work				-0.022*** (0.003)	-0.001 (0.002)	
Health status				0.115*** (0.027)		
Informal employment					0.121*** (0.026)	
Constant	0.860*** (0.083)	6.344*** (0.095)	7.359*** (0.237)	3.313*** (0.136)	-2.300*** (0.115)	7.189*** (0.079)
<i>N</i>	25314	12916	30247	18513	18513	40679
<i>R</i> ²		0.403	0.114			0.265
pseudo <i>R</i>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*** (0.025)	-0.052** (0.017)	-0.183* (0.071)	0.046 (0.024)	0.135*** (0.023)	0.114*** (0.025)
<i>Control variables</i>						
Female	-0.146*** (0.022)	-0.519*** (0.019)	1.570*** (0.065)	0.684*** (0.026)	0.208*** (0.025)	-0.312*** (0.022)
Age	-0.027*** (0.004)	0.077*** (0.006)	0.349*** (0.012)	-0.146*** (0.009)	0.050*** (0.005)	-0.065*** (0.004)
Age sq.	0.000*** (0.000)	-0.001*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	-0.000** (0.000)	0.000*** (0.000)
Married	0.052 (0.031)	0.163*** (0.021)	-0.765*** (0.085)	-0.222*** (0.032)	0.037 (0.033)	0.236*** (0.028)
Years of schooling	-0.095*** (0.003)	0.127*** (0.002)	0.412*** (0.008)	-0.161*** (0.003)	-0.054*** (0.003)	-0.144*** (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*** (0.003)		0.007 (0.005)		
Experience sq.		-0.001*** (0.000)		-0.000*** (0.000)		
Age for starting work				-0.022*** (0.003)	-0.001 (0.002)	
Health status				0.116*** (0.027)		
Informal employment					0.123*** (0.026)	
Constant	0.863*** (0.083)	6.340*** (0.095)	7.335*** (0.238)	3.296*** (0.136)	-2.287*** (0.116)	7.196*** (0.079)
<i>N</i>	25314	12916	30247	18513	18513	40679
<i>R</i> ²		0.403	0.114			0.265
pseudo <i>R</i>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*** (0.030)	-0.075*** (0.019)	-0.402*** (0.090)	0.099*** (0.028)	0.169*** (0.028)	0.144*** (0.029)
<i>Control variables</i>						
Female	-0.206*** (0.031)	-0.602*** (0.024)	1.944*** (0.091)	0.817*** (0.035)	0.250*** (0.032)	-0.368*** (0.029)
Age	0.040** (0.015)	0.047*** (0.012)	0.335*** (0.043)	-0.142*** (0.017)	0.065*** (0.014)	0.079*** (0.014)
Age sq.	-0.001*** (0.000)	-0.001*** (0.000)	-0.003*** (0.001)	0.002*** (0.000)	-0.000* (0.000)	-0.002*** (0.000)
Married	0.120* (0.049)	0.094*** (0.027)	-1.157*** (0.129)	-0.116** (0.043)	0.032 (0.044)	0.474*** (0.040)
Years of schooling	-0.111*** (0.005)	0.132*** (0.002)	0.409*** (0.011)	-0.162*** (0.004)	-0.054*** (0.004)	-0.142*** (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*** (0.004)		-0.011 (0.007)		
Experience sq.		-0.001*** (0.000)		0.000 (0.000)		
Age for starting work				-0.026*** (0.004)	-0.003 (0.002)	
Health status				0.106** (0.033)		
Informal employment					0.110*** (0.032)	
Constant	-0.432 (0.302)	7.008*** (0.215)	8.450*** (0.855)	3.173*** (0.313)	-2.565*** (0.287)	4.104*** (0.274)
<i>N</i>	13615	8192	16532	11473	11473	20236
<i>R</i> ²		0.398	0.104			0.240
pseudo <i>R</i>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*** (0.016)	-0.25*** (0.004)
The ratio of the number of children to the number of adults	0.26*** (0.007)	0.08*** (0.002)
The ratio of the number of worker to the number of adults	-0.72*** (0.027)	-0.23*** (0.008)
The occupation of the household (Highly skilled non-manual)	-0.47*** (0.019)	-0.16*** (0.007)
The occupation of the household (Low skilled non-manual)	-1.32*** (0.144)	-0.23*** (0.008)
The occupation of the household (Skilled manual)	-0.85*** (0.082)	-0.18*** (0.010)
Home ownership	-0.23*** (0.012)	-0.07*** (0.004)
A household with two parents	-0.81*** (0.025)	-0.30*** (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