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The Many Faces of Poverty: A Comprehensive Analysis on Measurement of Poverty in Türkiye

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ABSTRACT

Although poverty statistics serve as crucial economic and social indicators, their measurement varies depending on the chosen definition of poverty. This study examines whether poverty estimations in Türkiye significantly differ based on the definition used and explores which concept of poverty is most appropriate. Utilizing the SILC micro datasets from 2014 to 2021, the study estimates two absolute poverty measures, a subjective poverty measure, and a multidimensional poverty measure. The findings reveal that poverty rates are highly sensitive to the definition applied. For instance, while the updated absolute poverty line from TurkStat identifies less than 20% of the population as poor, the subjective poverty line and the absolute poverty line defined by TÜRK-İŞ classify approximately 60% and 70% of the population as poor, respectively. Furthermore, while 43% of the population was considered multidimensionally poor in 2014, this figure declined to 31% in 2021. A significant concentration of poverty is observed in the Southeastern and Eastern regions across all measurement approaches. Finally, the study conducts a comparative analysis of various poverty definitions by examining trends in poverty rates, the overlap of poor households, regional rankings, pairwise correlations, and the demographic profile of individuals living in poverty.

Keywords: Poverty Measures, Absolute Poverty, Multidimensional Poverty, Subjective Poverty, Regional Poverty.

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INTRODUCTION

Poverty measures are critical social and economic indicators. They allow us to compare poverty across groups and regions and monitor how economic well-being has evolved. These statistics can raise awareness and play an essential role in motivating political action (Atkinson, 2019). They are especially valuable in shaping social policies, targeting vulnerable populations, and allocating social budgets. Still, defining and measuring poverty remains a highly controversial issue. Various approaches can be used in this regard. The choice of welfare indicator, poverty line, or measurement technique can considerably influence the results (Atkinson, 1987). For instance, an improperly defined poverty line leading to either an underestimation or overestimation of poverty may undermine the effectiveness of poverty eradication policies. Robustness checks are, therefore, necessary for any measure of poverty (Deaton, 2018).

Given the diversity of conceptualizations and measurement methods, comparative analyses of poverty

measures are crucial (Kwadzo, 2015). Even if policymakers tend to adopt a particular poverty definition and follow the poverty measure based on this definition, this choice may have critical consequences for the people in poverty. As Laderchi et al. (2003) argue, different conceptualizations and measures of poverty may not always identify the same people as poor. Conducting a comparative analysis helps determine which poverty measure is most appropriate under existing conditions.

Although poverty is fundamentally an issue of underdevelopment, it is also a significant concern in developed countries (Şenses, 2019). Still, the convenience of poverty concepts can be distinct for developed and developing countries. Deaton (2018) and Şenses (2019) argue that relative poverty measures are more relevant for developed countries where absolute poverty is negligible, whereas absolute poverty remains a critical concern in developing countries where significant segments of the population struggle to meet basic needs. Additionally, applying relative poverty measures in developing economies can yield counterintuitive results due to rapid economic shifts (Demir Şeker &

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Jenkins, 2013). For example, during periods of rapid economic growth, living standards improve; however, since median income levels also rise, relative poverty measures may fail to capture these gains. Conversely, in economic downturns, relative measures may not fully reflect declines in individual well-being. Therefore, the relative poverty approach is used primarily in developed countries where absolute poverty is no longer a major concern, rather than in developing economies that are undergoing rapid changes (Şenses, 2019).

Given the complexities surrounding poverty measurement, this study seeks to determine whether poverty estimates in Türkiye significantly vary based on the chosen definition and, if so, which conceptualization is most suitable for a developing country. For this purpose, using the Survey on Income and Living Conditions (SILC) micro datasets for the 2014-2021 period, this study estimates absolute poverty (via two distinct absolute poverty lines), subjective poverty, and multidimensional poverty rates. Considering the persistent regional disparities in the country (see for example, Doğruel & Doğruel, 2003), these estimates are also analyzed at the NUTS-2 regional level. The results reveal whether different approaches broadly classify the same households and regions as poor.

LITERATURE ON POVERTY MEASURES

The first studies on poverty measurement emerged in England at the end of the 19th century. Prior to the Industrial Revolution, poverty was the prevailing condition for the majority of the population, with only a privileged minority experiencing economic security (Rodrik, 2017). The rise of industrial capitalism in the late 19th century led to low-paid work with rough working conditions and visible socioeconomic inequalities (O'Connor, 2016). This is why initial studies on poverty correspond to this time. Indeed, Atwater's (1894) calory measurement as an indicator for basic subsistence level; Booth's (1895) poverty estimates in London with poverty lines; and Rowntree's (1901) examination of the social conditions of the workers in York coincided with this period.

A key debate in poverty measurement arises from the choice of an appropriate welfare indicator. Monetary indicators such as household income and consumption are commonly used, yet each has limitations. Consumption is not as volatile as income thanks to savings and borrowings (Ravallion, 1992). Since people in poverty tend to engage in activities with variable income (Banerjee & Duflo, 2012), consumption may be a better indicator. On the other hand, remembering what they

spent is more difficult for households compared to what they earned. Another ongoing debate centers on whether poverty is better captured by material deprivation or low income. Some studies have highlighted the mismatch between income poverty and material deprivation, demonstrating that low income does not always align with broader measures of economic hardship (see for example Berthoud & Bryan, 2011; Hick, 2014).

The capability approach posits that a direct measure for evaluating well-being is neither commodities, nor utility, but individual's capability (Sen, 1983, 1985, 1993). This perspective has expanded the evaluation of living standards by emphasizing deprivations beyond economic hardship (Smeeding, 2016). Even if household income or consumption can indicate the accession to plenty of market goods, they exclude non-market goods such as access to health services or education (Ravallion, 2012). Hence, non-monetary indicators of welfare may play a significant role in comprehending the multifaceted nature of poverty.

Another key debate in poverty measurement concerns the selection of the poverty line. Townsend (1979) introduced the concept of relative poverty, defining poverty as a situation of people whose resources are so lower than an average person in the society that they are excluded from ordinary living standards. On the other hand, Sen (1983) argued that poverty should primarily be deemed as an absolute notion and addresses that *"... the fact that some people have a lower standard of living than others is certainly proof of inequality, but by itself, it cannot be a proof of poverty..."*. Kwadzo (2015) compared monetary poverty, capability poverty, and social exclusion in the U.S. and concluded that these three measures generate quite different poverty rates. The notable variation in the poverty rates indicates the sensitivity of the measures to the definitions.

Since the 1990s, The World Bank has estimated global extreme poverty through international poverty lines (e.g., 1.90\$ (PPP) per day per person). Meanwhile, several countries estimate official poverty rates through different approaches. For instance, the absolute poverty notion is prevalent in the US following the Orshansky (1965) method, whereas poverty studies in Europe mostly focus on the concept of relative poverty and social exclusion (e.g., Walker & Walker, 1997; Gordon et al., 2000). More recently, the Supplemental Poverty Measure¹ in the US since 2011 and

¹ <https://www.census.gov/topics/income-poverty/supplemental-poverty-measure.html>

the Social Metrics Commission Reports² in the UK since 2018 have improved poverty measurements in these countries.

Another approach to poverty measurement involves subjective assessments of well-being. In this approach, survey respondents are directly asked to rate their well-being on an ordinal scale or are asked about the minimum income level required to make ends meet. However, self-assessed welfare may be biased and unreliable due to the possible high degree of variability in subjective data (Ravallion, 2012). Even under similar circumstances, respondents may provide widely different answers. The way survey questions are perceived can vary, even among communities with similar living standards (Şenses, 2019). Additionally, self-assessments may easily be influenced by personality traits, social norms, and reference groups.

Recently, the multidimensional poverty approach has gained prominence, emphasizing that poverty is intrinsically a multifaceted phenomenon ranging from undernourishment to poor health or housing conditions (Alkire & Foster, 2011; Alkire et al., 2015; Nolan & Whelan, 2014). In this regard, since 1990, the Human Development Index (HDI) has been estimated by the United Nations Development Programme (UNDP). This index is a summary measure of a decent living standard, education, and health. Furthermore, the Human Poverty Index (HPI) which consists of three dimensions (i.e., a decent standard of living, a long and healthy life, and finally knowledge) was introduced by the UNDP in 1997. This index is differently defined for high-income OECD countries and developing countries. In 2010, it was replaced by the Global Multidimensional Poverty Index (MPI). This multidimensional approach considers overlapping deprivations experienced by individuals and allows for a comprehensive analysis of poverty. The Global MPI comprises education (lack of six years of schooling and school attendance), health (*child mortality and undernourishment*), and living standards (*cooking fuel, sanitation, drinking water, electricity, housing, and assets*). It has been measured for more than 100 countries by the Oxford Poverty and Human Development Initiative and UNDP. The Global MPI was also measured for Türkiye in 2003, and 6.6 per cent of the population was identified as multidimensionally poor (Alkire, Roche, Santos, & Seth, 2011). However, as Acar (2014) states, rather than developing countries, the global MPI is more relevant for underdeveloped countries due to its low criteria. Lately, many developing

countries (e.g., Mexico, Chile, Colombia, India, etc.) have constructed national MPIs considering country characteristics and have accepted these tailored MPIs as their official poverty measure.

In Türkiye, the official statistical institute, TurkStat, measured absolute poverty rates during the 2002-2009 period. However, in an effort to align with European Union statistical standards, TurkStat subsequently shifted to relative poverty measures. Even though there are a few studies on absolute poverty in Türkiye, these studies (e.g., Şengül, 2003; Demir Şeker & Jenkins, 2013; and Karadağ, 2015) examined a period more than a decade ago, leaving a gap in recent absolute poverty estimates for the country. Hence, there is a lack of absolute poverty measures in Türkiye in the present time.

This study aims to provide a comparative analysis of poverty measurement in Türkiye starting with absolute poverty estimates. First, it updates the old absolute poverty lines of TurkStat through the changes in the consumer price index (CPI). It also estimates absolute poverty by using the poverty lines of the Confederation of Turkish Trade Unions (TÜRK-İŞ), whose poverty lines have been the subject of significant public debate in recent years. To the best of my knowledge, this is the first study using TÜRK-İŞ' poverty lines to estimate poverty rates in Türkiye. Furthermore, this study estimates subjective poverty rates using a question in the SILC dataset. Finally, an MPI for Türkiye is developed and measured, and all these estimations are compared. Even though some studies have already measured the multidimensional poverty in the country, such as Acar (2014), Karadağ (2015), Limanlı (2016), Giovanis & Özdamar (2021), Karahasan & Bilgel (2021), the MPI in the current study brings out some new indicators and a new dimension. Also, it accounts for the whole population, while the previous studies mostly focused on the population above 15 years old.

DATASET AND METHODOLOGY

Poverty Concepts

This paper applies the four approaches in Table 1 to measure poverty in Türkiye. For this purpose, the SILC micro datasets for the years between 2014 and 2021 are utilized. These datasets cover household disposable income and non-monetary indicators for welfare. Household disposable income includes earnings, imputed rent, agricultural production for own consumption, and social allowances while excluding regular taxes. Income data in the SILC is one year lagged which means that income poverty in 2020 is estimated

² <https://socialmetricscommission.org.uk/>

Table 1. Poverty measurement approaches

Approach	Welfare indicator	Poverty line
<i>Absolute poverty</i>	<i>Household income</i>	<i>Updated absolute poverty line of TurkStat</i>
<i>Absolute poverty</i>	<i>Household income</i>	<i>TÜRK-İŞ' absolute poverty line</i>
<i>Subjective poverty</i>	<i>Household income</i>	<i>Subjective poverty line</i>
<i>Multidimensional poverty</i>	<i>Monetary and non-monetary indicators</i>	<i>Multidimensional poverty line</i>

using the SILC 2021, for example. Summary statistics for income data in the SILC are provided in Table A.1 in the appendix. The surveys contain annual income data, but in this study income data is converted into monthly income so that fluctuations throughout the year are eliminated.

Notable spatial price differences may exist within large countries, and in this case, national poverty measures need intra-national price indexes (Deaton & Dupriez, 2011). Given the regional heterogeneity in the country and the availability of the NUTS-2 level datasets since 2014, poverty estimates in this study start from 2014.

For absolute poverty measures, this study employs two different lines; the poverty lines of TurkStat and TÜRK-İŞ. Both poverty lines are based on the cost of basic needs during a month in Turkish Liras (TL). TurkStat previously calculated absolute poverty lines, which included food and non-food necessities, for the 2002-2009 period. These poverty lines were constructed using the cost of a minimum food bundle satisfying daily 2,100 kcal. The costs of non-food needs were estimated using the ratio of non-food expenditures to total household expenditures for households whose total consumption expenditures were slightly above the food poverty line.

To update TurkStat's most recent absolute poverty line (from 2009) for subsequent years, this study adjusts for inflation using changes in the CPI obtained from TurkStat. Additionally, to account for regional price disparities, the study constructs region-specific poverty lines by applying regional purchasing power parity (PPP) for the base year and regional CPIs for subsequent years. To ensure comparability across households of different sizes, the modified OECD equivalence scale is applied, assigning a weight of 1.0 to the first adult, 0.5 to other household members aged 14 or older, and 0.3 to children under 14. The same equivalence scale is also used for household income adjustments. The updated absolute poverty lines based on TurkStat's methodology are presented in Table A.2 in the appendix.

Despite these adjustments, the updated poverty lines of TurkStat have certain limitations. First, they do not consider the changes in the quality of existing goods, the arrival of new goods, or the substitution between goods over time

(Meyer & Sullivan, 2012). Additionally, they cannot take the changes in needs into account. Furthermore, while this study utilizes the changes in CPI for inflation adjustment, food prices -comprising a significant portion of expenditures for low-income households- rose at a higher rate than overall CPI during the period. Lastly, concerns have been raised regarding the underestimation of official inflation rates in some years. For example, while TurkStat reported an annual CPI increase of 36.08% in 2021, ENAGrup estimated the rate at 82.81%³. Consequently, the updated poverty lines may underestimate actual poverty thresholds. Given the potential parsimony in these lines, poverty estimates using them can be considered as extreme poverty.

Another absolute poverty line used in this study is that of TÜRK-İŞ⁴, which is a more generous line compared to that of TurkStat. TÜRK-İŞ first calculates a food poverty line for a household composed of four individuals, assuming that the daily calorie requirements for an adult male, adult female, a young (15-19 years old), and a child are 3,500 kcal, 2,300 kcal, 3,200 kcal, and 1,600 kcal, respectively. Then, it estimates the non-food part using the share of food expenditures in total consumption (i.e., 30.7%). TÜRK-İŞ' poverty lines are for a household comprised of four members living in the TR51 (Ankara) region. In this study, the poverty lines of TÜRK-İŞ are divided by the OECD equivalent scale⁵, which is the most proper scale to convert these lines into adult equivalent terms. To consider the regional price level differences, the regional price level in TR51 (Ankara) is normalized to one. Afterwards, poverty lines for other regions are derived using regional price level indices for each year. These poverty lines can be found in Table A.3.

Third, subjective poverty is estimated using a survey question from the SILC dataset, in which respondents are asked to specify the minimum monthly income level required to make ends meet. Households whose income levels are lower than this self-reported threshold are counted as subjectively poor.

³ <https://enagrup.org>

⁴ <https://www.turkis.org.tr/category/aclik-yoksulluk/>

⁵ The OECD equivalent scale (where the first adult takes 1, other members aged 14 or older take 0.7, and each child takes 0.5) is a more proper scale for the approach of TÜRK-İŞ compared to the modified scale. The same scale is also applied to household income.

Table 2. MPI for Türkiye

Dimension	Indicator
Education (1/5)	E1: If the average years of schooling among household members 15 years old or older are lower than eight years
	E2: If a household member who is at least 15 years old is illiterate
Health (1/5)	H1: If a member of the household suffers from a physical or mental health issue constraining daily activities
	H2: If a member of household suffers from accessing to health services
	H3: If household cannot afford a meal including chicken/meat/fish/vegetarian equivalent at least once every two days
Housing conditions (1/5)	HC1: If there are problems related to floor, walls, or roof
	HC2: If there is a lack of indoor toilet and bathroom
	HC3: If 2.5 or more members share a bedroom (overcrowding)
	HC4: If there is environmental pollution in the neighborhood
	HC5: If violence or crime issues occur in the neighborhood
	HC6: If there are heating problems resulting from a lack of isolation
Material deprivation (1/5)	M1: A lack of at least three of five assets (TV, cellphone, dishwasher, computer, and automobile) because of economic problems
	M2: If the household cannot pay housing rent, loan on interest, or mortgage credit at least twice during the last 12 months
	M3: If the household cannot pay bills (e.g., gas, electricity, water) at least twice during the last 12 months
	M4: If the household cannot repay a credit card debt or other debts at least twice during the last 12 months
	M5: If the household cannot afford an unexpected but mandatory expenditure ⁶
Social exclusion (1/5)	S1: If there is a household member who is unemployed (looking for a job)
	S2: If a household member is not registered in social security in his/her job
	S3: If the household is not able to eat/drink with family or friends at home or outside at least twice a month because of financial limitations
	S4: If the household is not able to get involved in sports activities, cinema, or concerts at least twice a month because of economic hardships
	S5: If the household cannot access the internet because of economic limitations
	S6: If the equivalized income level of household is lower than sixty percent of the median adult equivalized income in the country

Source: Generated by the author.

Note: Weights are in parentheses.

Finally, following the Alkire-Foster (AF) methodology, official MPIs of other developing countries, and previous studies, an MPI for Türkiye is developed. Table 2 outlines the dimensions, indicators, and weights used in this index. All the indicators are binary variables and have a value of one (deprived) or zero (not deprived). The dual-cut-off approach of the AF method is implemented which has a set of deprivation cut-offs to identify whether a person or household is deprived in each indicator, and a poverty cut-off to determine whether a person or household is in multidimensional poverty. The equal weighting approach is adopted where both dimensions and indicators in each dimension are equally weighted. The poverty cut-off adopted here is 1/3 following the

standard AF methodology and official MPIs of many other developing countries. Compared to the previous MPIs produced for Türkiye, the current MPI introduces a new dimension -social exclusion- along with additional indicators, such as internet accession and overcrowding. The summary of MPI indicators is provided in Table A.4.

In 1997, the compulsory education period by law became eight years in Türkiye. More recently, in 2012, this compulsory period was further increased to twelve years. Consequently, deprivation in E1 refers to households with lower education than the compulsory period (even based on the low criterion). The lack of micronutrients is included as an indicator of poor health (H3), reflecting nutritional deprivation. Overcrowding (HC3) is incorporated as an indicator for housing conditions following the official MPI frameworks used in Chile and

⁶ This expenditure costs approximately 1,079 TL in 2021, for example.

Mexico. Similar to Gordon et al. (2000) and the HPI of UNDP, being out of employment and social security are adopted as indicators of social exclusion. Lack of participation in social activities, inability to access the internet –especially in this digital age–, and relative income poverty are also considered as indicators of social exclusion.

Poverty Measurement Methods

This study adopts the Headcount Ratio (HCR) from the Foster-Greer-Thorbecke (1984) (FGT) indexes to estimate poverty rates. This method has some practical and technical advantages in terms of intuitive interpretation and subgroup decomposability. FGT indices’ general form is given below.

$$FGT_{\alpha} = \frac{1}{N} \sum_{i=1}^M \left(\frac{z_i - c_i}{c_i} \right)^{\alpha} I n_i$$

where N refers to total population, M denotes the total number of households, c_i refers to the income level of the household, z_i presents the poverty line, and n indicates the number of individuals in each household.

$$I=1 \quad \text{if } c_i < z_i,$$

$$I=0 \quad \text{if } c_i \geq z_i$$

This definition of I signifies that only the households whose income levels are lower than the poverty line are counted. Population weights are also included if we have a sampling based on random stratification, ensuring representative estimates. Once α is zero (FGT₀), the index is called the headcount ratio (HCR), which measures the proportion of individuals classified as poor. FGT₁ refers to the poverty gap ratio (PGR), which captures the average shortfall of incomes from the poverty line. Finally, FGT₂ refers to the squared poverty gap (SPG), which gives greater weight to the poorest individuals.

For multidimensional poverty estimation, the Alkire-Foster (AF) methodology is followed in this study. Assuming that poverty is evaluated utilizing d number of dimensions where $d \in \mathbb{N}$, and the total population consists of n individuals where $n \in \mathbb{N}$, the formation of multidimensional poverty measure can be expressed through the $n \times d$ dimensional achievement matrix X below. The achievement of individual i in dimension j is shown by x_{ij} where $x_{ij} \in \mathbb{R}_+$ for all $i=1, \dots, n$ and $j=1, \dots, d$. It is assumed that higher achievements are preferable to lower ones.

$$X = \begin{matrix} & \begin{matrix} \text{dimensions} \\ \mathbf{x}_{11} & \cdots & \mathbf{x}_{1d} \\ \vdots & \ddots & \vdots \\ \mathbf{x}_{n1} & \cdots & \mathbf{x}_{nd} \end{matrix} \\ \begin{matrix} \mathbf{x} \\ \vdots \\ \mathbf{x} \end{matrix} & \begin{matrix} \text{people} \\ \vdots \\ \text{people} \end{matrix} \end{matrix}$$

A weight is given to each dimension with respect to its relative importance. The vector of weights is $w = (w_1, \dots, w_d)$. The normalized-weights approach is followed in this study where the sum of the weights is one, and each dimension is assumed with equal weights. It is the most widely used approach in literature unless there is evidence of disparities in the relative importance of dimensions.

Deprivation cut-off in dimension j is shown as z_j . The vector of deprivation cut-offs for all dimensions is $z = (z_1, \dots, z_d)$, where $z \in \mathbb{R}^{d++}$. If $x_{ij} < z_j$, individual i is identified as deprived in dimension j , or non-deprived otherwise. Through the achievement matrix X and the vector of deprivation cut-offs, we obtain a deprivation matrix g^0 where $g_{ij}^0 = 1$ whenever $x_{ij} < z_j$ and $g_{ij}^0 = 0$ otherwise for all $j=1, \dots, d$, and for all $i=1, \dots, n$. Then, $g^0(X)$ matrix demonstrates the deprivation status of all individuals in all dimensions in the matrix X. A deprivation score c_i is produced by the matrix g^0 such that:

$$c_i = \sum_{j=1}^d w_j g_{ij}^0$$

where c_i refers to the sum of weighted deprivations of individual i , and w_j is the weight of the dimension j . The deprivation score increases as the number of deprivations of individual i rises and reaches its maximum if individual i is deprived in all dimensions. The vector of deprivation scores of all persons is $c = (c_1, \dots, c_n)$. In this method, an individual who is deprived in a dimension is not necessarily identified as poor. An identification function p_k is employed such that:

$$p_k(x_i; z) = \begin{cases} 1, & \text{if } c_i \geq k \\ 0, & \text{otherwise} \end{cases}$$

where k denotes the poverty cut-off. $p_k(x_i; z) = 1$ identifies individual i as poor. Standard poverty cut-off in the AF method is 1/3. In other words, households who are deprived in at least 33.3% of the weighted indicators are counted as in multidimensional poverty. Deprivations of the non-poor individuals are censored so that they are not embodied in the measure. After the identification approach is chosen, the aggregation step requires selecting a poverty index to summarize the information obtained. This step is based on the FGT indexes. The adjusted Headcount Ratio (M_0), commonly known as the Multidimensional Poverty Index (MPI), is the average of the censored deprivation score vector:

$$M_0 = \mu(c(k)) = \frac{1}{n} \times \sum_{i=1}^n c_i(k)$$

It provides a comprehensive measure of both the incidence and intensity of multidimensional poverty. The adjusted Headcount Ratio can also be measured as $M_0 =$

HxA . Headcount ratio (H) = $H(X; z)$ where $H=q/n$, and q denotes the number of poor persons based on the dual cut-off approach. “ A ” is the intensity of poverty which is the average deprivation score of people in poverty:

$$A = \sum_{i=1}^q c_i(k)/q$$

Since income data in the SILC dataset is recorded at the household level, the unit of identification in the monetary poverty estimates is households. Then, the results are reported as a percentage of people (rather than households) considering household sizes. In the multidimensional poverty approach, most previous studies focused on the population aged 15 or older due to data unavailability. This is because education and health data, as well as some social exclusion variables,

Country-level Results

Table 3 indicates poverty rates (i.e., headcount ratios) estimated through four different approaches. Due to the one-year lag in income data within the SILC datasets, estimates of absolute and subjective poverty correspond to the previous year’s conditions rather than the current period. The results reveal substantial variation in poverty rates, highlighting the sensitivity of poverty estimates to the chosen definition.

TurkStat’s absolute line identifies less than 20% of the population in poverty which can be considered the extreme poverty rate as suggested in the previous section. In contrast, the subjective approach captures more than 60% of the population as poor. TÜRK-İŞ’ line

Table 3. Poverty rates by various methods (%)

Survey year	Absolute poverty (TurkStat’s line)	Absolute poverty (TÜRK-İŞ line)	Subjective poverty	Multidimensional poverty
2014	19.35	76.92	62.1	43.2
2015	17.74	76.72	63.2	43.5
2016	14.97	77.14	63.7	38.6
2017	12.88	70.04	65.9	35.6
2018	13.72	72.62	64.4	33.9
2019	12.65	67.43	62.1	34.9
2020	13.54	69.73	61.3	31.6
2021	13.63	74.11	62.6	31.5

Source: Author’s own estimates.

are only available for this age group. A key distinction of the MPI in this study is that it measures poverty across the entire population by using households as the unit of identification and individuals as the unit of analysis. However, a limitation of this approach is that it cannot capture the intra-household inequalities. Differences in the bargaining power of household members depending on gender, age, or other factors can result in unequal distribution of resources within households (see for example, Jenkins, 1991). Nonetheless, adopting a household-based approach allows for the measurement of poverty among the whole population, and this is an acceptable compromise considering the widespread child poverty in the country which would be disregarded otherwise.

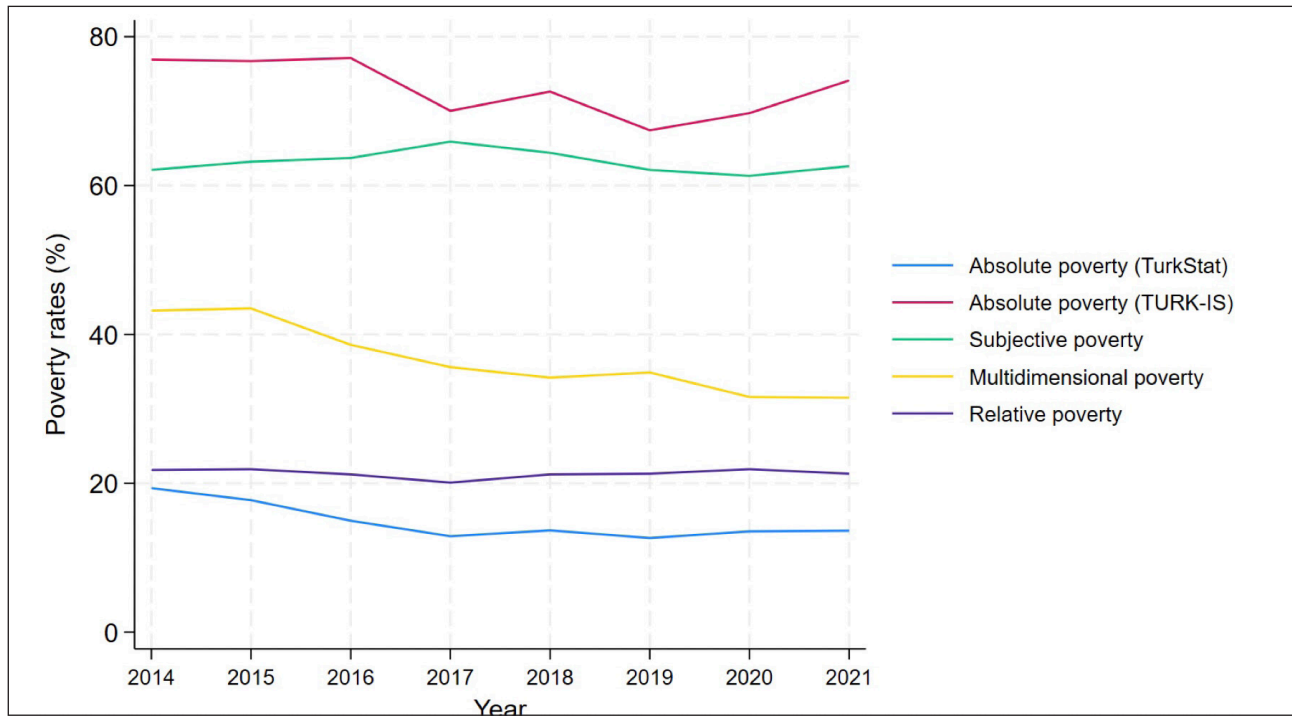
FINDINGS

Estimation results are given in this section. Survey weights are used in all estimates to measure poverty for the entire population.

counts an even higher proportion of the population in poverty. Indeed, more than two-thirds of the population is identified poor with this approach throughout the period. These higher rates may result from that TÜRK-İŞ is a labor union, and during the negotiations on minimum wage, it defends the rights of employees each year, potentially influencing its poverty benchmarks. Meanwhile, multidimensional poverty rates are found more moderate compared to TÜRK-İŞ’ and subjective approaches, yet they remain much higher than TurkStat’s approach⁷.

Şenses (2019) suggests that rather than expecting complete consistency across different poverty measures, it would be more useful to examine whether they reveal similar trends and rankings. In this sense, graph 1 presents poverty trends in Türkiye. As well as the poverty rates measured in this study, the graph also

⁷ The multidimensional poverty rates are found higher than that in Karahasan and Bilgel (2021) and Giovanis and Özdamar (2021) mostly because those studies do not include child poverty.



Graph 1: Poverty trends in Türkiye

Source: Relative poverty ratios are taken from TurkStat, and the rest is the author's own estimations.

manifests the relative poverty estimates of TurkStat based on 60% of median equivalized income⁸. The trends indicate that absolute poverty rates (blue and red lines) and multidimensional poverty rates (yellow line) had a decreasing tendency until recently. However, estimations using the last surveys capture a rise in these ratios. Although multidimensional poverty rate declined in 2021, the number of people who are multidimensionally poor and average deprivation score increased that year. This recent rise in poverty coincides with the recent decline in GDP per capita (\$) and increasing inflationary pressures in the country. As well as economic and political factors, the COVID-19 pandemic might play a role in the rise of poverty. These results are compatible with the findings of the World Bank (2022).

On the other hand, subjective (green line) and relative poverty rates (purple line) remained almost unchanged during the period. Nearly stable rates of subjective poverty imply that some parts of the population tend to perceive their income levels as insufficient. Moreover, the relative poverty approach did not capture the improvements until 2019 because the median income level also rose. It was not capable of reflecting the recent deterioration either, as the median income level fell. This finding is in line with the discussion on relative poverty measures in the introduction. It can be concluded that

the relative poverty approach falls short of capturing the changes in the living standards in Türkiye.

Multidimensional estimates indicate that education is the most contributing dimension to the MPI in all years. It makes up around 30% of the index on its own (see Table A.5 in the annex). Health follows it with a 23% contribution rate. The MPI is also measured via different poverty cut-offs (see Table A.6). Compared to the original measure using the $\frac{1}{3}$ cut-off, the $\frac{1}{4}$ cut-off estimates higher rates of multidimensional poverty, whereas the $\frac{1}{2}$ cut-off captures a much lower share of population in multidimensional poverty. Still, a high correlation is found between these estimates. Also, the contribution rates of dimensions and regional variation in multidimensional poverty rates remain unchanged, providing a robustness check.

Table 4 shows the number of households in poverty or not (among participants of the SILC 2021) by poverty definition. The total number of households in the survey is 26,289. The table indicates that 15,350; 14,139; and 5,287 of these households are absolutely (by TÜRK-İŞ definition), subjectively, and multidimensionally poor, respectively, although they are not counted as poor through the updated absolute line of TurkStat. This finding reinforces the notion that the latter can be considered as extreme poverty line. The results indicate that all the households who are counted as poor through the TurkStat's poverty line are also identified as poor via the line of TÜRK-İŞ. This finding is just

⁸ TurkStat uses separate relative poverty lines for each region.

Table 4. Number of households in poverty or not, by definition

Absolute poor (TurkStat)	Absolute poor (TÜRK-İŞ)		Subjective poor		Multidimensional poor	
	0	1	0	1	0	1
0	7,932	15,350	9,143	14,139	17,995	5,287
1	0	3,007	116	2,891	739	2,268
Total	7,932	18,357	9,259	17,030	18,734	7,555

Source: Author’s own estimates.

Note: In the table, zero and one denote non-poor and poor households, successively.

like expected considering that TÜRK-İŞ’ line is much higher than that of TurkStat. On the other hand, 116 households are detected as poor via TurkStat’s line, although they are not subjectively poor. It means that even if these households’ income levels are lower than the extreme poverty line, they consider that their income is sufficient to satisfy their needs. Furthermore, 739 households in the survey are in poverty according to the updated line of TurkStat, but they are not multidimensionally poor. Hence, there is an apparent lack of overlap in households falling into different types of poverty.

concentrates mostly in the South-eastern and Eastern regions, while the Western regions have lower poverty rates in all estimations regardless of methodological choices.

Table 5 provides regional rankings by five dimensions of MPI, alongside absolute and subjective poverty estimates. The results indicate that regions with the highest average deprivation scores in each dimension of MPI have also the highest absolute poverty. However, rankings of subjective poverty considerably differ compared to the other types of poverty. For example, TR83 is ranked 25th (i.e., the second region with the lowest poverty) in subjective poverty, but it is ranked 9th by the absolute line of TÜRK-İŞ or by the education/health

Region-level Results

Figure 1 exhibits average NUTS-2 level poverty rates over the period of 2014-2021. A remarkable regional clustering of poverty is observed in the country. Poverty

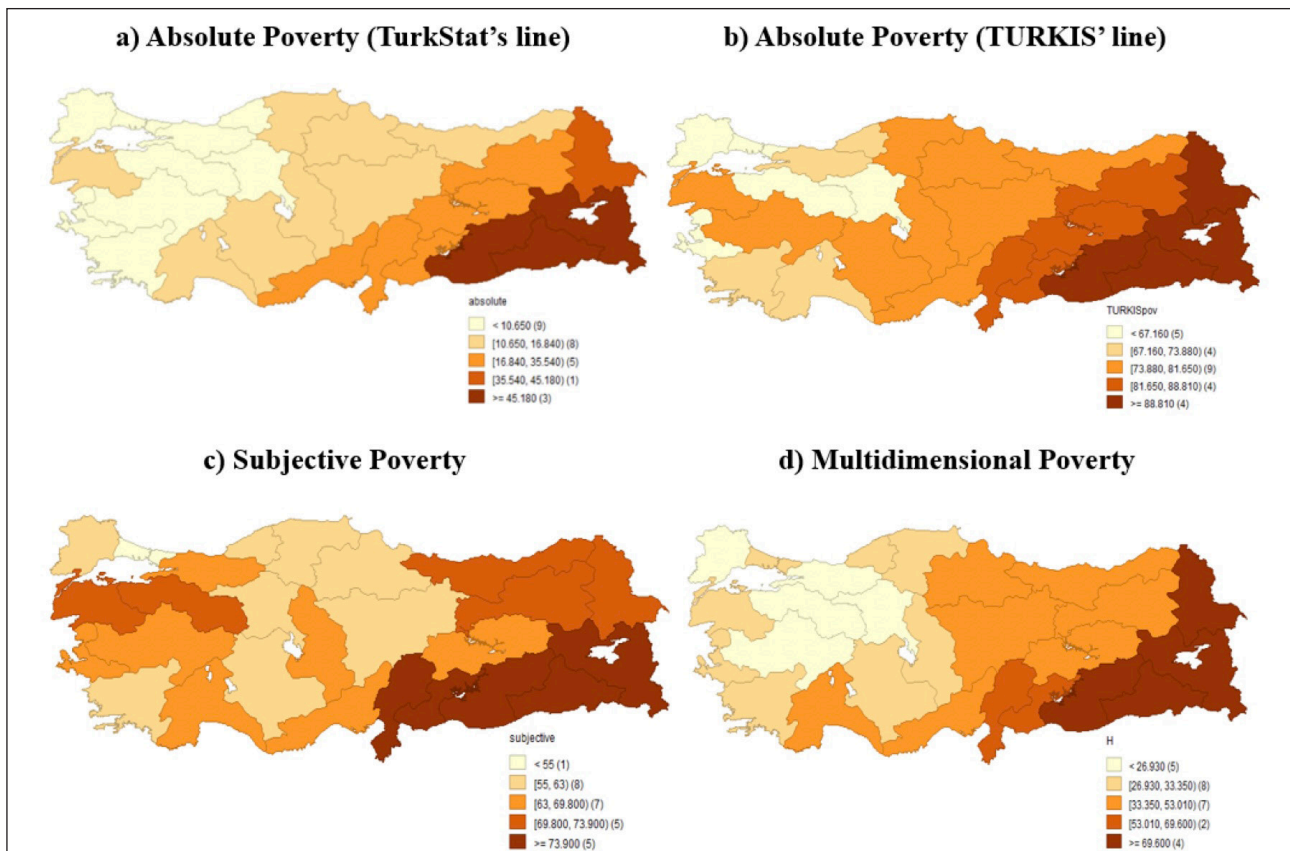


Figure 1. Regional poverty rates % (natural break maps)

Source: Author’s own estimates.

Table 5. Rankings (2014-2021 Average)

region	education	health	housing	material deprivation	social exclusion	absolute (TurkStat)	absolute (TÜRKİŞ)	subjective
TRC2	1	2	1	1	1	1	2	3
TRB2	2	1	2	2	4	2	3	2
TRC3	3	6	4	5	2	3	1	5
TRA2	4	3	3	3	3	4	4	10
TRC1	5	5	5	4	5	6	5	1
TR63	6	4	6	6	6	5	6	4
TRA1	7	11	8	7	7	8	7	7
TR90	8	8	10	12	9	17	11	8
TR83	9	9	11	14	11	11	9	25
TRB1	10	13	13	19	10	9	8	14
TR62	11	12	7	8	8	7	13	12
TR72	12	7	9	11	12	12	10	23
TR81	13	16	16	21	20	24	19	18
TR82	14	18	20	17	18	13	15	20
TR71	15	19	17	23	17	14	12	16
TR61	16	10	15	10	13	16	21	17
TR31	17	14	12	9	14	19	25	13
TR33	18	25	25	25	22	18	14	11
TR22	19	21	21	15	16	10	16	6
TR32	20	15	18	18	23	20	20	19
TR10	21	20	14	13	15	21	22	26
TR52	22	17	24	20	19	15	17	21
TR42	23	23	22	24	24	23	18	15
TR21	24	22	19	16	21	22	24	22
TR41	25	24	23	22	25	25	23	9
TR51	26	26	26	26	26	26	26	24

Source: Author's own estimates.

Note: Regions with the highest poverty are ranked 1st and the least poor regions are ranked 26th.

criteria. Conversely, TR41 is one of the least poor regions in terms of absolute and multidimensional poverty, but it is the 9th poorest region according to the subjective poverty line. These findings confirm the potential bias in the subjective poverty estimates asserted by Ravallion (2012).

The table also shows that the most urgent needs of the regions can differ and therefore the priorities of the regions need to be diversified. In this context, region-specific poverty alleviation policies are thought to be helpful.

Table 6 demonstrates the pairwise correlations between various poverty rates at the NUTS-2 level. There are very strong correlations between absolute poverty rates (both with TurkStat's and TÜRK-İŞ' lines) and multidimensional poverty rates. This finding implies that

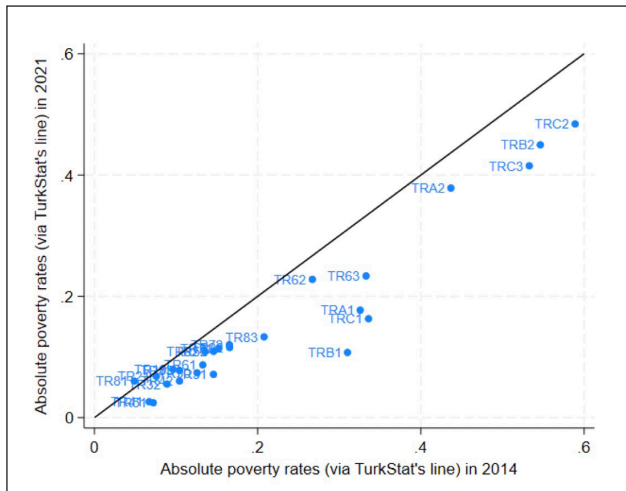
despite the variation in poverty rates, absolutistic and multidimensional poverty concepts largely detect the same regions as poorer or less poor in the same years. On the other hand, subjective poverty has very weak correlations with the other poverty estimates.

Graphs 2-5 indicate the regional poverty rates at the beginning (2014) and the end (2021) of the period with a 45° line to trace the changes over time. The results show that regions with the highest initial poverty ratios in 2014 also exhibit the highest poverty rates 2021, suggesting the persistence of regional disparities in terms of poverty. From 2014 to 2021, while absolute poverty rates estimated through the TurkStat's line slightly increased in TR81, all the other regions managed to reduce their absolute poverty rates (see Graph 2). In some regions, such as TRB1, TRC1, and TRA1, striking

Table 6. Pairwise correlations

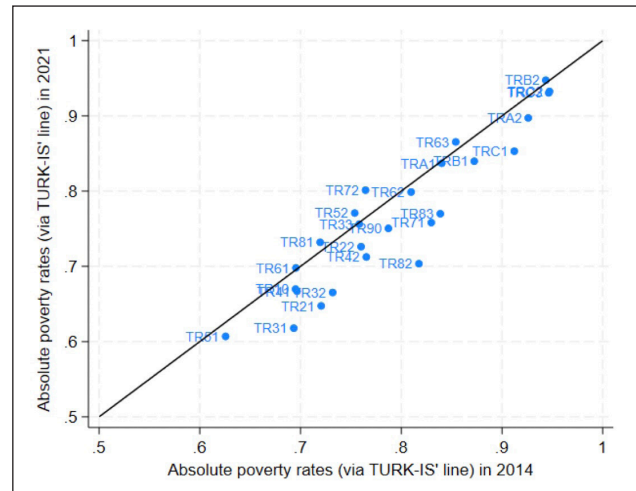
	Absolute (TurkStat)	Absolute (TÜRK-İŞ)	Subjective	Multidimensional
Absolute (TurkStat)	1			
Absolute (TÜRK-İŞ)	0.845*	1		
Subjective	0.495*	0.498*	1	
Multidimensional	0.923*	0.852*	0.474*	1

Source: Author’s own estimates.



Graph 2. Absolute poverty rates (via TurkStat’s line) in 2014 vs. 2021

Source: Author’s own estimates.



Graph 3. Absolute poverty rates (via TÜRK-İŞ’ line) in 2014 vs. 2021

Source: Author’s own estimates.

poverty reductions are observed. Conversely, absolute poverty rates estimated through the poverty line of TÜRK-İŞ are mostly located near the 45° line which means that there were no significant changes in the poverty rates (see Graph 3).

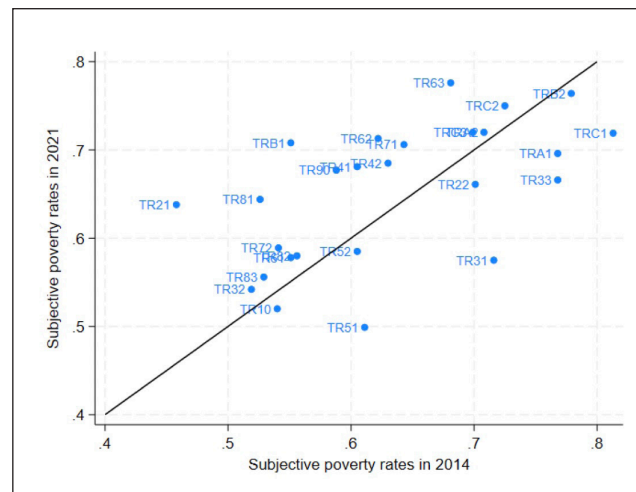
Although subjective poverty rates in most regions increased, a fall in subjective poverty was observed in some regions (see Graph 4). Especially, the poverty alleviation in the metropolitan areas (e.g., TR51, TR31, and TR10) probably tolerate the rises in the other regions, and therefore, country-level subjective poverty rates remain almost stable.

Multidimensional poverty rates in all regions decreased in this period (see Graph 5). In particular, enormous poverty reductions were noticed in TRB1 (by 34.8 percentage points), TRA1 (by 26.5 points), TR42 (by 24.4 points), TRC1 (by 23.7 points), and TR72 (by 23.2 points).

Profile of People in Poverty

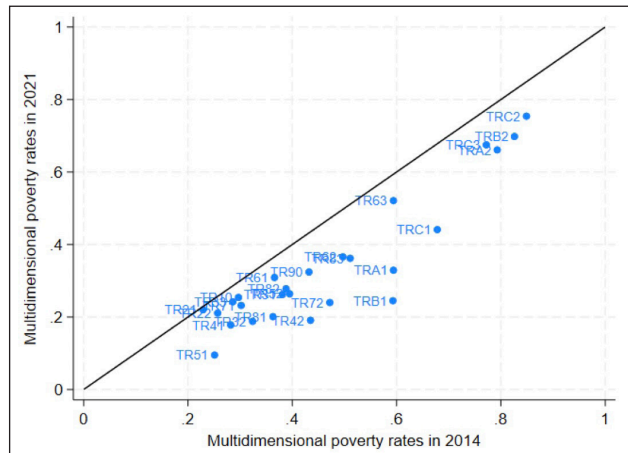
The study also examines the characteristics of individuals living in poverty in terms of gender, age, education level, household size, homeownership, employment,

and social assistance status. For this purpose, the survey participants of SILC 2021 are analyzed. The variables are chosen depending on the existing literature on poverty-related factors and the availability of relevant data.



Graph 4. Subjective poverty rates in 2014 vs. 2021

Source: Author’s own estimates.



Graph 5. Multidimensional poverty ratios in 2014 vs. 2021

Source: Author's own estimates.

According to Table 7, poverty rates among men and women are more or less the same in all types of poverty. However, this finding may result from that intra-household inequalities are not incorporated into the analysis here. Some previous studies argue that as their bargaining power in households tends to be lower than men, women are more vulnerable to poverty (e.g., Özar, Kutlu, & Mülayim, 2022). For instance, female members of a non-poor household may still suffer from poverty, highlighting the limitations of household-level poverty assessments.

The relationship between age and poverty varies across different poverty measures. As age increases, absolute and subjective poverty rates fall. This finding aligns with the OECD (2008) report stating that older groups' poverty risks declined thanks to the upward trend in old-age income security, while younger individuals became more vulnerable due to the decline in the benefits towards the non-elderly population. On the other hand, the lowest rates of multidimensional poverty are found among the middle age groups. This result can be explained by the fact that younger populations tend to experience higher monetary poverty, while older individuals are more likely to be disadvantaged in education and health dimensions.

Moreover, education emerges as a key factor in reducing the risks for all types of poverty. As education level increases, the poverty rates enormously fall. Poverty rates also vary across different-sized households. Households composed of five or more members exhibit much higher poverty rates than less populated households. This finding supports the previous studies associating a higher household size or household dependency with a greater poverty risk (e.g., Crettaz, 2011; Acar, 2014).

The tenure status of the dwelling also matters. Individuals residing in employer-provided lodging experience lower

poverty risks, suggesting that stable employment with housing benefits serves as an effective poverty alleviation mechanism. In contrast, households that do not own property but live in rent-free accommodations exhibit the highest poverty rates. This pattern suggests that many of these households receive housing assistance from relatives or the government, indicating pre-existing financial hardship. Homeownership is associated with lower absolute and subjective poverty rates compared to tenancy; however, homeowners exhibit slightly higher multidimensional poverty rates than tenants. This discrepancy may be explained by rural-urban differences in homeownership patterns. Approximately 60% of households in Türkiye are homeowners⁹, with homeownership being significantly more prevalent in rural areas. Given that rural areas tend to have lower access to education, healthcare, and infrastructure, homeowners may experience higher multidimensional poverty despite their relative economic stability in monetary terms.

As for employment status, individuals looking for a job have the highest rates of poverty in all estimates, reinforcing the argument that employment is a crucial pathway out of poverty as suggested by Minsky (2013). However, poverty is not exclusively limited to the unemployed; at least 10% of the working population experiences monetary poverty, while 27% of employed individuals are classified as multidimensionally poor. This finding suggests that while having a job is necessary, it is not always sufficient to escape poverty, highlighting the importance of in-work poverty¹⁰.

Once the beneficiaries of social allowances are examined, it is observed that people getting in-kind social allowances are more likely to be poor than those getting cash. Only 40% and 49% of the beneficiaries of cash and in-kind social allowances, respectively, are identified poor by TurkStat's line. On the other hand, nearly all recipients fall below the TÜRK-İŞ' poverty line, indicating that thousands of households with incomes above the updated TurkStat poverty line but below the TÜRK-İŞ' poverty line rely on social assistance. In addition, 80 percent of the beneficiaries are subjectively considered poor, reporting a subsistence level exceeding their income. In other words, 20 percent of the beneficiaries receive social assistance despite considering their

⁹ <https://nip.tuik.gov.tr/?value=KonutIstatistikleri>

¹⁰ Indeed, ILOSTAT (2019) states that one-fifth of the working population of the world was living in households with a daily per capita income under 3.1\$ (PPP) in 2018.

¹¹ This table presents the profile of the people in poverty among the survey participants of the SILC 2021. Since population weights are not employed, poverty rates are slightly different than those across the whole country.

Table 7. Profile of the people in poverty¹¹

Category	Absolute poverty rate (Turkstat) %	Absolute poverty rate (TÜRK-İŞ) %	Subjective poverty rate %	Multidimensional poverty rate %
<i>Gender</i>				
Male	16.14	76.59	65.63	33.45
Female	16.78	77.13	65.61	34.60
<i>Age</i>				
<15	25.21	85.15	73.72	37.85
15-30	19.42	81.00	66.27	36.45
31-45	15.15	74.22	67.93	27.45
46-60	11.10	70.11	59.99	31.68
>60	6.43	69.36	55.30	36.85
<i>Average years of schooling among household members over 14-year-old</i>				
0-4 years	27.75	88.80	70.80	64.10
5-8 years	20.55	87.94	68.22	41.44
9-12 years	6.54	73.14	62.92	8.65
13-16 years	1.82	36.27	55.09	1.78
>16 years	0.48	11.70	45.28	0.40
<i>Household size</i>				
1	6.57	49.88	68.55	24.67
2	4.52	60.30	61.67	24.93
3	5.98	63.39	61.06	22.05
4	10.19	76.95	65.51	21.52
5	18.85	87.95	67.64	34.97
≥6	41.68	96.41	70.47	67.29
<i>Tenure status of dwelling</i>				
Owner	14.70	74.42	59.78	34.38
Tenant	18.85	78.89	76.55	32.25
Lodging	2.16	55.85	61.33	8.81
Not owner but free accommodation	20.77	85.08	71.20	37.80
<i>Employment status</i>				
Working	10.18	66.13	59.23	27.12
Looking for a job	28.09	88.02	73.06	52.40
Retired/cannot work	9.19	68.62	57.73	36.58
Other inactive	20.61	83.90	70.33	35.99
<i>Social assistance beneficiary</i>				
Social allowances in cash	40.11	97.13	80.13	63.01
Social allowances in kind	49.39	98.62	81.02	77.44

Source: Author's own estimates.

income sufficient, indicating a 20 percent leakage rate in the distribution of social benefits. Similarly, 37 percent of cash beneficiaries are not in multidimensional poverty, further raising concerns about the efficiency of social aid allocation.

These high leakage rates suggest inefficiencies in the allocation of social assistance funds. However, it is also possible that some households have successfully escaped poverty due to social assistance. The issue of leakage, wherein social aid is distributed to individuals who may

not be truly in need, has been identified in previous studies as a challenge to poverty alleviation efforts in Türkiye. For a critical evaluation of the Social Aid and Solidarity Promotion Fund in Türkiye, Şenses (1999) and İlman & Tekeli (2016) can be examined¹². Additionally,

¹² Şenses (1999) assessed the Social Aid and Solidarity Promotion Fund (SYDTF) established in 1986 in Türkiye. He criticized the fund because it was applied without identifying the people in poverty by using a poverty line. Instead of an objective criteria, the fund was allocated to the people depending on the subjective identification by local authorities. He argued that even though the leakage ratio of the fund could not be estimated due to lack of data, the leakages were

as Şenses (2008) argues, a further concern regarding cash and in-kind assistance programs is their potential to create long-term dependency. Instead of facilitating the integration of individuals living in poverty into the labor market, excessive reliance on social benefits may contribute to the development of a dependency culture, ultimately hindering economic and social inclusion.

CONCLUSION

This study conducts a comparative analysis of poverty measurement to examine if theoretical and empirical definitions of poverty yield significantly different outcomes by taking Türkiye as a case study. The findings reveal that absolute and multidimensional poverty rates considerably decreased over time, but the estimations based on the latest surveys capture a rise which can be explained by the pandemic, the recent decrease in GDP per capita (\$), and rising inflation rates. In contrast, subjective and relative poverty remained almost stable during the period. Although relative poverty is the officially recognized measure in Türkiye, findings provide strong evidence that relative poverty measures fail to accurately track the changes in poverty during the times of rapid movements in the living standards. This limitation may extend to other developing countries as well.

Absolute poverty measures in the study have some limitations. The updated absolute poverty lines of TurkStat are parsimonious lines and estimations using them most probably suffer from underestimation as expected in the first place. Therefore, they can be interpreted as extreme poverty rates. Moreover, the very high and unchanged rates of subjective poverty reinforce the concerns about the unreliability of self-assessed poverty measures. Absolute poverty estimates using the lines of TÜRK-İŞ are found even higher than the subjective lines, implying to a potential overestimation. Multidimensional poverty rates are found somewhere between these possibly underestimated and overestimated rates. Besides, given that the multidimensional approach takes into account not only monetary but also non-monetary aspects of poverty, it can be the most appropriate estimate in the current study. Additionally, despite the variations in poverty rates, regional rankings and pairwise correlations show that absolutistic and multidimensional poverty concepts largely detect the same regions as poorer or less poor. This finding suggests that, while poverty rates

vary depending on the measurement approach, the spatial distribution of poverty remains largely consistent across methodologies.

The sub-national analysis reveals a notable clustering of poverty, with South-eastern Anatolia and Eastern Anatolia consistently exhibiting the highest poverty ratios no matter which methodology is executed. These findings are in line with the previous studies, such as Karadağ and Saraçoğlu (2015), Limanlı (2016), and Karahasan and Bilgel (2021). Given the severity of poverty in these areas, these regions need more attention for targeted poverty alleviation strategies. The regional concentration of poverty underscores the necessity of developing region-specific policies to address localized socioeconomic challenges (Şenses, 2008). On the other hand, notable reductions in poverty rates are observed in a few regions, such as TRB1, TRA1, TR42, TRC1, and TR72. Future studies can examine how these regions managed to reduce their poverty rates, providing lessons for other regions.

Finally, the profile of the people in poverty reveals that all types of poverty rates considerably fall as the education levels of individuals increase. While the elderly population exhibits the lowest rates of monetary poverty, middle age groups are found as the most robust group against multidimensional poverty. Furthermore, households with five or more members, unemployed individuals, and recipients of social benefits experience remarkably high rates of poverty across all definitions.

In conclusion, this study suggests that policymakers need to evaluate various types of poverty in policy making processes given the sensitivity of measures to their respective definitions. An elaborative national poverty measurement strategy would serve as a vital guide to eradicate poverty. To this end, the absolute poverty line of TurkStat can be updated considering the basic needs at present. Also, an official MPI tailored to the socioeconomic conditions of the country can be generated similar to the one in this study. As Şenses (2002) argues, the problems of identifying and profiling the poor are just the tip of the iceberg. Further research is essential to broaden our understanding of regional imbalances and the underlying reasons of poverty, enabling the development of effective poverty alleviation policies.

predicted to be very large in size, resulting from misuse, partisanship, and favouritism. Likewise, Ilman and Tekeli (2016) empirically examined the fund and concluded that the allocation of these social expenditures were partly shaped by political interests.

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APPENDIX

Table A.1 Summary statistics of monthly equivalized income (SILC)

Survey	Number of households	Mean	Std. Dev.	Min.	Max.
2014	22,740	1,257	1,129	7	25,856
2015	22,763	1,426	1,261	27	18,116
2016	22,441	1,658	1,643	4	38,923
2017	22,869	1,848	1,989	18	51,414
2018	24,068	2,058	2,301	10	75,240
2019	24,924	2,420	2,482	17	73,273
2020	25,706	2,779	2,901	14	76,203
2021	26,289	3,141	3,339	5	202,854

Table A.2 Updated poverty lines of TurkStat (per adult equivalent) in TL

Region	2013	2014	2015	2016	2017	2018	2019	2020
TR10	585	639	690	740	820	947	1,086	1,245
TR21	532	581	621	668	741	860	994	1,126
TR22	531	581	629	681	761	878	1,017	1,179
TR31	542	594	643	698	781	912	1,058	1,219
TR32	516	561	607	656	734	866	1,011	1,150
TR33	512	556	602	651	722	846	983	1,125
TR41	528	573	616	667	739	857	989	1,144
TR42	535	580	625	673	747	871	1,000	1,152
TR51	547	598	644	698	772	887	997	1,131
TR52	497	538	577	622	698	817	945	1,075
TR61	528	575	617	666	740	869	1,006	1,154
TR62	515	556	598	654	731	858	1,001	1,144
TR63	494	536	575	619	693	819	945	1,071
TR71	502	546	583	627	702	812	943	1,082
TR72	503	548	593	638	714	832	963	1,106
TR81	511	556	598	648	729	855	984	1,121
TR82	504	548	589	635	708	825	958	1,066
TR83	503	548	590	636	710	833	965	1,115
TR90	537	583	622	673	752	886	1,030	1,176
TRA1	514	560	592	636	709	829	964	1,121
TRA2	503	547	584	631	706	824	966	1,075
TRB1	505	551	586	633	705	829	954	1,071
TRB2	511	554	592	635	712	833	980	1,116
TRC1	507	553	599	645	728	852	986	1,135
TRC2	501	545	589	637	711	831	978	1,133
TRC3	477	513	552	596	665	780	908	1,039

Table A.3 Poverty lines of TÜRK-İŞ (per adult equivalent) in TL

Region	2013	2014	2015	2016	2017	2018	2019	2020
TR10	1,327	1,514	1,728	1,784	1,976	2,318	2,773	3,268
TR21	1,212	1,366	1,556	1,606	1,769	2,078	2,494	2,903
TR22	1,198	1,358	1,559	1,615	1,744	2,037	2,447	2,890
TR31	1,238	1,407	1,612	1,671	1,878	2,214	2,670	3,129
TR32	1,181	1,329	1,537	1,592	1,756	2,071	2,518	2,928
TR33	1,145	1,287	1,483	1,534	1,688	1,985	2,408	2,797
TR41	1,184	1,333	1,522	1,578	1,756	2,063	2,483	2,932
TR42	1,217	1,371	1,568	1,619	1,793	2,099	2,515	2,925
TR51	1,240	1,414	1,616	1,683	1,836	2,136	2,501	2,905
TR52	1,133	1,269	1,449	1,496	1,705	1,985	2,388	2,769
TR61	1,195	1,348	1,535	1,588	1,744	2,057	2,493	2,897
TR62	1,182	1,325	1,519	1,585	1,746	2,044	2,480	2,888
TR63	1,124	1,258	1,437	1,486	1,622	1,911	2,298	2,650
TR71	1,132	1,270	1,447	1,492	1,646	1,921	2,321	2,684
TR72	1,141	1,285	1,473	1,522	1,673	1,957	2,350	2,733
TR81	1,163	1,320	1,510	1,564	1,719	2,022	2,426	2,819
TR82	1,141	1,290	1,478	1,533	1,688	1,978	2,390	2,760
TR83	1,145	1,297	1,483	1,537	1,708	2,004	2,414	2,810
TR90	1,207	1,360	1,548	1,606	1,762	2,072	2,514	2,929
TRA1	1,162	1,305	1,471	1,523	1,691	1,988	2,393	2,797
TRA2	1,126	1,264	1,435	1,483	1,610	1,887	2,283	2,646
TRB1	1,157	1,305	1,478	1,528	1,679	1,968	2,348	2,696
TRB2	1,147	1,291	1,470	1,517	1,639	1,935	2,335	2,722
TRC1	1,143	1,287	1,479	1,532	1,681	1,965	2,361	2,750
TRC2	1,130	1,274	1,453	1,503	1,651	1,946	2,363	2,751
TRC3	1,100	1,225	1,401	1,451	1,612	1,920	2,309	2,714

Table A.4 Summary of MPI indicators

Indicator	Weight	Percentage of people deprived								
		2013	2014	2015	2016	2017	2018	2019	2020	2021
<i>Education</i>										
E1	0.1	62.02	61.69	58.93	57.97	56.56	54.71	53.11	50.33	47.75
E2	0.1	27.77	28.29	27.41	26.35	24.95	23.79	22.84	21.46	20.00
<i>Health</i>										
H1	0.07	44.85	45.46	50.12	39.35	45.38	47.77	47.47	42.35	43.07
H2	0.07	29.78	27.56	23.77	15.77	14.10	15.01	14.97	8.48	19.30
H3	0.07	46.09	33.64	35.81	37.74	33.97	31.95	33.56	37.29	38.32

<u>Housing conditions</u>										
HC1	0.03	39.73	37.18	39.01	38.09	36.62	35.91	36.88	34.72	33.89
HC2	0.03	9.24	7.97	6.82	5.49	4.80	4.28	3.99	3.79	3.41
HC3	0.03	27.67	28.81	27.40	25.99	24.84	23.15	22.36	21.67	14.42
HC4	0.03	24.28	24.38	24.19	24.51	22.94	24.83	26.10	22.60	23.40
HC5	0.03	9.71	10.57	11.26	10.66	11.33	11.18	10.87	9.79	9.98
HC6	0.03	42.21	38.66	43.04	42.20	40.77	39.39	39.31	36.73	34.28
<u>Material deprivation</u>										
M1	0.04	17.20	14.22	13.15	10.42	7.58	6.12	6.11	6.17	6.50
M2	0.04	8.56	9.03	9.06	8.60	7.84	7.05	9.18	7.79	8.89
M3	0.04	33.64	31.02	28.52	24.31	21.48	18.16	22.47	18.40	19.52
M4	0.04	22.46	21.70	21.76	18.90	17.80	15.31	19.42	13.89	16.98
M5	0.04	48.99	29.05	32.64	34.43	31.74	30.17	29.69	32.23	33.43
<u>Social Exclusion</u>										
S1	0.03	12.11	12.69	13.76	13.62	14.98	14.64	17.66	20.70	17.92
S2	0.03	41.43	38.61	36.40	34.14	33.11	32.86	32.46	28.06	28.94
S3	0.03	35.98	24.40	22.47	14.04	12.11	12.82	13.19	13.66	15.28
S4	0.03	38.08	27.21	29.61	20.29	16.98	17.54	19.58	18.14	19.82
S5	0.03	32.40	28.25	25.39	18.06	10.08	7.20	6.53	6.35	4.80
S6	0.03	24.59	24.01	24.39	23.78	23.13	22.89	23.45	23.59	23.31

Note: Deprived refers to the individuals whose indicator values are below the threshold.

Table A.5 Contribution of each dimension (%)

Dimension	2014	2015	2016	2017	2018	2019	2020	2021
Education	.29	.29	.31	.32	.31	.30	.31	.29
Health	.23	.23	.22	.23	.24	.24	.23	.25
Housing conditions	.15	.16	.16	.17	.17	.16	.16	.15
Material deprivation	.15	.15	.15	.14	.14	.15	.14	.15
Social exclusion	.18	.17	.16	.15	.15	.15	.16	.16

Table A.6 Multidimensional poverty with various poverty cut-offs

Year	H (%)			M (%)		
	1/4	1/3	1/2	1/4	1/3	1/2
2014	54.7 (.004)	43.2 (.005)	19.8 (.004)	25.1 (.002)	21.8 (.003)	12.3 (.003)
2015	55.1 (.004)	43.5 (.005)	19.4 (.004)	25 (.002)	21.6 (.003)	11.9 (.003)
2016	50.3 (.005)	38.6 (.005)	15.7 (.004)	22 (.002)	18.6 (.002)	9.4 (.002)
2017	47.6 (.005)	35.6 (.005)	13 (.004)	20.3 (.002)	16.9 (.002)	7.8 (.002)
2018	45.9 (.005)	33.9 (.005)	12.2 (.003)	19.4 (.002)	16 (.002)	7.2 (.002)
2019	47 (.004)	34.9 (.004)	12.3 (.003)	19.9 (.002)	16.4 (.002)	7.4 (.002)
2020	43 (.004)	31.6 (.004)	10.5 (.003)	17.9 (.002)	14.6 (.002)	6.1 (.002)
2021	43.8 (.004)	31.5 (.004)	11 (.003)	18.2 (.002)	14.6 (.002)	6.5 (.002)

Note: *H* denotes the headcount ratio, and *M* presents the adjusted headcount ratio (i.e., MPI). Standard errors are given in parentheses.