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A MULTIDIMENSIONAL APPROACH IN MEASURING DEPRIVATION WITH A FOCUS ON TURKEY

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1   INTRODUCTION

This dissertation aims to contribute our understanding of substantive issues of measuring poverty in Turkey with a cross-country comparison and to the development of the methods that can be adapted to produce new insights into the questions related to deprivation. The main scope of this dissertation is to adopt a new method of multidimensional deprivation in Turkey with a cross-country comparison.

The multidimensional approach means that, in addition to income, other more direct indicators of absence from the standard of living are considered. First of all, this dissertation uses empirical data from Eurostat and the Turkish Statistical Institute entitled Statistics on Income and Living Conditions (SILC). The dissertation also aims at exploring cross-country differences based on deprivation patterns and suggests a way of measuring deprivation in a multidimensional way. The reason behind this purpose of the cross-country analysis, is to indicate that how multidimensional deprivation is in Turkey compared to other selected European countries. The countries that have been selected in this dissertation are those, which have a high deprivation rate among European countries and joined at same year to European Union additionally, sharing the same path of income and living conditions.

It is a fact that Europe has been fighting against poverty and produce the methods and the welfare systems they have developed to inspire the social policies of developing countries in the world. Turkey has a candidacy status for joining the European Union since beginning of the 2000s. Additionally, Turkey has adopted in the last fifty years, economic, social and technological developments from Europe. Turkey has started journey of being candidate country for the European Union to adopt reforms which helps to development of Turkey. The reforms and social policies used to combat poverty effectively in Europe. Turkey has followed the adequate requirements of the European welfare model, which stated to be productive on every platform.

In this dissertation, the used deprivation poverty measure is model of European and Turkish social welfare system, the welfare model implemented in Turkey that carries the characteristics of European social policies.

The primary idea of dissertation comes from famous Nobel prize economist AMARTYA SEN's sentence who clearly emphasized that "People are only free where they can provide for their basic needs and realize their innate abilities." (SEN, 1999). SEN

mentions that the well-being of an individual is best captured as an index of the individual's behaviours (SEN, 1985). In his study, particular behaviours are an expression of the state of a person and a reflection of what he or she can manage based on their available resources. By selecting a collection of living conditions items that an individual can obtain and collect from it. Therefore, living is viewed as a combination of many things "doings and beings" with quality of life to be able to reach in terms of the capabilities to behave.

The methods used to scale poverty has been based on income and expenditure approaches to understand its concept. Income-based poverty measures do not suffer from the volatility of current income compared to consumption, but it does suffer from the scale of errors and bias in data collection, and some limitations (BREWER-O'DEA, 2012). Consumption-based measures are supported, partly because they can better hide the situation of poor households (MEYER-SULLIVAN 2003). Critics often emphasize that they rely on expenditure rather than consumption, and therefore can be missed many fundamental aspects of their living standards (GORDON, 2002, 2006). Objective poverty measurement has started with well-known scientist TOWNSEND (1979), SEN (1976) and RAWLS (1971). However, one of the first historical studies of poverty was written by BOOTH (1887). He invented the idea of 'poverty line' and divided people of London into those who live 'in poverty' and 'in comfort'. His idea has become a fundamental concept of social sciences, and shed light on poverty measurement. It has also influenced many scientists such as ROWNTREE (1922) who estimated minimum necessary expenditures and defined the poverty line based on the income required to meet minimum nutritional requirements. Poverty thresholds were developed in the US by ORSHANSKYIN in 1963 and later they were adopted by the Office of Economic Opportunity and other US agencies.

The author aims to create a multidimensional method to analyse the deprivation from a different and more contextual aspect. The author creates a model with three dimensions. First dimension is called "Economic Strain" where it contains four indices from EU – SILC dataset. Economic strain addresses the percentage of people in the total population who are in the state of inability to afford; 1. to pay for a week's annual holiday away from home; 2. to afford a meal with meat, chicken, or fish (or the vegetarian equivalent) every two days; 3. to face unexpected financial expenses, or 4. to pay their debts (mortgages or leases, invoices or lease purchases, and utilities). Second dimension is called "Living

Conditions" which refers to the lack of goods and amenities needed to live a comfortable life. The author defiens the living conditions with the ability to keep one's home adequately warm and the capacity to afford basic goods (having a washing machine and other home necessities) that are – while not essential for physical survival – critical for enjoying a decent quality of life. The availability of consumer durables (a car or a computer) is essential to perform everyday life activities. Living conditions also relate to the interior characteristics of the dwelling (availability of an indoor flushing toilet or a shower/bathtub). The last dimension is called "Housing and Environmental Conditions" which aims to measure 'quality and affordability' of individuals' housing. Items such as having a leaking roof, damp walls, floors and foundations, rot in the window frames or floor, as well as problems with the dwelling (having rooms which are too dark or do not have enough light) show an overall picture of housing conditions and the problems households have to cope with. This dimension also focuses on the 'quality of life' of households with respect to environmental conditions such as crime, noise, and pollution in the neighbourhood.

1.1 The structure of the dissertation

This dissertation tends to extend the items of the multidimensional deprivation and provide a cross-country comparison rather than one composite index. In this framework, in the first part of the study, the definitions, notions and measurement methods of poverty and deprivation are examined. In the literature and empirical research measuring deprivation is built with four basic approaches: monetary approach, capacity approach, social exclusion approach, and participatory approach. These four approaches complement each other; they are conceptually related, but there is no substitution between them. Most frequently poverty has been measured with one dimension (income or consumption) and deprivation has been measured with different deprivation indices. The most frequently used measure among poverty one-dimensional measurement methods is the FGT (FOSTER, et al. 1984) index, which is a headcount ratio, referring to the fraction of the population that lives below the poverty line. Besides, it is possible to measure poverty in a multidimensional way with composite deprivation indices.

The author introduces the methodology used and created in the second part of dissertation. Also, provides a brief history of the SILC database, and gives descriptive statistics on the sample sizes. Thanks to the Eurostat and TUIK harmonized data

collection that provided statistics on income and living conditions it became possible to make cross-country comparison analysis applying Kruskal – Wallis test. The structure and quality of the survey sample is explained in the materials and methods section.

The methods of the empirical analysis are discussed. It is important in cross-country comparison analysis that the method should be accurate. The author first applies the Kruskal – Wallis test in order to determine whether there is a significant differences among countries in terms of three deprivation dimensions. Secondly, multivariate method that has been used in this dissertation is discussed. Empirical part is built with two chapters. The first is the group part and the second is the logistic regression where main focus and findings are presented.

In the last part of this dissertation, the conclusions and findings are presented. Additionally, argument on why Turkey has performed less than other selected countries. And provides the recommendations for policymakers and researchers. Moreover, at the end of the dissertation, limitations of dissertation, methodological perspectives and weakness of SILC datasets are discussed.

1.2 Motivation

Poverty is said to be a multidimensional phenomenon by scientists and decision-makers in the world since it is both result of economic and social well-being. The Human Development Report (HDR) (2000) states that "eradication of poverty is more than a major development challenge - it is a human rights challenge". About 1.5 billion people are living under the poverty line in the world (World Bank, 2018). We should consider our focus to a deeper analysis of poverty to understand its dimensions and content, to the individuals living in poverty and to shed light on its human and personal content.

Dealing with poverty requires a wider understanding of all aspects of poverty. Poverty remains an issue all over the world, not only in developing countries. Nowadays, the method that used to understand poverty neglect the fact that the standard of living is not the same all over the world. For example, people living in African countries have hunger problems, people living in Europe face neglecting holidays, television, cannot afford to eat meat or chicken every second day of the week. However, relative deprivation remains a problem: 21.1% of the population lived under the poverty rate in 2019 (EUROSTAT, 2009). Thus, it is important to understand the deprivation to find who are the poor people

and households, and at the same time to develop appropriate policies for fighting poverty. The current Eurostat material deprivation index is built up with 9 deprivation items (GUIO et al. 2016). Households where 3 of them cannot be afforded will be considered as materially deprived. However, this deprivation index has been criticized by BRUDER (2014) who suggested amending this deprivation index by adding further items and deleting those items which are not a real deprivation indicator anymore in the EU such as one cannot afford to own a phone.

On the other hand, poverty has more effect on social life, where this is not strictly connected to this dissertation. However, it should be mentioned as a side effect of being poor. Poverty experience can lead to demoralization, loss of motivation or depreciation, which can lead to the possibility of someone becoming a physical worker, having low-quality jobs or unstable employment, being unemployed and increases the risk of poverty (BIEWEN, 2009). Despite the fact that social consequences of being poor usually forms limited economic resources. Such studies, however have too small sample size where population cannot be generalized. Relative studies addressed that there is no relationship between poverty and social outcomes (BÖHNKE, 2008). But he found that poor have worse social relationships. Another study has analysed the relationship between poverty (relative income poverty 60% - limit) and social isolation, however, test was not statistically significant (LEVITAS, 2006).

In beginning of 2000s, researchers started focusing on the particular cities. Due to the high number of migrating from rural areas to urban areas, big cities started having more population. This effected the socio-economics structure of the cities. That is why, in Turkey, the "new poverty" debate started before the middle of the 90s, concerning irregular housing (slums), a less strict division between the formal and the informal sector, whether certain legal and illegal mechanisms, such as urban-rural links exist. In general, "new poverty" points to a temporary poverty (BUĞRA 2003, KALAYCIOĞLU-RITTERSBERGER-TILIÇ, 2002). Poverty had been said to be a temporary phenomenon until thirty years ago because the poor had a chance to work in the institutions, get higher salaries, find a place to live in neighbourhoods and get advantages from social networks. But these systems have been out of sustainability since the early 1990s and poverty has become a long-term experience for many citizens.

It is argued that finding a job is not a secure to escape from poverty; many poor people, even though they work, remain in poverty (CLARK-KANELLOPOULOS, 2009). Employers can take low-paid employment as a second job as a sign of an individual's low

productivity. Low-paid employment on the supply side can reduce the human capital, thus keep producing low-paid employment can affect productivity perception, which prevents one from applying for other companies. For this reason, fewer wages may lead to high dependence on the state with a low salary in the future, which may increase the probability of low wages and extreme poverty (STEWART-SWAFFIELD, 1999).

The aim of this dissertation is to provide a wider concept to deprivation by providing empirical results. The focus of this dissertation is Turkey. The author hopes that his work and results of this study will add to meaning and effect of deprivation in Turkey and will be realized by decision-makers to protect people from being deprived. In this dissertation, the author will use the Income and Living Conditions (SILC) database for the year of 2005, 2009, 2013 and 2017. The distance between the studied years is always 4 years. 2005 is the year when most of the studied countries started to collect harmonised data on deprivation, therefore we can consider this as a base year. 2009 is another important year, since countries started to recover from the Great Recession. 2017 is the freshest data available at the time of writing this dissertation. In order to reflect the deprivation changes, logical way to approach it to look at a longer time period to track the trends for deprivation experiences of the societies.

Income and living conditions surveys are gathered on household and individual level. Questions about labour, education and health information are collected for those people who are aged 16 and older. The dataset is provided at micro-level which means that people are interviewed on a personal level. EU-SILC was used to provide data in the context of structural indicators of social integration and social inclusion. Since 2010, European Union aims to monitor the poverty, social exclusion for the purpose of Europe 2020 target strategy.

The author assumes that the comparison of the cross-country analysis will show significant differences among the selected countries. Additionally, the socio-economic characteristics of Turkey will play a core role in the determination of the deprivation. In this framework, the research questions of this dissertation are as follows.

- ✓ Is there a considerable gap between selected European countries and Turkey in terms of three dimensions? And how severe it is over time?
- ✓ Do individuals who experience deprivation with one dimension also experience with other dimensions in selected European countries and Turkey?
- ✓ How well does deprivation explains the main differences of the different characteristics of the selected European countries and Turkey?

✓ What items of each dimension has a significant role for selected countries? Are there any similarities in terms of affordability or inabilities?

✓ What are the key socio-economic factors of determining the deprivation in Turkey?

1.3 Importance of the study

Poverty measures have been applied in Turkey by many researchers. Although new approaches have had not been implemented by institutions. Traditional poverty measures used by official government agencies. This leads a gap to create reproducible method to monitor the changes. This is a serious imperfection because the most important aspects of poverty and deprivation studies are related to the monetary and non-monetary terms. It is only can be monitored with an adequate methodological approach to measure the prevalence of deprivation is inadequate for a more comprehensive understanding of the phenomena and the policy interventions in the same time (JENKINS, 2000). Such as recognizing the impoverishment caused by deprivation dimensions require whether it is a relatively short or long-term experience and that the causes of poverty or deprivation should be placed in a wider context. It is important to see the rate at which individuals escape from poverty to reach a decent life standard (FINNIE-SWEETMAN, 2003). Assessing overall deprivation dynamics and following individuals over time, it is necessary to have longitudinal data, but those data are not available currently in Turkey. Accordingly, this dissertation plays an important role to provide a wider concept with new implemented method using available data starting from 2005 to 2017. Certainly, there are studies where it tends to analyse deprivation from more dimensions, however, these studies just followed the tradition measurements. Some examples: one of the first attempts to analyse the multidimensional phenomena were made by KARADAG in 2010. He has used data from 2006 and 2007 with seven dimensions. YILDIZ (2011) applied the ALKIRE and FOSTER methodology (2011a) for Turkey. She has used household budget surveys for 2003. Another study was made by BETTI, et al. 2013. They have used the Income and Living Conditions Survey for 2007 and proposed a new method called fuzzy monetary supplementary. The most recent studies have applied by ACAR (2014), ZANBAK 2014 and KARADAĞ 2015. The common point of these studies is that they are using the methodology of the Alkire and Foster. The aim of Alkire and Foster method is to measure multidimensional poverty in African countries. Turkish researchers tend to

use the same method to measure the multidimensional poverty in Turkey. Traditional poverty measures have also been applied by scholars in Turkey. In this light of literature, the dissertation focuses mostly on deprivation which is a well-discussed topic within the European countries and adopted the official measurement of the Eurostat. The main motivation of this dissertation is that the author uses Income and Living Conditions Survey from 2005 to 2017 which are the most refresh data set available and compares the selected European counties and Turkey. Additionally, the propose is to adjust the existence methodology of deprivation measurement to analyse the deprivation in a wider concept. The author considers that this study will be a fundamental outcome of the deprivation studies within the European Union and Turkey.

Besides all discussing the theoretical arguments on measuring poverty in a multidimensional approach, a key factor of investigating multidimensional poverty in Turkey stands behind the candidacy of Turkey for the European Union process. Turkey has achievements for fulfilling the requirements of EU standards. Turkey has been transitioned from a planned economy, a growing economy but cannot be seen in standards of living for society. To fulfil the requirements, Turkey has been implementing reforms that affected every aspect of people lives both socio-economically and well-being.

Turkey has adopted the social policies of the European Economic and Social Committee and implemented the methods of the Eurostat, for instance, collecting the Statistics on Income and Living Conditions (SILC) Survey. SILC now makes it possible to conduct a comprehensive cross-country analysis. Considering this collaboration with the European Union, this study plays a very significant role to be able to compare the selected European countries with Turkey using the same structured dataset.

1.4 Hypothesis

Deprivation is a form of poverty which is adopted by European Economic and Social Committee as a measurement to announce yearly and collect the relevant data from EU member states. Persons who are below the national poverty line more often report difficulties to make ends meet and thus to feel poor. But according to the author's definition, poverty should be defined as a lack of resources to maintain the minimum living standards. In this point of view to reach this target group, the SILC data helps to create a method where the author can perform the cross-country analysis. Deprivation can

be considered as a consequence of the not available resources. For that reason, this dissertation emphasizes the new way of the deprivation method to look at deprivation in a wider concept. Based on this purpose, the following hypotheses will be tested in this dissertation:

H1: The new multidimensional poverty measurement will yield different poverty results, compared to the traditional uni-dimensional approach. In terms of the proportion of the population affected by deprivation, the ranking of the selected countries for traditional and the new approach are different.

H2: In terms of EU integration, Turkey has adopted EU regulations. In terms of living conditions and economic strain, Turkey catches up with Eastern European countries. Specifically those who joined to European Union in 2007.

H3: Economic strain deprivation is the most significant problem, which affects the highest rate of the Turkish population, compared to other aspects of deprivation.

H4: Determinants of the deprivation are significantly different from each other across the three studied dimensions.

2 LITERATURE REVIEW

Firstly, the author will present the concepts and definitions: the unit of analysis and measurement of poverty. Then, the author reviews the theoretical and empirical literature. The literature part is divided into two parts: literature abroad and literature in Turkey. Deprivation is one of the ways to measure poverty. Considering this, the author will present literature about traditional poverty measurements. Later on, the dissertation will focus on the literature about the deprivation method.

2.1 Main concepts and definitions about poverty

To determine the poverty, we must evaluate living standards that measure poverty. The concept of the standard of living itself is an issue but the main problem is to know all the information of poverty (SEN, 1985), including such as being healthy, being educated, and being involved in the life of the community at the same time. The UNDP's HUMAN DEVELOPMENT REPORT (1990) identified human development as a process of extending people's preferences. Most of the other alternatives are good substitutes for other humanitarian preferences because access to income is necessary. However, Human Development Report also explains income as an average. Countries can experience high human development with modest income (UNDP, 1990). Therefore, Human Development Report, takes health, education, and income as main indicators.

The selected indicators are closely related to the complexity of the living standards but should also be aimed at sustainability. They are simple enough to measure (SEN, 1985). This involves all the factors related to the difficult dimensions of non-monetary poverty because some cannot even measure this. For example, if UNDP includes the education and health dimensions repetitive is criticized for which is not included. Education quality as well as educational success. Income or expenditures are commonly used to measure the standard of living. On the other hand, those that are adequate are particularly important for countries underdeveloped or developing countries. Wealth can also be used to measure poverty (CANER-WOLFF, 2004, HAVEMAN-WOLFF, 2004).

2.2 Traditional poverty measurement approaches

There are two ways to measure poverty with traditional approaches. The first is absolute and the second is relative poverty. The definition of absolute poverty is the inability to meet the basic needs of life. It is seen as an insufficient command of resources, independent of the general welfare level in society. Relative poverty is seen only as a relative to the population income distribution. On the other hand, the choice of an approach has important consequences for social policy: absolute poverty can be reduced by economic growth, while relative poverty can only be reduced if income inequality is reduced (HAGENAARS- PRAG, 1985). Many people think that relative poverty is rough measures of inequality, and it is not poverty. Poor families falling below the poverty line determined by income distribution should not define low-income families. For this reason, it is normal that Eurostat's "poverty rate" expression uses the "at-risk of poverty rate" (SUCUR, 2005). In this case, it is surprisingly giving different results based on these two approaches.

For poverty reduction policies, poverty comparisons appear to be persistent in terms of two individuals with the same level of prosperity (RAVALLION, 1998). Nevertheless, absolute poverty is not well suited for countries where living standards are very low. As relative poverty margins increase with income increases, relative poverty is more favourable for developed countries. (WORLD BANK, 2005).

Relative poverty is more suited to international comparisons of poverty rates since it is difficult to find the same absolute poverty line for different countries. For this reason, when measuring the differences between absolute and relative poverty, the most important thing to consider is that only price increases will be reflected in the determination of poverty lines, or total welfare increases will be considered in analyses.

In recent literature, researchers have been discussing existing poverty measures. GOEDEMÉ et al. (2017) pointed out that some of those who were not identified as poor by the relative income poverty method (60% of the national median income), still faced multidimensional deprivation. Moreover, there are conceptual problems regarding data-driven designs. Deprivation items are generally constructed based on the 'available data technique'. Consequently, there are significant limitations in measuring scarcity. The existing methods are unidimensional and do not evaluate the different types of deprivation (BEDÜK, 2018). Therefore, one of the advantages of the measures proposed in this dissertation is that the author identify deprived people multidimensionally.

2.2.1 Absolute poverty

There are two main ways to measure absolute poverty and determine the poverty line. One way is to define an "objective" poverty line. The basic opinion is that the poverty line should be brought to a level that lets individuals to access certain abilities that are health in society, social life and education. The second way is to define a "subjective" poverty line. That is, poverty can be measured by asking people to define a poverty line and use it to measure the dimension of poverty. Many research focus on the comparison of subjective and objective poverty lines (SIPOSNÉ, 2021). For example, the Household Budget Survey (HBS) questionnaires that: "What should be your monthly income to protect your life: 1) minimum level 2) normal level 3) appropriate level." On the other hand, the most common way of exceeding the objective absolute poverty line is the cost of basic needs (WORLD BANK, 2005). Almost all absolute poverty lines are determined in terms of the cost of buying a basket: A basket is identified, and the cost of this basket is defined as the poverty line.

Identifying the poor according to the concept of absolute poverty is mostly based on the basket of goods and services that households can buy (CORAK, 2006). The expenses of this basket state the poverty line. International absolute poverty standards such as comparisons and the $ 1,00 daily poverty line are widely used for the Millennium Development Goals (UN, 2007). Absolute poverty is that the household or the individual must be able to meet only the most basic needs necessary to sustain the minimum standard of living. These poor people, who need to be perceived as needing assistance from the first degree, cannot even meet their basic human needs, and even a person falling into this situation can be inevitably faced with the risk of death if not helped from the outside. The discovery of absolute poverty requires the determination of the minimum consumption needs that are necessary for the survival of the individual. Although absolute poverty measures in developed countries are measuring a higher standard of living. Absolute poverty can be determined separately considering food and non-food components. Calculation of the absolute hunger limit based solely on food expenditure, and it is calculated as 'the cost of the food basket consisting of the minimum basic foodstuff'. Based on the recommended daily number of calories per person for the entire population, individuals who have calorie intake below this, form a poverty line. The absolute poverty line can be calculated by considering the basic requirements (education,

health, housing, clothing) in addition to food expenditures. Nowadays, in many less developed countries, the absolute poverty line is calculated based on this approach.

The most resent approach for European countries has been developed by GOEDEMÉ et al (2019) and GOEDEMÉ (2020), who created reference budgets, in order to define an income-based poverty threshold. Reference budgets are priced baskets of goods and services that represent a certain targeted living standard, the minimum financial resources for adequate social participation.

2.2.2 Relative poverty

Relative poverty calculations in Europe are mostly based on income from the Income and Living Condition Survey (SILC), as well as on consumption expenditures in Household Budget Survey (HBS). The poverty line in HBS is defined as 50% of the median of consumption. The relative poverty rate is calculated as the portion of the household population divided with the total population, where the per capita consumption expenditure is below the relative poverty line. Those who can meet their basic needs but who are below social welfare level because of the inadequacy of personal resources and who are prevented from social gathering and participation are relative poverty.

While an absolute poverty line is based on the ability to purchase the number of goods and services, the relative poverty line is up to the standard of living in a certain country (UNICEF, 2005). Relative poverty lines are appointed in terms of the time and place they are used and take into consideration the standard of living.

The EU indicators for the defining the relative poverty lines at 50% and 60% of median incomes (EUROPEAN COMMISSION, 2011), and stated the relative poverty lines 40%, 50%, 60% or 70%, which are determined by household income, whether the individual is poor or not is identified by comparing these poverty lines to the per capita income.

As can be understood from the definition, relative poverty, which interprets poverty as a relative concept and more social, defines poverty according to the situation of society against other individuals at the level of meeting the needs of the individual. In the definition of poverty, either a low-income rate of the population is taken as poor, or a limit of average income level is determined and those with a low income are defined as poor. Whereas the definitions of absolute poverty are based on a constant level of real income per person, relative poverty defines the per capita real income of some other social groups. The concept of relative poverty focuses more on differences in the

distribution of income and wealth than on the absolute income level that diverse group to be taken when calculating the relative poverty line is to determine the average welfare level of the social community in which the research will be conducted. At this stage, both income level and consumption level can be determined as prosperity measure. Then a certain percentage of this level gives the poverty line.

2.2.3 Deprivation

Traditional poverty analysis uses a single indicator for poverty measures such as income poverty. Although there are monetary measures based on simplicity and comparability in terms of calculation, they are partial and indirect demonstration of poverty among the nations.

In the last decades, traditional one-dimensional approaches have been questioned and alternative approaches have been put forward. According to recent literature (DUCLOS-TIBERTI, 2016), poverty is multifaceted and pervasive. Poor individuals often face various deprivations, both economically and socially. Meaning that poverty should be addressed as a multidimensional phenomenon and non-monetary indicators should be studied to provide a better understanding (PERRY, 2002, WHELAN et al. 2006). One of their main findings is that the outcomes of the analysis can be very different if it is based on indicators of income or other living standards. In other words, while some people with low living standards earn income above the poverty line, some people under poverty may experience satisfying living conditions. Deprivation is the most obvious candidate for an extreme poverty measure (EUROPEAN COMMISSION, 2011). The EU indicator of lacking more listed items is not perhaps extreme, but it is an EU wide threshold. The EU deprivation index was based on work by GUIO (2009) using the 2006 SILC data. In this work, he suggested a nine-indicator scale to measure deprivation. The nine items are the following: capacity to face unexpected expenses, cannot afford a one-week annual holiday away from home, arrears on mortgage or rent, cannot afford a meal with meat, chicken or vegetarian equivalent, cannot afford to keep home adequality warm, being able to afford a washing machine, a colour TV, a telephone, or car. Some studies apply equal weights while avoiding assigning different importance to each item (HALLEROD, 1995). Deprivation indicators earlier emerged from the UK well-known scholar TOWNSEND in 1979 who studies the poverty. Then later on, as it is mentioned earlier in the literature MACK (1985).

The common purpose of the well-known researchers was to identify and set an accurate methodological solution for deprivation approaches. During this development process, other contributions are added by other researchers, GORDON (1997) studied on further methodological issues on deprivation. However, deprivation still has a debate about how Eurostat studies the deprivation and what things are missing. It is a common consideration by European studies that Eurostat should adopt a new methodology for identifying the deprived population within the European Union. In recent literature, new approaches and methodologies have been studied by researchers, one of the biggest findings was applied by EU's policy agenda is the social exclusion is defined as persons who have experienced an accumulation of the disadvantages in the society which is called socially excluded person (VROOMAN-HOFF, 2013). Social exclusion has three dimensions, first refers to the population at risk of poverty is measured base on an income variable. Second dimension is consist of the low work intensity and the third one is the material deprivation (COUMANS et al. 2015)

Deprivation is defined as the outcome of the lack of monetary resources. For that reason, to measure poverty, more dimensions should be considered. Nowadays, scientists or researchers' approach to this topic in a wider view (economically, living conditions and housing and environmental conditions) (ÜNAL et al., 2021). Ideas about deprivation is one of the challenging topics for all scientists and policymakers in terms of conceptualization. In this matter, to create a background to set a method in this phenomenon is important. This dissertation is going to deeper analyse certain indices of living conditions, economic conditions and housing and environmental conditions for individuals rather than general poverty measures.

The multidimensional poverty measurements started in the early 1980s when the first studies that analysed poverty and social exclusion using non-financial indicators, were published (TOWNSEND (1979), MACK (1985), CALLAN et al. (1993)).

TOWNSEND (1979) created a multidimensional deprivation index using 60 indicators that reflect on the living conditions and provide information on food, clothing, health, entertainment, household goods, and consumer durables. These 60 indicators, he randomly chose 12 and a cut-off point of five out of these 12 to identify deprived people. His index is a simple breakdown of goods and services indicators. Townsend's aim was to identify the income level where deprivation increased enormously or, in other words, where the living conditions were severely constrained. This income level was labelled as

the poverty threshold. His study has inspired further research on poverty and social exclusion in Europe.

MACK (1985) constructed another multidimensional poverty indicator. They differentiated between compulsory and voluntary scarcity and held that deprivation is only present when there is a lack of basic goods or services (compulsory scarcity), while in the other case (voluntary scarcity) the products or services lacking are not essential to an individual or a family. The authors used 35 indicators, selecting 18 to create a deprivation index. They measured deprivation directly, identifying those deprived British people who lacked the goods and services that were included in the 18 indicators.

CALLAN et al. (1993) study aims to deepen the link between income and material living conditions and measure living conditions directly. Starting from a list of 24 non-monetary indicators, the authors used factor analysis to examine the clustering of different conditions, goods and services, and defined the possible dimensions of material deprivation. According to their multidimensional deprivation criteria, a person can be regarded poor when s/he is deprived of essential goods, services, or living conditions. This method, however, was criticised for not including actual needs and including needs whose specific factors were not associated with the general material deprivation definition. NOLAN (2011a) compared the characteristics of the 'poor' defined by their method with those described by monetary poverty. They found that many individuals who were not classified as financially poor were materially deprived and some who were considered financially poor were not deprived.

Later, the research efforts focused on developing a European multidimensional deprivation index. Building upon the prior work of social scientists and researchers, and using the Social Assistance Council's sub-group of indicators, Eurostat has developed a methodology for creating non-monetary indicators of deprivation. Although these indicators are not intended to cover all areas of social exclusion, they provide information that supplements knowledge acquired through other social exclusion indicators.

Eurostat published two reports on multidimensional material deprivation in 2002 and 2003 and used them as a basis for its present official methodology. Currently, Eurostat publishes material deprivation and severe deprivation statistics based on EU-SILC. GUIO's (2005) material deprivation study describes households' poor living conditions, the unavailability of durable goods, delays in payments, and the inability to meet basic material needs as elements of deprivation. GUIO et al. (2017) set a new indicator based on 13 items where seven relate to the household and six to the individual. Individual

items are collected at the adult level for all persons in a household aged 16 or above to allow for gender- and age-based measurement. The author used economic difficulties, durable goods, and dwelling as indicator dimensions. Economic difficulties were defined as making ends meet with difficulties, i.e., being unable to pay for a one-week annual holiday away from home; delays in mortgage, rent, water and electricity payments; paying for shopping in instalments; being unable to afford meat, chicken or fish (or the vegetarian equivalent) at least every other day and being unable to maintain the dwelling at an adequate temperature during cold months. Durable goods stand for the ability to possess the following durable items: a colour TV, telephone and a car/van for personal use. Their dwelling dimension refers to poor amenities and indicates the existence of leaks; damp walls, floors, ceilings or foundations; rotten floors, window or door frames; shortage of natural light in a room, bathroom or shower in the dwelling, toilet with running water inside the dwelling for the household's exclusive use.

Later, Guio's methodology was criticized by researchers. According to BRUDER (2014), additional indices should also be used in the measurement of material deprivation. She argued that some items of Eurostat method (such as 'having a mobile phone' that should not be considered a sign of deprivation because almost all people have a cell phone in Europe) should be replaced. BOARINI (2006) studied data from OECD countries to draw up suitable survey questions to be used in comparative analyses. The dissertation proposes a classification of the broad notion of deprivation into its objective and subjective dimensions. The author suggest that the scope of deprivation should be determined based on survey questionnaires to identify those who need targeted social policies.

OBÁDOVICS et al. (2019) conducted further analyses for non-European countries. They studied Turkish poverty to find potential determinants of deprivation because Turkey has one of the highest rates of material deprivation (28.7%) based on 2017 European measures. The authors used household socioeconomic factors in their logistic regression analyses. In 2007, Hungarian scientist HAJDU created a statistical multidimensional measurement method to estimate the relations between poverty, deprivation, and social exclusion without differentiating between society's poor and non-poor.

Deprivation is a wider topic than poverty measurements which is considered another method of poverty and measured with income and living conditions indicators in the methodology. Deprivation usually tends to capture the non-monetary needs of people using survey data. There are critics on how deprivation should be measured and what

kind of structure it should contain such as unidimensional (severe or material deprivations published by Eurostat) or multidimensional deprivation where researchers propose their fundamental study to regarded institutions. Some studies have had important points to focus on. First, well-known scholars in the field of social indicator studies proposed to adjustment to deprivation definition. Poverty should be extended beyond the monetary approach (SAUNDERS, 2011).

The well-being of a person cannot be determined solely from monetary indicators. Non-monetary conditions such as access to material needs and literacy also contribute to one's well-being (BOURGUIGNON-CHAKRAVARTY, 2009).

Additionally, CHAKRAVARTY (2018) and DARVAS (2019) have critic points to single deprivation index has many diasadvantages of capturing the those people who are at risk of poverty. NOLAN et al. (2010) have studied that deprivation should be studied with non-monetary indicators. Poverty can be captured using deprivation method with multiple dimensions to identify those people who are not captured using monetary measures.

Some studies have performed that deprivation cannot be defined as a single indicator. BOSSERT et al. (2013) launched a study to compare income poverty and material deprivation in the EU. They found that income poverty results did not reflect the actual standard of living, both income poverty and material deprivation indicators should be adopted to define poverty.

There are some proposed methods to measure deprivation from different aspects. WHELAN et al. (2010) have proposed a multidimensional model for the method of material deprivation to the European Union. The study was based on a comparison method of income poverty and material deprivation. The study has found that income poverty does not reflect the material deprivation among European countries. The study aimed to show that to identify poor population, income poverty and material deprivation indicators are also needed. These results were mentioned by BRADSHAW (2003), it is needed to ensure the validity of multidimensional poverty results.

Challenges of creating how to establish a list of all indicators of poverty for those low-level income countries are not explored as Eurostat does for European countries (GURSKY-KANBUR, 2006). Obviously, in social science, definition of the deprivation or poverty with non-monetary approaches has been debated by scholars and researchers. One of the roots of this discussion is about what is the high degree of consensus among the society minimally accepted standards of living (VALADEZ et al. 2018). The second thing is about how to approach this standard of living, as the author grounds the base of

this dissertation according to Sen's capabilities approach, the author argues that standards of living should be defined as "freedom" that people value their capabilities in a given country and given time. In another word, it is the rights-based approach (CHZHEN-FERRONE, 2017) where definition consists the basic human rights and human needs (NOBLE et al. 2004).

The multidimensional poverty index continues to be adopted by many scientists. ALKIRE et al. (2015) created an MPI (multidimensional poverty index) to study African countries based on three dimensions, education, health, and basic needs. Their MPI was adopted by the United Nations for use in reporting multidimensional poverty.

To conclude, the definition of deprivation must extend beyond income-related indicators (SAUNDERS, 2011). Using discrete datasets, several well-known scholars have proposed new multidimensional poverty indicators to compare them with the existing material deprivation index of the EU. The general concern of these researchers is that deprivation cannot be categorized by using only one measure (SAUNDERS et al. 2014, NOLAN et al. 2007, 2010).

2.2.4 Calculations of poverty

After deciding on the welfare indicator and the poverty line, it is hard to decide on an appropriate measure of poverty. The most often used measures in the literature are headcount index and poverty gap.

1. Headcount Index

The headcount index is the commonly used measure of poverty, demonstrating the ratio of the total number of people to the total population.

The poverty rate is calculated as $P = q/n$, where q is the number of poor people and n is the population.

The main advantages of the headcount index are that they are easy to calculate. However, the headcount index does not measure the deep of poverty. In other words, a policy targeting the poor does not lead to a change in the headcount index, although the poor do not push the poverty line, but the incomes of the poor increase, implying that politics is ineffective. The headcount index does not measure the intensity of poverty. It is insensitive to transfers among poor people, that is, they remain on the same level when they are transferred to a poorer person or a poorer country. Unlikely characteristic shows

that poverty can be reduced more easily by reducing the poverty rate among the poor who are closest to poverty line. But, the distribution below the poverty line cannot be regarded as a desirable policy to change for the lesser poor. For this reason, for policy intentions, it may be desirable to complete the index of the number of people with another index that is sensitive to the deep and intensity of poverty.

2. Poverty Gap

This poverty index provides knowledge about the deep of poverty. The poverty gap index is based on the difference between the poverty line and the income of the poor persons. The poverty line is calculated for those whose income is below the poverty line. The poverty line cannot be negative. Total income needed to remove the poor above the poverty line.

Poverty gap $= I = \sum_{i=1}^{q}(z - y)$, where z is the poverty line, y is income, i is individual and q is the total number of poor people.

The poverty index is equal to the average distance of the poverty gap to the poverty line (how much it will cost per person to remove poverty above the poverty line).

Where the poverty gap index: $PG = \dfrac{\sum_{i=1}^{q}(z-y_i)/n}{z}$ where n is the total population.

If there is a change in the income of a poor person, both the poverty gap and the poverty gap index change. The number of people changes if this person changes relative to the poverty line. If there is an increase in the incomes of the poor, while the number of people living below the poverty line remains constant (the increase is not high enough to raise that person above the poverty line), the headcount index does not change; poverty reduction does.

Eurostat and Turkstat use several types of poverty rates. Instead of recognizing the equivalent income of each adult equivalence from the poverty line, they use the median adult equivalent income to represent the adult equivalent income of the poor. Poverty is subtracted from the line and averaged over the poverty line. Poverty gap rate is = (Poverty threshold – Equivalised median income per person)/Poverty threshold) *100

2.3 Multidimensional poverty approaches

A multidimensional approach moves away from the traditional one-dimensional approach by focusing on a single dimension as an adequate proxy for human well-being. The difficulties of using a single dimension, such as income, involve considerable debate on which income level can be used universally; on the heterogeneity of humans and contexts in the transformation of income to gender; the role and contribution of the public sector; the effects of underperforming markets such as political constraints and problems. These issues have been emphasized by academic researchers in a series of arguments to expand the view of social welfare beyond the economy since the 1960s (SEERS-JOY, 1971).

Rather than viewing poverty because of a lack or lowness of a single resource variable or trait, the multidimensional approach weighs in a more comprehensive set of information. While economic prosperity, capability, and social inclusion are treated as poverty, which represents proxy concepts, this approach considers all three as separate dimensions of poverty. Even though these dimensions are very closely related, the lack of excellent predictability indicates the urgency of using all three. The measurement results obtained from this approach will be more comprehensive and accurate than any one-dimensional approach. When the concept of the "poverty gap" is used in the literature, the difference between the poverty line and the poverty point of a person comes as an indication and does not consider all potentially relevant information. The multidimensional approach makes it much less practical to implement immediately, with the need to collect comprehensive data and the complexity of their aggregation, thus causing potential information loss, but more conceptual and methodological improvements will alleviate these problems.

The multidimensional assessment reveals researchers to aspects of poverty that are neglected by the one-dimensional monetary aproach, while also confronting them with increased technical complexity from aggregation procedures or the selection of dimensions and weights to add to the first of the desirable traits (MARTINETTI et al, 2019). With the light of this, of course, the relevant decisions can have a significant impact on the multidimensional poverty measure and the results accomplished so far. Despite the wealth of interest from policy makers, researchers and scientists there is little evidence of the their impact on multidimensional poverty (SETH et al, 2021). Poverty is multifaceted and well-being can be measured in many different other dimensions. Empirical studies have shown that a significant percentage of those experiencing

multidimensional deprivation are not monetary poor and vice versa (ALKIRE et al, 2018).

In the recent literature, poverty is discussed as multidimensional concept. In Vietnam, HOANG (2016, et al.) studied with Vietnam Household Satandards of Living Survey and examined that 20 percentages of the households who are not categorized income poor were actually defiend as a very deprived families. In terms of multidimensional living conditions 42 percentages of the household who were not classified as income poor were facing multidimensional deprivation. This represents that multidimensional deprivation require an adequate measurement to overcome this complexity. Single dimensional or multidimensional argument makes the measurement of political debate a delicate and important task for the researchers. Rationale behind each poverty measurement approach is important as statistical evidence on poverty adds significant motivational actions and lights on poverty reduction mechanism (ATKINSION, 2019).

Poverty affects the people's quality of the life and those countries with higher poverty rate experience the worse growth (HULME, 2010). Multidimensional poverty always affect the middle income households and individuals and can be observed significant changes over from rural areas, elderly people, ethnic minorities and some from disability (GREENHILL, et al., 2015). Multidimensional poverty is not something that changes can imply in the society effectively, it rather requires more time to be observed in the society and can be passed on through generations (BEHRMAN et al., 2013). A fundamental research has carried out in Vietnam. The research aims to analyse the effect of trade liberalization on multidimensional deprivation in rice sector as it is known that rice has significance role in Vietnamese economy. Empirical study shows that trade liberalization has positive effect on growth and poverty reduction (MAGRINI et al., 2018). Another study has showed that CHATTOPADHYAY et al. (2017) attempts to provide a microeconomic link to the study of poverty. The study embedded their model of income and consumption distributions into a very broad institutional structure with an agent-based model of labor markets and goods markets. The study has provided that work intensity is the most determining dimension in Europe. He has suggested to policy makers accurate measurement of multidimensional poverty is the key for policy maker decision making.

In the late 2018, more multidimensional poverty indices were proposed by researchers. First is called a new joint OPHI - UNDP (Oxford Poverty & Human Development Initiative). This multidimendimensional poverty includes the a housing indicator

developed from data where it provides information about floors, roofs, wallas, computers and cars. Second methodology is developed by WORLD BANK (2018) and called MPI – 3 using Alkire Foster aggregation method, however the indicators dimension weight and selected thresholds are different from MPI – 1a and MPI – 1b and MPI – 2. MPI – 3 contains the monetarty poverty approach of 1.9 $ per day which is not included in any other MPIs. As a result, MPI – 3 defines a single deprivation indicator with monetary poverty to identify a household as a living in deprivation.

2.3.1 At risk of poverty or social exclusion

The Europe 2020 strategy refers to the population for which a poverty reduction target is defined with the term 'the population at risk of poverty or social exclusion'. This approach does not give deeper theoretical literature of the concepts of poverty, but is in line with the following description, to which the Europe 2020 Strategy states that "*Persons beset by poverty: individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life of the Member State in which they live*". (COUNCIL of the EU, 1975)

The population at risk of poverty or social exclusion of the Europe 2020 Strategy is illustrated in Figure 1 visually
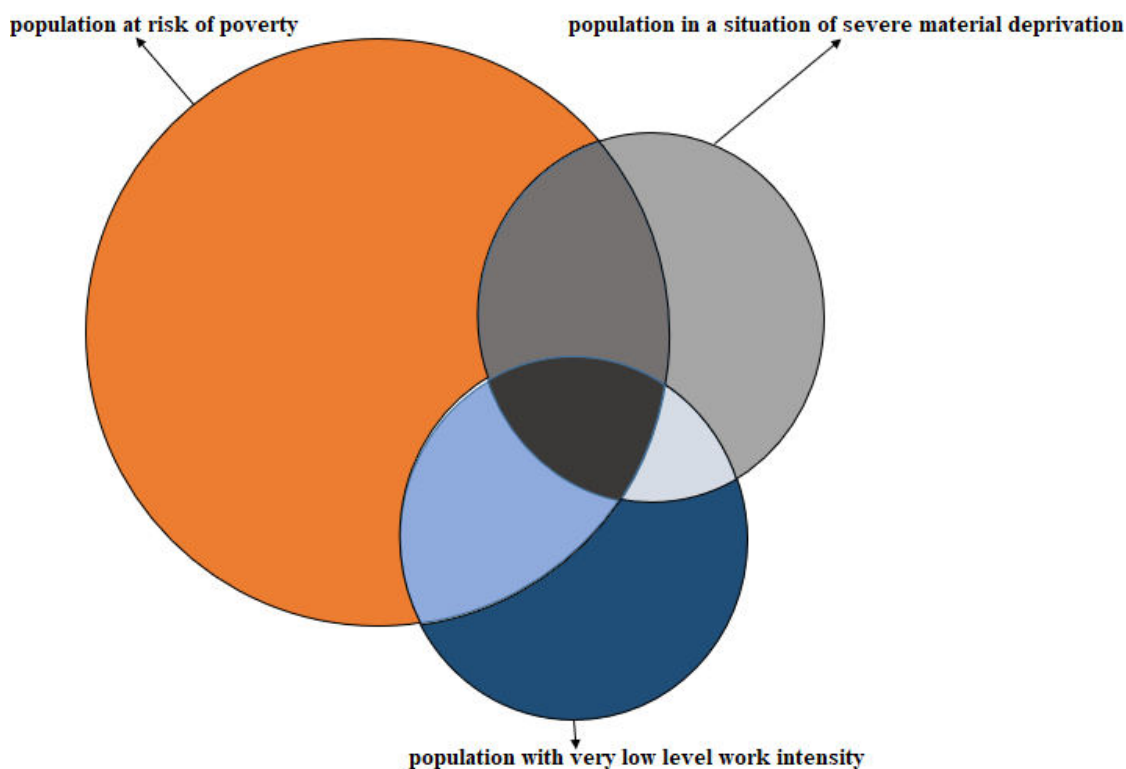
Figure 1: Population at risk of poverty or social exclusion according to the Europe 2020 Strategy

Source: Eurostat, 2016

These sub-classes are each resisted with one or more aspects of the multidimensional poverty debate: living standard difficulties merging into the labour force market or not unable to afford goods and services which are necessary to live in society. Each sub-population is analysed using indicators, that is, the indicators 'at risk of poverty', 'very low work intensity' and 'severe material deprivation'. At risk of poverty identifies the people living under 60% of the equivalized disposable income after social benefits. Work intensity defines the number of months worked during the income reference year as the ratio of household members of all working age (18-64, excluding dependent children) to the total number of months that could theoretically work at the same working age withing household members. And lastly, severe material deprivation rate is the percentage of people living in households whose living conditions are severely constrained by lack of financial resources, regardless of people's preferences for deprivation items defined by Eurostat. As a summary, socially excluded person is considered to be one of this group, if faces one, two or three aspects of the multidimensional poverty issue (EUROSTAT, 2016).

2.3.2   *Multidimensional Poverty Index (MPI)*

The Multidimensional Poverty Index (MPI) defines multiple deprivations at the household and individual level in the health, education and living standards (ALKIRE et al, 2010). It uses microdata the inequality-adjusted Human Development Index all the indicators must originate from the same survey. Each person in a household is selected as poor or not impoverished depending on the household experience. MPI reflects both the prevalence of multidimensional poverty and the density of concurrent deprivations experienced by poor people. It can be used to create a comprehensive picture of the people living in poverty and allows comparison of other major groups and communities in the country, region, and the world in ethnic, urban or rural profiles.

Multidimensional Poverty Index (MPI) is published for the first time by Alkire et al called A new index for developing countries report in 2010. The index identifies deprivations across the same three dimensions as the human development index and explains the number of multidimensionally poor people. It can be deconstructed by

region, ethnicity and other groups as well as by dimension, other indicators, and MPI makes it a useful tool for decision-makers.
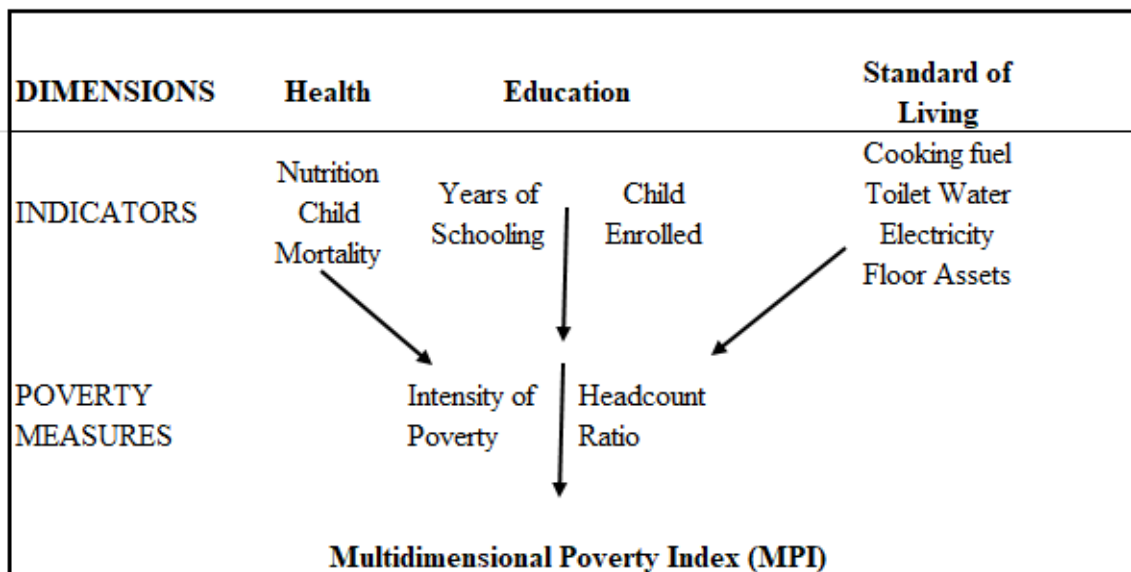
Figure 2: Methodology of using MPI.

Source: Alkire (2010)

2.4 Poverty studies

The definition of poverty is very complex. It is difficult to form a definition because poverty means different things to different people. Some people define poverty as a lack of income resulting in the absence of a car or refrigerator, while others may define it as a lack of formal housing, basic services, or education and employment opportunities. Poverty is measured differently among different countries. Each country has different strategies to fight poverty. Poverty is a depressive topic that effect the individuals and families to be unable to afford and decent level of living conditions with society's standards. However, nowadays world, in order to fight poverty, it is a fundamental fact that availability of the data has a significant role playing in this matter.

In European Union, Eurostat is responsible for producing poverty related data. Each member state conducts the survey and collected surveys are sent to the Eurostat to be published. And Turkish poverty data are published by TUIK. TUIK has been collecting data sources and calculation methods to be able to produce the socio-economic structure of the country since 2010 and to produce data that will enable international comparisons

(TUIK, 2011). For this reason, after 2010, poverty studies take a prominent place in Turkey. Due to the lack of panel data dynamic aspects of poverty in Turkey has not been studied extensively. Fortunately, Turkey Statistical Institute (Turkstat) begun collecting data on the income of households in 2006 as well as about their living conditions. Since then, Turkstat has published annually Income and Living Conditions Survey (SILC). Poverty studies in Turkey is based on cross-sectional data only until 2006 and could not give any information about the deep understanding of poverty. These studies are generally based on the general poverty rate (absolute and relative poverty). Panel data availability has encouraged scientists to study on poverty in Turkey. The next part will review the international literature.

2.4.1 Poverty studies outside Turkey

Significant studies have been carried out in the world literature on the examination of poverty. These examples mostly focus on developing, or underdeveloped, countries that have not addressed the problem of poverty. Nowadays, poverty is a worldwide issue, and world poverty is published by WORLD BANK and UNITED NATIONS (2010).

The World Bank focuses on those nations where developing countries are struggling with poverty, rather than overcoming debt crises and ensuring macroeconomic stability. Indeed, it is often stated that the Bank does not adequately consider issues such as poverty and the environment in the lending process (JAMES, 2002). If the debate on the validity of this policy is left aside, it seems that it has failed at least in struggle with poverty. In the 1990s, 24 transition economies borrowed 143 structural balances in line with the proposals of Western economists. Major losses in production have emerged and poverty has increased. As a result, the percentage of people with income below $ 2 per day in these countries increased from 1.7 to 20.8 % (HILLMAN, 2002).

This type of work is usually focused on calculating regional poverty rates or whether differences in urban-rural distinction are observed. For example, BIDANI (1993) investigated this issue for the regions of Indonesia. In his study, regional poverty rates for 1990 were calculated and it was found that poverty is heavily involved in rural areas compared to cities. Different types of methodologies let scientists ask the different questions: "Poverty is not cross-sectional, is it a more common experience when viewed longitudinally?"; "How long will poverty last?"; "What are the beginning and ending incidents of poverty?"; "Which groups constitute the short and long-term poor?"; "What

are the exit and entry rates of poverty?"; "What are the reasons for the continuation of poverty?".

Many studies find high turnover among the poor: however, those who are under the poverty line will not be forever under this line. Due to the high exit and entry rates, poverty is more about to analyse and statistically should be proved. For example, ANDRIOPOULOU (2011) study the dynamics of poverty in 14 European countries over seven years and show the rate of poverty, which measures the share of poor people among the European countries. When they compare the poverty rate among those countries, the poverty rate indicates many different results in different European countries. This is the reason for European mobility and individuals have access to live in different territories. LAYTE (2002) also state that poverty is a common experience that would spread into these countries maybe not cross-sectionally, however, longitudinally it is true.

Many other studies are showing the same conclusions: how long the period of poverty has lasted, and how less likely it is to return to poverty (DEVICIENTI, 2000).

Most of the work done is on how long someone is poor or will remain to be poor, some studies have done for different countries by different scientists for instance; ELLWOOD (1986) for the United States, JENKINS (2000) for England, and ANTOLIN et al. (1999) for Canada and Germany. Long standing poverty leads to changing attitudes towards work or the reduction of human capital (ANTOLIN et al. 1999). Some arguments, for example, according to HECKMAN (1981), real state dependence means that the experience of poverty in one year increases the risk of weakening in the next coming years. In other words, studies constantly try to distinguish between true state dependence and individual experiences. Many studies have found that poverty is highly depended on state. Some of these studies are carried out by CAPPELLARI (2004) for England, AYLLON (2008) for Spain, Australia VERICK (2008), ANDRIOPOULOU (2011) for fourteen European countries. More than half of this probability is due to the poverty of the last period and there is no variation in individual characteristics. For this reason, human capital itself has no significance to identify poverty.

TOMLINSON and WALKER (2010) analyse the state dependence of Britain both qualitatively and quantitatively and summarize that at low wages, depending on the state has come to an increase in poverty. STEWART (1999) and STEWART (2005) find that low wage state dependence is high in England.

In the case of poverty in state dependency, the prevention of poverty at the start becomes an important policy goal, and social programs are used for those achievements. However,

because it is a potential deterrent, it can create social assistance programs that do not reduce state dependence (DANZIGER et al. 1981). Those studies are done for this purpose to analyse whether poverty has state dependency.

In dynamic analyses, the following questions are common: "Are social benefit recipients unemployed longer than non-recipients?" And "Are recipients more likely to leave their jobs than non-recipients?" A time analysis is performed to answer these questions. For example, PELIZZARI (2004) studies the impact of social programs for those who are seeking for job opportunities. He concludes that delay in social programs makes the unemployment period longer. ERBENOVA et al. (1998) found a similar result for the Czech Republic. BLAU (1986) estimates of welfare differences in labour market flows between employment, unemployment in the US. BLAU (1986) concludes that for the US, the biggest profit is an impact on the employment rate. EARLE (1998) found that social assistance for unemployed individuals was not a considerable influence on the duration of unemployment. There are comparatively few studies on the impact of social assistance programs on the employment rate.

On the other hand, as it is discussed in deprivation section, European Union poverty policies has been changed by years. European Union focuses on income poverty where it is referred to household's equivalised disposable income based on EU 2020 strategy for a sustainable and inclusive growth. This strategy is called "at risk of poverty". Researchers in Europe also study deprivation approaches due to the deprivation items make it possible to capture the income and living conditions by analysing the basic needs of people. Deprivation indicators are more useful than income measuring the persistence of poverty and social exclusion because of lack of items are often associated with resource scarcity for a longer period (CALANDRINO, 2003). This approach distinguishes those who cannot afford a particular price and service or those who do not have any other reason. In other words, the lack of items is not due to lifestyle or choices. People want to have things but cannot pay for them (FUSCO et al, 2013). However, EU-2020 has limitation on measuring poverty. EU's multidimensional poverty measure, the at risk of poverty or social exclusion measure is based on combination of income poverty, material deprivation and work intensity (EUROPEAN COMISSION, 2011). But this strategy has taken critics by well-known researcher by NOLAN at al. (2011a). They emphasize that, the any specific multidimensional measurement approach cannot be interpreted in terms of the multidimensional nature of the concepts.

Some of the well-known studies have carried out in Europe by respected scientists. Researchers investigate the relationship between multiple deprivation and income poverty. BERTHOUD (2011) studied that those people who have high income are in part of low level deprivation. However, strength of this relationship is less than as they have expected. They also find that association between dimensions are strongest in between financial difficulties and environmental and housing conditions indices.

Same study is investigated association between income and multiple deprivation in US by MAYER and JENCKS. They refer multiple deprivation as material hardship (SULLIVAN et al, 2008). Using time series of current and permanent income of individuals, results show more or less same result of BERTHOUD in 2011 strong negative association between income and odd ratio of deprivation.

Researchers in Europe concentrated on living conditions and bad housing issues. NAVARRO (2010) studied that there is a positive relationship between low living conditions and bad housing conditions have negative impact on household's health. Another study shows that those household types which are overcrowded effects the children's education (BARNES et al, 2011).

As a consequence of definition EU-2020 remains broadly identified. The danger of such a broad definition is that interpretation is much more complex and much less accurate in identifying those at the highest risk. NOLAN et al. (2011a) recommend the use of alternative poverty measurement and social exclusion measures based on a consistent poverty approach, based on relative income poverty and material income measures. They offer three alternative measures based on an overlap approach in which is a combination of being at risk according to various criteria is used to identify the target group. In this way, they advocate a measure that combines a one-dimensional concept of poverty with a multi-dimensional concept. Because it provides an opportunity to bridge poverty thresholds at national and EU level. They also argue that income poverty and material deprivation complement each other in a beneficial way: while income poverty directly measures the input side of household finances, material deprivation is associated with the ability to put goals together by capturing a subjective assessment of poverty.

2.4.2 Poverty Studies in Turkey

Poverty is a sociological fact that has an issue in Turkey. Fact that there is an increase in interest in poverty in Turkey. However, when looking at the challenges of poverty-related

research and explanation of the concept of poverty in Turkey, it has scope issue. One of the most important of these issues is that researchers focus on just income and consumption-based measurement and ignoring medium and long-term indicators such as human development (KAYALIDERE-ŞAHİN, 2014). Another issue is that the analyses have made with different numerical data and variables show different results. Despite assumptions regarding the poverty, it cannot be considered from independent of economic inefficiency. For this reason, poverty studies continue to focus on income. The official institute of Turkey who collects the poverty data is Turkish Statistical Institute (TUIK). Official poverty reports have launched in early 2000s. First report presented by TUIK in 2002 which shows that 40% of the Turkish population is poor. In the same study, 43% of total households are also poor. However sad thing is that in addition to these poor households 12% of households entered the poverty line for those who cannot even afford their daily survival (BUZ, 2003). In Turkey, some studies have carried out to explain and analyse the extent of poverty in a framework of statistics. Due to the lack of official poverty data, there are very few studies examining poverty before the year 2000. Studies of poverty could be clustered as follows: studies on the measurement of poverty and the determination of the profiles of the poor; studies trying to find the relationship between poverty and macroeconomic indicators; fiscal policies and some industrial policies and especially aiming at the changing forms of poverty after 2000.

In Turkey, the first official poverty line, according to the Household Budget Survey results, was announced in 2002. Because there was no definition of poverty before this date in Turkey, the first studies focused on measuring poverty and providing the definition of the poor. Some of these studies; ERDOGAN (2002), PAMUK (2002) and DAYIOGLU et al. (2010), DAGDEMIR (1992) and DANSUK (1997). These studies used the Household Income and Expenditure Surveys in 1987 and 1994 to determine a poverty gap based on expenditures or total consumption of food and other items. These studies consider demographic feature of the households such as age, gender, education and employment status.

Another pair of studies have done to understand the relationship between macroeconomic, fiscal and sectoral policies and poverty: CELASUN (1986), DAĞDEMIR (1999), WORLD BANK (2000, 2003), WORLD BANK and STATE INSTITUTE of STATISTICS (2005), PINAR (2004). CELASUN (1986) analyse the influence of changes in the terms of trade to see the trend line or transition within the years (1973-78 and 1978-83) on income distribution and poverty. The average income of the agricultural

and non-agricultural sectors, according to the results of discrepancies between income inequality are two main reasons for inequality in the agricultural sector in Turkey. Years between 1973-1978, the raise in low-income groups working in the agricultural sector was above the average due to the relative improvement of the agricultural sector in Turkey. However, in 1978-1983, poverty increased because of the trade against agricultural income.

DAGDEMIR (1999) has a study on poverty in economic crises in 1987-1994 in Turkey. In addition to the number of staff, the change in poverty is measured using the poverty line between the poor. Using the household income and expenditure surveys (2000 and 1994), the WORLD BANK (2000) analyses of poor societies throughout the economic growth, employment, and public expenditure. The WORLD BANK (2003) examines the relationship between poverty and economic development and the impact of depressive poverty in 1999. From 1994 through 2001, especially due to the financial crisis of 2001, the number of the poor people increased. In the qualitative part of the study, it was determined that the poor relied on family, relatives and neighbouring networks, but these networks were constrained by economic shocks and financial limits crisis. The WORLD BANK and the TURKISH INSTITUTE of STATISTICS (2005) use the HBS in 2002 to measure situations of individual characteristics based on their socio-economic indicators for instance; education, health, participation in labour and social protection. PINAR (2004) studies on the effects of public expenditures and taxes on income inequality using the 1994 household income and consumption survey. Her result showed that expenditures and social supports can help positively to low-income groups.

Education, health and income-oriented human development dimensions are also taken into consideration by some authors, to analyse welfare (AKDER, 2000 and UNDP, 2001). Another way to identify poverty is to pay attention to the voices of the poor. ERDOĞAN (2002) is an example of such an analysis based on interviews and focus group interviews with the poor in the big cities Istanbul and Ankara.

There are some case studies which has done by researchers to understand poverty. For example, KEYDER (2005), concerning Turkey and Istanbul, examines the causes of the poverty because of structural change. The research is predominantly based on interviews. KALAYCIOĞLU (2002) investigated the change in poverty through interviews with people who are immigrated and the people living under the poverty line in Ankara, Istanbul, Izmir, and Mersin. IŞIK (2008) studies with poverty as a progress and try to understand how people can survive their livelihoods, especially after 1980, by taking a

step to in Istanbul. ADAMAN (2006) target the poor and socially excluded persons in the slum areas where people live with not constructed houses and for this reason some cities were chosen by him to interview them such as; Adana, Ankara, Diyarbakır, Gaziantep, Istanbul, and İzmir. Also, the same year, KEYDER (2006) examines social exclusion in Istanbul with the aim of changes in such as employment status, property conditions, and status.

Based on the result of the Household Labor Force Survey in 2003 72.4% and the Household Labor Force Survey 86.8% in 2010, the proportion of informally employed poor has increased.

The falling number of public sector jobs after privatization is increased the poverty rate in the informal sector (TANSEL, 2001). Employment in the public sector is a way to alleviate poverty with the decline of public employment, and the share of more educated workers in this sector is also decreasing (BORATAV et al, 2000). The poor have tried to escape from poverty by accessing the informal employment, but this does not guarantee the survival of the poor. ADAMAN (2006) find that high social exclusion rates are related to unemployment or employment in the private job market. KALAYCIOĞLU (2002) also emphasizes that poverty has become more common because poverty has become difficult to find formal jobs, and these non-commercial gains have started to be the most important for poor household income.

BUĞRA (2006) state that social security jobs serve as a channel for social integration full of rural-urban migration and this can lead to poor integration of the poor by reducing the chances of registered employment. In addition to the human capital theory, the partitioned labour market theory can at least inform the informal sector of the high rate of poverty in the informal sector. If they already looking for jobs in the formal market, their previous professional career can act as a sign of the individual's potential productivity. For this reason, illegitimate work can be led to become trapped for poor people.

On the other hand, studies on labour market were carried out to analyse the wage differences between formal and informal job market. The first empirical evidence done by TUNALI (2002) on the divided labour market. Using the 1988 household labour survey, he finds out that wage gap between large-scale firms and small-scale firms are big. BORATAV et al. (2000) states the results of the household labour survey and the results of a manufacturing industry statistics for before and after 1989. The result has shown that official workers benefiting more from the formal market. They are widening the gap between the gains of different labour types and triggering the labour market. İKKACAN

(2010) studied the extent to which the formal and informal sector wage loss is reflected in productivity differences change in human capital assets and industry and geographical distribution. It examines the informal labour market section and looks for changes in the size of the wage gap between the formal and informal sectors using the data household labour surveys 1988-2007. The used method is a two-step forecasting method because the distribution of workers between the formal and informal sectors cannot be regular and random and can affect the wages of worker features that affect the sectoral distribution. Oaxaca (The Oaxaca decomposition is a statistical method that explains the difference in the averages of the dependent variable between two groups by separating the gap resulting from the differences in the mean values of the independent variable within the groups.) decomposition methodology is used to deform the wage range.

They see that the wage gap between the two sectors doubled during the investigation period and that wage differentials sources are shifted to the differences in 1988 from human capital donation differences to occupational and industrial distributions. Also, unexplained component concrete made the largest contribution. They concluded that the formal and informal components of the labour market are increasingly fragmented. In addition to these studies, LEVENT et al. (2004) and DAYIOĞLU (2010) show a high salary difference between structured and informal sectors, even if observable features are controlled. For this reason, changes in attitudes to work can be unofficial dependence on the state because of the erosion of human capital or the ability of an earlier professional career to serve as an indication of the potential productivity of an individual.

In the early 2000s, the situation of immigrants in urban areas deteriorated. There is now no possibility of land occupation and slum construction (KEYDER, 2005). Since the city has only limited space for the next round, and the richer parts of the city were active in the skirts. For this reason, they could not build their own houses. At the same time, wealthier segments began to buy land for informal land markets. This meant that early entry into the shanty townships would no longer require a network with newcomers. They have established such a relationship because of the rent they had previously received. Instead, they started looking for ways to obtain legal rights for their land and buildings (PINARCIOĞLU-ISIK, 2008). That is why individuals who migrated in the late 1990s lost hope to being able to be a home owner.

Poverty is well studied in rural areas too. Important researcher AKDER (2000) focuses on rural poverty through human development dimension and states that low human development is highly seen in rural areas. Rural poverty has been studied by many

researchers and that is why it is not a new phenomenon. It has been known for many years in Eastern and South-eastern Anatolia parts of Turkey. The study carried out by the WORLD BANK (2000) finds that low productivity in agriculture is related to lower incomes, weak infrastructure, and hard to be able to reach the labour market. Those factors are more crucial issues beyond the rural poverty.

BUĞRA et al. (2003) studied that immigrant living in the city from the countryside live in poverty temporarily, but this is no longer valid. Poverty also affects rural poverty due to backward and forward distention. Migration through money fluctuation helps to reduce poverty in rural areas. Reduced livelihoods of immigrants can also trigger a return to rural areas by increasing the population of existing resources. For this reason, new poverty appears to be particularly linked to the urban poverty.

3   MATERIALS AND METHODS

In this chapter, the author describes the data used in this dissertation. First, the author gives a brief definition of EU-SILC data and its history. All the statistical analysis been done with IBM SPSS version 25.

This section details the methods used to define standard of living and specify its dimensions. A 'critical lens' is applied to the current standard processes in Europe which are considered normative in academic and social policy settings. After reviewing the literature, first the author examines three deprivation dimensions and their indicators (items) to further develop the methodology. Then, adds further items to them and make calculations for 11 countries, based on the new deprivation definition.

The study is based on two datasets that are derived from EU-SILC and cover the years 2005 to 2017. The first one is provided by Eurostat and the second (Turkish dataset) comes from TUIK. Due to space limitation and the fact that the yearly cross-country comparisons would facilitate more the understanding of deprivation, only four years (2005, 2009, 2013, 2017) were chosen to be studied. The aim of this research is to present measurement instead of an in-depth trend analysis. At the time of writing this dissertation, the latest available data were for 2017. The author selected 10 Eastern-European countries to study based on their economic and social development: they all have a similar integration path and joined the EU in 2004 or later. Despite its negotiations for accession to the EU have been terminated, Turkey was also selected since these negotiations did begin the harmonization of the European datasets, which resulted in the availability of the EU-SILC database in Turkey. Another reason for including these 11 countries in the study is the large gap between their yearly deprivation figures. Eurostat has two deprivation indexes; first is material deprivation index. The deprivation calculation in this dissertation is based on three dimensions: economic strain, living conditions, and housing and environmental conditions.

3.1 History of EU-SILC

In 1994, the European Union Statistical Office Eurostat established the European Community Household Panel.

The purpose of creating of this panel data was to examine the income and living conditions of different characteristics of households within the European Union. The European Community Household Panel was held until 2001. In 2004, "Income and Living Conditions Statistics" (SILC) was taken over from the panel. The SILC tool is subject to a wider detail of the themes than before the European Panel and due to the 2003 European Regulation, it provides a broader range of issues to be addressed in Europe. The main aim was to observe the European countries with a comparable dataset which is announced annually, and which will provide information about income, living conditions and social exclusion in the EU member states.

The EU-SILC system was implemented in 2003 agreed on a "gentleman's agreement" in six Member States (Belgium, Denmark, Greece, Ireland, Luxembourg, and Austria) and Norway. The starting of the EU-SILC tool was in 2004 for the EU-15 (except Germany, the Netherlands, the United Kingdom) and Estonia, Norway, and Iceland. An exception was made which allowed Germany, the Netherlands, the United Kingdom and nine of the ten new Member States (all except Estonia) to start in 2005, provided they provide comparable data for 2004 for the partners. EU indicators adopted by the Council in the context of an open method of coordination. In 2006, the full implementation of the EU-SILC instrument Bulgaria, Turkey, Romania, and Switzerland in 2007 began to practice. The former Yugoslav Republic of Macedonia (FYROM) started in Croatia in 2010, Montenegro and Serbia in 2011.

SILC survey in Turkey within the framework of the implementation of the EU Cohesion Program was initiated in 2006. The aim of launching a new survey to increase access to European standards is to generate data on income distribution, relative income poverty, living conditions and social exclusion compared to EU countries. This survey collected information on a wide range of individual and household characteristics as well as income. The survey addresses the following areas to calculate indicators such as income, poverty, social exclusion, and other life condition indicators: housing, economic status, social exclusion, ownership of assets, education, demography, health status, job status, and income status (TURKSTAT, 2011). Until 2006, income distribution figures were obtained from the Household Budget Survey (HBS), which has been implemented since

2002. Poverty figures are also explained from HBS. These poverty figures are based on consumption. There is no panel feature in HBS. Turkstat continues to produce consumption-based poverty from HBS. Since the implementation of SILC, income-based poverty figures have also been announced by Turkstat. Perhaps the most important aspect of SILC is that it can be used to perform dynamic poverty analysis.

3.2 Description of EU-SILC Data

European Union Income and Living Conditions Statistics (EU-SILC) is a tool to collect timely and comparable cross-sectional and longitudinal multidimensional microdata about income, poverty, social exclusion and living conditions (Eurostat 2018). This allows European Union to have comparative statistics on income and living conditions in Europe. This system is created to report to the European Commission and is controlled by Eurostat. The main goal of the EU-SILC is to produce the relevant indicators ("Laeken indicators") of social cohesion and social inclusion for the yearly report to the European Union. This report is attached to the European Statistical System (ESS). It aims to provide a better understanding of indicators and level of poverty and social exclusion and enables reliable and relevant comparisons within EU Member States.

EU-SILC provides two types of data:

- **Cross-sectional data** provides a given time or permanent of time period with variables on income, poverty, social exclusion, and other living conditions;
- **Longitudinal data** provides information about individual-level changes over time observed periodically over four years.

In this dissertation, the author uses *cross-sectional* data given by Eurostat from the first wave (2005) until most fresh data available (2017). The SILC data is a survey where individuals are asked questions about their social, economic and living conditions. Hence, to examine how different countries can be compared, the commonly used collection of the SILC data will help us to forecast the cross-country differences (EUROSTAT, 2013).

The main purpose of the longitudinal dataset of the EU-SILC is to ensure that the Social Inclusion Indicator is measured as the "persistent poverty risk ratio". This indicator gives the percentage of the population living in households with equivalised disposable income below the 60% of the national median income for the current year and at least two of the previous three years. That is the reason why the population selected for the first year should be followed at least once every four years, that is, the panel duration should be at

least four years. For the above reasons, Eurostat suggested using a rotary design that contains four sub-samples or panels. Figure 3 below shows the type of structure proposed by Eurostat. This structure will be suitable to meet the combined cross-sectional and longitudinal requirements.

SUCCESSIVE PANEL OF LIMITED DURATION
SAMPLE

Years in Survey							
1				**4**			
2				**3**			
3				**2**			
4				**1**			
TIME	T-2	T-1	T	T+1	T+2	…	…
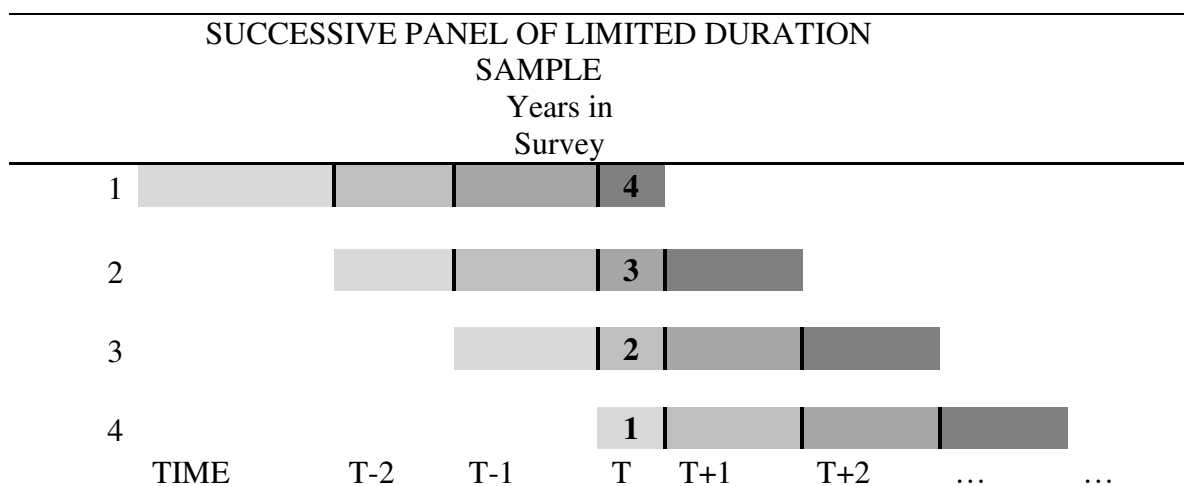
Figure 3: Illustration of a simple rotational design

Source: Eurostat (2018)

Figure 3 shows a simple turn design (after the system is fully installed). For any year, the sample consists of four replicates in the questionnaire for 1-4 years (as shown for "Time" = T in). Any regular replication research will continue for four years; every year, one of four repetitions of the previous year is cut and a new one is added. Sample overlap between T and T + 1 is 75%; The overlap between T year and T + 2 is 50% and is reduced to zero at intervals of 25% and longer from T year to T + 3.

For the EU-SILC, such a 'linear' rotational model is as simple and optimal as the main interest in monitoring annual trends. Initially, a cross-sectional representation of the household was selected. It is divided into four sub-samples, each representing the entire population on its own and similarly with the whole sample structure. A sub-sample is completely cross-sectional and is not followed in the first round. The participants in the second sub-sample are required to take part in the panel for two years, three years in the third sub-sample and four years for the fourth. Starting from the second year, a new panel is being established every year with the demand for participation for four years. At any time, the sample of the population collection starts from the base. Table 1 shows the type of information household file and personal file includes.

Table 1: Main group of indicators in EU-SILC dataset

Household data (h-file)	Personal data (p-file)
Basic data	Basic/demographic data
Housing	Education
Material deprivation	Health
Income	Labour and income

Source: own construction *based on the SILC (EUROSTAT) and TUIK*

Social exclusion and housing status information is collected at the household level. The essence of the income variables comes from a very detailed level, collected mainly personal level. EU-SILC contains a combination of target variables where all member countries apply the same questions in the survey. There are two types of data available in the EU-SILC dataset: those are primary and secondary variables. Primary variables are gathered each year. These variables represent household information and are regrouped into domains.

3.2.1 Unit of Analysis: Individual

The following measures combine individual and household level information and identify all individuals as poor or non-poor based on their achievements in these indicators. A different unit of analysis is also possible using EU-SILC datasets: individuals, individual adults, individual children by households and households. The author uses individuals as a unit of analysis. All EU-SILC data provided in four different data which are household register, household data, personal data, and personal register. To have just an individual basis one data set, the author has merged all files using household ID and finally had all files on the individual level. Finally, the unit of analysis includes the achievements of the individual's economic conditions, living conditions, and housing and environmental conditions are used to identify their deprivations. Household-level variables are used to define individuals as deprived or not deprived in terms of economic, material deprivation, housing, and environmental conditions. This path is very useful because the resulting measures can avoid having too many missing cases. It will be possible to use the household as an analysis unit with EU-SILC data. In this case, a household will be deprived of economic, education, housing, living conditions indicators due to the common deprivation of household members with data (which may include children). For example, this method used in the global MPI has an advantage in terms of missing data, because if existing data is defined as a household deprived, all members can be included,

even if there is missing data for some members. However, experimental measures that did not apply to identify household, it was not clear how household definitions and comparability were changing across Europe. Besides, appropriate "cut off" for household-level indicators built with individuals requires separate analysis for indicators. Finally, in the context of the EU, social rights tend to be based on an individual basis. Therefore, in experimental measurements, the individual is taken as an analysis unit as a result of the reduction of the larger sample.

3.2.2   Sample Size

Various conceptual and fundamental considerations and planning concepts made it necessary that the most critical variables require minimum effective sample sizes. In this section, the author only mentions about the cross-sectional component which is used in this dissertation.

In the cross-sectional dataset, the requirement is to reach the minimum effective sample size of around 135.000 households within the EU (141.000 including Iceland and Norway). The allocation of the EU sample between countries represents a compromise between the two objectives: the results are representative at the level of individual countries, and for the EU as well. Table 2 is for cross-sectional sample size. (Note: It is important to note that the sample size in Table 2 is not given in the number of households but in the number of individuals for each EU members and Turkey)

Table 2: Sample Size

	2005	2009	2013	2017
Bulgaria	-	13150	10880	17649
Czech Republic	10333	19765	16275	19205
Estonia	11948	11308	12551	15320
Hungary	17969	20973	21349	18591
Lithuania	12117	11214	10485	11136
Latvia	9699	12207	12442	13457
Poland	49044	31674	30162	34835
Romania	-	16282	15859	17240
Slovenia	27679	25386	23374	26306
Slovakia	15418	13821	13286	16031
Turkey	42795	45362	73499	78015

3.2.3 Weighting Design

Weighting design is defined and valid for units in all, not just units in one dataset. For instance; DB080 (Household Weight) is calculated as follows and can be used in all variables in a household file: In case that households are sampled (or addresses or other units containing households):

$$DB080_h = 1 / \text{(probability of selection of h)}$$

In the case that persons are sampled:

$$DB080_h = 1/\sum \text{((probabilities of selection of eligible persons in h)}$$

"Eligible persons" are persons who are numbered a non-zero probability in the chosen procedure, for example: people aged 14+ or 16+. If the probability of selection is the same for all eligible people in each household, the denominator is the probability of choice of such persons only in the household.

When households or individuals are selected from lists containing "empty", that is, non-existent or empty buildings, the unit is not a private home, it is important to make sure that the selection possibilities are calculated correctly if the listed household or person is not available (Eurostat, 2014). For example, if there are "N" lists containing "N" real units, and an equal probability sample of the n list that gives "n" real units is selected:

$$\pi_i = n/N \text{ If N is known}$$

$$= n/N \text{ otherwise (most common case)}$$

PB070 (Personal Weight) is defined only when a sample of persons is used, for the selected respondent k (respondents):

Note: In this dissertation only, personal weight will be used due to the merging the household files to personal files.

Calibrated household weight is given to each of its members $RB050_{j=h} = DB090_h$. PB040 weights are obtained simply by filtering the RB050 to people who receive an individual survey (PB040 = RB050). This is based on completing all survey questionnaires to

50

respond to households. In fact, if individual responsiveness is restricted, Eurostat recommends applying individual records, at least for individual income components. Currently, personal weights should not be adjusted so as not to respond personally, and from time to time, adjustability can be maintained while total income is delivered. Basic weights are the backbone of calculating both cross-sectional weights and longitudinal weights. They are calculated and managed and clouded for a single panel and are rarely used to estimate population parameters (EUROSTAT, 2014).

3.3 Applied Statistical Models

In this section, the author presents the statistical methods used in this dissertation.

3.3.1 Kruskal – Wallis Test

In the first part of empirical study, the author compares the selected European countries with Turkey. In order to perform an adequate statistical analysis, the author chooses to perform the Kruskal- Wallis test to observe the differences among the countries.
Kruskal- Wallis test is one of the non parametric tests that used to determine if there are statistically significant differences between two or more groups of an independent variable. This test is an alternative to the one way ANOVA and test is proposed by KRUSKAL and WALLIS in 1952. Kruskal - Wallis test does not assume the normal distribution.
The author performs the Kruskal – Wallis test for each year from 2005 to 2017. This test will allow to see whether in each years countries differ from one to another. The non parametric Kruskal – Wallis analysis of variance is computed to determine if there is a significant difference among economic strain, living conditions and housing & environmental conditions for each countries in different years.

3.3.2 Logistic regression

In the second part of the results, this dissertation focuses on the Turkish deprivation. This model aims to find out the roots of the determinants of deprivation in Turkey. The availability of data is from 2005 until 2017. It illustrates the changes and trends of the deprivation in Turkey.

Logistic regression requires the binomial (X, Y) or nominal measurement level. In this dissertation, representation of dependent variable is 1 = deprived, 0= not deprived. Independent variables can be the nominal or scale measurement level. Logistic regression does not require linearity. What logistic regression does is to predict the odd ratios for each independent variable. This is interpreted as regression coefficient β_1 is interpreted as log of the odd ratios allows to compare changes in one unit in X to original odds (HOSMER- LEMESHOW, 2000). Odd ratios are divided into two groups one is mentioned β_1 (coefficients) and second is called exponential β_2 which gives the probability of the dependent variable (HOSMER et al, 2013). To be more precise, exponential values are interpreted with reference categories where the predicted dependent variable has lower or higher however, scale measurement independent variables are interpreted with one unit change (DAVID -KLEINBAUM, 2002).

To sum up, the predicted coefficients represent the change in log of odds ratios suitable to a particular number of changes in independent variable. Moreover, exponential β_2 is interpreted with reference categories. This means that each independent variable categories are counted to another one where reference category is set. For instance, if a researcher looking for the effect of education to being deprived or not deprived, first, reference category should be set to where each individual is less like to be deprived, this would be the ones who has more education will be less likely to be deprived. In this case, higher education is the reference category. And all the other categories exponential β_2 is measured based on higher education. In this dissertation, in order to determine the reference categories, author first runs the frequencies and determines those cases where each covariate (independent variables) has less likelihood chance to be deprived. Each frequency table is presented before logistic regression outputs.

The author runs the logistic regression for each dimension and for each year. Thanks to the EU-Turkey SILC dataset that each year, dataset provides the same variables and this will help the track the changes over years. Logistic regression is used commonly in social sciences.

4 RESULTS

Processes, which are taken into consideration after criticizing the availability of the data and looking at deeply each dimension and their indices which were thought to be academic and normative points of view to apply them in the society. Therefore, it compares the results of selected countries with an individual-based measure. Data has been provided by Eurostat from 2005 to 2017 and Turkish data is given by the Turkish Statistical Institute (TUIK) from 2005 to 2017. Countries selected in the tables are chosen by the author based on the accession time to the EU. Turkey is a non-member state, although its poverty rates are most comparable with the newer member states of the EU. The other reason for the selection was, that in the selected countries, we can observe the most significant gaps between years in terms of three dimensions.

First empirical evidence attempts applying Kruskal – Wallis test. This will help us to compare the selected countries. As one of the aims is to find out where Turkey stands among the selected countries.

As a final, the second chapter of this dissertation will just focus on Turkish deprivation and logistic regression will be used. Dataset has been provided by TUIK including 2005, 2009, 2013 and 2017 years and its cross-sectional data

4.1 Measuring multidimensional deprivation

At first, this dissertation describes in each dimension the main concepts and methodology interpreting to study deprivation. Secondly, it argues that why poverty requires multidimensional measurement. Thirdly, it identifies different dimensions of deprivation and selection of each of them, so that, as a definition of three dimensions were initially identified: economic strain, living condition, housing, and environmental conditions.

Table 3: Dimension specific deprivation cut-offs

Dimensions	*Deprivation Cut-off*
Economic Strain	As given in the above persons who have not obtained at least one economic strain item are deprived
	Others are not
Living Conditions	As given in the above persons who have not obtained at least two living conditions items are deprived
	Others are not

Housing and Environmental Conditions	As given in the above persons who have not obtained at least two housing and environmental conditions items are deprived
	Others are not

Source: own construction

Based on EU-SILC and TUIK data, the author adjusts the existing material deprivation index with multidimensional approach with available information in the dataset. Purpose of this methodological adjustment is to criticize the existing material deprivation index and consider the deprivation cannot be measured with unidimensional approach (ÜNAL et al. 2021). The Figure 3 represents the author's own construction for multidimensional deprivation used in this dissertation.
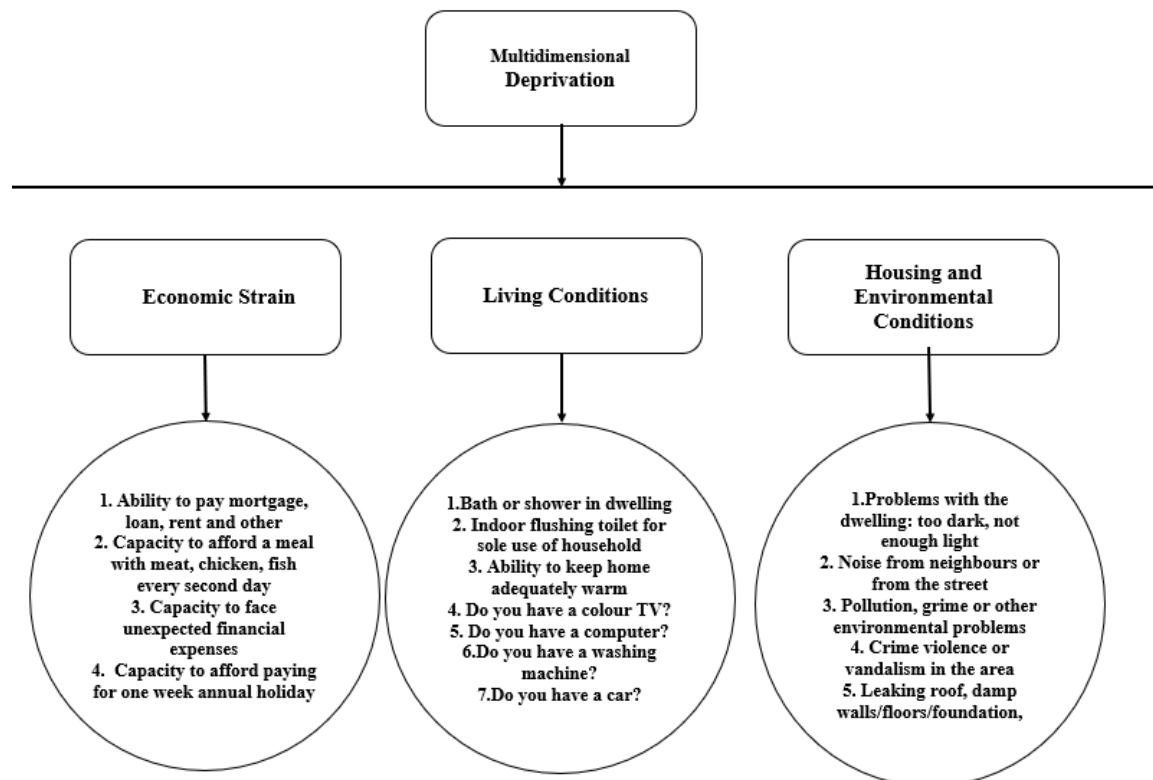

Figure 3: New model for Multidimensional deprivation
Source: own illustration (*based on EU-SILC and TUIK dataset*)

4.1.1 Economic Strain

In general, there are large cross-country differences based on economic-strain-related items. This dimension is comprised of four indicators. They refer to the percentage of

people in the total population who are in the state of inability 1. to pay for a week's annual holiday away from home; 2. to afford a meal with meat, chicken, or fish (or the vegetarian equivalent) every two days; 3. to face unexpected financial expenses, or 4. to pay their debts (mortgages or leases, invoices or lease purchases, and utilities). The value of this last indicator is calculated on the basis of the following question of the EU-SILC: 'Has your household been in arrears in the last 12 months, i.e., has been unable to pay rent for accommodation, mortgage payments, utility bills (such as for heating, electricity, gas, water, etc.), hire purchase instalments, or other loan payments)?' An additional item (Answer 2) was added to the EU-SILC answers to capture the subtle difference between the inability to pay a debt for only one month or for more than one month:

1. Yes (once);
2. Yes (twice or more);
3. No;
4. There is no such payment

In this example, those respondents can be considered deprived who choose the second option (Yes (twice, or more)). This answer was selected because those who were unable to pay their rent for accommodation, mortgage payments, utility bills, etc. only once in the 12 months preceding the survey, would not be considered deprived. For instance; an individual might have considerable excuses to skip just one-month purchased instalments, rent and other loan payments. Continuity of inability to pay is the matter of deprivation. Regarding the other three dimensions, the worst-case scenario was considered, too.

These four indicators refer to the lack of the minimally acceptable financial stability. The items in this dimension are relatively similar. Economic strain formula is based on that of the Eurostat, where they defined a person deprived, if he/she is living in a household where they face one third (33%), i.e., three out of the nine listed financial difficulties (items),

Where:

$$DEco \ (dholiday + dmeat + dunexpected + dmortgage) \geq 2,$$

Where:

dholiday is the inability to pay for a one-week annual holiday away from home, *dmeat* is the unaffordability a meal with meat, chicken, fish (or the vegetarian equivalent) every second day, *dunexpected* is the inability to face unexpected financial expenses, and *dmortgage* is being in arrears on mortgage or rental payments, utility bills, and other loan

payments. Table 4 shows the deprivation rate for economic strain in 11 countries, and its change over time.

Table 4: Percentage of the population facing economic strain deprivation in the selected countries

Country List	2005	2009	2013	2017
Bulgaria	–	71.5	79.2	70.0
Czech Republic	56.5	50.3	52.7	35.5
Estonia	70.0	56.8	59.6	45.8
Hungary	77.1	82.5	82.4	52.6
Lithuania	80.5	62.1	66.0	59.7
Latvia	86.4	81.2	78.4	67.8
Poland	79.3	68.9	68.7	51.3
Romania	–	79.7	78.8	73.8
Slovenia	53.8	52.4	56.4	46.0
Slovak Republic	77.2	64.0	59.7	53.3
Turkey	92.3	99.4	81.1	63.9

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data

From 2005 to 2017, one of the most significant changes in people's economic conditions was seen in Turkey, where economic deprivation decreased from 92.3% to 63.9%. In 2017, the highest share of the population faced financial instability in Romania (73.8%) and Bulgaria (70.0%), where individuals could not afford at least two examined items out of the four. Surprisingly, 99.4% of the Turkish population had to cope with certain financial difficulties in 2009. As well as due to the high number of demands for real estate services affected relatively increase in real estate rental prices. Additionally, the livestock market faced decreasing in cattle numbers, sheep, and goat while growth in domestic meat demand. This is ended up with meat crisis in the beginning of 2009. Meat prices increased 50% in 2009 compared to 2008 (USDA, 2009). As a result, percentage of the population who cannot afford every second day meat, chicken and fish were significantly high. Table 5 presents the 2017 deprivation rate for economic strain by item in the 11 countries.

Table 5: Percentage of the population facing economic strain deprivation in the selected countries, by item, 2017

Countries	$d_{holiday}$	d_{meat}	$d_{unexpected}$	$d_{mortgage}$
Bulgaria	53.4	32.3	53.9	32.5
Czech Republic	25.1	7.4	27.4	2.8
Estonia	28.6	5.5	36.2	6.9
Hungary	47.8	16.3	30.3	14.3
Lithuania	42.7	16.6	50.9	7.9
Latvia	39.1	13.6	59.9	13.2
Poland	39.6	7.1	35.4	10.5
Romania	65.2	19.3	52.0	16.9
Slovenia	24.9	6.9	37.5	14.3
Slovakia	42.9	14.8	34.1	6.9
Turkey	59.1	32.8	30.4	25.7

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data

In each selected country, at least a quarter of the population was unable to spend a one-week annual holiday away from home; the highest rates were observed in Romania (65.2%) and Turkey (59.1%), just as for those (in Turkey 32.8%, in Bulgaria 32.3%) who could not bear the costs of eating meat, chicken, or fish (or the vegetarian equivalent) every other day. The share of people who could not afford unexpected payments was highest in Latvia (59.9%) and Bulgaria (53.9%), which means that more than half of the population in these countries did not have enough savings to meet unexpected bills. The percentage of individuals who could not pay their mortgages, rents, utility bills, and other payments during the 12 months preceding the survey was highest in Bulgaria (32.5%) and Turkey (25.7%) in 2017. We can see the same phenomenon in each studied country, that people are prioritising to pay their bills and to have proper food to be eaten when they lack certain resources, they rather give up on going on a holiday. There is a relatively high rate of the population cannot afford going on holiday, the rates are starting from 24.9% in Slovenia and the highest rate can be observed in Romania (65.2%), where more than half of the population could not afford to spend one week away from home in 2017.

4.1.2 Living Conditions

Living conditions can be measured in a variety of ways through either money metric or basic needs methods. The basic needs method considers whether an individual's expenditure falls below a 'minimum' or 'cannot afford' level, as shown below. Living-condition-related deprivation refers to the lack of goods and amenities needed to live a comfortable life.

In terms of this dimension, the satisfaction of basic needs refers to the ability to keep one's home adequately warm and the capacity to afford basic goods (having a washing machine and other home necessities) that are – while not essential for physical survival – critical for enjoying a decent quality of life. The availability of consumer durables (a car or a computer) is essential to perform everyday life activities. Living conditions also relate to the interior characteristics of the dwelling (availability of an indoor flushing toilet or a shower/bathtub).

The EU-SILC with its standardised questions across countries allows researchers and scientists to make international comparisons. However, determining who is deprived depends on the year from which the dataset being analysed is taken. For example, the 2005 EU-SILC dataset includes data based on the Yes/No answers given to the questions about living conditions (dwelling problems or having a car, a washing machine, a shower/bathtub in the dwelling), which has limitations when measuring real deprivation. This is particularly important because those who answered 'No' in 2005 were not provided with other options. The survey questionnaire was improved in later EU-SILCs and in consequence the number of those who were categorized as deprived has decreased. In 2017, the following answers could be given, for example, to the question 'Is there a shower unit or a bathtub in your dwelling?':

> *1*. Yes, for sole use of the household;
> *2*. Yes, shared;
> *3*. No.

Those were considered at the bottom end who chose the second or the third option (i.e., they did not have a shower unit/bathtub, or they had one but it was shared).

This dimension has been the subject of criticism because the EU-SILC questions do not provide information on the availability of the dwelling or whether it is shared with other individuals who are not household members in the apartment complex.

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The following items are considered to determine living conditions formula based on the 33% percentage of all items, that is, if an individual cannot afford two out of seven items is considered to be deprived.

Where:

$$DLiving\ (dwarm + dcomp + dcar + dtv + dwashing + dbath + dtoilet) \geq 2,$$

where *dwarm* is the ability to keep the household's home adequately warm, *dcomp* is having a computer, *dcar* is having a car, *dwashing* is having a washing machine, *dbath* is having a shower unit or a bathtub in the dwelling, *dtoilet* is having an indoor flushing toilet for the sole use of the household, and *dtv* is having a colour TV. Those who cannot afford at least two out of the seven items are considered deprived.

Table 6: Percentage of the population facing poor living conditions deprivation in the selected countries

Country List	2005	2009	2013	2017
Bulgaria	–	49.1	38.7	33.7
Czech Republic	11.0	6.1	4.8	3.1
Estonia	31.1	15.8	11.7	8.9
Hungary	19.0	–	14.6	9.8
Lithuania	42.4	27.7	23.1	–
Latvia	47.9	29.5	27.4	17.9
Poland	29.8	14.4	8.8	6.4
Romania	–	53.4	42.7	33.8
Slovenia	3.6	3.1	3.0	2.9
Slovak Republic	20.0	8.9	6.7	5.5
Turkey	53.3	44.8	33.1	20.0

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data

According to Table 6, living condition problems have decreased over time in the 11 countries. However, there are countries, such as Romania, Bulgaria, and Turkey that have not made sufficient progress in this respect as 33.8%, 33.7% and 20.0% of their populations had inadequate living conditions in 2017, respectively. Meanwhile, other countries have shown notable improvements. For example, 29.8% of the Polish

population was deprived for this dimension in 2005 but the figure has remarkably fallen (6.4 %) by 2017. Decrease in deprivation was also detected in several other countries including Latvia (from 47.9% to 17.9%), Estonia (from 31.1% to 8.9%), and Slovakia (from 20.0% to 5.5%). Table 7 presents the proportion of people in the countries' total populations that were at risk of being deprived of various living condition items in 2017.

Table 7: Percentage of the population facing poor living conditions deprivation in the selected countries, by item, 2017

Countries	d_{warm}	d_{tv}	$d_{washing}$	d_{car}	d_{bath}	d_{toilet}	$d_{computer}$
Bulgaria	37.1	1.6	8.1	20.2	20.1	26.6	13.7
Czech Republic	3.3	0.1	0.2	7.3	0.6	0.7	2.7
Estonia	3.2	0.3	1.1	11.0	9.1	7.4	3.2
Hungary	6.8	0.6	0.7	19.1	3.5	3.9	8.1
Lithuania	29.4	-	-	10.2	13.0	13.5	6.2
Latvia	9.9	0.9	3.6	18.5	13.4	12.5	7.8
Poland	6.5	0.4	0.5	7.3	4.3	3.7	3.1
Romania	11.3	0.9	7.8	28.9	27.6	29.5	14.0
Slovenia	4.2	0.4	0.2	4.0	0.6	0.6	3.6
Slovakia	4.1	0.2	0.6	10.9	1.9	2.7	4.5
Turkey	19.4	13.7	0.4	0.4	0.9	1.3	4.3

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data

Among the Baltic countries, the best living conditions were seen in Estonia, regarding all items except for d_{car}. In 2017, the highest rates of those who could not keep their homes adequately warm, characterised Bulgaria (37.1%), Lithuania (29.4%), and Turkey (19.4%). Of the selected countries, Bulgaria was in the worst position in terms of ability to afford basic items: 20.2% of its population could not afford a car for personal use, 20.1% did not have a shower or a bathtub in their homes, and 26.6% did not have a toilet. It is clear from the results that having a bathroom and toilet for the sole use of the household is still a significant deficiency in the studied countries. It appears most frequently in Romania, Bulgaria, Lithuania and Latvia. The most disadvantaged groups satisfy their needs in line with certain priorities, which is, in most of the cases also in line with the price of satisfying that certain need. For example, having problem with buying a

tv is the least problematic item, and it is also the cheapest item among the list. It is notable that Turkey does not follow this phenomenon, whereas problems with having a car affects only 0.4% of the population, while buying a tv seems to be unreachable for 13.7% of the population.

4.1.3 Housing and Environmental Conditions

The housing and environmental conditions dimension aims to measure 'quality and affordability' of individuals' housing. Items such as having a leaking roof, damp walls, floors and foundations, rot in the window frames or floor, as well as problems with the dwelling (having rooms which are too dark or do not have enough light) show an overall picture of housing conditions and the problems households have to cope with. This dimension also focuses on the 'quality of life' of households with respect to environmental conditions such as crime, noise, and pollution in the neighbourhood. Crime refers to the percentage of the population who perceived crime, violence or vandalism in the area where they live. Noise and pollution refer to the percentage of the respondents declaring too much noise and pollution in their dwelling from neighbourhood businesses and industries or other environmental problems caused by traffic or industry.

In the EU-SILC questionnaire, respondents may choose from two answers regarding housing and environmental items. A Yes/No answer can be given, for example, to the following question: 'Do you have any of the following problems related to the place where you live: pollution, grime or other environmental problems in the local area such as smoke, dust, unpleasant smells or polluted water?'

1. Yes
2. No

In this dissertation, housing and environmental deprivation is determined by five indicators (items) included in the following formula. The formula is based on the Eurostat methodology (one third of nine items (33%)), according to which an individual is considered deprived when she/he faces difficulties in two out of the five items:

Where:

$$DHousing \ (ddark + dpoll + dleak + dcrime + dnoise) \geq 2,$$

where *ddark* denotes that the dwelling is too dark or does not have enough light, *dpoll* refers to pollution, grime, or other environment problems, *dleak* means leaking roof,

damp walls, floors and foundation, or rot in window frames or floor, *dcrime* stands for crime, violence or vandalism in the area, and *dnoise* is noise in the dwelling from neighbourhood businesses and industries. Table 8 presents the percentage of the population deprived of decent housing and environmental conditions in the countries studied.

Table 8: Percentage of the population facing poor housing and environmental conditions in the selected countries

Country List	*2005*	*2009*	*2013*	*2017*
Bulgaria	–	26.4	17.8	17.9
Czech Republic	24.1	20.9	15.6	11.7
Estonia	27.4	17.9	12.8	10.1
Hungary	26.3	15.8	20.6	16.6
Lithuania	23.7	18.1	16.0	14.6
Latvia	37.3	32.6	22.5	19.8
Poland	25.9	16.3	12.5	12.0
Romania	–	31.7	23.2	16.7
Slovenia	21.8	25.8	17.3	16.1
Slovak Republic	18.2	20.4	12.9	10.2
Turkey	49.1	38.3	32.0	28.0

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data.

A significant change (improving housing and environmental conditions) was seen in most countries from 2005 to 2017. In 2005, the biggest problems were reported in Turkey (49.1%) and Latvia (37.3%) but the proportion of the population living in poor housing and environmental conditions in these two countries has decreased by 2017 (to 28.0% in the former country and to 19.8% in the latter). The Hungarian figures have changed from 26.3% in 2005 to 16.6% in 2017, while Estonia went through an even more significant development, from 27.4% in 2005, the rate decreased to 10.1% by 2017.

Table 9: Percentage of the total population who cannot afford the items of Housing and Environmental Conditions Deprivation by country in 2017

Countries	d_{dark}	d_{poll}	$d_{leaking}$	d_{crime}	d_{noise}
Bulgaria	6.4	14.4	12.3	24.0	9.7
Czech Republic	3.0	11.4	7.7	9.1	13.7
Estonia	4.3	8.6	14.0	7.3	8.3
Hungary	7.9	12.3	23.9	6.8	10.8
Lithuania	5.9	14.7	15.2	8.0	12.7
Latvia	8.8	18.5	22.9	7.9	14.4
Poland	4.6	12.6	12.0	5.6	12.8
Romania	4.3	14.1	10.5	10.8	18.9
Slovenia	4.5	16.8	22.5	8.0	13.7
Slovakia	2.8	10.5	6.5	6.1	12.7
Turkey	18.4	22.3	35.7	11.0	15.3

Note: all data are weighted percentages; those with missing data in any year are excluded.
Source: own calculations based on SILC (Eurostat) and TUIK data

In Table 9, we can observe, that housing and environmental problems are very uneven within the population. Having problems with leaking roof is affecting the most households in Estonia, Hungary, Lithuania, Latvia, Slovenia and Turkey, while in Bulgaria, the most frequently observed problem is crime in the neighbourhood. Noise in the neighbourhood is reported to be the most significant deprivation item in Czech Republic, Poland, Romania and Slovakia. According to Table 9, in 2017 18.4% of people in Turkey lived in dwellings that were too dark or did not have enough light, and 15.3% perceived noise in their homes from neighbourhood businesses and industries. Surprisingly, 35.7% lived in dwellings having problems with leaking, which is the highest rate among the selected countries, while crime is affecting relatively few households in comparison with other countries. Low rates of crime are reported by Hungarian and Latvian households, although the relative difference is the highest in Turkey.

To sum up, the author provides an overall summary for official result and author's result in the Figure 4.
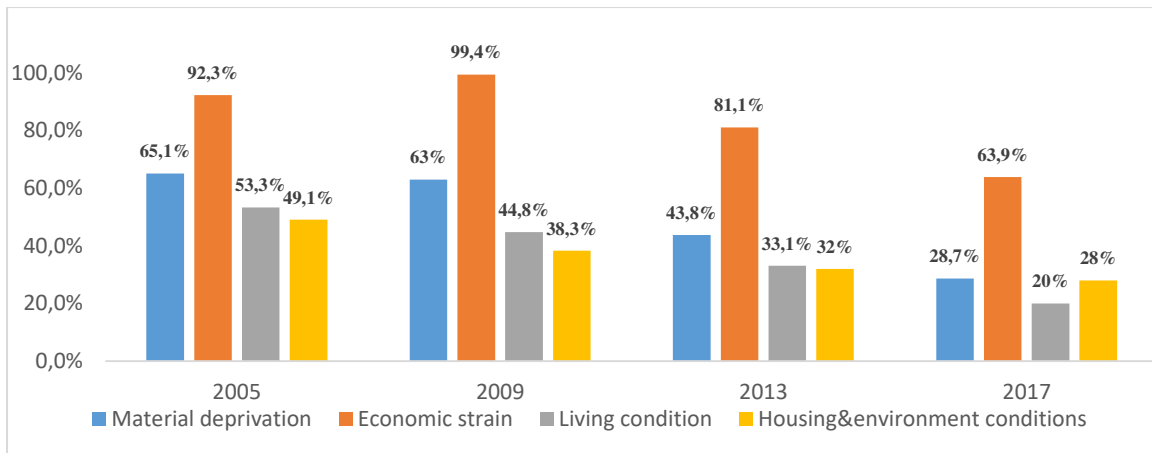
Source: Eurostat and TUIK

Figure 4: Percentages of the deprived population in Turkey by Eurostat vs Author's definitions

Figure 4 compares the result of Eurostat definition vs. the author's definition. It is apparent from the figure, that in 2005 Turkey's official severe material deprivation is relatively high. Definition of severe material deprivation is the proportion of the population that cannot afford at least four of the following items: to keep their home adequately warm, to face unexpected expenses; to eat meat or proteins regularly, to go on holiday, a television set, a washing machine, a car, a telephone. On the other hand, the author defines the deprivation with three different dimensions with adjusting the existing Eurostat definition. More details on this will be given in the next section for each dimension. However, in Figure 5, it is clearly can be seen that economic strain dimension is most problematic dimension in all years. The result of the author correlates with official Eurostat from 2005 to 2017. In 2005 reason of high severe deprivation rate is due to the economic crisis in 2002 in Turkey as well as in 2009 global economic crisis. The reason why author's result relatively higher than Eurostat is due to the selected items in dimensions. The author defines each dimension with more sophisticated sign of deprivation. However, Eurostat still chooses for instance; having a telephone is a sign of a deprivation. As it is discussed this cannot be a sign for a deprivation.

4.2 Result of Kruskal-Wallis Test

This chapter will focus on whether Turkey has significant differences among European Union countries in terms of deprivation dimensions. A Kruskal-Wallis test is conducted

to determine whether there is a significant difference of economic strain, living conditions and housing & environmental conditions on selected European countries and Turkey. The sum varable which have been used as a test variable of each dimension shows how many selected items a person cannot afford.

The author will present the comparison of each selected European countries and Turkey by each year. The aim of this chapter is to outline whether Turkey has significant difference among selected European countries or not. In order to observe each country pairwise comparison, Dunn's post hoc tests is carried out on each pair of countries. As multiple tests are being carried out, SPSS makes an adjustment to the p-value. The Bonferroni adjustment is to multiply each Dunn's p-value by the total number of tests being carried out. The pairwise comparisons tables below illustrates the results of the Kruskal – Wallis test with Dunn-Bonferroni correction on each pair of countries.

First of all, a Kruskal – Wallis test is run to compare the association between countries and check whether any significant difference could be found based on mean rank. Used variables of Kruskal – Wallis test as follows:

Table 10: Variables used in Kruskal – Wallis test

Years	Dependent Variables	Independent Variables
2005	Economic strain sum of items Living conditions sum of items Housing and Environmental conditions sum of items	Selected European countries and Turkey
2009	Economic strain sum of items Living conditions sum of items Housing and Environmental conditions sum of items	Selected European countries and Turkey
2013	Economic strain sum of items Living conditions sum of items Housing and Environmental conditions sum of items	Selected European countries and Turkey
2017	Economic strain sum of items Living conditions sum of items Housing and Environmental conditions sum of items	Selected European countries and Turkey

Source: *own construction based on EU – SILC and TUIK*

This Table 10 represents the variables used in this test. Result of each Kruskal – Wallis test used for each year will be demonstrated in next pages.

Table 11: Kruskal – Wallis Test for Sum of Economic Strain in 2005

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-60,735	382.28	-158.88	0.0	0.00
Czech Republic - Turkey	-56,526	558.11	-101.28	0.0	0.00
Estonia Turkey	-50,164	533.17	-94.09	0.0	0.00
Slovakia -Turkey	-34,887	478.36	-72.93	0.0	0.00
Hungary- Turkey	-34,534	543.24	-76.20	0.0	0.00
Lithuania- Turkey	-28,663	526.80	-54.41	0.0	0.00
Poland- Turkey	-24,464	334.13	-73.22	0.0	0.00
Latvia -Turkey	-19,473	578.86	-33.64	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

The Table 11 above shows the KruskaL -Wallis test for economic strain items for 2005. Kruskal-Wallis test provides very strong evidence of a difference ($p < 0.001$) between the mean ranks of countries. Dunn's pairwise (All pairwise) tests are carried out for the pair of countries. There was very strong evidence ($p < 0.001$, adjusted using the Bonferroni correction) of a difference between the countries who could not afford the economic strain items in 2005. That means that there is a strong evidence that Turkey has significant difference among selected European countries in terms of economic strain items in 2005.

Table 12: Kruskal – Wallis Test for Sum of Living Conditions items in 2005

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-61,236	368.402	-166.221	0.0	0.00
Czech Republic - Turkey	-48,192	537.275	-89.698	0.0	0.00
Estonia Turkey	-21,602	513.204	-42.092	0.0	0.00
Slovakia -Turkey	-32,793	458.132	-71.851	0.0	0.00
Hungary- Turkey	-35,803	434.845	-82.336	0.0	0.00
Lithuania- Turkey	-8,557	507.136	-16.875	0.0	0.00
Poland- Turkey	-20,419	321.644	-63.486	0.0	0.00
Latvia -Turkey	-3,680	557.645	-6.60	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

The Table 12 above shows the KruskaL -Wallis test for living conditions items for 2005. Kruskal-Wallis test provides very strong evidence of a difference (p < 0.001) between the mean ranks of countries. There was very strong evidence (p < 0.001, adjusted using the Bonferroni correction) of a difference between the countries who could not afford the living condtions items in 2005. That means that there is a strong evidence that Turkey has significant difference among selected European countries in terms of living conditions items in 2005.

Table 13: Kruskal – Wallis Test for Sum of Housing and Environmental Conditions indices 2009
Source: own construction based on EU – SILC and TUIK

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-25,740	369.061	-69.746	0.00	0.00
Czech Republic - Turkey	-22,256	538.985	-41.294	0.00	0.00
Estonia Turkey	-17,877	514.968	-34.716	0.00	0.00
Slovakia -Turkey	-29,630	459.233	-64.522	0.00	0.00
Hungary- Turkey	-16,980	436.515	-38.9	0.00	0.00
Lithuania- Turkey	-20,561	508.75	-40.415	0.00	0.00
Poland- Turkey	-13,135	322.668	-40.708	0.00	0.00
Latvia -Turkey	-4,253	558.943	-7.61	0.00	0.00

Note: Each row tests the null hyphothesis that the countries distributions are same

The Table 13 above shows the KruskaL -Wallis test for housing &environmental conditions items for 2005. Kruskal-Wallis test provides very strong evidence of a difference (p < 0.001) between the mean ranks of countries. There was very strong evidence (p < 0.001, adjusted using the Bonferroni correction) of a difference between the countries who could not afford the housing & environmental conditions items in 2005. That means that there is a strong evidence that Turkey has significant difference among selected European countries in terms of for housing & environmental conditions items in 2005. This test shows that comparison of countries in 2005 illustrates that there is an absolute difference between selected European countries and Turkey in terms of three different deprivation items.

Table 14: Kruskal – Wallis Test for Sum of Economic Strain items in 2009

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-87,404	488.11	-179.068	0.0	0.00
Czech Republic - Turkey	-91,046	530.75	-171.545	0.0	0.00
Estonia Turkey	-85,909	645.64	-131.233	0.0	0.00
Slovakia -Turkey	-73,648	605.16	-121.70	0.0	0.00
Hungary- Turkey	-52,966	520.10	-101.84	0.0	0.00
Lithuania- Turkey	-77,501	656.735	-118.010	0.0	0.00
Poland- Turkey	-64,284	455.984	-140.980	0.0	0.00
Latvia -Turkey	-49,644	634.96	-78.185	0.0	0.00
Romania-Turkey	-56,117	568.91	-98.640	0.0	0.00
Bulgaria- Turkey	-41,642	616.76	-67.515	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

The Table 14 above shows the KruskaL -Wallis test for economic strain items for 2009. Kruskal-Wallis test provides very strong evidence of a difference ($p < 0.001$) between the mean ranks of countries. Dunn's pairwise (All pairwise) tests are carried out for the pair of countries. There was very strong evidence ($p < 0.00$) of a difference between the countries who could not afford the economic strain items in 2009. That means that there is a strong evidence that Turkey has significant difference among selected European countries in terms of economic strain items in 2009.

Table 15: Kruskal – Wallis Test for Sum of Living Conditions items 2009

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-70,553	414.686	-170.138	0.0	0.00
Czech Republic - Turkey	-64,509	450.911	-143.065	0.0	0.00
Estonia Turkey	-43,590	556.087	-78.389	0.0	0.00
Slovakia -Turkey	-57,158	514.329	-111.132	0.0	0.00
Hungary- Turkey	N/A	N/A	N/A		
Lithuania- Turkey	-31,377	557.949	-56.237	0.0	0.00
Poland- Turkey	-47,200	387.395	-121.741	0.0	0.00
Latvia -Turkey	-26,782	539.447	-49.65	0.0	0.00
Romania- Turkey	648.985	483.337	1.343	**0.1**	**1.00**
Bulgaria-Turkey	5,074	523.985	9.685	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same
Note: N/A means that in 2009, Hungary did not provide living conditions information to Eurostat.

The Table 15 above shows the Kruskal -Wallis test for living conditions items for 2009. Kruskal-Wallis test provides very strong evidence of a difference (p < 0.001) between the mean ranks of countries. There was very strong evidence (p < 0.001, adjusted using the Bonferroni correction) of a difference between the countries who could not afford the living condtions items in 2009. That means comparing Turkey with each European countries. The author states that there is a strong evidence that Turkey has significant difference among selected European countries in terms of living conditions in 2009. However, Kruskal- Wallis test provides that Turkey has no difference with Romania in terms of living conditions items ability to afford by a person.

Table 16: Kruskal – Wallis Test for Sum of Housing and Environmental Conditions items 2009

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-16,142	461.855	-34.951	0.0	0.00
Czech Republic - Turkey	-35,020	502.211	-69.733	0.0	0.00
Estonia Turkey	-34,087	619.429	-55.03	0.0	0.00
Slovakia -Turkey	-36,440	572.642	-63.636	0.0	0.00
Hungary- Turkey	-42,575	492.041	-86.528	0.0	0.00
Lithuania- Turkey	-39,557	621.415	-63.658	0.0	0.00
Poland- Turkey	-40,071	431.461	-92.873	0.0	0.00
Latvia -Turkey	-11,967	600.808	-19.92	0.0	0.00
Bulgaria-Turkey	-23,421	583.587	-40.134	0.0	0.00
Romania-Turkey	-18,035	538.316	-33.504	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

The Table 16 above shows the Kruskal -Wallis test for housing &environmental conditions items for 2009. Kruskal-Wallis test provides very strong evidence of a difference (p < 0.001) between the mean ranks of countries. There was very strong evidence (p < 0.001, adjusted using the Bonferroni correction) of a difference between the countries who could not afford the housing &environmental conditions items in 2009. That means that there is a strong evidence that Turkey has significant difference among selected European countries in terms of housing & environmental conditions in 2009.

Table 17: Kruskal – Wallis Test for Sum of Economic Strain items 2013

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-57,085	507.158	-112.561	0.0	0.00
Czech Republic - Turkey	-62,975	585.090	-107.633	0.0	0.00
Estonia Turkey	-53,257	654.686	-81.348	0.0	0.00
Slovakia -Turkey	-52,804	640.618	-82.43	0.0	0.00
Hungary- Turkey	-9,916	527.476	-18.80	0.0	0.00
Lithuania- Turkey	-43,177	705.083	-61.238	0.0	0.00
Poland- Turkey	-38,653	461.840	-83.696	0.0	0.00
Latvia -Turkey	-24,170	654.731	-36.916	0.0	0.00
Romania-Turkey	-22,700	591.340	-38.388	0.0	0.00
Bulgaria- Turkey	-94,625	693.846	-0.136	**0.8**	**1.000**

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

Table 17 illustrates that comparison of each country with Kruskal – Wallis test result. There is a strong evidence that Turkey is different than other European countries. However, in 2013, items that one person cannot afford for economic strain indices do not show any significant difference between Turkey and Bulgaria. That shows that Bulgaria and Turkey are same (no difference, p = 0.8), in terms of economic strain dimension.

Table 18: Kruskal – Wallis Test for Sum of Living Conditions indices 2013

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-73,424	468.591	-156.692	0.0	0.00
Czech Republic - Turkey	-66,103	540.597	-122.279	0.0	0.00
Estonia Turkey	-47,577	602.692	-78.942	0.0	0.00
Slovakia -Turkey	-60,220	588.919	-102.256	0.0	0.00
Hungary- Turkey	-39,418	485.424	-81.205	0.0	0.00
Lithuania- Turkey	-26,787	651.438	-41.121	0.0	0.00
Poland- Turkey	-54,801	426.714	-128.428	0.0	0.00
Latvia -Turkey	-17,967	604.942	-29.701	0.0	0.00
Romania- Turkey	-41,157	546.371	-0.750	**0.9**	**1.00**
Bulgaria-Turkey	2,228	641.005	3.565	0.0	0.02

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

Table 18 illustrates that pairwise comparison of each country with Kruskal – Wallis test result. Pairwise comparisons using Dunn's test indicated that Turkey is significantly

different among selected European countries (p <0.005). But, only pairwise comparison of Dunn's test shows that there is no statistically significant difference between Romania and Turkey. This means that in terms of living conditions, a person who cannot afford living conditions items are same in Turkey and Romania (p = 0.9).

Table 19: Kruskal – Wallis Test for Sum of Housing and Environmental

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-57,085	507.158	-112.561	0.0	0.00
Czech Republic - Turkey	-40,605	545.760	-74.401	0.0	0.00
Estonia Turkey	-39,756	608.779	-65.306	0.0	0.00
Slovakia -Turkey	-46,222	594.258	-77.782	0.0	0.00
Hungary- Turkey	-31,095	489.837	-63.482	0.0	0.00
Lithuania- Turkey	-36,358	657.659	-55.284	0.0	0.00
Poland- Turkey	-47,186	430.789	-109.535	0.0	0.00
Latvia -Turkey	-22,877	610.719	-37.460	0.0	0.00
Bulgaria-Turkey	-38,175	647.127	-58.992	0.0	0.00
Romania-Turkey	-28,262	551.618	-51.236	0.0	0.00

Conditions indices in 2013

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

In Table 19 represents the result of multiple comparison of the selected European countries and Turkey. Based on the test results among the each ountry and Turkey, there is a strong statistically different between countries where it can be stated that each of the non affordable housing & environmental incidices per person is different from one observed country to Turkey. However, this test can not say which country is better, it only shows the rank of the average housing & environmental indicies per person who cannot afford.

Table 20: Kruskal – Wallis Test for Sum of Economic Strain indices 2017

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-42,212	526.553	-80.171	0.0	0.00
Czech Republic - Turkey	-55,512	594.914	-93.312	0.0	0.00
Estonia Turkey	-42,307	652.796	-64.812	0.0	0.00
Slovakia -Turkey	-27,581	640.516	-43.06	0.0	0.00
Hungary- Turkey	-19,175	602.746	-31.81	0.0	0.00

Lithuania- Turkey	-19,118	748.139	-25.554	0.0	0.00
Poland- Turkey	-33,353	476.923	-69.935	0.0	0.00
Latvia -Turkey	-10,076	689.372	-14.617	0.0	0.00
Romania-Turkey	1,018	621.525	1.639	**0.1**	**1.000**
Bulgaria- Turkey	8,889	615.599	14.441	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

In the last part of Kruskal – Wallis test for 2017, in given Table 20 above it is clearly seen the result of the average rank. Based on that, in each pairwise comparison of the countries, Turkey does not show any similarities to selected European countries (p < 0.0). However, in 2017, average rank of Romania and Turkey is not significant that is why it states that there are no significant difference between Romania and Turkey. One assumption of Kruskal – Wallis test is the each group is assumped to have normal distrution of the dependent variable (Economic strain sum of indices). As it is mentioned earlier, thanks to the EU-SILC dataset where each EU member countries and adoption of Turkey – EU accession, economic strain indices shows the how many items cannot be afforded by a single person. Based on that Kruskal Wallis test proves that there is no statistically difference between Romania and Turkey (p = 0.1).

Table 21: Kruskal – Wallis Test for Sum of Living Conditions items 2017

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-57,194	440.994	-129.694	0.0	0.00
Czech Republic - Turkey	-52,744	498.247	-105.86	0.0	0.00
Estonia Turkey	-36,671	546.626	-67.087	0.0	0.00
Slovakia -Turkey	-42,128	536.425	-78.536	0.0	0.00
Hungary- Turkey	-28,160	505.158	-55.745	0.0	0.00
Lithuania- Turkey	N/A	N/A	N/A		
Poland- Turkey	-44,871	398.673	-112.551	0.0	0.00
Latvia -Turkey	-17,237	577.356	-29.856	0.0	0.00
Romania- Turkey	4,544	520.534	8.731	0.0	0.00
Bulgaria-Turkey	11,751	515.571	22.794	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same
Note: N/A means that in 2017, Lithuania did not provide living conditions information to Eurostat.

In 2017, Table 21 illustrates the Kruskal – Wallis test result for living coditions sum of the items where it tested for a sum a individual who cannot afford seven living conditions

indices. Kruskal – Wallis test is performed to explore the sum of living conditions indices through countries. There is a statistically difference between countries and sum of living conditions items in 2017. The results of the Bonferroni (Adjusted significance) post hoc test show a significant difference between the sum of living conditions and countries.

Table 22: Kruskal – Wallis Test for Housing and Environmental Conditions Sum of items 2017

Countries	Test Statistic	Standard Error	Standard Test Statistic	Sig.	Adj.Sig
Slovenia -Turkey	-23,801	486.084	-48.966	0.0	0.00
Czech Republic - Turkey	-43,733	549.191	-79.632	0.0	0.00
Estonia Turkey	-41,297	602.648	-68.526	0.0	0.00
Slovakia -Turkey	-46,525	591.211	-78.695	0.0	0.00
Hungary- Turkey	-28,316	556.421	-50.891	0.0	0.00
Lithuania- Turkey	-33,321	690.639	-48.248	0.0	0.00
Poland- Turkey	-40,813	439.335	-92.898	0.0	0.00
Latvia -Turkey	-19,927	636.389	-31.314	0.0	0.00
Bulgaria-Turkey	-33,451	568.286	-58.863	0.0	0.00
Romania-Turkey	-33,504	573.757	-58.395	0.0	0.00

Source: own construction based on EU – SILC and TUIK
Note: Each row tests the null hyphothesis that the countries distributions are same

Accordingly; in Table 22 when the average scores of the sum of housing & environmental conditions items (total 7 indices) were examined. It is seen that in 2017, Kruskal – Wallis test is performed to observe the whether there is a significant difference among selected European countries and Turkey. Results proves that there are significant difference between selected European countries and Turkey based on pairwise table. This implies that a person who cannot afford all housing & environmental conditions items in Turkey and selected European countries are different ($p < 0.05$).

Considering all of the facts that said in all years for different dimensions, Turkey has significant differences among selected European countries. However, in 2009 there was not seen any statistically difference between Romania and Turkey in terms of sum of living conditions indices. In 2013, based on test applied, there is also no statistical difference between Bulgaria and Turkey on an individual who cannot afford all economic strain items. In the same year, no statistical difference observed between Romania and Turkey on sum of living conditions indices. Lastly, in 2017, it is proven that Turkey and Romania are same based on an individual who cannot afford economic strain items.

4.3 Multidimensional Deprivation in Turkey

This chapter will focus on deprivation in Turkey. The author will present the Turkish findings by each year. The aim of this chapter is to understand why Turkey cannot perform as good as other European countries, and what are the social and economic factors affecting becoming deprived in Turkey over time.

In this section, the author uses his definition of multidimensional deprivation as it was described before. The author defines deprivation with three dimensions. So that in this part, there will be three different logit models for each dimension. As it is defined in the logistic regression part, the logit model aims to focus on the determinants of deprivation. The dependent variable of each model is bivariate as below:

- Economic strain

  1 = *Deprived*

  0 = Not Deprived

- Living conditions

  1 = *Deprived*

  0 = Not Deprived

- Housing and Environmental conditions

  1 = *Deprived*

  0 = Not Deprived

The covariates (explanatory variables) of the model are various socio-economic characteristics of individuals. Based on that gender, age, total disposable income, highest education attainment, household type, current economic activities where factors play a significant role in deprivation in Turkey.

Understanding the deep inside the deprivation in Turkey, the aim of this part is to set a time table from 2005 until 2017 to see the odds ratios of those individuals with different characteristics. Firstly, the author presents the percentages of the socioeconomics characteristic in Turkey. After that result of the logit model will be presented. In the below tables, it will show the percentages of the deprived individuals in different socio-economic characters. The reason to do that is to determine the reference categories for the logistic regression.

4.3.1 Descriptive results of Economic Strain deprivation dimension

The economic strain dimension mainly focuses on the affordability of some aspects of living standards. In particular, the "economic strain" dimension is highly associated with other founding elements and appears to be a good surrogate, even if it is debatable whether the lack of holidays will be considered a social necessity in Europe. That is the reason for cut-off the deprivation items at > 2, so that if a household cannot go to holiday that should not be considered to be deprived of the second item of the economic strain makes households deprived. For example; individuals cannot go on holiday but also cannot eat meat, chicken or fish every second day of the week. Based on that light of information, the author presents results with socio-economics features of Turkey.

Table 23: Percentage of Economic Strain deprived individuals by age groups in years

Age Groups	2005	2009	2013	2017
15-19	87.4	90.2	69.2	55.0
20-24	91.2	86.7	65.1	49.3
25-29	87.5	85.0	60.3	40.9
30-34	87.7	84.6	62.4	41.7
35-39	79.5	85.0	62.7	44.0
40-44	79.4	84.8	61.2	46.8
45-49	82.6	85.1	61.8	46.3
50-54	74.2	83.2	59.0	41.7
55-59	84.7	84.4	58.6	39.9
60-64	74.5	85.4	59.2	41.7
65+	85.1	85.8	65.5	45.5

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases)*

Table 23 shows the percentage of the deprived individuals by age groups. Base on that table, it is indicating that there is a negative trend over the years. From 2005 to 2017 there is a significant decrease in economic strain deprivation in each age category. But still looking at the details those who are between 15-19 years old are heavily deprived. There is a reason behind this, this age category does not work in many cases, they are inactive

on the labour market without income, which makes their household to have a higher likelihood to be poor, since they are sharing the household income with the inactive members too. Less deprived age group compared among others is 55-59 years old people. On the other hand, those individuals or pensioners who are above 65 years old also show high rate of deprivation compared to other age groups.

Table 24: Percentage of Economic Strain deprived individuals by household type in years

Household Type	2005	2009	2013	2017
Single Person	68.6	79.6	65.4	42.4
Two adults no independent children and at least one or two 65 years old member	77.0	79.3	58.4	37.1
Single person with dependent children	81.1	84.7	56.4	40.5
Two adults with one, two or more children	84.2	84.6	64.1	44.8
Other household types	90.5	90.9	66.4	52.9

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Table 24 reports that in 2005 other household type has the highest percentage of deprived. These other household types are atypical household types which does not fall in to any other category. Those households with two adults with one, two or three children are deprived in a highest rate in 2005. However, by 2017, we can observe a decrease in each category except for the year 2009. The most significant decrease can be observed in those households where there are two adults no independent children and at least one or two 65 years old member, only 37.1% of the individuals living in these households are deprived in economic strain dimension.

Table 25: Percentage of Economic Strain deprived individuals by education level in years

Education Level	2005	2009	2013	2017
Illiterate	90.9	94.3	77.8	63.5
Primary School	90.1	90.2	68.1	51.1
High School	77.8	84.4	63.7	42.9
Higher Education	47.5	79.3	52.9	32.4
Faculty/Master/Doctorate		57.6	27.9	14.6

Table 25 shows the percentage of deprived in economic strain dimension by educational level. By years and negative trends towards 2017, Turkey has improved deprivation significantly. Illiterate people have the highest percentage of economically deprived among other educational levels. For those who possess Faculty/Master/Doctorate degree, data is not available in 2005 but in 2017 they have lowest deprived rate among others, which is not surprising. The author states that the education level of individuals plays an important role to escape deprivation in Turkey.

Table 26: Percentage of Economic Strain deprived individuals by total disposable income in years

Total Disposable Income	2005	2009	2013	2017
0-10000 TL	97.2	98.0	96.9	62.7
10000 TL to 20000 TL	81.7	92.5	86.6	43.7
20000 TL to 30000 TL	57.3	84.1	67.0	32.9
Above 30000 TL	37.0	62.7	34.4	10.2

Total disposable income is the total income of a household (all members), after tax and other deduction that is available for spending on saving. Total disposable income is not grouped in the dataset given. It has to be converted into a categorical variable. The cut-off is determined by the author with normal distribution. Based on the result in Table 16, total disposable income has a meaningful result in deprivation. Because as it is described in the literature, it is known that deprivation is the result of the income poverty (BOSSERT et al, 2013). Looking at the table with different levels of total disposable income, lowest income level has the highest deprivation share. Although during the time it decreases significantly towards 2017.

Table 27: Percentage of Economic Strain deprived individuals by current economic activity status in years

Economic Activity Status	2005	2009	2013	2017
At work	83.4	83.6	58.7	41.2
Looking for a job	94.9	94.5	77.0	59.9
In retirement/Early retirement	63.2	79.9	52.9	35.5
Other inactive person	87.4	88.1	68.0	50.3

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Lastly, Table 27 illustrates the deprived individuals by economic strain with their economic activity status. Among the socio-economic characteristics of the individuals, economic status indicates the one of the most important indicators of the society. One of the most interesting categories is the other inactive person who is not part of any kind of economic activity. The highest rate of deprivation is observed in 2005 in all categories of economic status. Specifically, those individuals who are at work, still has the chance to be deprived. They are the so-called working poor. In another words, they do not have enough sources of income to afford their financial needs. Understandably, those who are looking for a job are likely to be deprived, the ratio of it is highest compared to other categories. Comparing the retired people to working people, working people have higher rate of deprived individuals. The issue here is that the ratio of those who are inactive is less than those who are looking for a job. The reason can be, that those who are inactive might be still living with their parents.

4.3.2 Determinants of deprivation for Economic Strain

In this section, the main findings of the logistic regression analysis will be illustrated. The main focus of this part is to examine the trends for the odds ratios of the socio-economic characteristics of the deprived individuals, and to investigate the chances of being economically deprived in terms of selected key variables. The independent variables of the logistic regression model are taken from the TUIK database. Secondly, investigating the literature, and based on own experience, the model is created to be a simple, but meaningful. During the model specification process, issues have been rising such as; missing data, low goodness-of-fit in the sub-groups and low explained variance. The

model that has been created in this dissertation meets all requirements and assumptions of logistic regression.

Purpose of the logistic regression is that based on provided literature above deprivation is not only caused by income indicator, socio-economic, demographic and sociological factors are also influential. Furthermore, to capture comprehensive idea of deprivation, author takes into consideration the all characteristics where data is available and have potential influence on deprivation. Reasons of selecting those covariates are based on the effective studies. FOURAGE et al. (2003) finds out that single man and women have more likelihood change to be poor, however same individual's marriage makes them less likely to be poor. He studied European countries and presented that education level and household size have significant effect on poverty. On the other hand, in Turkey researcher usually focuses on the relative poverty. The influential factors in Turkey are education level, gender and employment status (DANSUK, 1997). KIZILGÖL et al. (2010) finds out using logit model that household size, age, and educational level have effect on being poor in Turkey.

With help of the previous studies and existing method, this dissertation brings those studies to wider concept where influential factors are monitored over years. This will suggest us how each covariate changes over years.

The logistic regression model has been run on the individual-level dataset. The dependent variable of the model is economic strain deprivation (0-not deprived/1-deprived). All analyses in this dissertation based on the 2009, 2013 and 2017 wave of the TUIK database provided by TUIK. The analysis is made applying the personal cross-sectional weights.

Table 28: Odds ratios of the Economic Strain deprivation by socio-economic characteristics

Covariates	2009		2013		2017	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Gender (reference: Male)						
Female	0.14	0.87	0.12	0.89	0.07	0.93
Maritial Status (reference: Married)						
Never Married	0.28	0.75	0.09	1.09	0.12	1.13
Widowed	0.23	1.26	0.23	1.26	0.17	1.18
Divorced	0.22	1.25	0.40	1.49	0.46	1.59
Age (reference: 65+)						

15-19	1.26	3.51	1.01	2.75	1.20	3.33
20-24	0.95	2.58	1.06	2.89	1.01	2.73
25-29	1.04	2.83	0.92	2.52	0.87	2.38
30-34	0.97	2.63	0.91	2.49	0.84	2.32
35-39	0.89	2.43	0.83	2.29	0.83	2.28
40-44	0.88	2.42	0.73	2.07	0.83	2.30
45-49	0.85	2.34	0.73	2.07	0.76	2.13
50-54	0.59	1.80	0.61	1.83	0.53	1.70
55-59	0.45	1.58	0.43	1.54	0.42	1.52
60-64	0.43	1.53	0.30	1.35	0.33	1.39
Education Level (reference: Faculty/Master/Doctorate)						
Illiterate	1.36	3.88	1.21	3.35	1.80	6.05
Primary School	1.02	2.78	0.97	2.64	1.40	4.06
High School	0.51	1.67	0.75	2.12	1.02	2.77
Higher Education	0.48	1.62	0.57	1.78	0.74	2.09
Household Type (reference: Single Person)						
Two adults no independent children and at least one or two 65 years old member	0.94	2.55	0.56	1.76	0.61	1.84
Single person with dependent children	1.79	5.98	1.16	3.19	1.17	3.21
Two adults with one, two or more children	1.34	3.82	0.98	2.65	1.06	2.87
Other household types	2.07	7.90	1.43	4.20	1.52	4.56
Total Household Income (reference: Above)						
0-10000 TL	3.26	26.11	4.24	69.14	3.03	20.77
10000 to 20000 TL	1.94	6.94	2.57	13.03	1.99	7.35
20000 to 30000 TL	1.06	2.88	1.33	3.78	1.21	3.35
Economic Status (reference: At work)						
Looking for a job	0.90	2.45	0.53	1.70	0.48	1.62
In retirement/Early retirement or has given up business	0.19	1.21	0.02	1.02	0.16	0.85
Other inactive person	0.12	0.89	0.05	0.95	0.18	0.83
Health Condition (reference: Very good)						
Good	0.31	1.37	0.19	1.21	0.08	1.08
Fair	0.76	2.15	0.55	1.74	0.49	1.64
Bad	1.10	3.01	0.86	2.36	0.85	2.34
Very Bad	1.36	3.90	0.91	2.49	1.01	2.75
Constant	2.65	0.07	3.53	0.03	3.92	0.02

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Note: Nagelkerke R square: 0.294 for 2009, Nagelkerke R square: 0.374 for 2013, Nagelkerke R square: 0.266 for 2017

The result will be explained by each covariate. Based on the result, each covariate is statistically significant in terms of becoming economically deprived (economic strain

deprivation dimension). As it is known in the literature, determinants of deprivation have major determinants, for instance; educational level, income level, household type, etc. But one of the purposes of this analysis is to analyse the changes in odd ratios over the years, in Turkey.

Results show that at a micro-level being a female does not have a big probability of being economically deprived compared to males in Turkey. But the probability of being economically deprived increases towards 2017 for females.

Concerning the relationship between marital status of likelihood of deprivation, divorced individuals have more probability of being economically deprived in 2017 in Turkey. However, age has a unique effect on being deprived in economic strain. The general statement is that older people are less likely to be a necessity, but it is found that younger generations who are under 40-44 also have high probability of being deprived in Turkey. Specifically, those who are between 15-19 years old have e = 3.33 more chances to be deprived compared to the old generation.

Results also show that educational level has indeed a significant effect on economic deprivation. Those, who have no education should face multiple odd if being economically deprived in each year. Moreover, those, who have primary education has close odd ratio (e = 4.06) to those who have no education (e = 6.05) in 2017 in Turkey.

Household type – being a unique determinant of economic deprivation – shows, that if a person with dependent children household has more chance to be economically deprived during all years. On the other hand, household type where it is not defined and categorized as other household types has the highest likelihood of being deprived.

Total disposable income – being deprived of the individual in a household total disposable income between 0-10000 TL has the highest chance to be deprived (e = 20.7) compared to those households above 30.000 TL in 2017.

Current economic status is the unique sign of economic strain deprivation, it is clear that looking for a job people have a high likelihood to be deprived in Turkey in 2017. However, those who are retired, and inactive have also similar likelihood to be deprived during the years.

The last examined variable is the general health status, consideration of general health status is a determinant of the deprivation. Based on results, it is indicated those, whose general health status is bad and very bad have more likelihood of being deprived in Turkey.

4.3.3 Descriptive results of Living conditions in Turkey

As it is discussed in the literature, living condition dimension refers to a state, when someone cannot afford durable goods for maintaining the daily life. In another words, living condition refers to standard of living. Living conditions can be defined as lack of being reflect of goods or services indicated by fundamental needs. From this definition, the author constructs the living conditions items associated with subjective and objective deprivation. Construction of the living condition dimension aims to provide broader concept compare to actual Eurostat definition. The author extends the items of living conditions where each items have different impact on living conditions. In order to determine quality of living for each individual, different indices (keeping home warm, do you have a computer, do you have car, do you have a tv, do you have a washing machine, do you have an indoor bath, do you have an indoor toile*t* are selected; ability to keep home warm refers to whether each individual can survive the different weather, author differentiate the socio-economic and demographic characteristics to separate the cases where each person faces the lack of living conditions. As it is discussed above, material goods are also included in the living condition dimension.

Living condition items are different from researcher to researcher. Items are selected based on literature and availability of the variables in the given dataset for both the selected countries and Turkey.

Table 29: Percentage of Living Conditions deprivation by age groups in years

Age Groups	2005	2009	2013	2017
15-19	56.4	51.5	40.3	27.5
20-24	59.0	47.1	37.0	22.9
25-29	54.0	47.3	33.9	19.4
30-34	61.6	47.7	33.6	20.0
35-39	54.9	47.3	33.5	21.4
40-44	49.8	43.6	30.6	19.8
45-49	42.9	39.6	30.1	18.5
50-54	44.4	37.9	28.7	16.3
55-59	45.4	38.0	27.8	14.6
60-64	40.4	40.7	27.6	16.8
65+	53.9	41.5	33.1	18.2

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Table 29 represents the percentage of the living condition deprived people in age categories. Based on that, it is observed that most deprived individuals are in their 30-34 ages in 2005. Based on literature, youngsters do not have living conditions needs. For instance, an individual who is between 15-19 years old does not have to meet ability to keep home warm or having a car due to the sharing of household with household head. In view of the fact that, in this table main focus should be those people who are above 30 years old where results can be implemented correctly. 2005 is the year where all age groups face lack of living conditions items. This follows with more or less same percentages of the individuals who are living conditionally deprived in 2009. In 2013, slight decreases are observed in all age groups. Due to the fact that, as sign of decrease in living condition deprivation in 2017, share of deprived population age after 30-34 are less effected by living conditions dimension. Specifically, significant decreases are seen in ages after 40 years old individuals.

Table 30: Percentage of Living Conditions deprivation by household type in years

Household Type	2005	2009	2013	2017
Single Person	28.4	34.9	30.6	16.5
Two adults no independent children and at least one or two 65 years old member	40.7	35.0	25.5	13.9
Single person with dependent children	51.2	39.0	28.3	14.5
Two adults with one, two or more children	54.7	45.9	33.9	21.9
Other household types	58.9	52.2	38.8	25.0

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases)*

Table 30 shows the percentage of the living condition deprived people by household type. Many studies stated that having children is increasing the risk of poverty. Our results show the same for Turkey, the most disadvantaged group are those households, where two adults live with one or more dependent children. More than half of them (54.7%) were deprived in terms of living conditions in 2005. This situation did not change significantly over the years. Although the rate of deprived decreased year by year, this group remained the most disadvantaged one in 2017 too. Although the situation changed for those who live in a single person household. In 2005 they were the least affected group, and this is the only group, whose situation got worse by time. The living conditions deprivation rate increased to 34.9% in 2009, then decreased little bit to 30.6% until 16.5% in 2017, taking the place of the second most disadvantaged group recently. Concerning two-adult households, they face the less housing problems in 2017, being the least disadvantaged group among others.

Table 31: Percentage of Living Conditions deprivation by education level in years

Education Level	2005	2009	2013	2017
Illiterate	69.1	64.7	52.2	37.0
Primary School	60.1	48.2	35.1	22.1
High School	36.6	41.4	32.6	17.8
Higher Education	12.2	29.4	19.7	9.3
Faculty/Master/Doctorate	N/A	11.7	8.1	3.8

Table 31 illustrates the percentage of the living condition deprived people by their education level. Education plays an important role in poverty alleviation. Unsurprisingly, those people who are illiterate have the highest rate of living conditions deprivation in all years. Towards 2017, there is a decreasing trend, still this group faces serious living condition problems, 37% of them were deprived. Education level shows that higher education provides better living conditions to individuals especially seen in the Faculty/Master/Doctorate level in 2017.

Table 32: Percentage of the deprived individuals by equivalised disposable income in years

Total Disposable Income	2005	2009	2013	2017
0-10000 TL	68.8	76.4	77.6	62.7
10003 to 20000 TL	51.5	51.7	52.8	43.7
20000 to 30000 TL	11.4	32.1	31.9	32.9
Above 30000 TL	4.2	14.5	9.7	10.2

Table 32 demonstrates the living condition deprived individuals by equivalised disposable income in years. As it is discussed above, total equivalised disposable income is the total income of the household members after income tax. It can be observed on Table 22 that living condition deprivation is decreasing significantly when income level is rising. However, 0-10000 TL has the highest deprivation rate, in 2005, 68.8% of the households with 0-10000 TL income level were deprived in living conditions, and the rate did not drop significantly by 2017. In total equivalised disposable income, the indicator does not drop significantly during the given years as it decreased in other indicators discussed before.

Those households, where the income level was above 30000 TL faced an unexpected increase in the rate of living condition deprivation. It can be due to the inflation experienced in Turkey lately, which suggests that by time it is getting harder and harder to maintain good living conditions with 30000 TL income level.

Table 33: Percentage of deprived individuals by current economic activity status in years

Economic Activity Status	2005	2009	2013	2017
At work	51.9	44.5	31.0	17.1
Looking for a job	67.1	58.4	49.2	33.0
In retirement/Early retirement	33.4	27.8	18.3	12.2
Other inactive person	56.1	47.3	36.8	23.7

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Table 33 represents the percentage of the living condition deprived individuals with their current economic status in years. In 2005, mostly ones who were looking for a job were deprived but this is expected in their condition, because no income is received. Other inactive person represents those who are doing their studies or not looking for a job or just not defined as an active person in their economic status. Interesting point is, that 51.9% of those are at work were deprived in living conditions in 2005, which seems to be a high rate knowing we are talking about people at work. Although we have to be aware of the fact that those household members, who are at work, might be sharing their income with other inactive household members, which might pull them into deprivation. Towards 2017, there is a significant positive change in deprivation rates in each category.

4.3.4 Determinants of deprivation for Living Conditions

Living conditions are considered as one dimension of multidimensional deprivation. In this part of the dissertation, the analysis of the logistic regression analysis result will be illustrated with key variables of the socio-economic characteristics. As it was described earlier, logistic regression has a binominal (0/1) dependent variable. In this dissertation, those, who are not deprived for living conditions are defined as 0, and deprived as 1.
The next table illustrates the odds ratios of the socio-economic characteristics by years. The target variable is the living condition deprivation dimension.

Table 34: Odds ratios of the Living Conditions deprivation by socio-economic characteristics

Covariates	2009		2013		2017	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Gender (reference: Male)						
Female	0.22	0.80	0.14	0.87	0.14	0.87
Marital status (reference: Married)						
Never Married	0.06	0.94	0.13	1.14	0.19	1.20
Widowed	0.13	1.14	0.13	1.14	0.02	0.98
Divorced	0.57	1.77	0.43	1.53	0.43	1.53
Age (reference: 65+)						
15-19	1.28	3.60	1.18	3.25	1.27	3.56
20-24	1.16	3.20	1.19	3.30	1.11	3.03
25-29	1.25	3.50	1.08	2.96	1.05	2.86
30-34	1.10	2.99	0.93	2.54	1.01	2.74
35-39	0.94	2.57	0.80	2.22	1.00	2.71
40-44	0.75	2.11	0.57	1.77	0.80	2.23
45-49	0.59	1.80	0.52	1.68	0.69	1.99
50-54	0.49	1.63	0.55	1.73	0.57	1.77
55-59	0.32	1.37	0.36	1.43	0.41	1.51
60-64	0.33	1.39	0.24	1.28	0.39	1.47
Education Level (reference: Faculty/Master/Doctorate)						
Illiterate	2.02	7.57	1.80	6.05	2.24	9.43
Primary School	1.31	3.70	1.20	3.33	1.46	4.29
High School	0.93	2.55	0.84	2.33	1.06	2.88
Higher Education	0.61	1.83	0.46	1.58	0.52	1.68
Household Type (reference: Single Person)						
Two adults no independent children and at least one or two 65 years old member	0.69	1.99	0.51	1.67	0.58	1.78
Single person with dependent children	1.28	3.58	1.35	3.86	1.15	3.17
Two adults with one, two or more children	1.07	2.92	1.05	2.85	1.26	3.53
Other household types	1.56	4.76	1.68	5.36	1.72	5.58
Total Household Income (reference: Above)						
0-10000 TL	2.76	15.82	3.69	40.08	3.18	24.16
10000 to 20000 TL	1.70	5.48	2.46	11.67	2.15	8.54
20000 to 30000 TL	0.88	2.40	1.46	4.30	1.52	4.58
Reference: At work						
Looking for a job	0.39	1.48	0.38	1.47	0.51	1.66
In retirement/Early retirement or has given up business	0.19	0.82	0.33	0.72	0.15	0.86
Other inactive person	0.19	0.83	0.22	0.80	0.15	0.86
Health Status (reference: Very good)						
Good	0.19	1.21	0.18	1.20	0.15	1.16
Fair	0.44	1.55	0.46	1.58	0.40	1.49

		0.72	2.05	0.69	1.99	0.70	2.02
Bad		0.72	2.05	0.69	1.99	0.70	2.02
Very Bad		0.70	2.00	0.85	2.35	0.65	1.92
Constant		4.94	0.01	5.45	0.00	5.84	0.00

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Note: Nagelkerke R square: 0.326 for 2009, Nagelkerke R square:0.368 for 2013, Nagelkerke R square: 0.292 for 2017

Results for living conditions deprivation shows that at a micro level, being a female gives less likelihood to become living condition deprived compared to males in Turkey, and this likelihood did not change over the studied years. In terms of marital status, being never-married has less likelihood (e = 0.94) to be deprived in Turkey compared to those, who are married. The relation between them changed over the years, in 2017 single individuals are more likely to have living condition problems compared to the married. On the other hand, divorced people have the highest probability (e =1.53) to be deprived in Turkey, and the likelihood did not change significantly over the years. Interesting to observe, how the social safety net works in Turkey, widowed individuals are less likely to become living condition deprived compared to the divorced. It is probably due to the protective behaviour of the family in case of any disaster happening in the family.

Considering the relationship between age and the likelihood of deprivation, age has a unique effect on being poor. In the literature, it is discussed that older generations are less likely to be poor. In this analysis, 65+ people are set as a reference category based on the bivariate analysis. In Turkey, those, who are below 25-29 years old have the highest likelihood of being deprived in living conditions. Specifically, 15-19 years old young generations have e = 3.56 times a chance to be deprived compared to the old generation. Although it is not surprising that young people start their life with poorer living conditions, the trend observed in the results show that this is not likely to change significantly. As a general observation we can say, that the likelihood of having living condition deprivation decreases by time, older generations are more likely to have decent living conditions, and there was not much change observed over the studied years.

Educational level – has also unique effect on poverty, it is a fact that the contribution of education to poverty is certain and accepted by all scientists. It is, unfortunately, having a significant effect on deprivation in the society. Specifically, those, who are illiterate have e = 9.43 times more probability to be deprived in 2017, and it increased from e = 7.57 in

2009. Secondly, primary school graduates have e = 4.29 more likelihood of being deprived in 2017 in Turkey.

In terms of household type, the reference category was the single person household. Household type -being a unique determinant of the deprivation- indicates that if a household defined as two adults with one, two or more children has the highest probability (e = 3.53 compared to the single person household) have living condition problems. Moreover, a single person with dependent children has e = 3.17 likelihood of being deprived in 2017 in Turkey, compared to the state, when the household comprises a single person without child.

The total disposable income of the household – has a significant effect on living condition deprivation in Turkey. Those households whose income level is between 0 – 10000 TL has twenty-four times higher probability to have living condition deprivation in Turkey compared to the most rich category, and this probability almost doubled between 2009 and 2017. Those, whose total disposable income is between 10000 – 20000 TL has e = 8.54 higher chance of being deprived in 2017 in Turkey compared to the richest category. Also, those households that have a higher total disposable income level between 20000 – 30000 (e = 4.58) is still at relatively high risk of becoming deprived.

Current economic activity of individuals is a key variable to analyse. Items that analysed in this section start with looking for a job individual which has e = 1.66 more likelihood of probability to become deprived compared to working people. At the same time, those persons who are retired and inactive have the same likelihood chance (e = 0.86) of being deprived in 2017 in Turkey.

The last examined variable is the general health status focuses on the differences between self-defined health status. It is considered that the status of the health condition has a significant impact on being deprived. Interestingly, those individuals who are stated that their health condition is bad have more chance (e = 2.02) to be deprived compared to those who stated very good. On the other hand, very bad health status has a lower chance (e = 1.92) compared to bad general health status. However, comparing those very bad health condition in living condition dimension and economic strain dimension, those who stated very bad health condition, are more likely to be deprived in economic strain, which means that economic strain dimension effects them more significantly than living condition dimension. This result indicates that for those whose health status are under bad conditions, their priority needs are economic items not the living conditions. Nevertheless, the author observes the opposite case in equivalised disposable income,

those cases, where individuals have 0-1000TL equivalised disposable income in terms of economic strain dimension have less odd ratios compared to those ones who have same amount of equivalised disposable income for living conditions dimension. Which expresses that those cases, where individuals have 0-1000TL priorties the living conditions items to meet their basic daily life of standards.

4.3.5 Descriptive results of Housing and Environmental Conditions dimension

In this section, the result of housing and environmental conditions dimension will be presented. This section aims to determine the effect of the different socio-economic characteristics on housing and environmental conditions deprivation. Based on EU-SILC, data were collected to show to what extent individuals are dissatisfied with their housing conditions and how badly individuals effected with the place they live in. In this dissertation I implemented a deprivation measurement which must be calculated based on individuals economic conditions, living conditions, housing, and environmental conditions. For that reason, housing and environmental conditions dimension (a) dwelling is too dark, or does not have enough light, b) pollution, grime or other environmental problems, c) leaking roof, dams, walls,floors, d) crime, violance or vandalism in the living area) is created to see how individuals are affected with problems of the place or environment they live in.

Table 35: Percentage of Housing and Environmental Conditions deprived individuals by age groups in years

Age Groups	2005	2009	2013	2017
15-19	56.4	41.7	34.5	32.4
20-24	46.0	39.5	33.7	31.1
25-29	53.5	40.7	33.0	28.3
30-34	47.6	41.0	32.8	29.9
35-39	52.6	40.0	33.2	30.6
40-44	48.9	39.3	32.0	29.6
45-49	50.1	36.5	32.8	28.1
50-54	45.7	35.0	30.2	26.1
55-59	35.8	34.0	29.2	23.1
60-64	42.9	33.2	27.8	23.5
65+	43.3	32.9	28.4	22.1

Table 35 represents the ratio of the housing and environmental conditions deprived individuals by their age group in years. In 2005, those people who are between 15-19 are the most deprived population. One of the reason why younger population is mostly deprived is due to that in the first stage of their life, youngesters preferences might not be the environmental problems. There might be two other reasons, firstly, they are environmentally deprived because they live with their parents. Secondly, they are in the places where they have to be such as university or school related obligations. In social point of view this can be understandable. In this table, what should be significant is those who are above maturity where they start thinking environmental issues in their life cycle. It can also be observed that in each age group there is a decreasing trend towards 2017. Interestingly, people over 65 years old have the lowest deprivation rate in 2017. It can be concluded that those youngsters who are between 15 to 24 are affected with deprivation the most. To sum up, it can be said that those people over 30-34 years old, their housing and environmental conditions have been improved significantly since 2013.

Table 36: Percentage of Housing and Environmental Conditions deprived individuals by household type in years

Household Type	2005	2009	2013	2017
Single Person	33.0	31.9	29.6	22.8
Two adults no independent children and at least one or two 65 years old member	40.1	32.4	27.1	21.7
Single person with dependent children	40.0	38.6	32.3	27.4
Two adults with one, two or more children	52.2	41.4	33.6	29.2
Other household types	53.5	37.9	32.5	31.5

Table 36 represents the ratio of the housing and environmental conditions deprived individuals by their household type. Household characteristics of Turkey is depending on family structure. Two adults no independent children and at least one or two 65 years old member have the lowest deprivation rate (21.7% in 2017). This is the reason, two adults move out of cities where two 65 years old members can live confortable. On the other hand same two adults with one, two or more children without 65 years member have

higher deprivation rate (29.2% in 2017) comparing with 65 years member. This is the cause of consideration; two adults usually prefer living in city center or closer to city centers to be closer to their economic activity. For single-person households, the deprivation rate is 33% in 2005. During that time, it has a negative trend until 2017.

Table 37: Percentage of Housing and Environmental Conditions deprived individuals by education level in years

Education Level	2005	2009	2013	2017
Illiterate	52.4	41.3	35.6	32.5
Primary School	53.6	37.7	31.4	28.4
High School	39.5	39.0	32.8	28.4
Higher Education	36.3	36.2	30.3	25.6
Faculty/Master/Doctorate	N/A	33.9	27.4	22.2

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Note: N/A represents the cases where data is not available for this year.

Table 37 indicates the share of the housing and environmental conditions deprived people by their education level. It is a fact that educational level is positively correlating with quality of life. Research on deprivation shows that lower education level links to the poorer housing conditions (SCARBROUGH et al. 2019). It can be considered as while educational level increases then income level increases so that individuals preferences changes based on their quality of life and needs. As author demonstrates in the Table 27, there is positive correlation between categories where education level increases and housing and environmental conditions increase. In 2005, those who are illiterate have the highest deprivation rate, primary school has the second-highest rate among the other education levels. The reason why this is important is that while an individual's educational level increases it affects their housing and environment condition as well. It determines where they live, under what kind of house condition they maintain their lives.

Table 38: Percentage of Housing and Environmental Conditions deprived individuals by total equivalised disposable income in years

Total Disposable Income	2005	2009	2013	2017
0-10000 TL	55.0	44.0	42.2	36.9
10003 to 20000 TL	47.6	39.5	36.1	30.3
20000 to 30000 TL	30.9	36.3	33.0	30.6
Above 30000 TL	38.5	32.5	26.1	26.5

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Table 38 illustrates the percentage of the housing and environmental conditions deprived people with their total equivalised disposable income in years. During years, deprivation ratios of the deprived individuals decrease for the 0-10000 TL income level households. 0-10000 TL gives the highest percentage of deprived in 2005 and also in 2017. More interestingly, the difference between housing and environmental conditions for 10000-20000 TL and 20000- 30000 TL almost remains the same in 2017. On the other hand, for the same comparison, there is a significant difference between them in 2005. There is a decrease in the rate of housing and environmental conditions deprivation during the years. But the effect of this decrease is not the same among different total household equivalised disposable income levels.

Table 39: Percentage of Housing and Environmental Conditions deprived individuals by current economic activity status in years

Economic Activity Status	2005	2009	2013	2017
At work	44.2	36.4	30.4	27.2
Looking for a job	73.0	49.5	40.8	35.5
In retirement/Early retirement	43.3	34.2	28.5	23.2
Other inactive person	51.7	39.7	33.6	29.3

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases)*

Table 39 demonstrates the ratio of the housing and environmental conditions deprived individuals by their current economic activity over the years. In 2005, those people who are looking for a job has the highest (73.0%) deprivation. That means that the place they live in has environmental problems for instance; crime, noise, air pollution around their

neighbourhood. However, for the same individuals in 2017, the ratio of these individuals decreases to 35.5%. In 2005 and 2017, retired individuals have the lowest level of deprivation among other groups. Usually, this is the result of retired people move out of cities, do not live in the city centers where there is a high rate of crime and pollution.

4.3.6 Determinants of deprivation for Housing and Environmental Conditions

The last dimension of the deprivation is housing and environmental conditions where individuals consider that their housing and environmental situation affect their basic way of living. The reason why logistic regression is important to analyse the housing and environmental deprivation is that we can see the unique effect of socio-economic factors on housing and environmental conditions deprivation. However, it is observed that differences between categories are not significant as much as in economic strain or living conditions dimension. Table 30, below shows the odds ratios of the results of the logistic regression analysis on housing and environmental deprivation by socio-economic characteristics.

Table 40: Odds ratios of the Housing and Environmental deprivation by socio-economic characteristics

Covariates	2009		2013		2017	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Gender (reference: Male)						
Female	0.10	0.90	0.08	0.92	0.08	0.92
Marital Status (reference: Married)						
Never Married	0.04	0.96	0.07	1.07	0.12	1.12
Widowed	0.08	1.09	0.03	1.03	0.06	1.06
Divorced	0.08	1.08	0.38	1.46	0.13	1.14
Age (reference: 65+)						
15-19	0.83	2.30	0.63	1.88	0.85	2.34
20-24	0.76	2.15	0.65	1.91	0.82	2.27
25-29	0.83	2.30	0.65	1.92	0.78	2.18
30-34	0.77	2.16	0.61	1.83	0.86	2.37
35-39	0.69	1.99	0.59	1.80	0.86	2.37
40-44	0.63	1.88	0.51	1.66	0.75	2.13
45-49	0.48	1.62	0.51	1.67	0.63	1.88
50-54	0.36	1.43	0.38	1.46	0.49	1.63
55-59	0.25	1.28	0.27	1.31	0.29	1.34
60-64	0.15	1.17	0.15	1.16	0.25	1.28
Education Level (reference:						

	2009		2013		2017	
Faculty/Master/Doctorate)						
Illiterate	0.14	1.15	0.08	1.09	0.54	1.71
Primary School	0.04	0.96	0.06	0.94	0.27	1.30
High School	0.02	0.98	0.02	0.98	0.17	1.19
Higher Education	0.05	0.95	0.04	0.96	0.08	1.09
Household Type (reference: Single Person)						
Two adults no independent children and at least one or two 65 years old member	0.15	1.16	0.06	1.07	0.07	1.07
Single person with dependent children	0.41	1.51	0.38	1.46	0.32	1.38
Two adults with one, two or more children	0.42	1.52	0.33	1.39	0.30	1.34
Other household types	0.30	1.35	0.33	1.40	0.42	1.52
Total Household Income (reference: Above)						
0-10000 TL	0.35	1.42	0.70	2.01	0.52	1.69
10000 to 20000 TL	0.23	1.26	0.45	1.58	0.20	1.22
20000 to 30000 TL	0.12	1.13	0.32	1.38	0.18	1.20
Economic Status (reference: At work)						
Looking for a job	0.45	1.57	0.27	1.32	0.22	1.25
In retirement/Early retirement or has given up business	0.22	1.25	0.15	1.16	0.14	1.15
Other inactive person	0.11	1.12	0.09	1.09	0.02	1.02
Health Status (reference: Very good)						
Good	0.21	1.23	0.30	1.35	0.17	1.19
Fair	0.66	1.94	0.68	1.98	0.53	1.69
Bad	0.78	2.18	0.84	2.31	0.62	1.85
Very Bad	0.97	2.64	0.84	2.31	0.53	1.70
Constant	1.97	0.14	2.25	0.11	2.50	0.08

Source: *Based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases)*

Note: Nagelkerke R square: 0.040 for 2009, Nagelkerke R square: 0.041 for 2013, Nagelkerke R square: 0.035 for 2017

The results of the logistic regression on housing and environmental conditions show that at a micro level, being female in a household decreases the chance to be deprived compared to males during the selected years in Turkey. Nevertheless, living in a household as a divorced person affects deprivation compared to married, divorced persons have e = 1.46 more chance to be deprived in 2013. But in 2017 it decreases to e = 1.14. The reason of this is the reform in civil law.

Age has a significant effect on deprivation. The general statement explains that older people have better life quality. In this dissertation, age follows the general statement but, the aim is to show how age affects the deprivation during the selected years. It has mentioned in previous dimensions that younger generations are more likely to be

deprived in Turkey. However, in housing and environmental conditions deprivation age has expanded to older generations. Those, who are between 40-44 years old have two times more likelihood chance (e = 2.13) of being deprived in 2017, while it has less odd ratio e = 1.66 in 2013.

Indeed, education level is one of the key factors of being deprived in all dimensions. Those, who have no education should face multiple odd of being deprived in each year for housing and environmental conditions. However, odds are less than expected for selected years. The most disadvantaged are those, who have no education, has e = 1.71 likelihood of being deprived in 2017 and it increased compared to the previous years. Those, who have primary school, their highest odd of being deprived is e = 1.30 in 2017 and it increased during the studied years. Lastly, those, who have a higher education have better living standards compared to other educational levels, although their chance for becoming housing and environmentally deprived also increased during the studied years.

Household type – being a unique determinant of deprivation – explains that a single person with a dependent child has the highest likelihood of being housing and environmental conditions deprived in almost all selected years in Turkey. It follows with two adults with one, two or more children have e = 1.34 more chance to be deprived in 2017. Lastly, two adults no independent children and at least one or two 65 years old family member has a better chance to reach higher housing and environmental standard.

Total household disposable income illustrates that it does not affect housing and environmental deprivation as much as has other dimensions. Because, it is a fact that, total disposable income effect can be seen on living conditions and economic strain dimensions. However, housing and environmental condition also has a unique effect on deprivation. Results show that those households who have total disposable income between 0-10000 TL have a more likelihood to be deprived e = 1.69 in 2017. The relatively low level of likelihood is somewhat surprising, which suggest, that low income households are able to maintain almost the same level of housing and environmental conditions like the highest income level households. Other total disposable income levels have even lower odds ratios.

On the other hand, current economic status is also a significant factor for housing and environmental conditions. An individual's economic status can determine under what conditions he/she can live and whether he/she can have satisfactory environmental condition. With the light of this information, unemployed people have e = 1.25 more chance to be deprived compared to those who are at work and those, who are retired have

e = 1.15 compared to working people. This means that Turkey is performing better in terms of housing and environmental conditions compared to other dimensions. It is also be proven with the odds ratio of the inactive people compared to working people is e = 1.02 meaning that there is almost no difference between working people housing and environmental conditions and inactive people ones.

The last socio-economic factor is the general health status, the relationship between general health status and housing and environmental conditions is about whether there is any significant difference in the chance of deprivation in different health statuses. The highest difference is with "bad" and "very bad" health status individuals. Those, who have "bad" general health status has e = 1.85 more chance of deprivation compared to "very good" ones. Additionally, those, who have "very bad" general health conditions have e = 1.70 more likelihood chance of being deprived compared to "very good" ones.

5 CONCLUSION AND RECOMMENDATION

This final chapter summaries the main findings and attempts to outline aspects of the deprivation with three dimensions where further attention needs to be paid.

The purpose of this dissertation was to analyse the different concepts of the deprivation while analysing for cross-country comparison. First, the dissertation discussed the definition and concept of poverty used in literature as well as existing deprivation approaches. Analysing the explanatory power of deprivation with three dimensions in a multivariate model, assumes a significantly stronger explanatory power.

Secondly, in the cross-country comparison with the three-dimensional concept of deprivation, analysing the main differences of economic strain, living conditions, and housing and environmental conditions between selected European countries and Turkey proves that with using same panel data (Statistics on Income and Living Conditions Survey, 2018), countries show significant differences compared to the traditional deprivation measure.

This dissertation, focuses on constructing a multidimensional deprivation measure of poverty that can reduce the disadvantages of existing deprivation method. It is discussed that deprivation measures can be alone used to assess the poverty both theoretically and empirically. The author described the methodological problems of the existing measure, for instance, missing dimensions, replacement of the existing deprivation indices, improvement of the data quality, data-driven specifications and more importantly neglecting the multidimensionality.

The proposed measure has three different design features compared to existing deprivation index. First, it is a concept-oriented measure in which measurement design is primarily determined by the definition of deprivation. To do this, an important part of the analysis is to focus on the meaning and the context of deprivation. Based on this this conceptual analysis, dimensions are derived before the measurement of the detailed definition of poverty is done.

The measure is more comprehensive compared to its existing deprivation items including dimensions such as needs related to economic items, living conditions, housing, and environmental issues. However, despite this improvement, the proposed method still limited due to the availability of the data, since other needed possible items such as caring related, personal and political securities are missing.

In the proposed multidimensional measure, each dimension has been evaluated separately to reach total deprivation measure for each dimension. This choice is again adopted from the theoretical point of view, i.e., not being able to meet identified needs due to the lack of available resources forbid people from maintaining their social activities and participation in society. As it is shown in the empirical results, evaluating each dimension separately improves the accuracy of measurement. The reason why one dimension is not created is because of a sizable group of individuals who are identified only by one dimension (material deprivation) which is discussed in the literature due to its unidimensional design.

In Table 31, a brief summary of the three dimensions is discussed in terms of country differences.

Table 41: Percentage of deprived as of the three dimensions, by country

Countries	D_{eco}				D_{living}				$D_{housing}$			
	2005	2009	2013	2017	2005	2009	2013	2017	2005	2009	2013	2017
Bulgaria	-	71.5	79.2	70	-	49.1	38.7	33.7	-	26.4	17.8	17.9
Czech Republic	56.5	50.3	52.7	35.5	11	6.1	4.8	3.1	24.1	20.9	15.6	11.7
Estonia	70	56.8	59.6	45.8	31.1	15.8	11.7	8.9	27.4	17.9	12.8	10.1
Hungary	77.1	82.5	82.4	52.6	19	–	14.6	9.8	26.3	15.8	20.6	16.6
Lithuania	80.5	62.1	66	59.7	42.4	27.7	23.1	–	23.7	18.1	16	14.6
Latvia	86.4	81.2	78.4	67.8	47.9	29.5	27.4	17.9	37.3	32.6	22.5	19.8
Poland	79.3	68.9	68.7	51.3	29.8	14.4	8.8	6.4	25.9	16.3	12.5	12
Romania	-	79.7	78.8	73.8	-	53.4	42.7	33.8	–	31.7	23.2	16.7
Slovenia	53.8	52.4	56.4	46	3.6	3.1	3	2.9	21.8	25.8	17.3	16.1
Slovakia	77.2	64	59.7	53.3	20	8.9	6.7	5.5	18.2	20.4	12.9	10.2
Turkey	92.3	99.4	81.1	63.9	53.3	44.8	33.1	20	49.1	38.3	32	28

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

Table 41 represents the percentages of the three dimensions by countries over years. Based on the author's definition of deprivation, countries have shown significant development to overcome deprivation. Based on these results, Bulgaria is the only country where there is a slower change in terms of economic strain dimension. It can be observed that percentages of economic strain dimension did not change significantly from 2009 to 2017 compared to other countries. On the other hand, Bulgaria has shown decrease in living conditions and environment and housing condition deprivation. In Czech Republic, economic strain deprivation is still high compared to living condition, environmental and housing condition compared to the country itself. In 2017, 35% of the

population was deprived in economic strain dimension in Czech Republic. Ratio of the living condition dimension is one of the lowest among the other selected European countries. However, in Baltic zone, Estonia is a country where there is a high gap between dimensions. The results show that percentage of economically deprived population is higher than those who are deprived in living condition and housing and environmental conditions. The population of Hungary still have the financial burdens to meet their financial needs. But, since 2005, Hungary has performed well to decrease the ratio of economic strain deprivation. Nevertheless, individuals who live in Hungary are fairly able to afford their living conditions by 2017, only 16.6% of the individuals commit that they have environmental and housing difficulties. Another Eastern European country Romania, still fight economic strain dimension from 2009 to 2017 where ratio of the individuals who cannot afford economic strain dimension items are still not changed significantly compared to other selected European countries. However, percentage of individuals who has difficulties about their living, environmental and housing condition are relatively low. In Slovenia, surprisingly, living condition dimension is sustainably lowest from 2005 to 2017. Turkey is the country where all dimension is the highest in 2005 and sharing the same percentages of the individuals who have difficulties about their living conditions with Romania and Bulgaria in 2017. Most important issue in Turkey is the economic problems while living, environmental and housing conditions are less problematic compared to other selected countries.

To conclude, almost all of the countries analysed have economic issues where individuals cannot afford their basic needs. Czech Republic is the only country who has lowest ratio of individuals who cannot afford their needs (35.5% in 2017). After economic strain dimension, living condition dimensions is the second fundamental issue in all counties where individuals consider themselves deprived. Slovenia is a country which has lowest percentage of the individuals who report living condition difficulties. Where countries do not have significant issues is the environmental and housing problems. Estonia has the lowest percentage of the individuals who state that they have environmental and housing issues.

In this study, a multidimensional approach was followed to measure deprivation based on proportions of people reported various forms of deprivation. The author has increased the number of deprivation dimensions from one to three (economic strain, living conditions, and housing and environmental conditions) and examined 11 countries' EU-SILC data by dimension. The results of the international comparison indicate that in the 10 selected

European countries and in Turkey, the most problematic economic strain indicator was 'going on a one-week annual holiday away from home'. Whether unaffordability to go on a one-week annual holiday is a sign of deprivation or not is still under debate. Nevertheless, the official Eurostat material deprivation measure does consider it as an indicator of deprivation. In terms of living conditions, deprivation is defined as a lack of basic goods and amenities required to have an acceptable standard of living. According to the results shown above, in 2005 a tragic share of the countries' population was considered deprived in this regard; the figures, however, have improved significantly over the years. Yet, even today, there are people who lack basic amenities or do not have the capacity to keep their homes warm and their proportion in each country depends on the country's development. Thus, for example, the percentage of those, who do not have a bath in their home is still high in Romania, Bulgaria, Latvia, and Lithuania. The dissertation considered also the dimension of housing and environmental conditions as a fundamental life-standard measuring factor. Conceptually, this third dimension includes housing conditions and crime- and pollution-related environmental factors (i.e., the external characteristics of people's dwellings) also taken into account. In most countries, it was found that housing and environmental conditions were less problematic for people than the other two dimensions, because a smaller proportion of the population reported being deprived in this respect. However, the opposite was true for Turkey, where people had significant housing and environmental problems in the years examined.

This study provides evidence on deprivation and has implications for both methodology and policy. It attempts to broaden the scope of deprivation by identifying survey questions that may serve as a base for a cross-country comparative assessment. However, this study has limitations in several aspects. Although it is based on micro-level statistics, it did not deal with the multiple overlaps between financial and non-financial deprivation. The second part of the empirical result focused on the determinants of deprivation in Turkey. In this part, a logit model is applied to be able to observe the odd ratio changes over time by socio-economics factors. The model starts from 2009, 2013 and 2017 where it is observed decreasing odds ratio changes over the years. Each dimension has its logit model, the first economic strain has been performed with logistic regression (economic strain deprived (0, 1)) with explanatory variables where covariates are not able to afford economic strain items. Results show that those, who are more likely to be deprived are the 30-34 years old age group in 2017. Secondly, in education, those who are illiterate have e = 6.05 and primary school has e = 4.06 more chance to be deprived compared to

the higher educated in 2017. Thirdly, in the total disposable household income where the household has between 0-10000 TL has e = 20.77 more likelihood of being in danger of deprivation in 2017.

Furthermore, in the second logistic regression model, it is performed with living conditions where the dependent variable is whether the person is living conditions deprived or no (0, 1). Based on given results, most problematic socio-economics items are with age where those people less than 20-24 years old e = 3.03 more likelihood of being deprived in 2017. In the education category, those who are illiterate have e = 9.43 more chance to be deprived and those with primary school has e = 4.29 more chance to be deprived in 2017. In the total disposable income of the household – households who have a total household income between 0-10000TL tragically e = 24.16 more likelihood of being poor compared to household who has higher total disposable income in 2017.

In the third logistic model, it is performed with housing and environmental conditions where respondents have insufficient sources of housing and environmental conditions. The model has a dependent variable where individuals are defined that they do not meet the basic of housing and environmental needs (0, 1). Results show that most probability of becoming poor is observed in the age group is middle-age generations (30-34 and 35-39) where both have e = 2.37 more chance of being deprived compared to old generations in 2017. In the education level where individuals face housing and environmental issues are illiterate who have e = 1.71 more probability to be deprived compared to faculty/master/doctorate graduates in 2017. In the total disposable income households with income between 0-10000 TL has observed e = 1.69 more chance of becoming housing and environmentally deprived in 2017. In Table 34, the author compares the three dimensions with covariates.

5.1 Tested Hypothesis

The author explains the results of the tested hypothesis. Each hypothesis will be explained.

H1: *The new multidimensional poverty measurement will yield different poverty results, compared to the traditional uni-dimensional approach. In terms of the proportion of the population affected by deprivation, the ranking of the selected countries for traditional and the new approach are different.*

Table 42: Percentage of deprived as of author's deprivation dimensions and Eurostat material and severe material deprivation by countries in 2017

	$D_{econ\ 2017}$		$D_{living\ 2017}$		$D_{housing\ 2017}$		$EU_{severe\ 2017}$		$EU_{material\ 2017}$	
Countries	*%*	ranking	*%*	ranking	*%*	ranking	*%*	ranking	*%*	ranking
BG	70	**2**	33.7	**2**	17.9	**3**	30	**1**	44.4	**2**
CZ	35.5	**11**	3.1	**9**	11.7	**9**	3.7	**11**	7.8	**11**
EST	45.8	**10**	8.9	**6**	10.1	**11**	4.1	**10**	10	**10**
HU	52.6	**7**	9.8	**5**	16.6	**5**	14.5	**4**	25.1	**6**
LT	59.7	**5**	–		14.6	**7**	12.4	**5**	26.2	**4**
LV	67.8	**3**	17.9	**4**	19.8	**2**	11.3	**6**	25.2	**5**
PL	51.3	**8**	6.4	**7**	12	**8**	5.9	**8**	11.4	**8**
RO	73.8	**1**	33.8	**1**	16.7	**4**	19.7	**3**	47.7	**1**
SL	46	**9**	2.9	**10**	16.1	**6**	4.6	**9**	10.5	**9**
SK	53.3	**6**	5.5	**8**	10.2	**10**	7	**7**	13.3	**7**
TR	63.9	**4**	20	**3**	28	**1**	28.7	**2**	30.8	**3**

Source: Source: *own construction based on the SILC (EUROSTAT) and TUIK*

Note: BG: Bulgaria, CZ: Czech Republic, EST: Estonia, HU:Hungary, LT: Lithuania, LV: Latvia, PL: Poland, RO:Romania, SL: Slovenia, SK: Slovakia, TR: Turkey

Table 42 shows the deprivation ratios of the three dimensions created by the author, and two official Eurostat calculations, the $EU_{severe\ (severe\ material\ deprivation)}$, and the $EU_{material}$ (material deprivation). Based on this table, it is observed that Romania is in the first rank of the economic strain and living conditions additionally, Romania is in the third rank for the housing and environmental conditions dimensions while in Eurostat definition Romania is in the first rank for material deprivation and third place in the severe material deprivation. Based on author's definition Bulgaria shares the second place for economic strain, living conditions and third place for housing and environmental conditions

dimensions. On the other hand, based on Eurostat definition, Bulgaria is first rank for severe material deprivation and second for material deprivation.

As a conclusion, based on author's definition and Eurostat definition, it is a fact that higher rate of population is affected by multidimensional deprivation compared to Eurostat definition also ranking of the countries are different compared to official publication of Eurostat. This hypothesis is accepted.

H2: *In terms of EU integration, Turkey has adopted EU regulations. In terms of economic strain, living conditions and housing & environmental conditions, Turkey has no difference with Eastern European countries. Specifically those who joined to European Union in 2007.*

Turkey has significant differences among selected European countries. However, in 2009 there was not seen any statistically significant difference between Romania and Turkey in terms of sum of living conditions items. In 2013, based on test applied, there is also no statistical difference between Bulgaria and Turkey on an individual who cannot afford all economic strain items. In the same year, no statistical difference observed between Romania and Turkey on sum of living conditions items. Lastly, in 2017, it is proven that Turkey and Romania are same based on an individual who cannot afford economic strain items. Therefore, H2 hypothesis - *In terms of EU integration, Turkey has adopted EU regulations. In terms of economic strain, living conditions and housing & environmental conditions, Turkey has no difference with Eastern European countries. Specifically those who joined to European Union in 2007 - is rejected.*

H3: *Economic strain deprivation is the most significant problem, which affects the highest rate of the Turkish population, compared to other aspects of deprivation.*

The evidence from result section points towards the idea that economic strain dimension has a critical role in Turkey. The results intimates that in 2005, 92.3% of individuals could not afford the economic strain indices. This follows in 2009, 99.4%, in 2013, 81.1% and finally in 2017, 63.9% while living condition dimension and housing and environmental condition dimension have less effect on society in Turkey. Finding of this study for economic strain dimension suggest that most problematic indices is "going one week holiday away from home" and 59.1% of Turkish society could not afford to have a one-week holiday away from home. This follows with "to eat meat, fish or a protein equivalent every second day". 32.8% of Turkish society stated that they are not able to consume meat, fish or chicken every second day of the week. Third item where

individuals indicates that 30.4% of society cannot pay "unexpected expenses" meaning that those individuals do not have savings to bear the unexpected situations. The last item is the "cannot afford to pay rent/mortgage or utility bills on time" where 25.7% of Turkish society has difficulties with their payments.

In summary, with the light of this results, it can be said that Turkish society has economic and financial difficulties in society where they clearly mentioned that they are not able, cannot afford and cannot pay their basic needs for maintaining their life while this percentages are lower in other countries.

Therefore, H3 hypothesis - economic strain deprivation is the most significant problem, which affects the highest rate of the Turkish population, compared to other aspects of deprivation is accepted.

H4: *Determinants of the deprivation are significantly different from each other across the three studied dimensions.*

Table 43: A summary of logistic regression result of three deprivation dimensions in 2017

Covariates	D_{eco}	D_{living}	$D_{housing}$
	Exp(B)	**Exp(B)**	**Exp(B)**
Reference: Male			
Female	0.93	0.87	0.92
Reference: Married			
Never Married	1.13	1.2	1.12
Widowed	1.18	0.98	1.06
Divorced	1.59	1.53	1.14
Reference: 65+			
15-19	3.33	3.56	2.34
20-24	2.73	3.03	2.27
25-29	2.38	2.86	2.18
30-34	2.32	2.74	2.37
35-39	2.28	2.71	2.37
40-44	2.3	2.23	2.13
45-49	2.13	1.99	1.88
50-54	1.7	1.77	1.63
55-59	1.52	1.51	1.34
60-64	1.39	1.47	1.28
Reference: Faculty/Master/Doctorate			
Illiterate	6.05	9.43	1.71
Primary School	4.06	4.29	1.3

High School	2.77	2.88	1.19
Higher Education	2.09	1.68	1.09
Reference: Single Person			
Two adults no independent children and at least one or two 65 years old member	1.84	1.78	1.07
Single person with dependent children	3.21	3.17	1.38
Two adults with one, two or more children	2.87	3.53	1.34
Other household types	4.56	5.58	1.52
Reference: Above			
0-10000 TL	20.77	24.16	1.69
10003 to 20000 TL	7.35	8.54	1.22
20001 to 30000 TL	3.35	4.58	1.2
Reference: At work			
Looking for a job	1.62	1.66	1.25
In retirement/Early retirement	0.85	0.86	1.15
Other inactive person	0.83	0.86	1.02
Reference: Very good			
Good	1.08	1.16	1.19
Fair	1.64	1.49	1.69
Bad	2.34	2.02	1.85
Very Bad	2.75	1.92	1.7
Constant	0.02	0	0.08

Source: *own construction based on the SILC (EUROSTAT) and TUIK (note: all percentages are measured with weighted cases*

The Table 43 indicates a summary of logistic regression results with the three dimensions. Exp(B) refers to exponential β which was explained in the section of statistical methods used (Exponential β is the odd ratios of the covariates on dependent variable).

Based on logistic regression results, females have higher chance to face financial difficulties in Turkey compared to male. Studies have showed that Turkey is 131st in gender gap index among 144 countries according to World Economic Forum 2017.

Situation of the marital status showed that worst case is the those who are divorced and individuals grumble about their affordability to meet their financial needs. This is partly due to the lack of reforms that individuals who are willing to divorce are not protected by law (GÜNDÜZ-SMITS, 2008).

Demographic factors that increase the odds ratio of being poor is the age of the individuals. The probability of being deprived increases until middle age of 25-29 then, it starts declining compared to those who are above 65 years old. However, needs of the age groups vary due to their life cycle. 15-19 years old youngsters have difficulties to afford their living conditions. This is the reason result show that they have higher chance to be

deprived compared to 65+ age group. This cycle is same until 25-29 age group, where the likelihood ratio is highest for living conditions dimension.

Most of the studies have done about educational level of population. As it is mentioned earlier, there is a strong positive association between educational level and standards of living. In this research, result have showed the similarities when level of education increases, standards of living increase as well. But illiterate individuals have higher chance to be deprived in living conditions dimension as a prior rather than economic conditions in Turkey. On the other hand, an individual who does not have an education and he/she is illiterate has just e = 1.71 odd ratio to be deprived in living conditions dimension. This odd ratio is relatively low compared to other dimensions. Comparison of those who have higher education has e = 2.09 likelihood chance to face the financial difficulties compared to those who have faculty, master and doctorate.

Household characteristic is a category where each category shows different behaviour towards deprivation dimensions. However, each group's odd ratios are close to each other. Those households, who are two adults no independent children and at least one or two 65 years old member has slightly more chance e = 1.84 to be deprived compared to living condition dimension while housing and environmental problems have lowest likelihood chance e = 1.07. Housing and environmental dimension have lowest odd ratios among the other deprivation dimensions. Two adults one, two or more children households are more likely to be deprived in terms of living condition dimension e =3.53. This is the sign of those families who have two adults have an economic activity where they have income and two adults consider living conditions more important for their children. Studies show that households with more children are more likely to be deprived (COOPER et al., 2013).

Many studies show strong relationship between living standards and income level. Total equivalised disposable income is the factor, where the author observes the biggest differences within the income categories. Those individuals whose equivalised disposable income is lower than 10000 TL faces more living condition difficulties e = 24.16 compared to above. On the other hand, all total equivalised disposable income categories have less likelihood ratio for housing and environmental dimension. That means that difficulties in financial and living issues are basic need to maintain their life while housing and environmental issues are less essential.

Another one of the most important factors is the economic status of the individuals. In this category, looking for a job category explains that both economic strain and living

conditions are more likely to be deprived compared to those who are at work. Those who are retired are less likely to be deprived compared to those who are at work. Those individuals who are inactive people are less deprived than those who are looking for a job due to the protection by law and benefits.

Based on health status, there is a slight gap between those status who reported good compared to very good in terms of three dimensions. However, those whose health status is less than good are more likely to be financially deprived. But it can be explained that those individuals whose health status is less than good considers all three dimensions have more or less same priority.

To sum up, it can be stated that by means of logistic regression model, the author finds the significant difference with regards to multidimensional deprivation. Therefore, H4 hypothesis - *determinants of the deprivation are significantly different from each other across the three studied dimensions* is accepted.

To finalize the dissertation, the relationship of the deprivation with other poverty measurements should be attempted to analyse the further detailed reports where it will have a great deal to know about the gap between monetary approaches and non-monetary approaches. Existing Eurostat deprivation index stands alone as one dimension including monetary and non-monetary items. The issue with existing deprivation is about capturing the wider concept of the deprivation. As a single indicator, it is useful to show differences between European countries. However, the single indicator should be adjusted with more significant items to be more realistic in terms of its implication. Such as having a phone should not be a sign of deprivation. After the required modifications, the author considers that it will be more comprehensive in application.

The design of the EU-SILC data is based on the distribution of the income and well-being in each member country of the European Union and to be allowed to make cross-country analysis. But let the author notes that the EU-SILC data are not representative at the country level and their inhabitants. Because, some groups of data are missing, for instance, the homeless, the population in the institutions, and inhabitants who are connected to illegality. The author emphasizes that each European member states should be able to provide an estimation of the population shares which are not covered in the EU-SILC data. At least, sex and age structure of the population should be estimated in the EU-SILC data. The author expects that share of these respondents who are enrolled in institutions should be also given as an estimation in the dataset. This information should be provided to users of the EU-SILC that they can be able to qualify their results. Also

considering the elderly people who need permanent care will simultaneously increase and this information will be important in the future. The study presented in this dissertation reaches the understanding of deprivation over years with a cross country comparison. It demonstrates the heterogeneity in the deprivation context experience within the selected European countries and Turkey.

To conclude, this dissertation is based on simple measures of deprivation built as the average of individuals reporting different forms of deprivation. The author attempts to create a new method to explain deprivation. Utilizing data from the EU-SILC, the author expanded the number of dimensions from one to three and applied these dimensions to selected countries. This study provides evidence and research on deprivation and has implications for both methodology and policy. This research attempts to broaden the scope of deprivation by identifying survey questions that may be the basis for a comparative assessment of the scope of deprivation in different countries. However, this preliminary analysis is limited in several dimensions. It is based on summary statistics rather than a more complex system of micro aspects collections that would allow for the creation of multiple deprivations and overlap measures between financial and non-financial deprivation. Taking the broader concept of deprivation, the author found that each item shows unique significant changes and importance for different countries specifically in the economic strain dimension. At looking at economic strain, the most problematic item was demonstrated for those people who cannot afford to go on a one-week holiday away from home in each country. In terms of living conditions, the most problematic item as it relates to a consequence of the lack of financial stability was keeping the home adequately warm. The overall multidimensional approach stands with limitations. Deprivation remains as a complex phenomenon among countries. Statistical tools and methods attempt to measure this reality that relies on societies cannot be truly measured due to the aspect of the poverty arising in one's country. As a result, the majority of the population found itself competing for survival, though they were deeply wounded in the process.

Turkey has failed to fight poverty in terms of social exclusion. European Union reforms have not been adopted and applied in the society. And as it can be observed from empirical results, Turkey is far away from European countries. However, Turkish social policy has been showed a successful development participation from 1999. There has been a serious attempt to shift social policy towards European Union priorities in the

areas of education, human rights, non-governmental organizations, women and minorities and effective regulations. The 2010 European Union Progress Report made some progress in the field of social policy, with a limited scope of employment, the labour market, the implementation of health and safety legislation, and the overall policy framework to tackle social exclusion. However, the legal actions to which the Constitution refers to adjusting the right to negotiate and organize collective action for workers, workers and civil servants remains unfulfilled and needs to be regulated for European Union standards. Moreover, the number of workers covered by agreements are just 767,582 workers, and this number is still very low compared to the number of people in employment, which is around 23.5 million. This rate in European Union is 50% and 44.7% which Turkey failed to adopt European Union standards. Youth unemployment remains high 22.6% Number of employed population who are not registered in social protection system is 44.8% and hence protection of labour law remains not effective. One of the fundamental facts that Turkey does not have a comprehensive social policy reforms to fight deprivation. This is the one of the important at risk of poverty remains high. There has not been any reform regarding the equal opportunity for men and women thus difference between men wage and women wage remains with a high gap. Legislation and policies aimed at harmonizing work and family life do not exist, and provision of affordable childcare remains insufficient. As a result of those features; Turkey is deprived and an failing the adopting European Union standards lead Turkey to overall limited success in alleviating poverty and overcoming social and economic gaps.

6   NEW SCIENTIFIC RESULTS

1. The author introduces a new deprivation index with a more complex approach, which the author gained by adjusting and correcting existing deprivation index..

2. The author examined the deprivation with a multidimensional approach and applied this model with a cross-country comparison within selected European countries and Turkey, and revealed significant differences in deprivation rates.

3. The author finds that if deprivation is considered to be a multidimensional phenomenon, there will be more identified deprived people.

4. The author proves that Turkey is far away from European Union standards in terms of three deprivation dimensions.

5. This is a first study that based on official Eurostat data, it is proved that Turkey, Bulgaria and Romania has no difference in terms of economic strain and living conditions deprivation. Bulgaria and Romania are only statistically different in terms of the housing & environmental conitions deprivation.

7 SUMMARY

Deprivation is a broader concept than poverty because it includes monetary, social exclusion and living condition aspects that prevent people from pursuing a desired way of living. It is the outcome of an enforced lack of monetary and non-monetary resources. Conceptualizing deprivation is a challenge that all scientists and policymakers face. Deprivation indicators differ from country to country because of the variations in political and social environments within and outside the EU (European Union). Contemporary social scientists and researchers approach this topic using 'broader lens', focusing not only on economic but also on living, housing, and environmental conditions. According to the literature, a single deprivation index does not provide enough information on those who lack basic living conditions. By following a multidimensional approach, undoubtedly more deprived people would be identified in the EU. At the European level, the main source for statistical data to measure material deprivation is EU-SILC (Statistics on Income and Living Conditions). The indicators of deprivation for the EU signify the inability to afford some goods considered to be essential to living a decent life. This dissertation introduces a method involving three dimensions and identifies its essential indicators (items) that are based on SEN's (1985) capability approach in which freedom to achieve well-being is critical to ensure a good standard of living, regardless of people's preferences and their capacity to meet living standards. This improvement of the deprivation definition will hopefully facilitate the conducting of comparability studies internationally.

The first part of this dissertation explains previous studies on deprivation, moreover, presents other methods of poverty measurement used abroad. This helps us to understand broader concept of the poverty itself. Deprivation is one of the methods to measure poverty.

The dissertation aims conduct the cross-national analysis, studies in abroad and in Turkey.

In Turkey, researchers and officials usually use the traditional approaches to measure the poverty (relative poverty and absolute poverty). However, in order to achieve an adequate cross-national comparison, there should be a common method and dataset required to be able to present meaningful result. In this regard, thanks to the EU and TUIK (Turkish Statistical Institute) SILC dataset that allow the author to develop a common

methodology to be able to compare countries. This dissertation focuses on eleven countries' population and households which cannot meet their basic needs. It includes economic strain, living conditions and housing & environmental conditions dimensions items rather than just general deprivation measures and additionally provides a brief cross-country comparative analysis using EU-SILC and TUIK datasets.

In the second part of the dissertation, the author presents the methods used in this dissertation. Method of deprivation measure is created by the author and aims to outline a methodology for identifying individuals at high risk of deprivation (in fact, with a multidimensional approach). Reason to do this, the Eurostat poverty measurement method fails to calculate the majority of the deprived and it defines as deprived who are otherwise not deprived (SAUNDERS et al, 2014).

In order to conduct a cross-national comparison, the author uses the Kruskal – Wallis test to be able to group selected countries and Turkey in terms of three deprivation dimensions. The main objective of the Kruskal – Wallis test is to assesses the differences against the average ranks in order to determine whether or not they are likely to have come from samples drawn from the same population. The main purpose of this analysis is to observe differences among three different dimensions over time between European countries and Turkey. In the Kruskal-Wallis test, each countries are shown whether they differ from each other or not. The Kruskal- Wallis test is performed for 2005, 2009, 2013 and 2017. It is observed that Turkey is absolutely different from selected European countries. However, in 2009 there was not seen any statistically difference between Romania and Turkey in terms of sum of living conditions indices. In 2013, based on test applied, there as also no statistical difference between Bulgaria and Turkey on an individual who cannot afford all economic strain items. In the same year, no statistical difference observed between Romania and Turkey on sum of living conditions indices. Lastly, in 2017, it is proven that Turkey and Romania are same based on an individual who cannot afford economic strain items.

In the third part of the results, the author only focuses on Turkey using logistic regression analysis. Focus is to determining the deprivation in Turkey special focus on changes over the years. Accession of Turkey to the European Union, it is critical that whether Turkey can adopt the European reforms and critical implications. The author finds significant differences between factors causing the deprivation. The model is the basic logistic regression applied to examine the determinants of deprivation in Turkey. There are no huge significant differences in terms of several factors investigated for instance gender,

marital status, general health status. The findings, however, indicate that in terms of factors that the author finds significant differences. Investigating several explanatory variables, the most determined causing the deprivation is by education, economic activity status, household type. Logistic regression is a statistical method which helps to identify the relationship between dependent binary variable and one or more nominal, ordinal or scale measurement level independent variables. In this case, the author dependent variables are the economic strain, living condition and housing and environmental condition dimensions. In order to convert dimension into binary format (0, 1), the author determines the cut-off points based on Eurostat methodology. Independent variables consist of the socio-economic characteristics of the population which gives a basic information of the society. This will help us to identify which population groups are more likely to be deprived or being lack of certain necessities. Based on the results, socio-economic characteristics shows different variations. The most significant determinants of deprivation are financial issues specifically in total equivalised disposable income where there is a huge difference between total equivalised disposable income groups. In the living condition dimension, the author observes the biggest differences are in the total equivalised disposable income group. In the last dimension where it explains the relationship between housing & environmental conditions deprivation and socio-economic characteristic, it is observed that the studied socio-economic factors have a lower likelihood to cause deprivation compared to other dimensions.

In the last part of this dissertation, the author summarizes the main achievement of this research, limitations and hypothesis. The author suggests that in order to achieve comprehensive results, officials should collect the micro aspects of knowledge that would allow for the creation of multiple deprivations and overlap measures between financial and non-financial deprivation. The author suggests the further studies should include the relationship of the deprivation with other poverty measurements should be attempted to analyse the further detailed reports where it will have a great deal to know about the gap between monetary approaches and non-monetary approaches. Furthermore, the author discusses the hypothesis results in the last part of this dissertation. First hypothesis shows that selected countries are affected by multidimensional deprivation compared to European Union definition also ranking of the countries are different compared to official publication of Eurostat compared. In hypothesis two, the author provides the Kruskal – Wallis test result where the author attempts to prove how Turkey progress by adopting the EU regulations in order to improve life standards in Turkey. The author uses the Kruskal

– Wallis test to determine the differences between selected European countries and Turkey. Based on findings indicates that Turkey has significant differences among selected European countries in terms of sum economic strain, living conditions and housing & environmental conditions indices. However, in 2009 there was not seen any statistically difference between Romania and Turkey in terms of sum of living conditions indices. In 2013, based on test applied, there as also no statistical difference between Bulgaria and Turkey on an individual who cannot afford all economic strain items. In the same year, no statistical difference observed between Romania and Turkey on sum of living conditions indices. Lastly, in 2017, it is proven that Turkey and Romania are same based on an individual who cannot afford economic strain items.

To conclude, the author presents the new research findings of the dissertation. The author introduces a new deprivation index with a more complex approach, which the author gained by adjusting and correcting the existing deprivation index. Additionally, the author examined the deprivation with a multidimensional approach and applied this model with a cross-country comparison within selected European countries and Turkey. This dissertation is a unique research in Turkey where there was no attempt earlier to modify an existing model and compare Turkey with European countries. Finally, deprivation remains as a complex phenomenon among countries. Statistical tools and methods attempt to measure this reality that relies on societies cannot be truly measured due to the aspect of the poverty arising in one's country. Turkey has failed to fight poverty in terms of social exclusion. European Union reforms have not been implemented correctly in the society. And as it can be observed from empirical results, Turkey is far away from European countries. However, Turkish social policy has been showed a successful development participation from 1999. There has been a serious attempt to shift social policy towards European Union priorities in the areas of education, human rights, non-governmental organizations, women and minorities and effective regulations. The 2010 European Union Progress Report made some progress in the field of social policy, with a limited scope of employment, the labour market, the implementation of health and safety legislation, and the overall policy framework to tackle social exclusion.

8   APPENDICES

8.1   A1: Bibliography

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8.2 A2: Further appendices

List of variables in SILC database

PERSONAL DATA (P FILE)

PB010: YEAR OF THE SURVEY

PB020: COUNTRY

PB030: PERSONAL ID

PB040: PERSONAL CROSS-SECTIONAL WEIGHT [PERSONAL CROSS-SECTIONAL WEIGHT (ALL HOUSEHOLD MEMBERS AGED 16 AND OVER)]

PB050: PERSONAL BASE WEIGHT [PERSONAL BASE WEIGHT (ALL HOUSEHOLD MEMBERS AGED 16 AND OVER)]

PB060: PERSONAL CROSS-SECTIONAL WEIGHT FOR SELECTED RESPONDENT

PB070: PERSONAL DESIGN WEIGHT FOR SELECTED RESPONDENT

PB080: PERSONAL BASE WEIGHT FOR SELECTED RESPONDENT

PB090: DAY OF THE PERSONAL INTERVIEW

PB100: MONTH OF THE PERSONAL INTERVIEW

PB110: YEAR OF THE PERSONAL INTERVIEW

PB120: MINUTES TO COMPLETE THE PERSONAL QUESTIONNAIRE [NUMBER OF MINUTES TO COMPLETE THE PERSONAL QUESTIONNAIRE]

PB130: MONTH OF BIRTH

PB140: YEAR OF BIRTH

PB150: SEX

PB160: FATHER ID

PB170: MOTHER ID

PB180: SPOUSE/PARTNER ID

PB190: MARITAL STATUS

PB200: CONSENSUAL UNION

PB210: COUNTRY OF BIRTH

PB220A: CITIZENSHIP 1

PB220B: CITIZENSHIP 2

PE010: CURRENT EDUCATION ACTIVITY

PE020: ISCED LEVEL CURRENTLY ATTENDED

PE030: YEAR WHEN HIGHEST LEVEL OF EDUCATION WAS ATTAINED

PE040: HIGHEST ISCED LEVEL ATTAINED

PH010: GENERAL HEALTH

PH020: SUFFER FROM ANY CHRONIC (LONG-STANDING) ILLNESS OR CONDITION

PH030: LIMITATION IN ACTIVITIES BECAUSE OF HEALTH PROBLEMS [GENERAL ACTIVITY LIMITATION: LIMITATION IN ACTIVITIES PEOPLE USUALLY DO BECAUSE OF HEALTH PROBLEMS FOR AT LEAST THE PAST SIX MONTHS]

PH040: UNMET NEED FOR MEDICAL EXAMINATION OR TREATMENT [UNMET NEED FOR MEDICAL EXAMINATION OR TREATMENT DURING THE LAST 12 MONTHS]

PH050: MAIN REASON FOR UNMET NEED FOR MEDICAL EXAMINATION OR TREATMENT

PH060: UNMET NEED FOR DENTAL EXAMINATION OR TREATMENT [UNMET NEED FOR DENTAL EXAMINATION OR TREATMENT DURING THE LAST 12 MONTHS]

PH070: MAIN REASON FOR UNMET NEED FOR DENTAL EXAMINATION OR TREATMENT

PL015: WHETHER PERSON HAS EVER WORKED

PL020: ACTIVELY LOOKING FOR A JOB [ACTIVELY LOOKING FOR A JOB IN THE PREVIOUS FOUR WEEKS]

PL025: AVAILABLE FOR WORK [ARE YOU AVAILABLE FOR WORK IN THE NEXT TWO WEEKS]

PL031: SELF-DEFINED CURRENT ECONOMIC STATUS

PL035: WORKED AT LEAST ONE HOUR DURING THE PREVIOUS WEEK

PL040: STATUS IN EMPLOYMENT

PL051: OCCUPATION (ISCO-08 (COM))

PL060: NUMBER OF HOURS USUALLY WORKED PER WEEK IN MAIN JOB

PL073: NUMBER OF MONTHS SPENT AT FULL-TIME WORK AS EMPLOYEE

PL074: NUMBER OF MONTHS SPENT AT PART-TIME WORK AS EMPLOYEE

PL075: NUMBER OF MONTHS SPENT AT FULL-TIME WORK AS SELF-EMPLOYED (INCLUDING FAMILY WORKER)

PL076: NUMBER OF MONTHS SPENT AT PART-TIME WORK AS SELF-EMPLOYED (INCLUDING FAMILY WORKER)

PL080: NUMBER OF MONTHS SPENT IN UNEMPLOYMENT

PL085: NUMBER OF MONTHS SPENT IN RETIREMENT OR EARLY RETIREMENT

PL086: NUMBER OF MONTHS SPENT AS DISABLED OR/AND UNFIT TO WORK

PL087: NUMBER OF MONTHS SPENT STUDYING

PL088: NUMBER OF MONTHS SPENT IN COMPULSORY MILITARY SERVICE

PL089: NUMBER OF MONTHS SPENT FULFILLING DOMESTIC TASKS AND CARE RESPONSIBILITIES

PL090: NUMBER OF MONTHS SPENT IN OTHER INACTIVITY

PL100: TOTAL NUMBER OF HOURS USUALLY WORKED IN SECOND, THIRD, JOBS

PL111: NACE REV.2

PL120: REASON FOR WORKING LESS THAN 30 HOURS [REASON FOR WORKING LESS THAN 30 HOURS (IN MAIN AND OTHER JOBS)]

PL130: NUMBER OF PERSONS WORKING AT THE LOCAL UNIT

PL140: TYPE OF CONTRACT

PL150: MANAGERIAL POSITION

PL160: CHANGE OF JOB SINCE LAST YEAR

PL170: REASON TO CHANGE

PL180: MOST RECENT CHANGE IN THE INDIVIDUAL'S ACTIVITY STATUS

PL190: WHEN BEGAN FIRST REGULAR JOB

PL200: NUMBER OF YEARS SPENT IN PAID WORK [NUMBER OF YEARS SPENT IN PAID WORK (AS EMPLOYEE OR SELF-EMPLOYED]

PL211A: MAIN ACTIVITY IN JANUARY

PL211B: MAIN ACTIVITY IN FEBRUARY

PL211C: MAIN ACTIVITY IN MARCH

PL211D: MAIN ACTIVITY IN APRIL

PL211E: MAIN ACTIVITY IN MAY

PL211F: MAIN ACTIVITY IN JUNE

PL211G: MAIN ACTIVITY IN JULY

PL211H: MAIN ACTIVITY IN AUGUST

PL211I: MAIN ACTIVITY IN SEPTEMBER

PL211J: MAIN ACTIVITY IN OCTOBER

PL211K: MAIN ACTIVITY IN NOVEMBER

PL211L: MAIN ACTIVITY IN DECEMBER

PY010G/PY010N: EMPLOYEE CASH OR NEAR CASH INCOME

PY020G/PY020N: NON-CASH EMPLOYEE INCOME

PY021G/PY021N: COMPANY CAR

PY030G: EMPLOYER'S SOCIAL INSURANCE CONTRIBUTION

PY031G: OPTIONAL EMPLOYER'S SOCIAL INSURANCE CONTRIBUTIONS

PY035G/PY035N: CONTRIBUTIONS TO INDIVIDUAL PRIVATE PENSION PLANS

PY050G/PY050N: CASH BENEFITS OR LOSSES FROM SELF-EMPLOYMENT 313

PY080G/PY080N: PENSION FROM INDIVIDUAL PRIVATE PLANS

PY090G/PY090N: UNEMPLOYMENT BENEFITS

PY100G/PY100N: OLD-AGE BENEFITS

PY110G/PY110N: SURVIVOR' BENEFITS

PY120G/PY120N: SICKNESS BENEFITS

PY130G/PY130N: DISABILITY BENEFITS

PY140G/PY140N: EDUCATION-RELATED ALLOWANCES

PY091G: UNEMPLOYMENT BENEFITS (CONTRIBUTORY AND MEANS-TESTED)

PY101G: OLD-AGE BENEFITS (CONTRIBUTORY AND MEANS-TESTED)

PY111G: SURVIVOR' BENEFITS (CONTRIBUTORY AND MEANS-TESTED)

PY121G: SICKNESS BENEFITS (CONTRIBUTORY AND MEANS-TESTED)

PY131G: DISABILITY BENEFITS (CONTRIBUTORY AND MEANS-TESTED)

PY141G: EDUCATION-RELATED ALLOWANCES (CONTRIBUTORY AND MEANS-TESTED)

PY092G: UNEMPLOYMENT BENEFITS (CONTRIBUTORY AND NON-MEANS-TESTED)

PY102G: OLD-AGE BENEFITS (CONTRIBUTORY AND NON-MEANS-TESTED)

PY112G: SURVIVOR' BENEFITS (CONTRIBUTORY AND NON-MEANS-TESTED)

PY122G: SICKNESS BENEFITS (CONTRIBUTORY AND NON-MEANS-TESTED)

PY132G: DISABILITY BENEFITS (CONTRIBUTORY AND NON-MEANS-TESTED)

PY142G: EDUCATION-RELATED ALLOWANCES (CONTRIBUTORY AND NON-MEANS-TESTED)

PY093G: UNEMPLOYMENT BENEFITS (NON-CONTRIBUTORY AND MEANS-TESTED)

PY103G: OLD-AGE BENEFITS (NON-CONTRIBUTORY AND MEANS-TESTED)

PY113G: SURVIVOR' BENEFITS (NON-CONTRIBUTORY AND MEANS-TESTED)

PY123G: SICKNESS BENEFITS (NON-CONTRIBUTORY AND MEANS-TESTED)

PY133G: DISABILITY BENEFITS (NON-CONTRIBUTORY AND MEANS-TESTED)

PY143G: EDUCATION-RELATED ALLOWANCES (NON-CONTRIBUTORY AND MEANS-TESTED)

PY094G: UNEMPLOYMENT BENEFITS (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY104G: OLD-AGE BENEFITS (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY114G: SURVIVOR' BENEFITS (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY124G: SICKNESS BENEFITS (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY134G: DISABILITY BENEFITS (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY144G: EDUCATION-RELATED ALLOWANCES (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

PY200G: GROSS MONTHLY EARNINGS FOR EMPLOYEES

PD020: REPLACE WORN-OUT CLOTHES BY SOME NEW 5NOT SECOND-HAND

PD030: TWO PAIRS OF PROPERLY FITTING SHOES (INCLUDING A PAIR OF ALL-WEATHER SHOES

PD050: GET-TOGETHER WITH FRIENDS/FAMILY (RELATIVES) FOR A DRINK/MEAL AT LEAST ONCE A MONTH

PD060: REGULARLY PARTICIPATE IN A LEISURE ACTIVITY

PD070: SPEND A SMALL AMOUNT OF MONEY EACH WEEK ON YOURSELF

PD080: INTERNET CONNECTION FOR PERSONAL USE AT HOME

HB010: YEAR OF THE SURVEY

B020: COUNTRY

HB030: HOUSEHOLD ID

HB040: DAY OF HOUSEHOLD INTERVIEW

HB050: MONTH OF HOUSEHOLD INTERVIEW

HB060: YEAR OF HOUSEHOLD INTERVIEW

HB070: PERSON RESPONDING THE HOUSEHOLD QUESTIONNAIRE

HB080: PERSON 1 RESPONSIBLE FOR THE ACCOMMODATION

HB090: PERSON 2 RESPONSIBLE FOR THE ACCOMMODATION

HB100: NUMBER OF MINUTES TO COMPLETE THE HOUSEHOLD QUESTIONNAIRE

HH010: DWELLING TYPE

HH021: TENURE STATUS

HH030: NUMBER OF ROOMS AVAILABLE TO THE HOUSEHOLD

HH031: YEAR OF CONTRACT OR PURCHASING OR INSTALLATION

HH040: LEAKING ROOF, DAMP WALLS/FLOORS/FOUNDATION, OR ROT IN WINDOW FRAMES OR FLOOR

HH050: ABILITY TO KEEP HOME ADEQUATELY WARM

HH060: CURRENT RENT RELATED TO OCCUPIED DWELLING

HH061: SUBJECTIVE RENT [SUBJECTIVE RENT RELATED TO NON-TENANT PAYING RENT AT MARKET PRICE]

HH070: TOTAL HOUSING COST [TOTAL HOUSING COST (INCLUDING ELECTRICITY, WATER, GAS, AND HEATING)]

HH071: MORTGAGE PRINCIPAL REPAYMENT [MONTHLY PRINCIPAL REPAYMENT OF MORTGAGE]

HH081: BATH OR SHOWER INDWELLING

HH091: INDOOR FLUSHING TOILET FOR SOLE USE OF HOUSEHOLD

HS011: ARREARS ON MORTGAGE OR RENTAL PAYMENTS [WHETHER THE HOUSEHOLD HAS BEEN IN ARREARS ON MORTGAGE OR RENTAL

PAYMENTS IN THE PAST 12 MONTHS]

HS021: ARREARS ON UTILITY BILLS [WHETHER THE HOUSEHOLD HAS BEEN IN ARREARS ON UTILITY BILLS IN PAST 12 MONTHS]

HS031: ARREARS ON HIRE PURCHASE INSTALMENTS OR OTHER LOAN PAYMENTS [WHETHER THE HOUSEHOLD HAS BEEN IN ARREARS ON HIRE PURCHASE INSTALMENTS OR OTHER LOAN PAYMENTS (NON-HOUSING-RELATED DEBTS) IN PAST 12 MONTHS]

HS040: CAPACITY TO AFFORD PAYING FOR ONE WEEK ANNUAL HOLIDAY AWAY FROM HOME

HS050: CAPACITY TO AFFORD A MEAL WITH MEAT, CHICKEN, FISH (OR VEGETARIAN EQUIVALENT) EVERY SECOND DAY

HS060: CAPACITY TO FACE UNEXPECTED FINANCIAL EXPENSES

HS070: DO YOU HAVE A TELEPHONE (INCLUDING MOBILE PHONE)?

HS080: DO YOU HAVE A COLOUR TV?

HS090: DO YOU HAVE A COMPUTER?

HS100: DO YOU HAVE A WASHING MACHINE?

HS110: DO YOU HAVE A CAR?

HD080: REPLACING WORN-OUT FURNITURE

HS120: ABILITY TO MAKE ENDS MEET

HS130: LOWEST MONTHLY INCOME TO MAKE ENDS MEET

HS140: FINANCIAL BURDEN OF THE TOTAL HOUSING COST [TOTAL HOUSING COST IS A FINANCIAL BURDEN TO THE HOUSEHOLD]

HS150: FINANCIAL BURDEN OF THE REPAYMENT OF DEBTS FROM HIRE PURCHASES OR LOANS [REPAYMENT OF DEBTS FROM HIRE PURCHASES OR LOANS OTHER THAN MORTGAGE OR LOAN CONNECTED WITH THE HOUSE ARE A FINANCIAL BURDEN TO THE HOUSEHOLD]

HS160: PROBLEMS WITH THE DWELLING: TOO DARK, NOT ENOUGH LIGHT

HS170: NOISE FROM NEIGHBOURS OR THE STREET [NOISE FROM NEIGHBOURS OR NOISE FROM THE STREET (TRAFFIC, BUSINESS, FACTORIES, ETC.]

HS180: POLLUTION, GRIME OR OTHER ENVIRONMENT PROBLEMS [POLLUTION, GRIME OR OTHER ENVIRONMENTAL PROBLEMS IN AREA CAUSED BY TRAFFIC OR INDUSTRY]

HS190: CRIME, VIOLENCE OR VANDALISM IN THE AREA

HY010: TOTAL HOUSEHOLD GROSS INCOME

HY020: TOTAL DISPOSABLE HOUSEHOLD INCOME

HY022: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS OTHER THAN OLD-AGE AND SURVIVOR'S BENEFITS

HY023: TOTAL DISPOSABLE HOUSEHOLD INCOME BEFORE SOCIAL TRANSFERS INCLUDING OLD-AGE AND SURVIVOR'S BENEFITS

HY030G/HY030N: IMPUTED RENT

HY040G/HY040N: INCOME FROM RENTAL OF A PROPERTY OR LAND

HY090G/HY090N: INTEREST, DIVIDENDS, PROFIT FROM CAPITAL INVESTMENTS IN UNINCORPORATED BUSINESS

HY050G/HY050N: FAMILY/CHILDREN-RELATED ALLOWANCES

HY060G/HY060N: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED

HY070G/HY070N: HOUSING ALLOWANCES

HY051G: FAMILY/CHILDREN-RELATED ALLOWANCES (CONTRIBUTORY AND MEANS-TESTED)

HY061G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED (CONTRIBUTORY AND MEANS-TESTED)

HY071G: HOUSING ALLOWANCES (CONTRIBUTORY AND MEANS-TESTED)

HY052G: FAMILY/CHILDREN-RELATED ALLOWANCES (CONTRIBUTORY AND NON-MEANS-TESTED)

HY062G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED (CONTRIBUTORY AND NON-MEANS-TESTED)

HY072G: HOUSING ALLOWANCES (CONTRIBUTORY AND NON-MEANS-TESTED)

HY053G:FAMILY/CHILDREN-RELATED ALLOWANCES (NON CONTRIBUTORY AND MEANS-TESTED)

(HY063G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED (NON-CONTRIBUTORY AND MEANS-TESTED)

HY073G: HOUSING ALLOWANCES (NON-CONTRIBUTORY AND MEANS-TESTED)

HY054G: FAMILY/CHILDREN-RELATED ALLOWANCES (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

HY064G: SOCIAL EXCLUSION NOT ELSEWHERE CLASSIFIED (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

HY074G: HOUSING ALLOWANCES (NON-CONTRIBUTORY AND NON-MEANS-TESTED)

HY080G/HY080N: REGULAR INTER-HOUSEHOLD CASH TRANSFER RECEIVED

HY081G/HY081N: ALIMONIES RECEIVED (COMPULSORY + VOLUNTARY)

HY100G/HY100N: INTEREST REPAYMENTS ON MORTGAGE

HY110G/HY110N: INCOME RECEIVED BY PEOPLE AGED UNDER 16

HY120G/HY120N: REGULAR TAXES ON WEALTH

HY130G/HY130N: REGULAR INTER-HOUSEHOLD CASH TRANSFER PAID

HY131G/HY131N: ALIMONIES PAID (COMPULSORY + VOLUNTARY)

HY140G/HY140N: TAX ON INCOME AND SOCIAL CONTRIBUTIONS

HY145N: REPAYMENTS/RECEIPTS FOR TAX ADJUSTMENT

HY170G/HY170N: VALUE OF GOODS PRODUCED FOR OWN CONSUMPTION