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TÜRKİYE POVERTY AND EQUITY ASSESSMENT

Türkiye Poverty and Equity Assessment

January 2025



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Acknowledgments

Türkiye Poverty and Equity Assessment is a product of the World Bank Türkiye Country Office and received strategic guidance from J. Humberto Lopez, Country Director for Türkiye. The core team was led by Cigdem Celik (Economist, Poverty and Equity) and Samuel Freije Rodriguez (Lead Economist, Poverty and Equity), and included Meliz Tyurkileri (Consultant, Poverty and Equity) and Santiago Garriga (Consultant, Poverty and Equity). The team expresses its special gratitude to Elizaveta Perova (Senior Economist, Poverty and Equity) for her contributions in addressing comments and feedback to the text from government counterparts.

The team is grateful to Salman Zaidi (Practice Manager, Poverty and Equity), Hans Anand Beck (Practice Manager, Economic Policy), Heba Elgazzar (Program Leader, Social Protection), Elizaveta Perova (Senior Economist, Poverty and Equity), Claire Hollweg (Program Leader, Prosperity), Utku Ozmen (Senior Economist, Economic Policy), Shomikho Raha (Senior Governance and Public Sector Specialist, Institutions), Korhan Yazgan (Operations Officer, Türkiye Country Unit) for their inputs and advice; to Ambar Narayan (Practice Manager, Poverty and Equity), Metin Nebiler (Senior Economist, Poverty and Equity) and Ana Maria Munoz Boudet (Lead Economist, Poverty and Equity) for their peer review; and Berkin Ilhan Demirsoy for administrative support.

The team is equally grateful to colleagues from the Ministry of Finance and Treasury, General Directorate of Economic Programs and Research, Ministry of Family and Social Services, Central Bank of the Republic of Türkiye and Turkish Statistical Institute for their feedback and technical insights.

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Introduction and Summary

The main purpose of this poverty assessment is to document the evolution of monetary poverty in Türkiye over the past two decades, identify the main drivers behind poverty reduction, and describe the poor population in the country and their changing situation over time as they try to emerge from poverty. The poverty assessment also makes linkages to changes in income distribution and shared prosperity trends over time and includes a special section on poverty dynamics that exploits panel data, describing unconditional probabilities of entering and escaping poverty over time, and the characteristics associated with these moves. It is intended to be a brief and descriptive repository of information for researchers and policy makers alike, and build on the findings of the recently published World Bank report entitled *Prosperous Places: Advancing Spatially Inclusive Development in Türkiye*¹. The findings are envisaged to inform policy decisions, support evidence-based policy making and improve the poverty and inequality impact of policies and programs.

The poverty assessment is based on the World Bank Group Poverty and Equity Global Practice's Poverty Assessment 2.0 Guidance note. It includes dedicated sections on poverty, inequality and shared prosperity. Special emphasis is placed on identifying the drivers of changes in poverty and inequality, and the profiles of the poor in the country. Cross-country benchmarking exercises are also conducted to compare the trends in Türkiye across comparator countries. Also as advised by the guidance note, the poverty assessment includes a deep dive section on household income mobility. This section aims to examine household mobility and the time dimension of poverty and put forward a preliminary exploration to understand poverty dynamics in the case of Türkiye. While static measures of poverty are widely studied in the Türkiye context, they do not provide enough evidence to answer questions related to mobility and equality of opportunity as they do not enable us to investigate the time dimension of poverty.

To that extent, this special section presents the evolution of poverty and chronic poverty in time and evaluates the dynamics of the entries into and exits from poverty. Finally, also exploiting the panel modules of the Survey of Income and Living Conditions (SILC), the study proposes for the first time, a bespoke middle-class threshold for Türkiye that identifies individuals that are “vulnerable to poverty”, associated with a set ex-ante probability of being poor in the next period.

Recent literature on poverty, inequality and mobility in Türkiye

Over the past two decades, many studies have been published on the trajectory and drivers of poverty, inequality, and mobility in Türkiye. Türkiye Joint Poverty Assessment (2005), conducted by the World Bank and the State Institute of Statistics (predecessor to TÜİK - Turkish Statistical Institute) reviews macroeconomic developments between 1994 and 2002, presents consumption-based poverty trends and provides an extensive overview of the poverty profiles of the early 2000s. Although several poverty lines are used for the international comparison, the report also introduces a new methodology to identify the national poverty line containing both food and non-food components. One of the main findings of the report is that Türkiye was not fully able to benefit from the poverty-reducing impact of previous growth years because of the distribution of the gains among different income groups.

Aran et al. (2010) investigate changes in poverty and consumption inequality over the 2003-2006 period. Household Budget Survey (HBS) data is used for the study, and a national poverty line, which includes food and non-food components, is calculated to define a poverty threshold. The results show a rapid decline in consumption-based poverty between 2003 and 2006 (from 28.1 percent to 18.3 percent), with a more pronounced reduction in urban areas. Although growth was the main driver of poverty reduction in these years, the redistribution component also played a substantial role, especially for urban areas. Consumption-based Gini index declined from 34.34 to 30.95 over the study period, but only a slight reduction was seen in rural areas.

In another World Bank working paper (Azavedo and Atamanov, 2014) the poverty rate trajectory between 2002 and 2011 is depicted with emphasis on the drivers of poverty reduction. The authors find a significant reduction in extreme poverty and moderate poverty rates in Türkiye (measured at \$2.5 and \$5.5/capita per day in 2005 PPP) during this period, primarily driven by economic growth. The authors also report a pattern of upward class transitions between different income groups, where 40 percent of the poor moved to the vulnerable group, while the share of the middle class expanded by 20 percentage points.

Şeker and Jenkins (2015) report poverty trends in Türkiye between 2003 and 2012, placing specific emphasis on issues related to statistical inference, choice of the poverty line and poverty measure. They use consumption-based equalized household welfare aggregate and two different absolute poverty lines for the study and report a rapid reduction in poverty between 2003 and 2009 and a moderate reduction in poverty thereafter. They decompose the poverty trends into growth and redistribution components and argue that the decline in the poverty rate was mainly driven by economic growth rather than distributional changes or changes in population composition.

Another study by Şeker and Dayıoğlu (2015) examines mobility in and out of poverty and its correlates for the 2005-2008 period using SILC panel data. Using equivalized household income and relative poverty lines, authors find about a quarter of the poor to be “persistently poor”, the majority of which are children.

Tekgüc (2018) uses SILC 2006 – 2015 cross section datasets to investigate the effects of social assistance on poverty and income inequality in Türkiye. He shows that pensions constitute the bulk of the public transfers to households, and despite its modest amounts, social assistance reduces poverty and has a marginal impact on income inequality, although at a greater rate than other income sources.

Tamkoç and Torul (2020) investigate the evolution of income, consumption and wage inequalities in Türkiye for the 2002-2016 period, using HBS and SILC datasets. They find a downward trend over time in income, consumption and wage inequalities during this period, albeit at different rates. Their findings align well with the significant decline in informal employment, the increase in social protection spending, and the rapid growth of the real minimum wages impacting a significant portion of wage earners at the lower end of the wage distribution².

Güncavdı and Bayar (2021) examine the trend in income inequality between 2002 and 2013 using HBS data and assess the income sources behind the changes. They find significant improvements in income inequality as measured by the Gini coefficient between 2002 and 2007, mainly owing to economic reforms made during this period that resulted in high economic growth, declining inflation and stability in exchange rates. However, the pace of this improvement is found to have slowed down in the post-2007 period.

The World Bank’s Türkiye Public Finance Review (2023) provides an overview of the Social Assistance System in Türkiye, its beneficiary incidence, coverage and adequacy rates and the system’s effect on reducing poverty. The report finds the beneficiary incidence of the programs to be higher than comparators, with 69 percent of beneficiaries coming from the poorest quintile. The coverage rate, standing at 61.3 percent, is found to be moderate but the authors identify some for improvement on the adequacy of social assistance transfers. The impact of the social assistance transfers in Türkiye is evaluated as modest, helping reduce poverty by 1.4 percentage points in absolute terms in 2018.

This poverty assessment contributes to the previous literature in several ways. First, the study uses SILC data for a longer and more recent period (it makes use of all available SILC datasets from 2005 until 2021). Second, it uses a consistent welfare aggregate and poverty line for the measurement of poverty rates in Türkiye over time, which is different from previous studies, and explains the consequences of using different aggregates and lines, as described in the methodological annex. Third, it presents a complete analysis of poverty and inequality by different demographic groups and income sources which deepens the understanding of trends in a manner and detail not seen in previous studies. And finally, it includes a joint assessment of poverty, inequality, and

mobility in the country in one reference document, something none of the previous studies has done. For policymakers and general audiences, the assessment offers an integrated account of Türkiye's progress and challenges in poverty and inclusion that may be of relevance for both economic analysis and policy design.

Summary of main findings

The findings of this study reveal that Türkiye has made considerable progress in poverty reduction over time. Not only the poverty rates have halved from 2007 to 2020 (from over 20 percent to 9.84 percent), but also chronic poverty in the country declined at similar rates, falling from 24 percent to 10 percent in just over a decade. In line with the fall in the chronic poverty, the rates of the vulnerability to poverty also declined from 25 to 17 percent.

The main driving force behind the poverty reduction was the growth in incomes, as opposed to redistribution of welfare. In particular, the growth of incomes from labor significantly helped explain most of the poverty alleviation in the country. While labor incomes grew, they did so in a progressive way, especially between the years 2009 and 2016. The labor incomes of the poor grew at higher rates than the rich, indicating increased shared prosperity and inclusive growth during this period. There was also convergence between the income levels of the less and more developed regions of the country, and the gap between the poverty rates of these regions narrowed over time. During 2009 and 2016 pension incomes also contributed significantly to poverty alleviation and the growth of the pension income was at a higher rate for the poorer segments of the society compared to the rich - even though the rich had higher shares of the total pension transfers. Non-pension public transfers also contributed to poverty reduction, but at smaller rates of around 1 percent of total poverty alleviation.

The convergence in incomes and shared prosperity could also be observed in the inequality indicators until mid-2010s. While the Gini or the GE(0) index did not change statistically significantly over time in year-on-year terms, the inequality indices were statistically lower at 2013, compared to their levels seen at the baseline (2007) and endlines (2019). The quantile ratios, in particular the Q(50,10) declined until 2016, and the share of between-group inequalities reduced in size. Subgroup income change – in other words, the convergence between the incomes of the more and the less wealthy was the main determinant of the change in inequality, which would have decreased headline inequality levels at the national level in the absence of other factors affecting inequality (such as demographic shifts or within group inequality changes). These developments were also mainly also driven by the growth of labor incomes - the most inequality reducing component of household income. Social Assistance also had an inequality reducing effect during this time and this effect increased over time. Pension incomes, on the other hand, had a disequalizing impact on the income distribution, as a big share of the pension transfers went to the top deciles of the distribution.

While rates of chronic poverty declined over time, the likelihood of escaping poverty after one and two-year poverty spells also increased at gradual rates, but large enough to make a statistical difference over time when comparing changes over the course of a decade. Similarly, the likelihood of entering poverty after one or two years of being non-poor declined gradually over time until 2017.

In terms of demographic profiles of the poor, poverty rates were the highest among children aged 14 and less. Children also comprised 43 percent of the people living below the poverty line. Poverty rates were below 3 percent for the population aged 60+ and this group was the best performer in reducing its poverty rates across different time periods. Larger households consisting of more than four members had higher poverty rates compared to smaller households (at rates twice the national average) and were more likely to spend longer consecutive years in poverty. This group also made up over 80 percent of the total poor population. Households with heads employed in industry and services sectors had a lower likelihood of being poor and being in poverty for more than one consecutive year. Households with heads employed in construction and agriculture were more vulnerable, with higher poverty rates over time. Households with unemployed heads had

the highest poverty rates across all groups and also had the worst performance in reducing poverty rates over time. Levels of education were highly correlated with welfare. Those with tertiary education or more had just over 1 percent poverty rate and the share of individuals with tertiary education among those that experienced 4-year poverty spells was zero percent across the years.

Türkiye's performance during 2020, in terms of mitigating the negative consequences of the Covid-19 pandemic was also noteworthy. While poverty rate rose in the majority of the world's countries during 2020, the poverty rates remained unchanged in Türkiye. The main reason for this was the considerable increase in public transfers. While labor incomes declined during this period, the size of the non-pension and pension public transfers increased considerably by 63 percent and 16 percent in real terms respectively. The increases in the size of the public transfers were also progressive, benefiting the bottom deciles at greater rates. These increases mitigated the effect of falling labor and business incomes, and the per capita household income growth averaged 0.4 percent in 2020.

While a comparison of poverty rates of men and women did not show statistical differences over time on average, a closer look at the decomposition of poverty changes in the country by income source revealed that the increase in women's incomes and women's employment rates made a positive contribution to poverty reduction both during 2009-2016 and 2016-2020. This, in particular during the 2016-2020 period, helped mitigate the increases in poverty rates caused by a fall in men's employment and labor incomes. The preservation of this trend and increasing women's participation in the labor force will be crucial to ensure that the trends in poverty reduction continues in the future.

Despite this very important and notable progress, challenges remain. In particular, the economic slowdown and macroeconomic developments during the 2018-2019 period led to a reversal in the reduction of the poverty rates. The reduction in chronic poverty reversed in the 2016-2019 time period, and the probabilities of exiting poverty reversed its upward trajectory starting from the year 2016. Between 2016 and 2019, per capita household incomes grew by 5 percent on average but the growth rate was much higher for the top 40 percent. Conversely, per capita income of the bottom 20 percent declined. Labor income growth also stalled during this period, and there was no particular trend in the growth of non-pension public transfers across different income segments. Finally, pension incomes rose by about 8 percent in real terms during this period, but the increase was positive for only the top of the distribution. The top 10 percent enjoyed a 50 percent increase in their pension income in real terms.

A closer look at the employee compensation trends of the national accounts data also corroborates the trends in the changes in household incomes. The pace of increase in the compensation per employee across all sectors, apart from industry, declined during 2016-2020, compared with the 2009-2016 period. While per capita national income grew on average terms during this period, the gains were disproportionately on the "net operating surplus" side, which was generally enjoyed by the income earners at the top of the income distribution. This was evidenced by the share of falling employee compensation over time within the factorial distribution of national income.

Based on the distribution of household expenditure in 2019, the impacts of inflation on the bottom and the top of the distribution seems to be at similar levels, although through different channels. While the bottom of the income distribution is disproportionately affected by rising food prices, the top 10 percent, having a higher share of transportation expenditures within their household budget, were affected at similar rates due to rising fuel and vehicle prices. However, due to the fact that the Household Budget Surveys from 2020 and 2021 were not collected due to restrictions imposed by the Covid-19 pandemic, it is not clear how the expenditure distribution of different household types changed during the pandemic. It is therefore, not entirely possible to make conjectures about the distributional impact of inflation during this period even though previous research finds a burden of inflation for the poor households, in particular driven by food price increases in 2013, 2015 and 2019.

Finally, given the major developments that took place after 2020 such as the tragic February 2023 earthquake, our projections show that poverty rates can rise up to 12.4 percent by 2024, in the case of a 2 standard deviation annual increase in inequality measured by the Gini coefficient (see Figure I.4). This highlights the importance of tracking inequality outcomes closely, ensuring progressive growth and prioritizing inequality reducing policies in the near future in order to sustain the continued poverty reduction attained since mid-2000s.

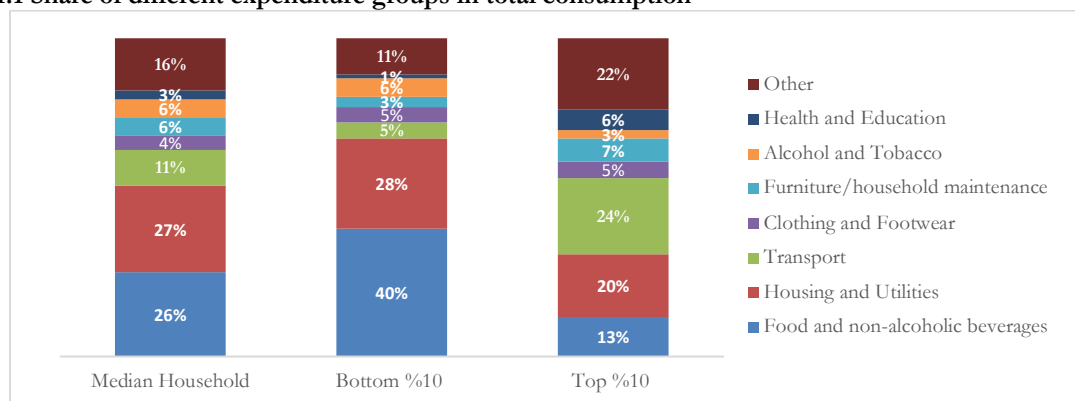
Post-2020: Potential Impacts of Inflation, Earthquake

At the time of writing this report, the most recently available microdata on household incomes is the SILC 2021 survey, with reference incomes from the year 2020. Since 2020, several developments that took place such as rising inflation rates, and February 2023 earthquake might have some implications on the income distribution and the trajectory of poverty rates. We briefly discuss these developments and present possible projections in poverty rates under different scenarios, based on various assumptions between economic growth and household incomes.

The increase in the consumer price inflation has been particularly high in Türkiye, with double digit inflation starting in 2017, and intensifying after 2018 due to exchange rate volatility, and the impacts of the Covid-19 pandemic. In December 2020, the annual rise in the CPI index was at 14.6 percent. The CPI inflation became increasingly higher over the next two years, reaching its peak at 85.5 percent in October 2022. High inflation might have different impacts on the different distributions of the population, depending on the levels of increase in the prices of specific expenditure categories. A previous World Bank study on the uneven burden of inflation across households in Türkiye had found that heterogeneities in expenditures showed a higher burden for the poor during the inflation episodes driven by rapid increases in food prices in 2013, 2015 and 2019³.

We repeat the same exercise using expenditure shares of different deciles from the Household Budget Survey and the CPI levels recorded in 2022. We use average annual increases in CPI rates for different expenditure categories to adjust for the decile-specific inflation rates of different households⁴. Most recently available Household Budget Survey data (for year 2019) shows that food consumption makes up 39 percent of the total expenditure basket of the poor households, whereas this share is 26 percent for the median household and 13 percent for the top 10 percent⁵. Conversely, the top 10 percent allocates about a quarter of its expenditure on transportation, compared to 5 percent of the bottom 10 percent (Figure I.1). In the light of recent increases in CPI inflation, in particular rising food and energy prices, households in Türkiye seem to have been affected by the rising price levels at similar rates.

Figure I.1 Share of different expenditure groups in total consumption



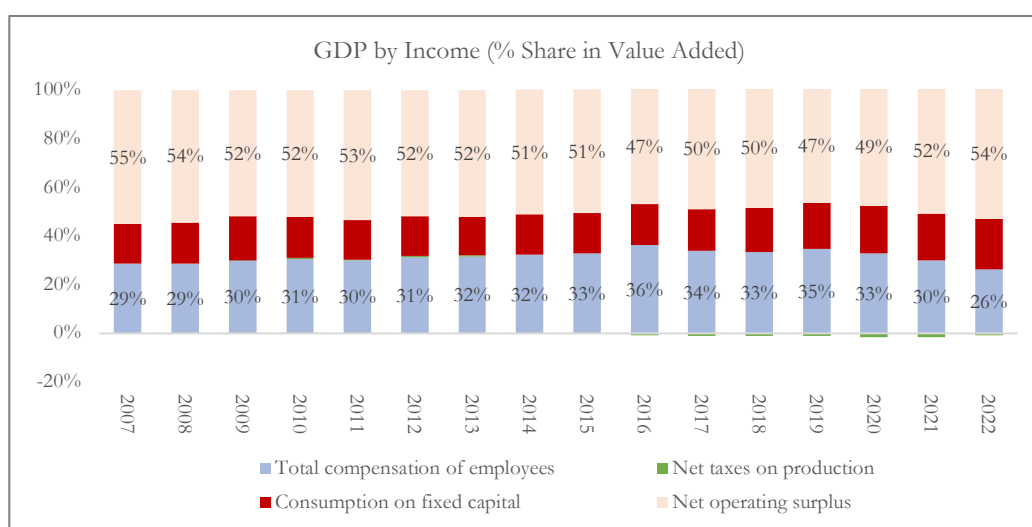
Source: World Bank Staff Calculations using Household Budget Survey 2019

In 2022, the 12-months moving average CPI inflation was 72.3 percent, while food prices rose by 85.7 percent (in 12-months moving average terms) and transportation prices rose by 99.9 percent. As such, the CPI inflation

experienced by the top 10 percent was 73.1 percent based on the specific distribution of consumption in their expenditure basket. This was mainly driven by the rapid increase in transportation prices. The average poor household experienced a similar rate of increase in basket specific inflation with 73.5 percent, mainly caused by the rising food prices. Similarly, the median household experienced a 72.3 percent increase in the price of its consumption basket. The findings were also similar for the year 2021: the decile specific inflation for the top 10, bottom 10 and the median household were 20.0 percent, 19.5 percent and 19.2 percent respectively. A caveat is needed here: the budget distributions shown in figure I.1 correspond to year 2019. If the share of food expenditures among the poor has increased since, and the consumption shares of other groups remain unaltered, then the average inflation of the poor may have surpassed the average inflation of other groups. The currently available data does not permit to substantiate this hypothesis.

While high inflation seems to have impacted the bottom and top of the distribution at similar levels during 2021-2022, (the former because of higher food prices, the latter because of rising fuel and transportation costs) other developments warrant caution with respect to future trajectory of inequality and poverty. One of the findings is related to the share of compensation of workers within the national income. Even though household income microdata fails to fully capture the capital rents, a fuller picture emerges by looking at the National Accounts data. A decomposition of GDP by income sources shows that the share of employee compensation in national income has declined from 36 percent in 2016, to 30 percent in 2021, and 26 percent in 2022, reaching an all-time low. This trend of rising capital gains and falling labor income within the national income is an indication of worsening factor inequality, as the distribution of total income across returns to capital and labor becomes more uneven (Figure I.2).

Figure I.2: The share of employee compensation in National Income



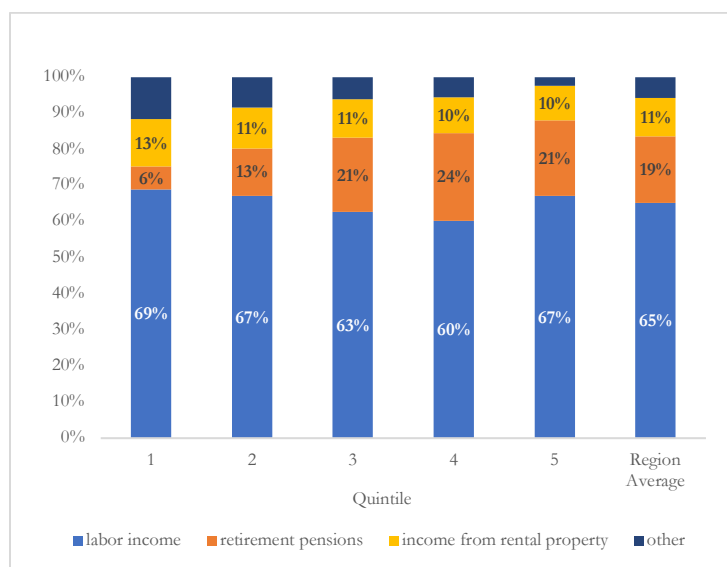
Source: World Bank staff calculations using TUIK National Accounts data

Another development that can possibly increase inequality and poverty rates in the post-2020 period is the tragic earthquakes that took place in Southeastern Anatolia in 2023. On February 6, 2023, Türkiye experienced its worst earthquake since 1939 with tragic human consequence. Two earthquakes of magnitude (Mw) 7.8 and 7.5 occurred nine hours apart on different fault lines in the southern region of Türkiye and northern Syria. The World Bank GRADE assessment released on 27 February 2023 estimated the direct infrastructure damage cost from the earthquakes at \$34.2 billion (4 percent of 2021 GDP). However, this did not measure longer term impacts on human capital and potential growth.

The regions impacted by the earthquake accounted for 11 percent of the national GDP, yet a much higher percentage of the nation's poor. In 2020, the five NUTS2 regions covering the 14 provinces that include the 11 earthquake affected provinces represented 39 percent of Türkiye's poor, while only representing 16.4 percent

of the national population. These regions also had a higher share of children, larger families and more household heads employed in construction and agriculture sectors. Rental incomes (or imputed rents) represented about 13 percent of the incomes of the bottom quintile and about 10 percent of the top quintile. This distribution of income sources in the region was not very different from the national averages (Figure I.3).

Figure I.3: Income shares by Quintiles for the 5 NUTS2 regions affected by the 2023 earthquake



Source: World Bank staff calculations using SILC 2021 survey. Income reference years are the previous calendar year.

Given the fact that the demographic and economic characteristics of the region affected by the earthquake define a population more vulnerable to poverty -due to high dependency ratios, low human capital and low labor market participation- than the rest of the population in the country, and that potential dwelling losses due to destruction of buildings will lead to significant income shocks for many families.

The recent evolution the trends in GDP by income, the tragic February 2023 earthquake -or a hypothetical differential impact of inflation across income groups- may signal growing inequality in standards of living following 2020. In order measure how poverty rates may evolve based on the trajectory of inequality rates, we rely on projections to forecast poverty rates in these and subsequent years. These projections are based on assumptions about the relationship between economic growth, as measured by GDP/capita, and household incomes for different groups of the population.

A usual simplifying exercise assumes that all households, rich and poor, experience a household income growth that equals the growth of GDP/capita. This exercise, often called “distributionally neutral”, assumes that income distribution does not change, and that growth helps all household groups the same. Based on this assumption, and the GDP/capita growth projections published on the World Bank March 2023 Macro Poverty Outlook (MPO) report, poverty rates will decline in coming years from 9.84 to 6.23 percent between 2020 and 2024.

However, recent historical experience in Türkiye seems to indicate that neutral distribution is not a valid assumption given recent trends in income distribution. While some workers may be suffering wage losses, others with non-labor incomes may be increasing their real household incomes. Because of these recent forces, it may be necessary to also simulate changes in the inequality to forecast future changes in poverty.

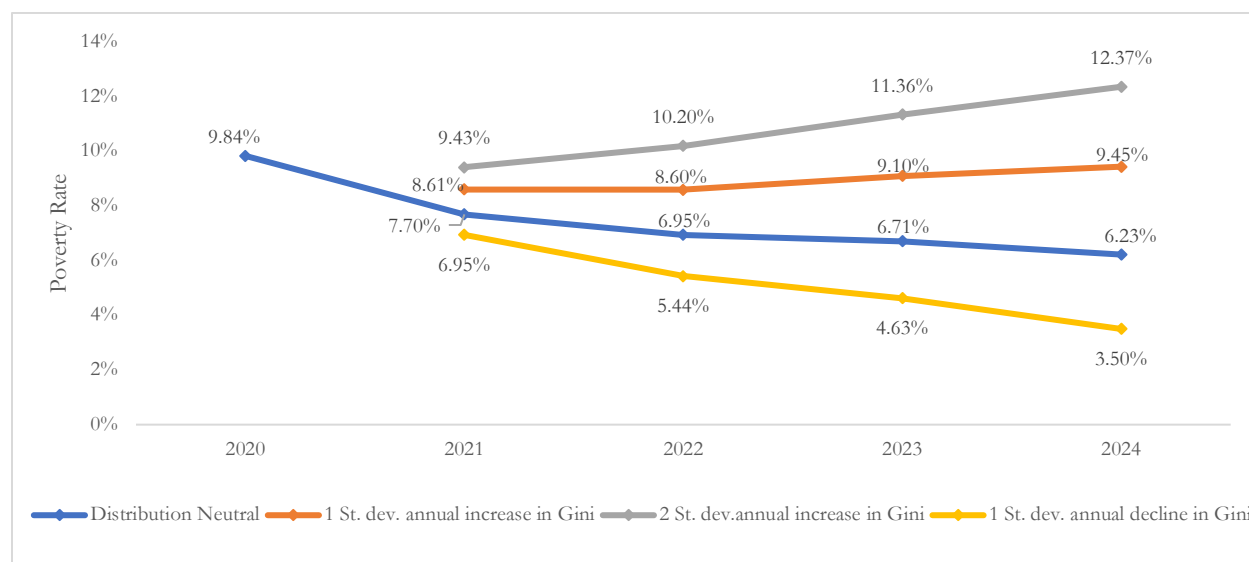
It is possible to nowcast poverty rates for 2021 and simulate poverty rates for the following years using national accounts data and GDP per capita growth projections and changes in inequality for the future. However, such

an exercise involves additional assumptions about the relationship between GDP per capita growth and growth in per capita household income from SILC microdata. Another layer of complexity is added when projections about the distribution of income are taken into account. The Gini index makes for an intuitive way of modeling distributional changes with conceptual simplicity. Our inequality change scenarios simulate that a decline in the Gini index by τ percent is tantamount to taxing everyone at a rate of τ , and distributing the proceeds to everyone as an equal absolute transfer. This is one of the more progressive ways of modelling inequality changes, so these projections would be more muted under other assumptions.

The “distributionally neutral” scenario assumes that all per capita household incomes grow at the same rate. For the growth projections in GDP per capita, we use current projections published in the World Bank March 2023 Macro Poverty Outlook (MPO) report and assume that 100 percent of GDP per capita growth rate is passed through to the household incomes. Other scenarios include annual increases in the Gini index by 1 and 2 standard deviations and a 1 standard deviation decrease in the Gini index based on the actual Gini indices recorded in Türkiye between 2007 and 2020⁶.

The projections for Türkiye show that the income-based poverty rate in 2024 could rise to 12.3 percent by 2024, if the forecasted growth in GDP per capita also brings a worsening of income distribution and Gini index increases by 2 standard deviations on an annual basis. On the other hand, if the growth is progressive and leads to a decrease in the Gini index at an annual rate of 1 standard deviation, income-based poverty is estimated to have fallen to 6.95 percent in 2021 on the back of the fast GDP growth and can decline further to 3.5 percent by 2024 (Figure I.4). This is consistent with what, at the global scale, Lakner et al. (2019) find: reducing each country’s Gini index by 1 percent per year has a larger impact on global poverty than increasing each country’s annual growth by 1 percentage point above forecasts.

Figure I.4: Poverty rate projections for Türkiye under baseline GDP growth forecasts and different inequality change scenarios



Source: World Bank staff calculations using SILC Surveys (2008-2021) and GDP growth projections

As shown in projections under different scenarios of Gini growth, neglecting a growth pattern that reduces inequality, or better said growth that brings shared prosperity, might signal a pause or even a reversal in poverty projections in the near future. Türkiye has an impressive record of poverty reduction since mid-2000s but the pace has declined in particular since 2016. On the other hand, the income elasticity of poverty, namely the extent that each percentage of GDP per capita growth leads to a reduction in the poverty rate also tapered over

time. For instance, while a 1 percent growth in GDP per capita led to a 2.09 percent reduction in income-based poverty rates between 2012-2016, this rate has declined to 0.07 percent between 2016 and 2020.

The findings signal the importance of tracking inequality outcomes closely, ensuring progressive growth and prioritizing inequality reducing policies in the near future in order to sustain the continued poverty reduction attained since mid-2000s. This is particularly important in the context of the falling share of labor income in aggregate national income. While income-based poverty did not rise during 2020 thanks to increased government transfers during the covid-19 pandemic, it is important ensure that the growth is progressive in the near future. This means not only supporting consistent recovery in the labor market across all population groups, sustaining structural transformation and switch from informal to formal employment, but also making sure that the wages keep up with the rising levels of inflation, more and better employment opportunities are created -particularly for women and youth who still show meager participation rates- and to support the most vulnerable families with targeted social assistance programs during times of crisis.

Policy Proposals:

1. Prioritize creation of productive jobs that raises labor incomes and invest in human capital:

Ensuring continued growth of labor incomes and creation of high value-added productive jobs is essential to carry Türkiye to high income status and to eliminate poverty. Growth in labor incomes have proven to lift millions of people out of poverty since 2006, made an equalizing impact on income distribution and contributed to shared prosperity. In Türkiye's current Eleventh National Development Plan, strengthening labor market functioning and quality of education for better human capital outcomes and adaptability to emerging jobs were highlighted priorities towards this end.

Fast economic growth seen in the post 2016 period despite the pandemic does not seem to have translated into a reduction in poverty nor an increase in employment rates. According to the World Bank's Türkiye Jobs Diagnostic Report, the quality of jobs, as measured by the Job Quality Index (JQI) has increased between 2009 and 2016 but has been on a declining path ever since⁷. Another World Bank Report on Human Capital Investments in Türkiye⁸ finds that Türkiye's Human Capital Index stands at 0.65 as of 2020 – a lower outcome with respect to other comparators. For its level of social expenditures, the allocative efficiency of the country's social spending is also lower. The HCI labor dimension that overall employment levels are relatively lower and gender gaps wider than elsewhere. After accounting for the population in education/training, and for the retired, 28 percent of the population aged fifteen and over is inactive, representing a large unused labor potential. Additionally, about a third of existing jobs are informal, typically in low productivity firms or through self-employment, which are less likely to be exposed to innovation and benefit from technological change⁹. While the rise of industry and service activities has been instrumental to economic progress, resources are increasingly going to activities with sluggish productivity. Employment creation has been concentrated in services sectors with low productivity growth and real wage growth, at an even higher rate, compounded by higher informality levels in lagging regions¹⁰.

Improving the quality and quantity of jobs involves wide ranging actions that encompasses a wide range of policy areas, targeting macroeconomic and price stability, growth in high productivity sectors, and efficient investments in human capital that improve the competitive skills of the workforce and facilitating labor market entry. While it is beyond the scope of this poverty assessment to provide a detailed policy prescriptions for each specific thematic area, it is important to nevertheless highlight some key policy points aimed at addressing growth and labor market challenges in the country.

In terms of boosting growth and productivity, strengthening macroeconomic stability through sustaining tight monetary policy, ensuring price stability, and strengthening the climate for FDI is of primary importance. Reviewing and reforming the financial support programs to firms to support those that are most likely to grow and be productive would help create new employment opportunities that are sustainable and resilient to economic volatility. Establishing linkages between domestic and foreign firms in sectors that invest in research and development improves technology transfer, product upgrading, management practices, as well as the supply and demand for more skilled and educated workers. Additionally, incentivizing formality in the economy by offering support for informal firms to register and enter the formal economy is also essential. This will serve to broaden the fiscal tax base and generate more resources for social assistance and protection programs and protect workers during times of crises like the COVID-19 pandemic, who would be otherwise ineligible for government support in the informal sector¹¹.

Employment support programs can act as a significant countercyclical policy tool to stabilize the labor market. This requires the use of effective and well-designed active labor market policies. These policies, including but not limited to, wage and hiring subsidies, need to be well designed with sound targeting. Programs should not only be well targeted to support new hires among disadvantaged workers (hard to place skilled youth, disabled, and subsets of low-skilled women), but they should also be provided to firms that are productive and

economically sound, so they can sustain the workers once the subsidy expires. Regular evaluation of the active labor market policies is also needed to ensure that they remain cost effective and relevant to the context. While these policies can serve as automatic countercyclical stabilizers to incentivize job creation, it is also important to accompany them with measures that addresses constraints that prevent workers from being competitive and entering the labor market, such as education and skills constraints and household, cultural or personal constraints.

Despite the remarkable improvements in the level of education of the Turkish workforce, further improvement of the workforce in terms of technical skills is required to meet the country's aspirational goals. Many workers are in occupations that entail using routine cognitive skills rather than non-routine cognitive analytical or interpersonal skills that are typical of more mature economies. Evaluations show that successful workforce development systems involve close cooperation between enterprises and training bodies. In this context, industry can be brought in closer into the workforce development system by employment led skills councils working together with the education and training system, government bodies, trade unions and professional bodies and focus on skills development that address the needs of industries and service sectors. Creating flexible adult learning options through mechanisms created to facilitate worker access to further training, integrating a system of recognition of skills acquired through non-formal education and facilitating access to financial support for firms to enable workers to upskill, are among some of the policy solutions to improve the workforce development system¹².

2. Increase female employment and labor force participation:

Increased integration of women into the workforce is essential to job creation and has contributed positively to poverty reduction both during times of high growth and also during economic downturns over the past two decades of Türkiye's history. Since the early 2010s, efforts have been made to enhance the integration of women into the workforce. In 2012, Family Support Centers (ADEM), initiated by the Ministry of Family and Social Services, commenced their operations with projects primarily focused on vocational training, aiming to improve women's social integration and to increase labor market participation. Likewise, Social Solidarity Centers (SODAM) were established in 2014 in locations with dense Romani population, aiming to improve women's personal and professional development. ADEM and SODAM centers provide vocational trainings organized in cooperation with the Ministry of National Education. While all these efforts have the potential to improve women's labor force participation, measuring their actual impacts and expanding their coverage are essential considering the low level of the women's labor force participation in Türkiye. Women's seasonally adjusted labor force participation rate increased from 21.3 percent in 2005 to 36.1 percent as of May 2023, after showing a fast recovery following the Covid-19 pandemic. On the other hand, it still lags behind the OECD countries and well below the OECD average of 45 percent in 2022. Support for childcare is shown to ease women's access to the labor market as well as increase firm productivity¹³.

Improving the access and quality of female employment in Türkiye will involve policy measures on several fronts:

- Providing affordable childcare, by promoting early childhood development programs, such as preschool education and public/subsidized childcare programs and expanding the coverage of early childhood education centers.
- Reform policies to allow flexible working arrangements for women (as well as men) to balance work with household responsibilities, which is cited as the main reason for women to stay out of the labor force. Additionally, implementing parental leave benefits rather than maternal leave alone, which hold women back from career progression, can help women be more competitive in the labor market. Evidence shows that by changing from maternal leave to parental leave rights and offering family-related subsidies rather than mother only support, changes in a country's social norms and attitudes towards gender roles in the home and the market can come about¹⁴.

- Sustaining investments on education by investing in vocational education and training, specialized training programs for women with low education and scholarship programs for women in tertiary education. Training programs for employment as currently offered through various channels (ISKUR, Ministry of National Education) can accompany on the job training (employment support) to ensure that skills are applied and further developed.
- Expanding financial inclusion services and banking coverage for women through targeted programs, strengthening investments in financial literacy and scaling up household behavioral education on roles, occupational and sectoral choice

3. Deliver improvements to the social protection transfers to protect the most vulnerable:

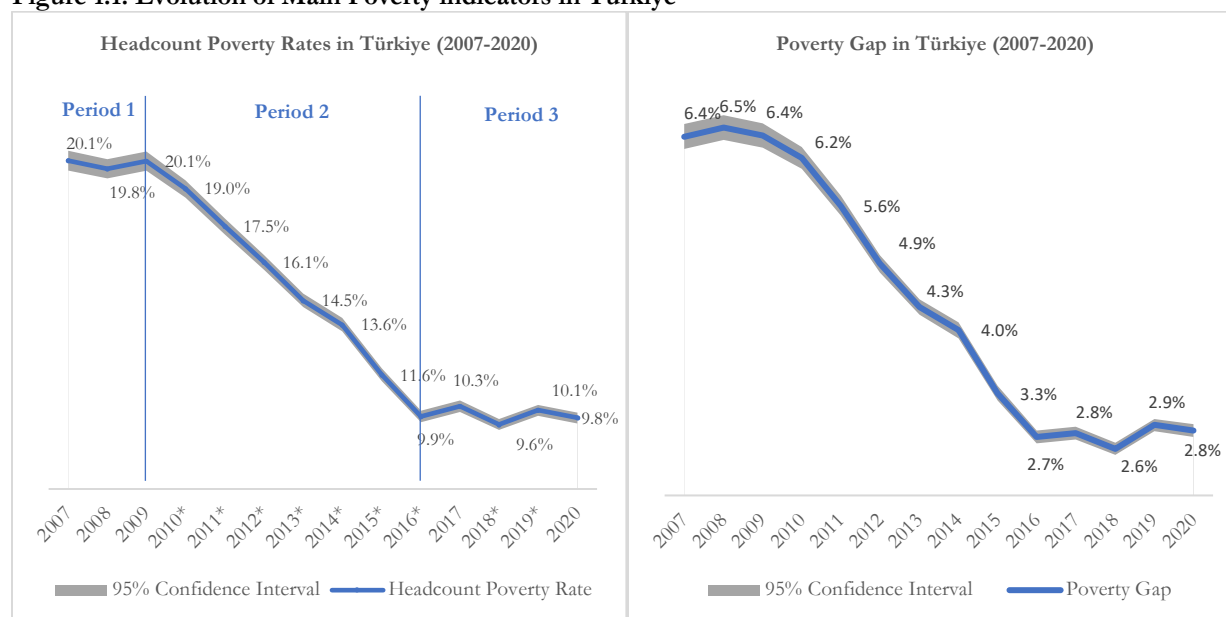
As proven during the Covid-19 pandemic, effective delivery of social assistance can be instrumental in mitigating the negative effects of shocks. The development of the Integrated Social Assistance System (ISAS) has been considered international best practice on the area of creation of a social registry for social assistance applicants and beneficiaries of different programs and can be leveraged further to improve the targeting and coverage of the social assistance system. Particular policy proposals to improve the adequacy, coverage and targeting of the social assistance programs include¹⁵:

- Increasing adequacy and coverage of the social assistance programs through the introduction of a Basic Income for the Poor (BIP) program: Given the categorical design of individual social assistance programs, there is potential to further improve coverage of the bottom 20 percent. A BIP program that provides assistance to the vulnerable families that do not meet the demographic categorical criteria, would significantly help reduce the poverty gap. The Family Support Program was designed as a means-tested income support program without categorical criteria to households with low per-capita income. The Child Support Component of the program targets families with children, allowing them to receive additional monthly cash transfers. The amount of the transfers various based on the total number of children in the household. The Family Support Program, originally planned to implement for 12 months to address the coverage issues, has been extended until the end of 2024. A further extension of the program can help provide continued support to families that are left out of the social assistance system and provide transfers that are more calibrated to meet their basic needs.
- Increasing the coverage of the poor by aligning social assistance program design with labor market incentives: For social assistance programs that might potentially affect employment outcomes by creating disincentives to work (in theory or in perception), potential improvements can be made in the country's existing approach to exit rules or benefit update formulas. In the past, individual benefits would be discontinued upon finding employment. Conditional Cash Transfers now have as the eligibility rule that a person cannot receive benefits one year after they begin contributing to social security. Another alternative to this approach would be a gradual phase out of benefits after one year, gradually reducing benefits over time and periodically reassessing the household situation.

I. Poverty Trends

Türkiye has made significant progress in poverty reduction since 2007. Poverty headcount ratio halved between 2007 and 2020, falling from 20.1 percent to 9.8 percent. During this period, 5.9 million people left poverty, and the number of people living with a household income per capita below the poverty line (\$6.85/ capita per day in 2017 PPP) fell from 14.1 million to 8.2 million. The severity of poverty also declined over time. The poverty gap index, which measures on average how far away the poor are from the poverty line, also more than halved, falling from 6.4 percent to 2.8 percent. Looking at historical trends, 3 distinct time periods stand out in the country's track record of poverty reduction: the global financial crisis of 2007-2009¹⁶, when the poverty rate remained unchanged, 2009-2016 when all of the progress in poverty reduction was made in the country's near history, and 2016-2020, when poverty reduction came to a halt (Figure 1.1).

Figure 1.1: Evolution of Main Poverty indicators in Türkiye



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008-SILC 2021) data from the Turkish Statistical Institute. Income reference periods are the previous calendar year.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

*Indicates years where the change in poverty rates is statistically significant at the 5% level

Based on the SILC data, and the poverty gap in 2020, the amount of resources needed to lift everyone out of poverty under perfectly targeted transfers was TRY 14.5 billion in nominal terms. This corresponded to approximately 2 percent of Central Government revenues and primary expenditures in the same year¹⁷. In other words, if the people living under the poverty line in Türkiye were reached under a perfect identification scenario and each person received social assistance enough to lift them above the poverty line, this would have cost the central government 2 percent of its total non-interest expenditures in 2020. This would come at a modest cost to the government and would approximately equal one fifth of the TRY 69.3 billion total social assistance expenditure carried out during 2020¹⁸. It contrasts with the poverty gap in 2009, when transfers needed to eradicate poverty would have amounted to TRY 10 billion in nominal terms, representing 70 percent of the TRY 14.3 billion social assistance transfer budget. This means the period shows not only an important decline in poverty incidence, but also in its depth.

Figure 1.2: Poverty headcount rate and number of poor in Türkiye and comparators

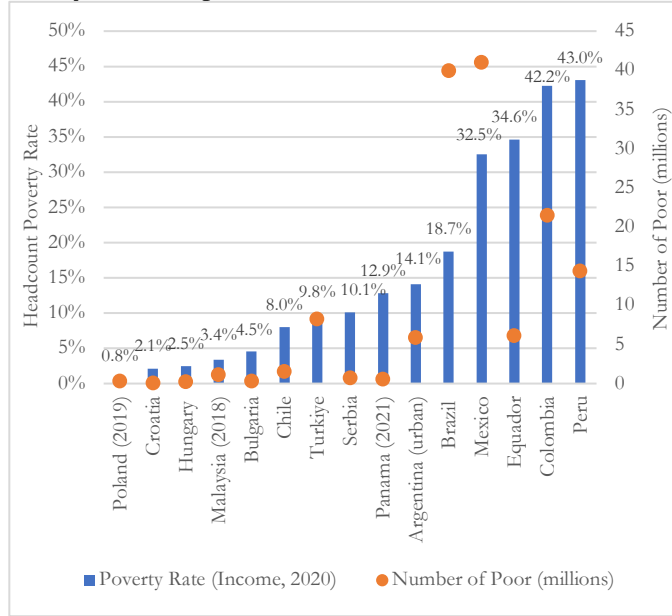
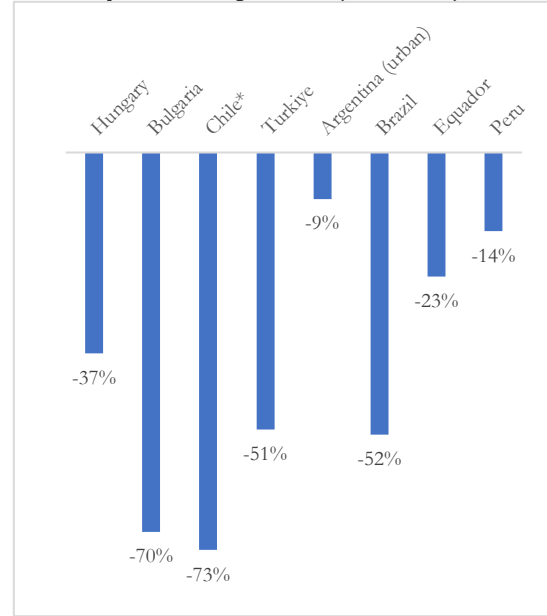


Figure 1.3: Decline in headcount poverty rates in Türkiye and comparators (2020-2007)



Source: World Bank Staff Calculations using Survey of Income and Living Conditions (SILC 2021) data from the Turkish Statistical Institute. World Bank Poverty and Inequality Platform (PIP) (<https://pip.worldbank.org>) is used as the source for other countries' poverty rates and population of poor.

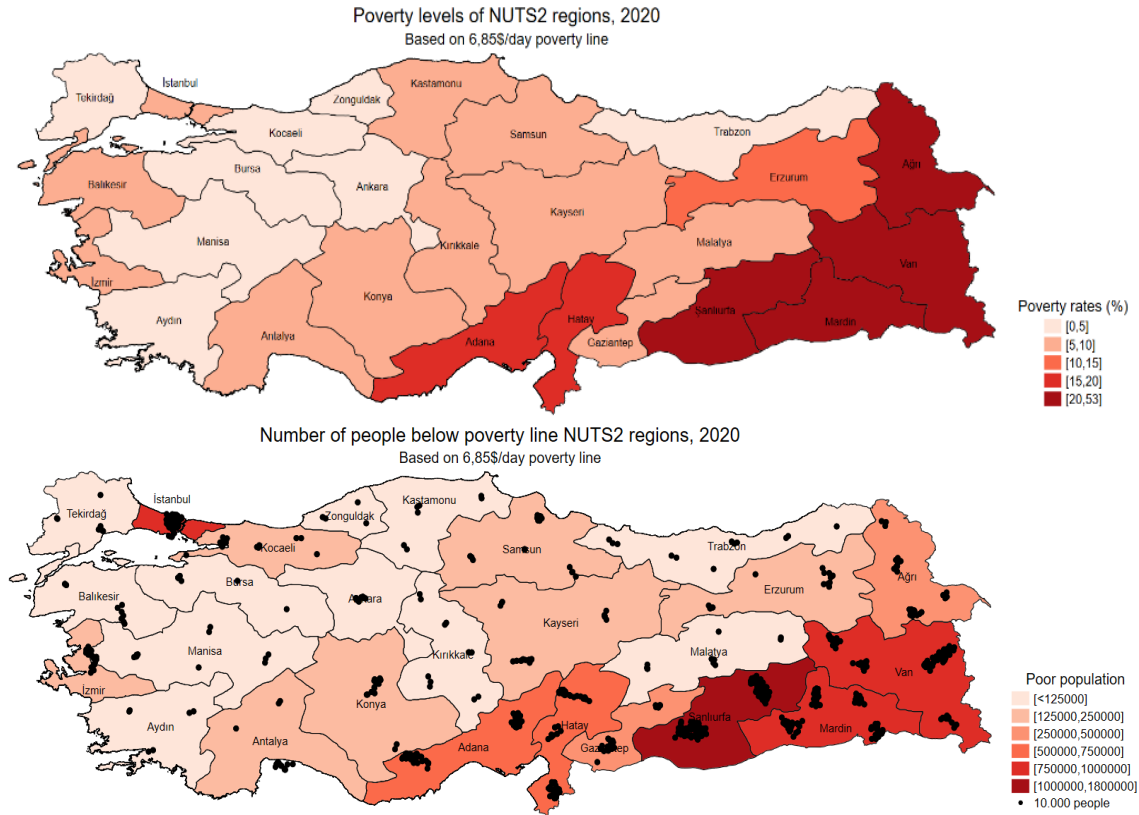
Notes: Income based poverty rates are provided for all countries for the year 2020, unless otherwise specified.

* Base year for Chile is 2006 due to the absence of available data for 2007.

The absolute poverty rate in Türkiye is moderate compared to other upper middle-income countries but the number of poor is among the highest. Türkiye's poverty rate of 9.8 in 2020 is much lower compared to most Latin American Countries but is much higher compared to European and East Asian countries with similar income levels, such as Bulgaria, Croatia, and Malaysia. On the other hand, Türkiye ranks fifth among selected comparators in terms of the number of poor, after Mexico, Brazil, Colombia and Peru (Figure 1.2). In terms of its performance in poverty reduction, Türkiye was able to nearly halve its poverty rate between 2007 and 2020, a performance better than most comparator counties with available data, but still behind Bulgaria and Chile (Figure 1.3).

In 2020, poverty rates varied significantly based on geographic divisions, with eastern regions having significantly higher poverty levels than the west (Figure 1.4). At the NUTS1 level, Northeast (TRA), Central East (TRB) and Southeast Anatolia (TRC) regions all had poverty rates over 20 percent, at least twice the country average. In particular, Southeast Anatolia Region (TRC) had a poverty rate of 30.4. These 3 eastern regions also hosted half of the country's 8.2 million poor in 2020 - approximately 4.2 million people. Istanbul, the region with the highest GDP per capita in the nation, also hosted a considerable share of the poor population of Türkiye, with over 800 thousand persons, or approximately 10 percent of the country's poor (Table 1.1).

Figure 1.4: Regional Poverty Rates in Türkiye in 2020



Source: World Bank Staff Calculations using Survey of Income and Living Conditions (SILC 2021) data from the Turkish Statistical Institute.
Note: Each dot represents 10,000 poor. In a given NUTS2 region, dots are located around provinces proportional to the province population.

All geographical regions at the NUTS1 level¹⁹ experienced a decline in their overall poverty rates between 2007 and 2020. The rate of the decline was however the smallest in Istanbul, falling by 1.3 percentage points from 6.6 percent to 5.3 percent (corresponding to a 19 percent decrease). While 5.9 million people left poverty in Türkiye during this time period, the number of poor in Istanbul did not change, partially due to the higher-than-average population growth of the province. Of these 5.9 people who left poverty, 1.3 million were from the Southeast Anatolia Region (TRC), followed by the Aegean (TR3) with 0.9 million. Additionally, in 2007, Istanbul hosted 5.8 percent of the poor population in the country in 2007. This share of the poor has increased to 10.1 percent by 2020. Other regions where the share of the poor population increased in relative terms were Southeastern Anatolia (from 29 to 34 percent) and the Mediterranean (from 13 to 17 percent) (Table 1.1, Figure 1.5).

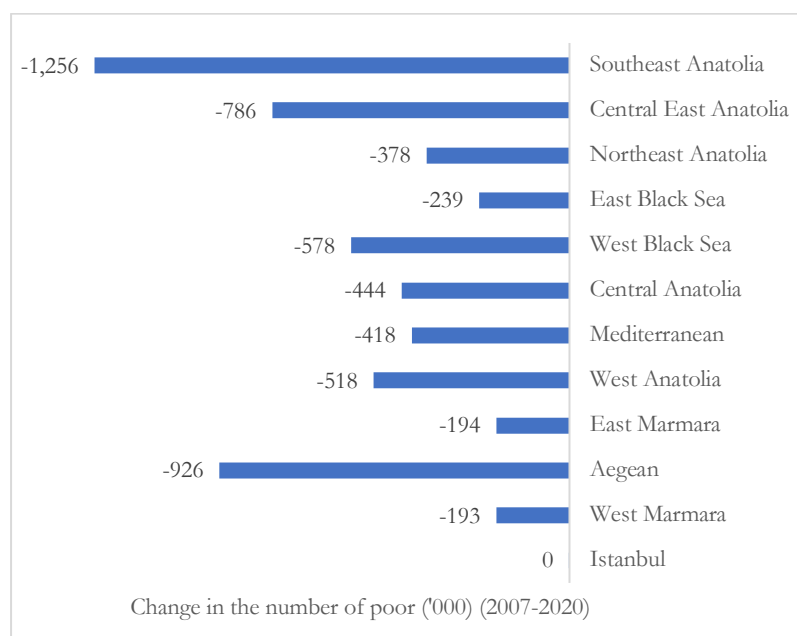
Table 1.1: Poverty Trends Across NUTS1 Geographical Regions

Region	Poverty Rate		Poverty Gap		Number of Poor		Share of poor	
	2007	2020	2007	2020	2007	2020	2007	2020
TR01 - Istanbul	6.6%	5.3%	1.8%	1.3%	819,949	819,528	5.8%	10.1%
TR02 - West Marmara	12.3%	5.0%	3.7%	1.4%	373,794	180,309	2.6%	2.2%
TR03 - Aegean	14.6%	3.9%	3.9%	1.0%	1,345,426	419,635	9.5%	5.1%
TR04 - East Marmara	6.7%	2.8%	1.7%	0.9%	424,786	231,072	3.0%	2.8%
TR05 - West Anatolia	12.2%	3.6%	3.3%	1.4%	807,811	290,026	5.7%	3.5%
TR06 - Mediterranean	20.4%	12.9%	5.4%	3.3%	1,801,792	1,384,253	12.7%	16.9%
TR07 - Central Anatolia	19.4%	7.0%	5.5%	2.5%	728,843	285,126	5.2%	3.4%
TR08 -West Black Sea	20.5%	7.2%	5.5%	2.4%	911,264	333,155	6.5%	4.0%
TR09 - East Black Sea	14.6%	4.5%	4.2%	1.1%	359,913	121,315	2.6%	1.5%
TRA - Northeast Anatolia	38.3%	21.3%	14.4%	6.4%	842,837	465,239	5.9%	5.5%
TRB - Central East Anatolia	48.2%	23.3%	15.9%	6.2%	1,705,740	919,770	12.0%	11.1%
TRC - Southeast Anatolia	56.4%	30.4%	22.1%	8.9%	4,018,828	2,762,448	28.5%	33.8%
Türkiye	20.1%	9.8%	0.1%	0.0%	14,140,983	8,211,876	100%	100%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

Figure 1.5: Change in the number of poor by statistical region (2007-2020)



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

Change in the number of poor calculated using mid-year population figures.

In line with the convergence in per capita income levels between the less and more developed regions of the country²⁰, there was also some convergence in poverty rates across geographical regions. Figure 1.6 below depicts the decline in regional poverty rates in percentage points against the regional poverty rates at the baseline. The magnitude of the decline in the poverty rate in poorer regions was greater compared to wealthier regions. There is also some convergence in the sense that the difference between the poverty rates in the richest

and the poorest regions of the country has declined drastically over time, from almost 50 to 28 percentage points²¹.

On the other hand, when the relative percentage decline in poverty rate across regions is examined, the regions with lower poverty rates at the baseline are found to have undergone a faster reduction in their poverty rates on average (Figure 1.7). This is due to two main reasons. The first is that even a small reduction in the poverty rate in wealthier regions translates to a large reduction in the poverty rate in relative terms. For instance, poverty rates in the West Marmara region declined by 7.3 percentage points, from 12.3 to 5 percent. This was greater in relative terms (corresponding to a 56 percent reduction in poverty rate) when compared with the Southeastern Anatolia, where the poverty rate declined by 26 percentage points, from 56.4 to 30.4 percent (a reduction of 38 percent). The second reason is the large discrepancy in the magnitude of monetary depravity in the poorer regions in the early 2000s. In 2007, the poverty gap was considerably larger in lagging regions, meaning that not only were poverty rates at baseline higher in these regions but that people who were poor had higher levels of deprivation than those in leading regions. However, the poverty gap has been declining faster in poorer regions since early 2010s²².

**Figure 1.6: Convergence in regional poverty rates
(percentage point change, 2007-2020)**

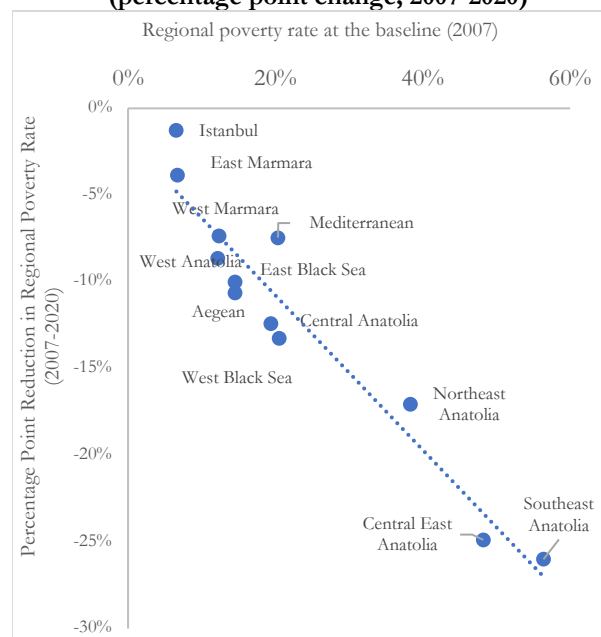
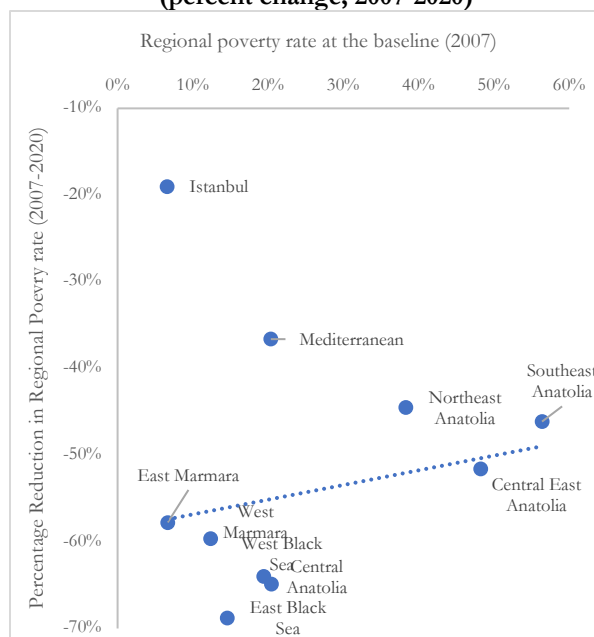


**Figure 1.7: Divergence in regional poverty rates
(percent change, 2007-2020)**



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

Demographic profiles

There was also significant heterogeneity in poverty rates with respect to family types, age cohorts, education levels, and employment sector of the household head. Poverty rates were the highest in nuclear families consisting of couples with three or more children under the age of 18. These types of households had poverty rates three times the country average and made up 38 percent of the poor living in Türkiye. In multigenerational families, which included couples with adult children and/or other relatives, poverty rates were just under the country average (8.8 percent). However, due to the large share of the cohort within the population, 41 percent of the poor resided in this type of household. Single person households and couples without children had poverty rates lower than 1 percent (Figure 1.8).

Similarly, poverty rates were the highest among the children aged 14 and less, with 19 percent. 43 percent of the people living below the poverty line in the country were younger than 15 years of age (Figure 1.9). In terms

of schooling, poverty rates are highest among those without formal education or primary schooling. Poverty rates fall significantly with increased levels of education, down to 1.5 percent for those who have completed university education or more (Figure 1.10).

With respect to the sector of the household head, individuals living in households where the head was unemployed had the highest rates of poverty (34 percent). This was followed by households where the head was employed in the construction and agriculture sectors (20 and 17 percent respectively) (Figure 1.11). On the other hand, over a quarter of the poor population resided in households where the head was out of labor force (including those in retirement), due to the large share of this group within the country's total population (Figure 1.13f). Disaggregated by gender, poverty rates were 10.1 percent for women and 9.5 percent for men, but the difference was not statistically significant.

Figure 1.8: Poverty headcount rate by household type

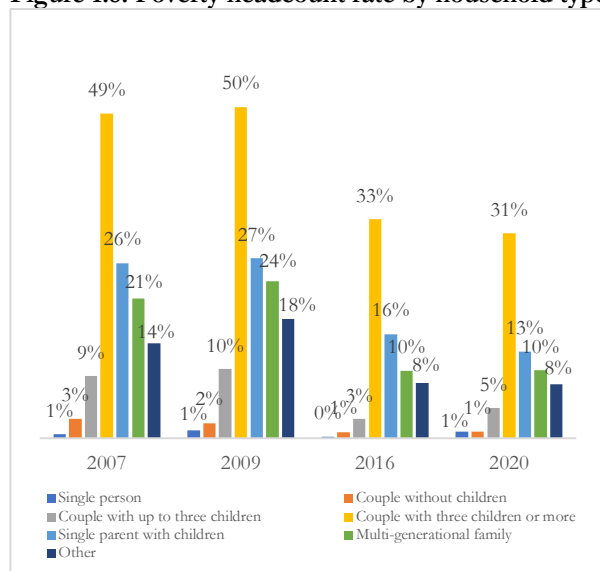


Figure 1.9: Poverty headcount rate by age cohorts

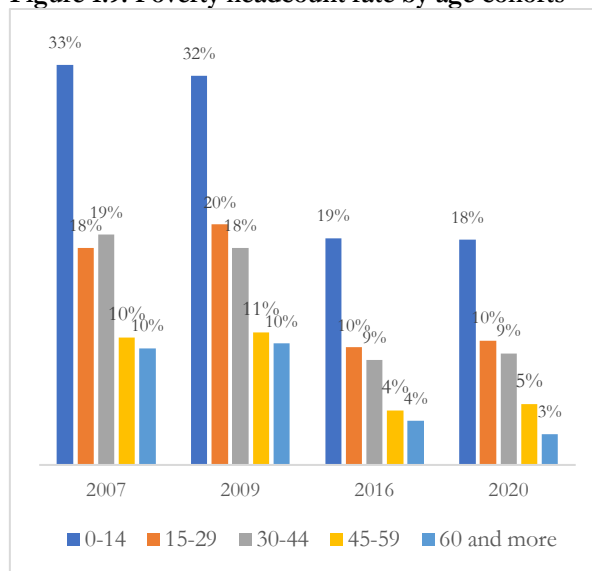


Figure 1.10: Poverty headcount rate by education

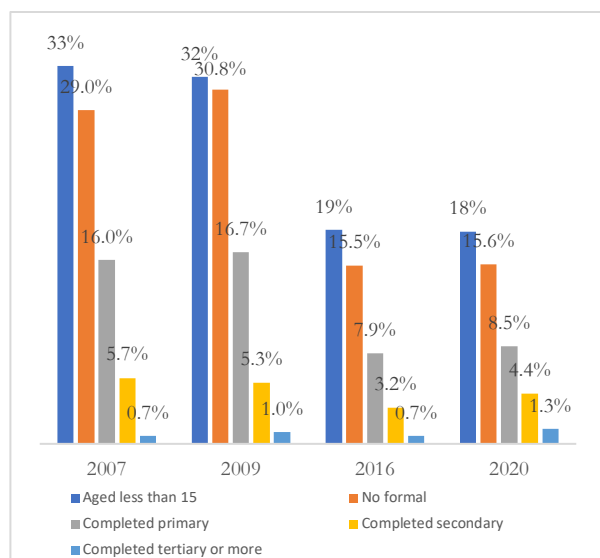
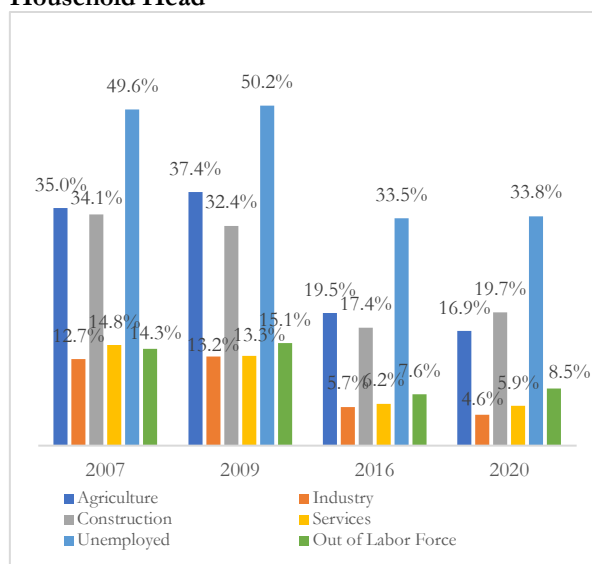


Figure 1.11: Poverty headcount rate by sector of Household Head



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.
Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

Looking at changes over time, poverty rates have declined across all household types, which kept their same rankings over time. Only between 2016 and 2020, the poverty rate in core families with up to three children increased statistically from 2.9 percent to 4.6 percent. With respect to age categories, poverty rates declined in absolute terms for all age groups between 2007 and 2016, whereas the corresponding rate remained relatively stable between 2016 and 2020, except for individuals aged 60 and above. For this group, poverty rates declined by more than 62 percent, from 9.6 percent in 2007 to 3.6 in 2016, and continued to decrease post-2016. Indeed, the sharp relative decline (almost 30 percent) in the poverty rates for those aged 60+ in the post-2016 period stands out compared to other age groups, whose poverty rates showed no change. By contrast, the 0-14 age group continued to have the highest poverty rates over time²³, without a significant change between 2016-2020. That said, poverty rates for the 0-14 age group declined from 33 percent to 19 percent by 2016, with many children benefitting from higher incomes of parents and other household members.

Another interesting finding for the 2016-2020 period is that poverty rates increased for groups with relatively higher levels of education (from 3.2 to 4.4 percent for those who have completed secondary education, and from 0.7 to 1.3 percent for those with tertiary education or more) (Figure 1.10). A detailed look into poverty rates across these years show that the increase in the poverty rates did not occur in 2020, at the peak of the Covid-19 pandemic, as one might expect. The biggest increases in poverty rates were seen in the year 2019, in the aftermath of the exchange rate volatility experienced during the second half of 2018. While poverty rates for those with tertiary education were statistically higher in 2020 compared to 2016, the changes experienced each year were in smaller increments, not large enough to be statistically significant (Table 1.2).

Table 1.2: Poverty Rates by Level of Education (2016-2020)

Education Level	2016	2017	2018	2019	2020
aged less than 15	18.6%	18.8%	17.5%**	17.7%	18.5%
no formal	15.5%	17.0%	15.0%**	16.8%**	15.6%
completed primary	7.9%	8.3%	8.0%	8.7%**	8.5%
completed secondary	3.2%	3.46%	3.52%	4.8%**	4.4%
some tertiary and more	0.7%	1.2%	1.3%	1.4%	1.3%
total population	9.90%	10.31%	9.58%**	10.14%**	9.84%

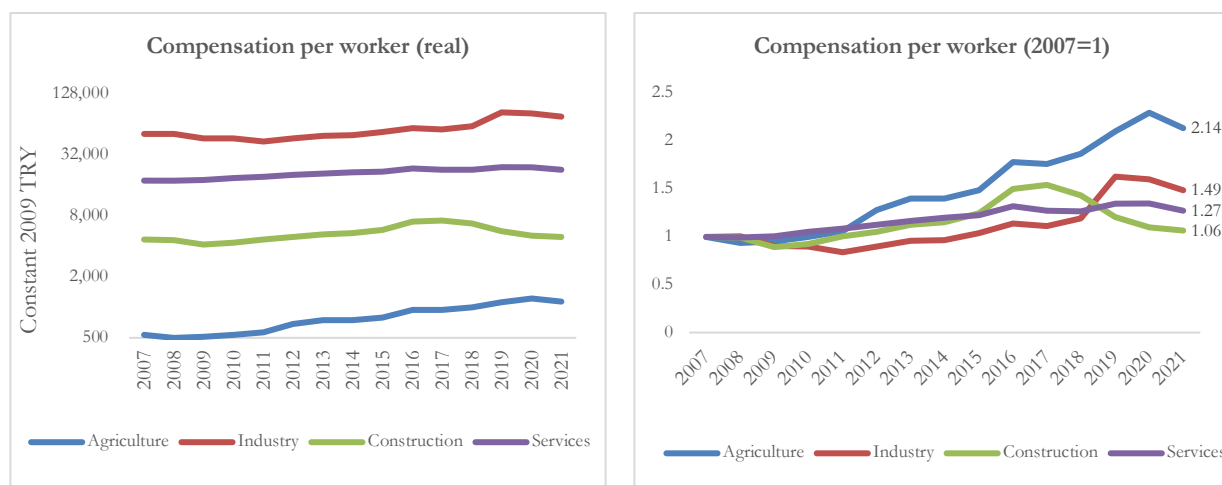
Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

**Indicates cases where the change in the poverty rate is statistically significant at the 5% level compared to the previous year.

Poverty reduction has been the fastest in families where the household head is employed in the industry and services sectors, both of which experienced over 60 percent decline in poverty rates since 2007. While households with heads employed in agriculture had the highest poverty rates in 2007, by 2020 households with heads employed in construction sector had the highest poverty rate. This was also in line with the change in average compensation per worker seen throughout this period²⁴. Average compensation per worker grew much faster for the agriculture sector compared to the construction sector. Industry sector had highest levels of worker compensation across time and increased by 49 percent in real terms since 2007. Compensation of workers in the services sector also rose over time, but at a slower rate of 27 percent. In contrast, construction sector exhibited the slowest growth in worker compensation, rising by 6 percent in real terms between 2007 and 2020 (Figure 1.12).²⁵ The rate of increase in the compensation per worker across all sectors averaged 5.4 percent during 2009-2016 period, while this has declined to 1.4 percent between 2016 and 2020. During this period, it was only the industry sector where the average rate of increase surpassed the rates seen in 2009-2016. Unsurprisingly, even though the poverty rate in households with unemployed heads declined from almost 50 percent in 2007 to 33 percent in 2020, the rate of decline was the slowest among all groups in relative terms.

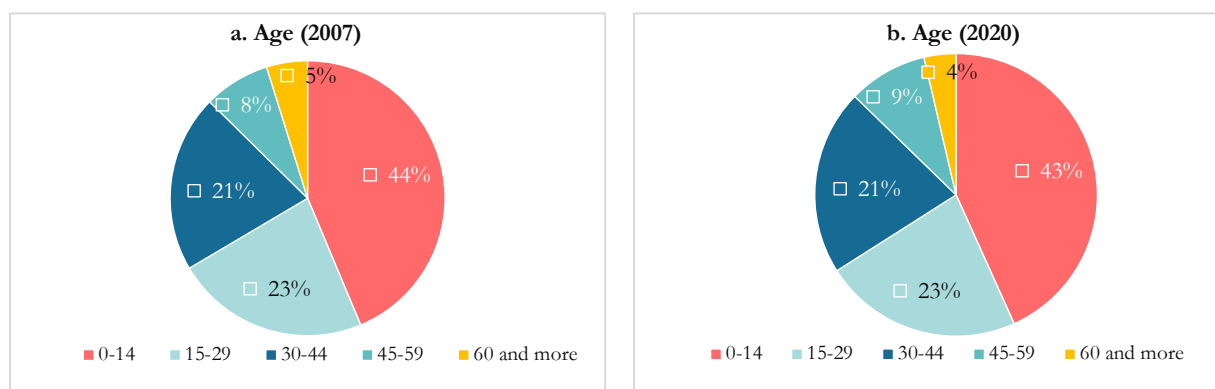
Figure 1.12: Average compensation per worker by sectors

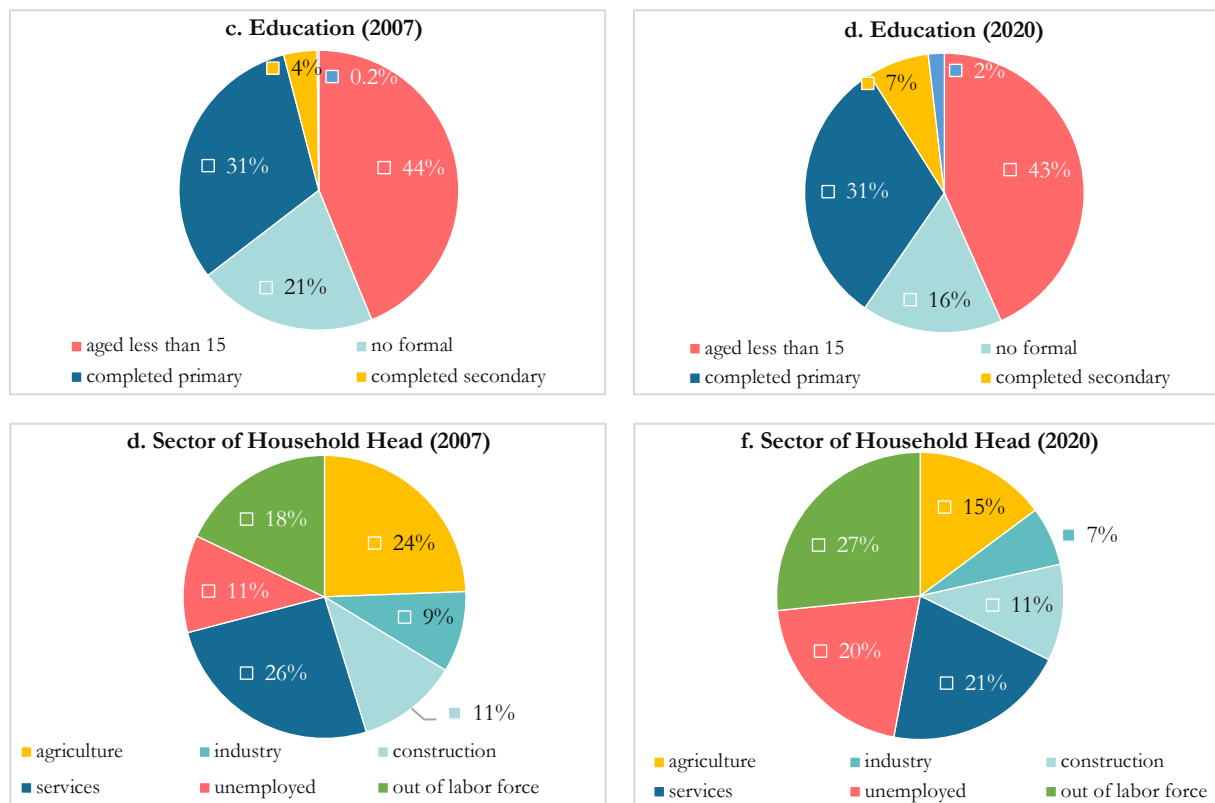


Source: World Bank staff calculations using National Accounts and Labor Force Survey data from the Turkish Statistical Institute

The evolution of poverty rates across demographics uncovered two primary findings. First, the national trend observed between 2009 and 2020 was not driven by specific demographic groups; in contrast, it was extended to all groups. Poverty rates exhibited a downward trend for all groups between 2009 and 2016, whereas the progress could not be sustained, and the poverty rates remained relatively constant during the post-2016 period. Second, the trends highlighted that the characteristics associated with higher poverty rates remained unchanged over time. In fact, the relative ranking of each group based on poverty rates remained stable across the years, with the exception of the individuals living in households where the head is employed in agriculture. Unchanged characteristics associated with the likelihood of being poor meant that the composition of the poor population demonstrated only marginal changes throughout the observed time span (Figure 1.13). The main exception was -as mentioned before- the distribution by employment of the household head: in 2007 27% of the poor lived in households whose head was unemployed or out of the labor force, but in 2020 it was 47 percent of the poor.

Figure 1.13: Share of Total Number of Poor by Group (2007 & 2020)



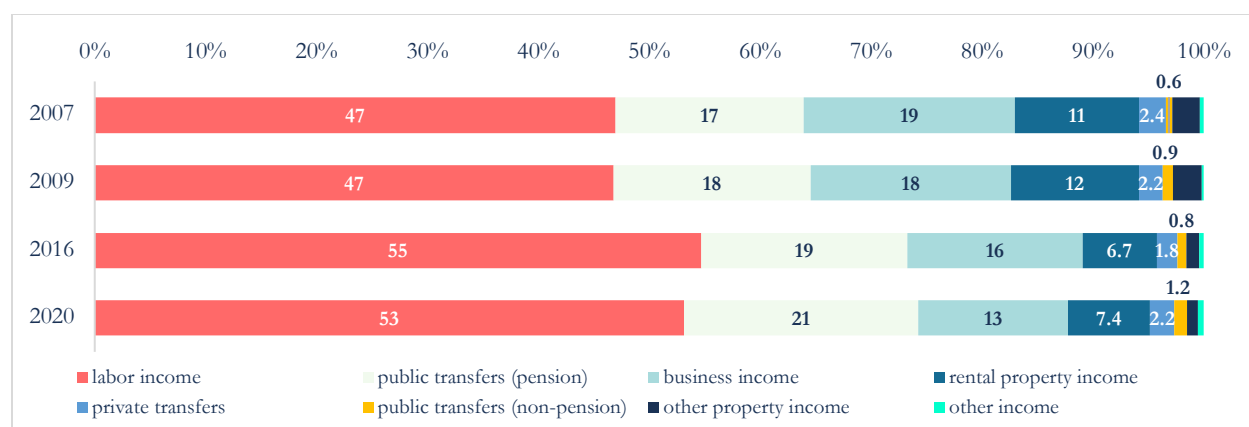


Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.
Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita day at 2017 PPP.

Sources of income

Across time, increase in labor incomes²⁶ made the greatest contribution to the poverty alleviation. Figure 1.14 below decomposes the headcount poverty rate into a list of contributions attributed to different income components. In 2007 and 2009, labor incomes were responsible for 47 percent of the poverty alleviation. This share had increased to 53 percent by 2020. Additionally, public pensions²⁷ had gained increased importance for poverty alleviation over time. 21 percent of the poverty alleviation was attributed to pension incomes in 2020 compared to 17 percent in 2007. The contribution of business income and rental income (or imputed rents) lost their relative significance over time. In 2007, rental incomes (or imputed rents) were responsible for 11 percent of poverty alleviation, and business income was responsible for 19 percent of poverty alleviation. These shares had declined to 7.4 and 13 percent by 2020 respectively.

Figure 1.14: Components of poverty alleviation by source



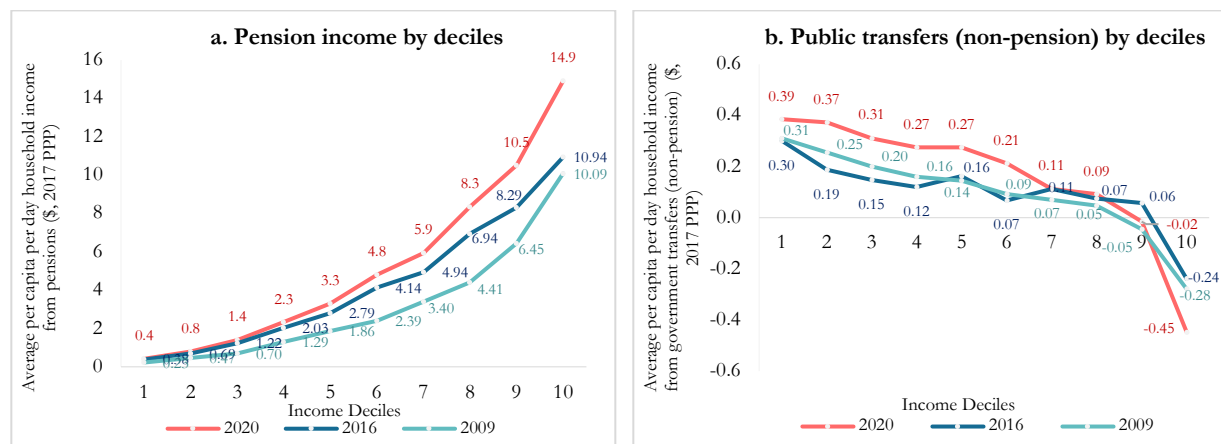
Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP.

The contribution of public transfers excluding pensions²⁸ (such as social assistance) to poverty reduction increased during economic downturns but fell during periods of growth. During the period of global financial crisis (2007-2009) the contribution of non-pension public transfers to poverty alleviation increased from 0.6 percent to 0.9 percent. On the other hand, the importance of public transfers in poverty reduction declined in relative terms between 2009 and 2016, from 0.9 percent to 0.8 percent. During this period, social assistance transfers increased by 4 percent in real terms on average, but this increase was only for specific deciles of the population (5th, 7th and 8th deciles), while the rest of the population experienced a net decline in social assistance (Figure 1.15b). Between 2016 and 2020, the impact of non-pension transfers to poverty alleviation continued to rise, realizing at 1.2 percent. That said, the impact of non-pension government transfers remained small, when compared with the impact of other income components and pensions.

Figure 1.15 below depicts the per capita pension and non-pension public transfer income going to each decile of the income distribution over time. Across the years, higher deciles enjoyed greater levels of pension income. In particular, between 2016 and 2020, the share of pension income accruing to the top deciles increased as a faster rate, and the wealthier received a higher proportion of the total pension transfers in the country. Conversely, non-pension transfers such as social assistance, were primarily received by lower deciles. Between 2016 and 2020, not only the non-pension transfers going to the bottom few deciles showed an increase over time, but also the transfers going to the entire bottom half of the population showed a significant increase.

Figure 1.15: Public Transfers (pension and non-pension) by deciles over time



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute

The main determinant of poverty reduction between 2007 and 2020 was the growth in household incomes as opposed to redistribution of income. Decomposition analysis identifies the relative contributions of growth and the redistribution of income to poverty reduction during the three time periods identified by the study. Between 2009 and 2016, when all of the poverty reduction in the country took place, the growth in total incomes was responsible for 80 percent of the reduction in poverty rates. That is, incomes have grown across the board for all income deciles in the country. Redistribution of income was responsible for 20 percent of the poverty reduction during this period. This meant that incomes for the lower deciles have increased on average faster than those of the upper deciles. This trend was reversed during the latter half of 2016-2020: poverty rate did not exhibit a statistically significant change during this period. However, decomposition analysis shows that total incomes grew by 6 percent on the average during this period. While income growth contributed 1.1 percentage points towards the poverty reduction, redistribution of income reversed the positive effects of the income growth (Figure 1.16). Consequently, the growth in income levels were enjoyed more by the wealthier groups compared to those at the bottom of the income distribution (Figure 1.17).

Figure 1.16: Datt-Ravallion decomposition of poverty reduction

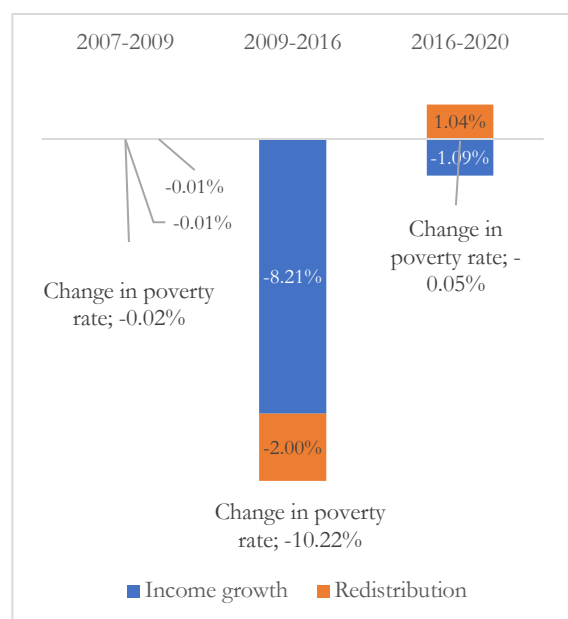
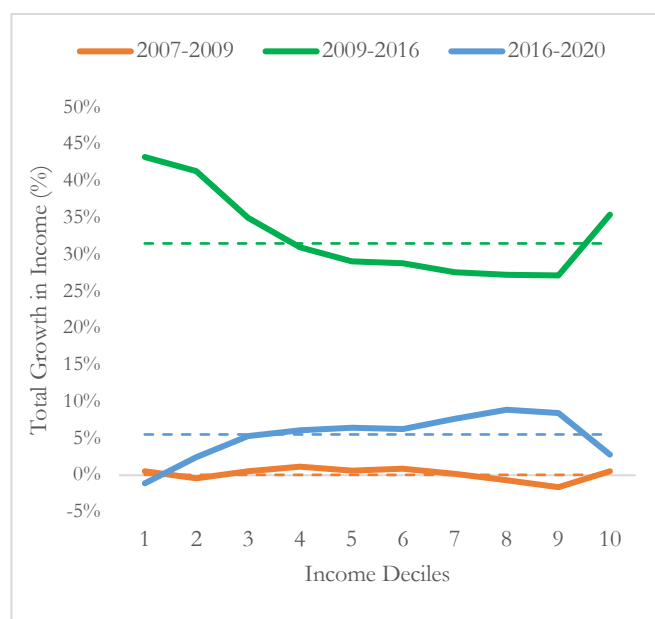


Figure 1.17: Income growth incidence curves for different time periods



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP. Decomposition in Figure 1.16 based on method by Datt and Ravallion (1991).

Looking at the details of growth incidence of different income types can explain in more detail the income and redistribution components of changes in poverty. Between 2009 and 2016, labor and pension incomes increased considerably (51 and 35 percent respectively), and the increase was greater for people in the lower deciles of the distribution. Rent incomes fell on average for the whole population but rose for the bottom 40 percent. On the other hand, non-pension government transfers such as social assistance fell in real terms for the majority of the deciles. Between 2016 and 2020 this trend reversed. Labor income did not grow in average terms. The growth in the labor income was negative for the bottom 3 deciles of the population. Conversely, pension incomes continued to rise considerably (24 percent on average), and the increase was much greater for the top deciles of the distribution. Rent incomes also rose considerably, but again, at much higher rates for the wealthier of the population (Figure 1.18).

Figure 1.18: Growth Incidence curves for selected income types across different years (2009-2016 & 2016-2020)



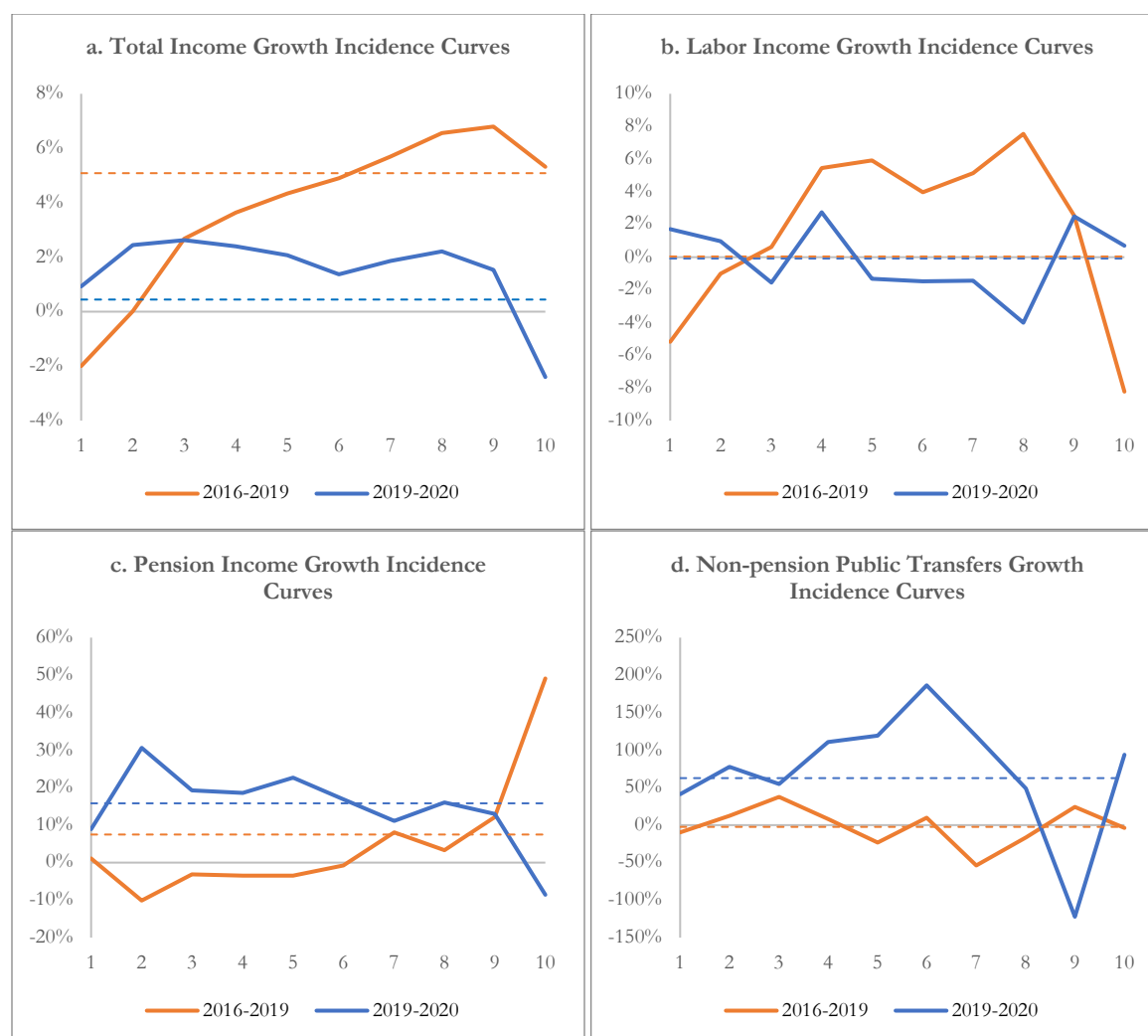
Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: Growth incidence curves represent the real growth of each income type for each income decile of the population, between selected years.

Decomposing the growth in pension and non-pension government transfers provides some additional insights about the impact of the government interventions during the Covid-19 pandemic. Between 2016 and 2019, non-pension government transfers fell on average (by 2.3 percent) and there was no clear trend of increase or decrease across the income distribution (Figure 1.19d). The income share of the non-pension transfers within the poorest decile of the population declined from 6.04 percent to 5.57 percent during the same period. Additionally, the labor incomes of the bottom 3 deciles (Figure 1.19b) and the total income of the bottom decile also decreased in real terms during this period (Figure 1.19a).

On the other hand, during 2020, non-pension government transfers increased on average by 63 percent. The increase was higher for the middle of the income distribution, at over 100 percent for deciles 4 to 7 (Figure 1.19d). Between 2016 and 2020, pension incomes continued to increase on average, but only for the top deciles of the income distribution. However, during 2020, pension incomes of the bottom 40 percent rose at a much greater rate (Figure 1.19c). The combined impact of the government transfers (pension and non-pension transfers) were able to offset the impact of falling labor and business incomes during the Covid-19 pandemic of 2020.

Figure 1.19: Growth Incidence curves selected income types (2016-2019 & 2019-2020)



Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: Growth incidence curves represent the real growth of each income type for each income decile of the population, between selected years.

Accounting for changes in poverty

The reduction in the poverty rate for the younger groups made the greatest contribution to the track record of poverty reduction between 2009 and 2016. Higher per capita household incomes and the consequent fall in the poverty rates of the 0–14-year-old age group contributed 3.35 points towards the 10.22 percentage point fall in the poverty rates for this period (Table 1.3). The fall in the poverty rates for those aged 30 and below were responsible for almost 60 percent of the poverty reduction. For the 0-14 age group, labor earnings were the most significant. Labor income for this group grew by 50 percent in real terms, and the share of labor income within total income rose by 6 percentage points from 52 to 56 percent. Demographic effects (people moving from groups of higher poverty rates to lower poverty rates as they get older) made a limited contribution to poverty reduction, with only 5 percent.

This trend was reversed during the post-2016 period. During this period, poverty rates fell only in a statistically significant way for those that are aged 60 and over. In particular, the retirement income of this group rose by 38 percent in real terms, whereas its labor incomes registered negative growth. Additionally, the share of

retirement incomes for this age group rose from 50 to 57 percent of total income between 2016 and 2020. Poverty rates remained constant or increased for other age groups and in total without the demographic effects there would have been a net increase of 0.17 percentage points in the nationwide poverty rate. However, people moving to older age brackets made an overall positive contribution to poverty reduction, reversing the effects of lower incomes. Demographic changes made a 0.22 percentage point contribution to poverty reduction between 2016 and 2020, and in total poverty rates declined by 0.05 percentage points – a change which was statistically insignificant.

Table 1.3: Changes in Poverty in Türkiye by age group

	Percentage point change in poverty headcount rate	
	2009-2016	2016-2020
0-14	-3.35%	-0.03%
15-29	-2.40%	0.13%
30-44	-2.13%	0.13%
45-59	-1.05%	0.09%
60+	-0.73%	-0.14%
Within Group Poverty Effects	-9.67%	0.17%
Demographic (Population Shift) Effects	-0.55%	-0.22%
Total Change in Poverty Rate	-10.22%	-0.05%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

In order to have a fuller picture about the poverty reduction by population groups, it is important to see the same breakdown with respect to other categories, such as family type, location, and sector of the household head. In terms of family types, the reduction in the poverty rates in multigenerational families, and families with 3 or more children were responsible for two thirds of the poverty reduction between 2009 and 2016 (Table 1.4). Population shift effects (i.e., changes in the relative shares of different family types in the population) was responsible for 7 percent of the total poverty reduction. In the post-2016 period, single person households and couples with less than 3 children contributed to a rise in poverty rates. Population-shift effects offset the overall increase in poverty rates at the national level, as the relative share of multigenerational families within the overall population declined over time.

Table 1.4: Changes in Poverty in Türkiye by household type

	Percentage point change in poverty rates	
	2009-2016	2016-2020
Single person	-0.03%	0.04%
Couple without children	-0.12%	0.00%
Couple with <3 children	-1.61%	0.35%
Couple with 3+ children	-2.04%	-0.25%
Single parent	-0.13%	-0.03%
Multigenerational Family	-4.78%	0.02%
Other	-0.80%	-0.01%
Within Group Poverty Effects	-9.52%	0.12%
Demographic (Population Shift) Effects	-0.70%	-0.18%
Total Change in Poverty Rate	-10.22%	-0.05%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

Looking at regions over time, the decline in the poverty rates in the eastern regions of the country was responsible for the 40 percent of the reduction in the national poverty rate between 2009 and 2016. In particular, the reduction in the poverty rates in the Southeastern Anatolia accounted for 20 percent of the overall poverty reduction. The impact of the demographic changes (people moving within regions) was very limited. In other words, inter-regional migration played little role in poverty changes (Table 1.5). For the 2016-2020 period, four three statistically significant increases in poverty rates stand out: the increase in the poverty rate in Istanbul from 4 percent to 5.2 percent, the increase in the poverty rate of the Mediterranean region from 10.6 to 12.9 percent, and the increase in the poverty rate of Northeast Anatolia from 15.1 to 22.3 percent. Conversely, poverty rates fell in Southeast Anatolia during this period from 35.2 to 30.4 percent, in West Anatolia from 4.9 to 3.6 percent and in Central East Anatolia from 25.3 to 23.3 percent. This heterogeneity of poverty trends in the period 2016-2020 contrasts with the downward trend across all regions during 2009-2016. The cumulative changes in those regions, combined with minor declines in poverty rates in 5 other regions and the population shift effects did not eventually make a statistically significant change in the national poverty rates over this period. In other words, whereas poverty reduction was observed across all regions in the period 2009-2016, the stagnation of national poverty rate in the period 2016-2020 was the result of regions moving in different trends.

Table 1.5: Changes in Poverty in Türkiye by region

	Percentage point change in poverty rates	
	2009-2016	2016-2020
TR01 - Istanbul	-0.82%	0.25%
TR02 - West Marmara	-0.38%	-0.02%
TR03 - Aegean	-0.80%	-0.05%
TR04 - East Marmara	-0.82%	-0.02%
TR05 - West Anatolia	-0.70%	-0.13%
TR06 - Mediterranean	-0.74%	0.29%
TR07 - Central Anatolia	-0.64%	0.03%
TR08 -West Black Sea	-0.66%	0.05%
TR09 - East Black Sea	-0.45%	-0.03%
TRA - Northeast Anatolia	-0.71%	0.16%
TRB - Central East Anatolia	-1.21%	-0.09%
TRC - Southeast Anatolia	-2.20%	-0.52%
Within Group Poverty Effects	-10.13%	-0.07%
Demographic (Population Shift) Effects	-0.08%	0.02%
Total Change in Poverty Rate	-10.22%	-0.05%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

The increase in the incomes of the households where the head was employed in the services and agriculture sectors, or where the head did not work was responsible for the 7.44 of the 10.22 percentage point decline in the poverty rates between 2009 and 2016 (Table 1.6). Demographic changes, such as the decline in the relative share of households where the household head is employed in the agriculture sector contributed an additional 1.4 percentage points to poverty reduction, whereas the relative increase in the share of households where the head is employed in construction increased the poverty rates by 0.5 percentage points during this period (Annex Table A.1). For the households where the heads were unemployed, labor incomes increased regardless. The share of labor income within total income rose from 51 to 61 percent for these households with unemployed heads, which meant that that they also benefited from the increase in the labor incomes of other members of the household that were employed. For the households with heads out of the labor force, both labor and pension incomes increased. The share of labor income within total income rose from 22 to 27 percent, and the

share of pension income rose from 41 to 46 percent during this time (Annex Table A.2). As a result of these changes, poverty rates significantly decreased for these two groups: from 50 to 34 percent for households with unemployed heads, and from 15 to 8 percent for households with heads out of labor force (Figure 1.11). During 2016-2020, poverty rates for households with heads that are out of labor force or employed in the construction sector increased over time. This contributed an approximate 0.40 points to the national poverty rate for the period. In this period, there was a decline in real terms in the labor incomes of these two groups. This increase in the poverty rate was offset by the decline in the poverty rates of households whose heads were employed in agriculture, industry and services (Table 1.6).

Table 1.6: Changes in Poverty in Türkiye by sector of household head

	Percentage point change in poverty rates	
	2009-2016	2016-2020
Agriculture	-2.17%	-0.24%
Industry	-1.05%	-0.16%
Construction	-1.04%	0.15%
Service	-2.52%	-0.12%
Unemployed	-0.76%	0.02%
Out of Labor Force	-1.99%	0.25%
Unknown (did not answer the questionnaire)	-0.03%	-0.01%
Within Group Poverty Effects	-9.55%	-0.108%
Demographic (Population Shift) Effects	-0.66%	-0.054%
Total Change in Poverty Rate	-10.22%	-0.05%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

With respect to education levels, the increase in the per capita household incomes of individuals younger than 15, and those with primary level of education or less accounted for 86 percent (8.79 ppt) of the 10.22 percentage point decline of poverty rate between 2009 and 2016. An additional 10 percent of the decline was attributed to demographic changes, namely declining shares of persons with low levels of education within the population. During 2016-2020, poverty rates increased for all groups of education levels, excluding those aged 15 and under. However, as part of a process of growing levels of education, the relative population share of individuals with primary level of education and less declined, which countered the effects of increase in poverty rates across education groups (Table 1.7).

Table 1.7: Changes in Poverty in Türkiye by level of education

	Percentage point change in poverty rates	
	2009-2016	2016-2020
Aged less than 15	-3.35%	-0.03%
No formal	-1.99%	0.01%
Completed primary	-3.44%	0.23%
Completed secondary	-0.29%	0.18%
Some tertiary and more	-0.03%	0.08%
Unknown (did not answer the questionnaire)	-0.04%	0.01%
Within Group Poverty Effects	-9.14%	0.47%
Demographic (Population Shift) Effects	-1.08%	-0.52%
Total Change in Poverty Rate	-10.22%	-0.05%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

As a final step, the changes in the poverty rates over time are decomposed using different sources of income, as well as demographic-and-labor changes, including the share of adults in the household and the share of employment among the adults in the household²⁹. The findings show that 8.59 of the 10.22 percentage point fall in the poverty rates in between 2009 and 2016, can be attributed to the increase in labor incomes. The second biggest impact was through the rising pension incomes, which contributed 1.93 percentage points towards the poverty reduction, and the rising share of adults in the household, which contributed an additional 0.95 percentage points. During this period, the increase in women's labor income and the female employment rate contributed to the decline in the poverty rate by 0.35 and 0.72 percentage points. These were partially offset by changes in rental property income³⁰, other property income³¹, non-pension public transfers and private transfers all of which led to an increase in overall poverty levels in the country during this time. As shown in the above incidence curves, the fact that the growth in the social assistance income was negative for the bottom 40 percent of the population led to a 0.39 percentage point increase in poverty rates between 2009-2016.

On the other hand, labor incomes made a significant and positive contribution to the poverty rates during the post-2016 period. Labor earnings, which remained unchanged for the national average but declined for the bottom 3 deciles of the population, increased poverty rates by 1.31 percentage points during this time. Also during this period, the share of employment among the household adults fell, which led to an additional 0.45 percentage point increase in the poverty rate. The increase in poverty resulting from a fall in labor incomes and employment rates were counteracted by the increase in government transfers, including pensions (which took off 0.68 percentage points from poverty rate), non-pension transfers (0.63 ppt) and private transfers³² (0.41). One important finding during this period was the fact that women's incomes and the increase in the women's employment rate during this period also made a positive impact to poverty reduction (by reducing 0.18 and 0.21 percentage points from the headline poverty rate), unlike those of their male counterparts (Table 1.8).

Table 1.8: Paes de Barros decomposition of Changes in Poverty in Türkiye by income source

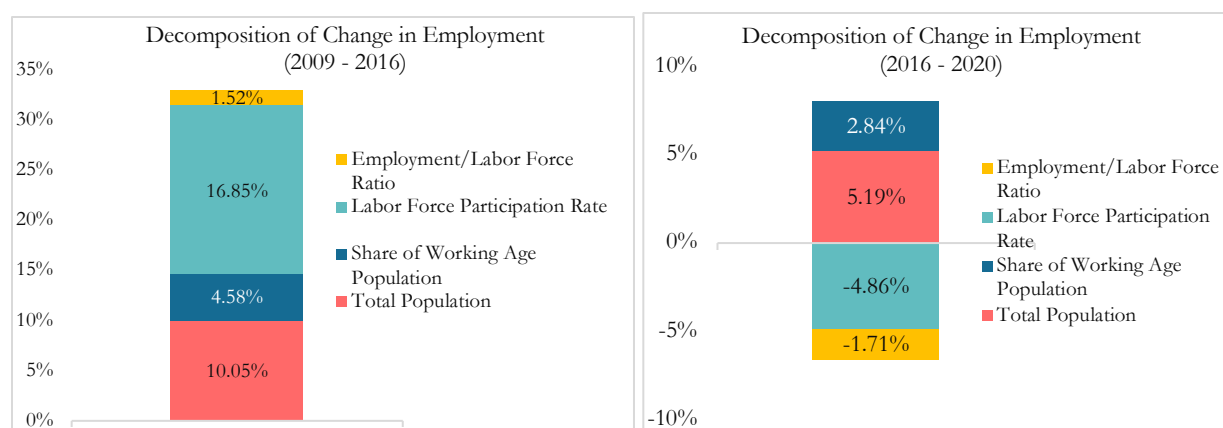
	2009-2016	2016-2020
	percentage points	percentage points
Share of adults	-0.95	0.03
Employment share	-0.15	0.45
Labor income	-8.59	1.31
Rental property income	0.06	-0.09
Other property income	0.56	0.10
Public transfers (pension)	-1.93	-0.68
Public transfers (non-pension)	0.39	-0.63
Private transfers	0.40	-0.41
Other income	-0.001	-0.13
Total change in poverty (ppt)	-10.22	-0.05
Share of adults	-0.87	-0.02
Employment share	-0.16	0.35
Employment share - women	-0.35	-0.18
Labor income - women	-0.72	-0.21
Employment share - men	0.35	0.40
Labor income - men	-6.79	1.24
Net transfers (public and private)	-1.99	-1.70
Net capital and other income	0.31	0.06
Total change in poverty (ppt)	-10.22	-0.05

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: Using per capita income as welfare aggregate, and absolute poverty line of \$6.85/capita per day at 2017 PPP. Decomposition based on method by (Paes de Barros, de Carvalho, Franco, & Mendonca, 2006) and its extension by (Azevedo, Nguyen, & Sanfelice, 2012)

The contribution of employment shares between the two periods can also be verified using Labor Force Statistics data. Between 2009 and 2016, when poverty rates showed the greatest decrease, the change in overall employment was mainly due to increasing labor force participation rates, followed by the rise in total population and the share of working age population. By contrast, between 2016 and 2020, labor force participation fell along with the employment rates in the country, and only demographic changes (rising population and share of working age population) were responsible for the increase in overall employment during this period (Figure 1.20).

Figure 1.20: Decomposition of Changes in the Number of Employed in Türkiye



Source: World Bank staff calculations using Labor Force Survey data from the Turkish Statistical Institute.

The analysis presented in this chapter reveals several important findings. First and most importantly, Türkiye was able to cut its poverty rate by half between 2009 and 2016, thanks to increased welfare gains being equitably distributed among different segments of the population. Growth was the primary driver of poverty reduction, and it was specifically the growth of labor incomes that was the most important contributor to the reduction in poverty rates. During this period, both the growth in incomes and more equitable distribution of the gains made a positive contribution to the fall in poverty, as the increase in labor incomes happened at greater rates for the poorest segments of the population. Changes in minimum wages may have contributed to pro-poor growth in labor incomes, especially considering that between 2009 and 2016 annual growth in minimum wages exceeded changes in CPI inflation. Convergence in regional poverty rates accompanied the convergence in per capita income across geographical regions, and the differences in poverty rates between more and less developed regions of the country decreased in size. Poverty rates fell for different demographic groups at similar rates, and the ranking of different demographic groups in terms of poverty rates stayed broadly unchanged over time. The share of children (aged less than 15 years) in poverty declined from 33 to 19 percent, but children living in households that are below the poverty line still made up almost 45 percent of the poor in the country as of 2016.

Secondly, the momentum built up during 2009-2016 was not sustained over the following 4 years. During this period, the macroeconomic conditions in 2018-2019 slowed down income growth, and the restrictions imposed by the Covid-19 pandemic led to an abrupt stop in economic activity. Between 2016 and 2020, average per capita household incomes grew by 6 percent, but this growth in incomes was not translated into further reductions in poverty. This was mainly due to the fact that the top deciles benefited more from this income growth, while the income of the poorest shrank in real terms. During this period, labor incomes did not grow on average. On the other hand, average pension incomes and rent incomes (or imputed rents for homeowners) rose by 24 and 18 percent respectively. Contrary to what took place between 2009 and 2016, this growth in non-labor incomes was enjoyed disproportionately by the wealthiest of the population. Despite having the lowest poverty rate among different age groups, only the 60+ age group was able to decrease its poverty rates further during this period, thanks to a significant rise in their pension incomes.

Thirdly, the regressive distribution of income was particularly evident during the 2016-2019 period. During this period, labor incomes did not change on average, but the top and the bottom of the income distribution experienced negative labor income growth. However, only the top was able to benefit from increased public transfers. Between 2016 and 2019, non-pension public transfers (such as social assistance) recorded negative growth on average, and there was no clear pattern for the growth of non-pension transfers across deciles. The income share of non-pension transfers for the poorest decile of the population also declined during this period. More importantly, there was a net decline in the total incomes of the bottom decile of the population. While pension incomes rose by 15.8 percent, only the top 4 deciles were able to benefit from this increase. For the richest 10 percent, pension incomes grew by nearly 50 percent. This meant that the poorest was affected by exchange rate volatility in 2018 and the gains of the period were primarily enjoyed by the wealthiest. Public transfers, including social assistance, had a limited impact on reducing the impacts of falling labor incomes for the bottom deciles.

Fourthly, increased government transfers – both social assistance and pension transfers – was able to reach the bottom of the distribution during 2020, resulting in stable poverty rates during the peak of Covid-19 pandemic. Türkiye was one of the few countries across the world that managed to keep its poverty rates unchanged during 2020 through fiscal support. Social assistance in particular rose by 62 percent on average but benefited the middle of the income distribution at a greater rate. Per capita pension income also rose by 16 percent during this period, mostly at higher rates for the bottom of the income distribution. Increased public transfers translated into a net per capita income increase of 0.4 percent, preventing poverty rates from rising during the Covid-19 pandemic.

Finally, even though there was no discernible difference between the poverty rates among men and women, female labor force participation and labor earnings helped reduce overall poverty rates during both the 2009-2016 and 2016-2020 periods. During faster income growth enjoyed in the 2009-2016 period, it was primarily the increase in men's labor incomes that made the greatest contribution to poverty reduction. However, in the post-2016 period, both men's labor incomes and employment rates contributed adversely to poverty reduction, which would have collectively led to a 1.6 percentage point increase in poverty rates, without other mitigating factors. A rise in female earnings and in the share of female employment within the household slashed nearly 0.4 percentage points from the headline poverty rate during this period. Similarly, female earnings and employment were also responsible for a total of 1.1 percentage point decline in the headline poverty rate enjoyed during the previous 2009-2016 period. Given the low labor force participation rates of women, increasing women's participation in the workforce has the potential to further compound the gains made in the poverty reduction in Türkiye since 2007.

Box 1: Multidimensional Poverty Measure (MPM)

Multidimensional poverty measure, an index developed by the World Bank, provides a comprehensive approach that aims to present a broader picture of human well-being. MPM is a complementary effort to extend the dimensions of the Multidimensional Poverty Index (Global MPI), developed by the UNDP and Oxford Poverty and Human Development Initiative. Both measures assess the crucial aspects of overall well-being, such as access to education and basic infrastructure, while the MPM differentiates from the MPI by incorporating monetary-based measures of well-being alongside the non-monetary dimensions.

Global MPI, a multidimensional poverty index developed with the joint effort of UNDP and Oxford University, measures multidimensional poverty across more than 100 developing countries. MPI monitors deprivations in 3 primary dimensions: health, education and standard of living, while ten different indicators (Health: nutrition, child mortality; Education: years of schooling, school attendance; Standard of

Living: cooking fuel, sanitation, drinking water, electricity, housing, assets) are mapped into the three dimensions to construct a single deprivation score. A personal deprivation score is constructed by adding up the weighted deprivations (UNDP and OPHI 2022). All dimensions are equally weighted, and the equal weights are allocated across the indicators within each dimension. The weighting scores are defined as 1/6 for each health and education indicator, while the corresponding weight is equal to 1/18 for the standard of living indicators. People are considered multidimensionally poor if their weighted deprivation score equals 1/3 or higher. The MPI ranges from 0 to 1 and is sensitive to both the incidence and intensity of poverty since it is a product of the share of multidimensionally deprived people and the average weighted deprivations experienced by the poor (Alkire et al. 2022)

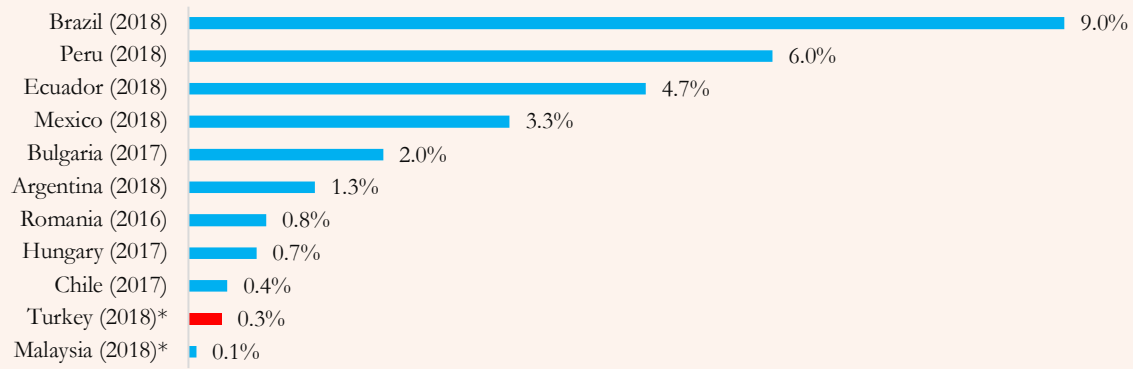
MPM evaluates the overall well-being by measuring the deprivation in three dimensions: monetary poverty, education and access to basic infrastructure services. The six different indicators, shown below, are aggregated into a single index, assigning equal weight to three dimensions, and each indicator is also weighted equally within each dimension. A dummy variable is allocated to each indicator where 1 implies the deprivation, and the sum of the weighted deprivations is used to construct multidimensional poverty scores. Households are categorized as experiencing multidimensional poverty if they are deprived in indicators whose weights add up to 1/3 or more (World Bank 2018). Likewise, a household which is deprived in at least one dimension will be directly considered poor based on the multidimensional poverty threshold. The multidimensional headcount ratio and the adjusted multidimensional headcount measure are the primary measures of MPM.

Dimension	Parameter	Weight
Monetary poverty	Daily consumption or income is less than \$ 2.15 per person.	1/3
	At least one school-age child up to the age of grade 8 is not enrolled in school.	1/6
Education	No adult in the household (age of grade 9 or above) has completed primary education.	1/6
Access to basic infrastructure	The household lacks access to limited-standard drinking water.	1/9
	The household lacks access to limited-standard sanitation.	1/9
	The household has no access to electricity.	1/9

Multidimensional headcount ratio (H) indicates the share of people who are categorized as multidimensionally poor based on the defined poverty threshold (1/3). This index reports the incidence of poverty while it is insensitive to the breadth of poverty. On the other hand, **the adjusted multidimensional headcount measure (M)** allows accounting for both the incidence and intensity of poverty since it incorporates the average number of deprivations among poor individuals, as proposed by Alkire and Foster (2011).

Multidimensional poverty headcount ratio increased in Türkiye between 2018 and 2019, from 0.34 percent to 0.58 percent, indicating that 60 out of every ten thousand people were multidimensionally poor as of 2019¹. A comparison of the sub-components of the multidimensional poverty index during this period the revealed a mixed trend. Despite a rising share of population access to education and sanitation over the course of the year, the share of individuals who experienced monetary-based deprivation (less than \$1.90 daily consumption per person)² reached 0.036 percent by 2019, increasing from 0.004 percent in the baseline. Similarly, the share of the population living in households where no adult has completed primary education marginally rose to 3.29 percent, with a 0.16 percentage point increase since 2018.

Figure B1.1: Multidimensional poverty headcount ratio in Türkiye and comparators



Source: Multidimensional poverty headcount ratios which are reported by World Bank (2018) are used to produce the figure.

Note: *World Bank Poverty and Inequality Platform (PIP) (<https://pip.worldbank.org>) is used as the source of data for Türkiye and Malaysia.

A benchmarking of the multidimensional poverty headcount rates across countries at similar income levels indicates that the population living in Türkiye experience a relatively lower level of multidimensional deprivation. Türkiye has the second-lowest multidimensional poverty rate among the comparators, with a 0.34 percent multidimensional poverty headcount ratio in 2018, following Malaysia ranked at the top (0.08 percent). On the other hand, populations living in Chile (0.4 percent), Hungary (0.7 percent), Romania (0.8 percent), Argentina (1.3 percent) and Bulgaria (2 percent) experienced a higher level of multidimensional deprivation compared to Türkiye (World Bank 2020) (Figure B1.1).

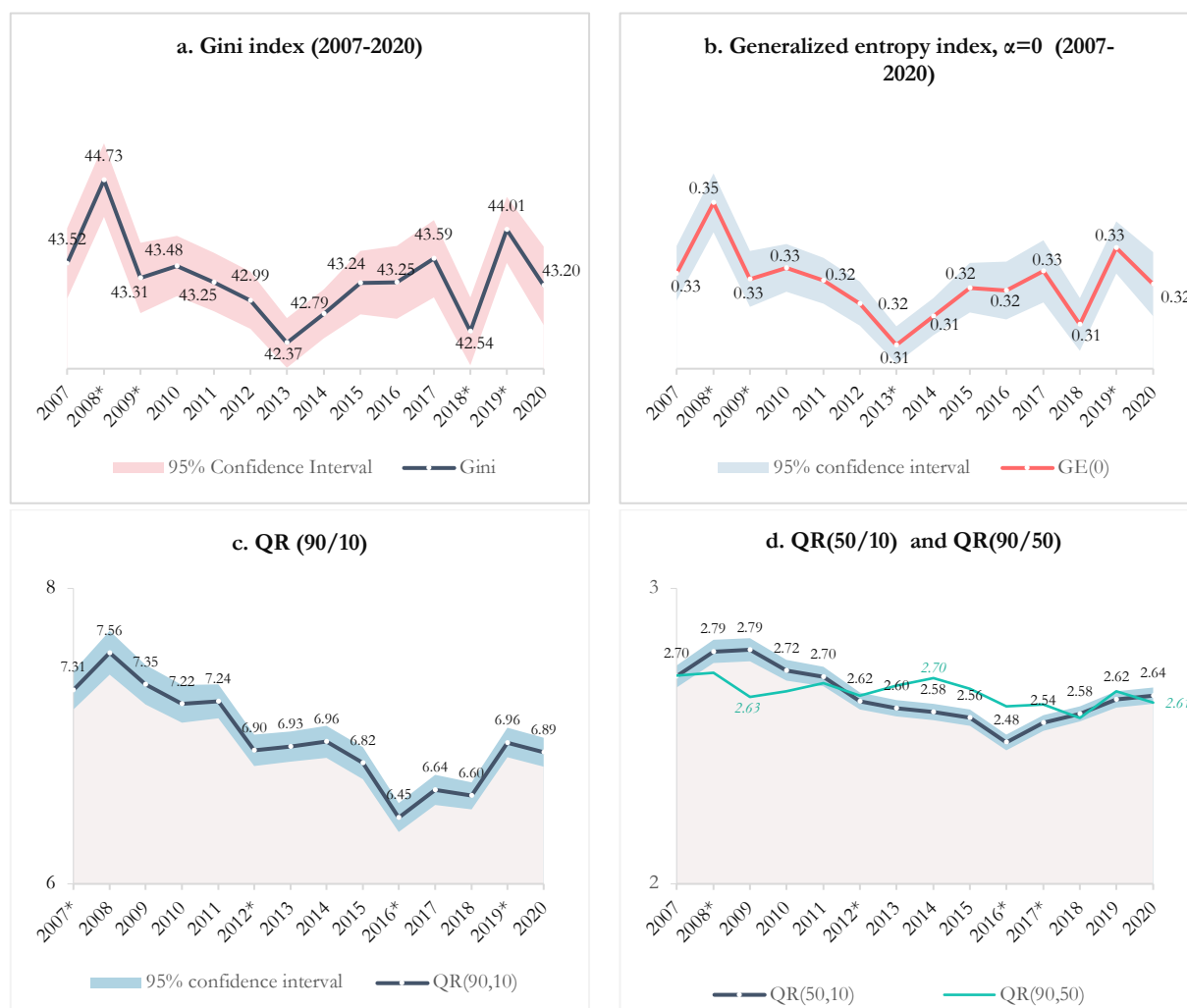
1. World Bank Poverty and Inequality Platform (PIP) (<https://pip.worldbank.org>) is used as the source of multidimensional poverty rates and their components which are reported for Türkiye and Malaysia.

2. With the adoption of 2017 PPPs in 2022, the threshold for monetary-based component of the multidimensional poverty rate was updated to \$2.15/capita per day.

II. Inequality and Shared Prosperity

Income inequality in Türkiye -as per some inequality indexes- displayed a V-shaped pattern between 2007 and 2020. The Gini index for per capita household income, which is a widely used measure of income inequality (ranging from 0 - perfect equality, to 1 - perfect inequality), decreased marginally from 43.5 in 2007 to 43.2 in 2020, but the change was not statistically significant between these two endpoints. Although an increase in the Gini index was seen during the global financial crisis year of 2008, income inequality declined to its pre-crisis level in 2009 and a downward trend was observed until 2013, with Gini index falling to 42.4. The Gini index seen in 2013 was statistically lower than its baseline value in 2007. Since 2013, the trend in inequality reduction reversed, and the Gini index increased to 43.6 by 2017, fluctuating around that range in subsequent years (Figure 2.1a). By 2019, the Gini index was statistically higher than the levels registered in 2013, and at a similar level with respect to levels observed in 2007. The Theil L index (GE(0)), a well-known generalized entropy measure that allows for decomposition of inequality, also showed a similar trend with the Gini index. The generalized entropy index -GE(0)- declined gradually between 2009 and 2013 and grew gradually thereafter, reaching levels experienced in 2009 (Figure 2.1b). Between the two endpoints of 2007 and 2020, there was no statistical difference in the GE(0) index.

Figure 2.1: Evolution of income inequality indices in Türkiye, 2007-2020



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC) data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

*Indicates years where the change in inequality measures is statistically significant at the 5% level compared to the previous year.

While the examination of Gini and Theil indexes provides an overall picture of income inequality, the quantile ratio indices (QR) allow us to gain a deeper understanding of income disparities across income distribution by examining the gaps within chosen income clusters. The QR(90/10), for instance, expresses the income of the population at the 90th percentile of income distribution (the “richer”) as a multiple of those in the 10th decile (the “poorer”). The evolution of the QR(90/10) in Türkiye indicates a significant reduction in the income gaps within the mentioned income classes between 2007 and 2016. The QR(90,10) had a statistically significant decline during this period, falling from 7.31 to 6.45. The trajectory has reversed however following 2016 and there was an uptick in the QR(90/10) until 2020. As of 2020, the average per capita income of the 90th percentile was about 6.9 times higher compared to the average per capita income at the 10th percentile of the distribution (Figure 2.1c).

A comparison of incomes across various other percentiles of the population complements the insights provided by the QR(90,10) measure. Findings from other quantile ratios show that the main driver of the narrowing income gaps was the improvement observed within the bottom half of the distribution. In fact, the income gaps between the 50th and 90th percentiles remained relatively constant across the years. In contrast, the income disparities across the 10th and 50th percentiles significantly narrowed between 2007 to 2016, parallel to the pronounced progress made in poverty reduction until 2016. The QR(50,10) has been on a rising trend since 2016, indicating a reversal in the relative growth of the incomes of the bottom deciles with respect to the median (Figure 2.1d).

As of 2020, Türkiye ranks eighth in terms of income inequality among comparators, reflecting moderate income inequality compared to other upper middle-income countries. Türkiye’s Gini index in 2020 (43.2) is significantly lower compared to most Latin American Countries, whereas Türkiye lags behind the European and East Asian comparators, such as Hungary, Croatia, Poland and Malaysia in terms of income inequality (Figure 2.2). Moreover, it is worth noting that Türkiye’s performance in closing income gaps between 2007 and 2020 remained behind the benchmarked Latin American Countries, with one percent decrease in the Gini index over a decade (Figure 2.3).

Figure 2.2: Income inequality in Türkiye and comparators

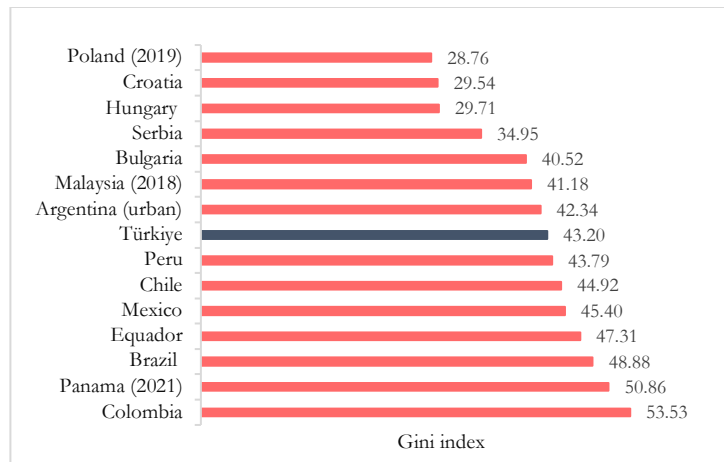
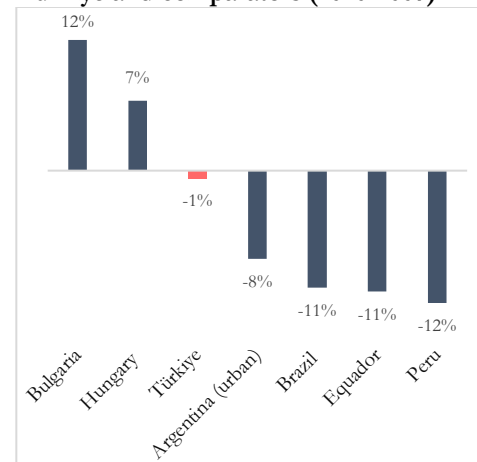


Figure 2.3: Change in Gini index in Türkiye and comparators (2020-2007)

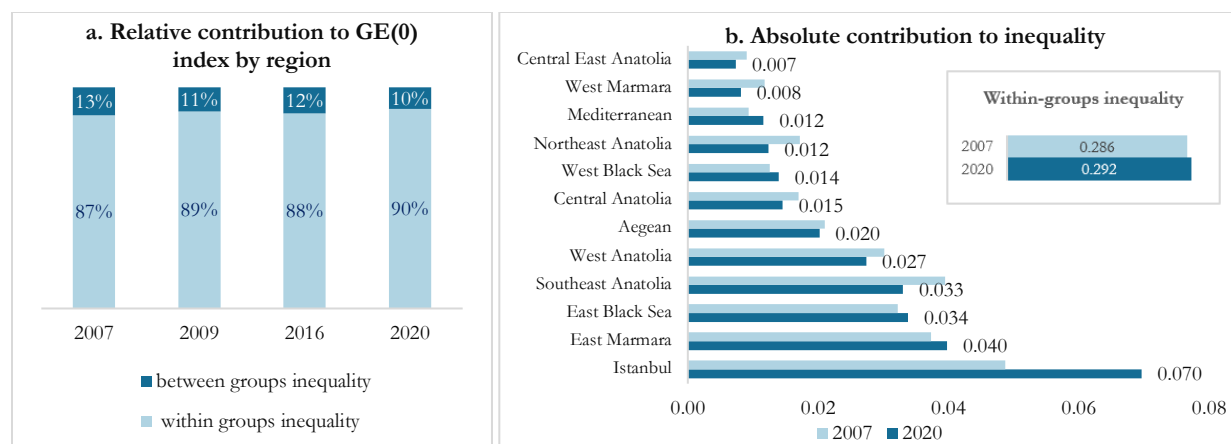


Source: World Bank Staff Calculations using Survey of Income and Living Conditions (SILC) data from the Turkish Statistical Institute. World Bank Poverty and Inequality Platform (PIP) (<https://pip.worldbank.org>) is used as the source for other countries’ Gini indexes. Note: Income based inequality indexes are provided for all countries for the year 2020 unless otherwise specified.

One advantage of the generalized entropy index, reported in Figure 2.1, panel b, above- is that it can be decomposed into different components, including within-group and between-group inequality indices. In line with the poverty trends described in the previous chapter, the between-region inequality component of the national GE(0) index has declined over time as the average income gaps across regions have closed throughout the years. During these years, household incomes in lagging regions enjoyed faster growth, indicating an income

convergence translated into a decline in between-region inequality. On the other hand, within-region inequality became an even bigger component of the national level inequality, rising its share from 87 to 90 percent. In particular, the contribution to total inequality due to within region inequality has increased significantly in Istanbul between 2007 and 2020 (Figure 2.4).

Figure 2.4: Within and between region components of the inequality index

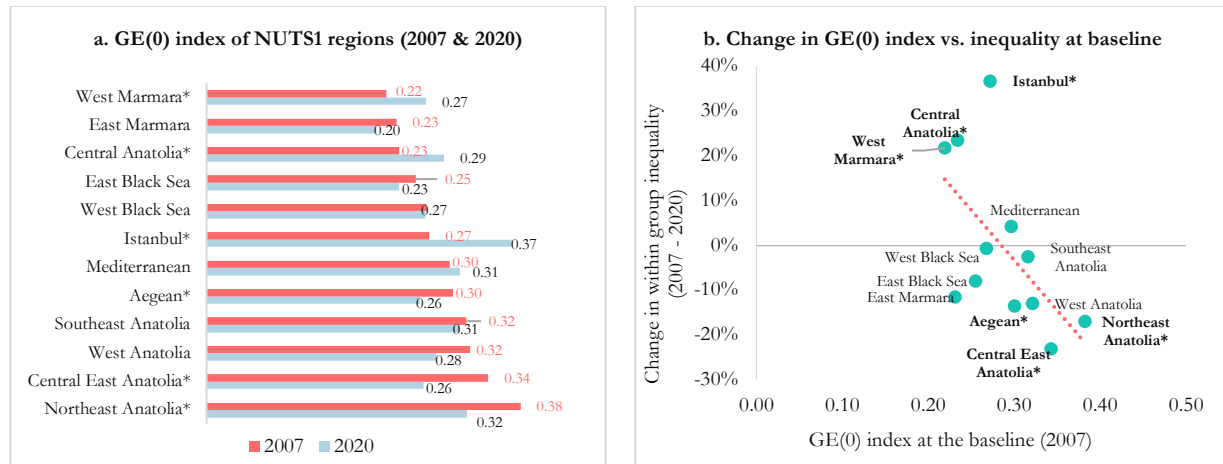


Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008-2021) data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

Looking at the generalized entropy index (GE(0)) with respect to geographic divisions reveals some regional differences in income disparities. In 2007, eastern regions had relatively higher income inequality compared to their western counterparts. At the NUTS1 level, Northeast Anatolia (TRA) had the highest income inequality based on the GE(0) index (0.38), followed by Central East Anatolia (TRC) with a GE(0) index of 0.34. (Figure 2.5a) Over the next decade, the regions have demonstrated varied performance in reducing income inequality. Income disparities significantly deepened in regions such as Istanbul (TR1), Central Anatolia (TR7), and West Marmara (TR2), while notable improvements were seen in regions with relatively higher income disparities at the baseline, such as Central East (TRB) and Northeast Anatolia (TRA). Plotting the change in the GE(0) index between 2007 and 2020, against the baseline GE(0) index reveals that on average, income inequality declined at a slightly faster rate in regions that had higher baseline levels of inequality. But there was no statistical change in inequality levels in 6 of the 12 NUTS1 regions (Figure 2.5b). As of 2020, Istanbul ranked at the top in income inequality with a 0.37 GE(0) index, contributing to 22 percent of the overall income inequality experienced in 2020. Istanbul was followed by Northeast Anatolia and Mediterranean regions, with GE(0) index levels of 0.32 and 0.31, respectively (Figure 2.5a)

Figure 2.5: Income inequality by regions



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008-SILC 2021) data from the Turkish Statistical Institute.

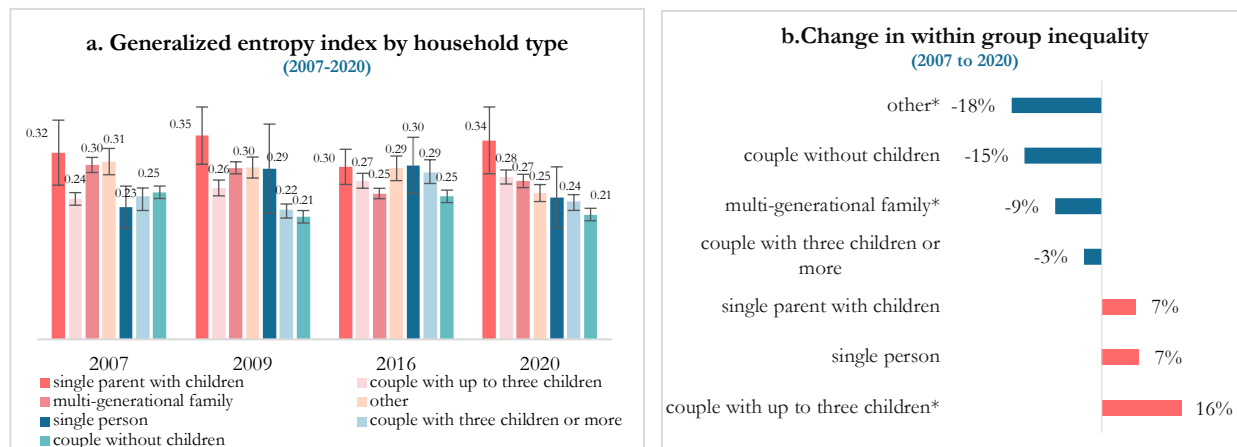
Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

*Indicates regions where the change in GE(0) index is statistically significant at the 5% level compared to the baseline index in 2007.

Demographic profiles of inequality

While the regional gaps in income inequality are commonly studied, other population characteristics such as household type, age, education and sector of the household head can also exhibit variation in income inequality. A comparison of income inequality across household types has not revealed a clear pattern, with the exception of single-parent households, where within group income inequality was persistently higher than other household types across time. In particular in 2009 and 2020, the GE(0) index for single parent households was visibly higher -though not statistically different- with respect to other household types³³ (Figure 2.6a). Between 2007 to 2020, nuclear families with less than 3 children experienced the highest increase in within group income inequality, whereas families categorized in “other” group (those including non-relatives) experienced the highest level of decline³⁴. Multi-generational families also experienced a decline in their within group inequality, by about 9 percent (Figure 2.6b).

Figure 2.6: Decomposition of income inequality by household type



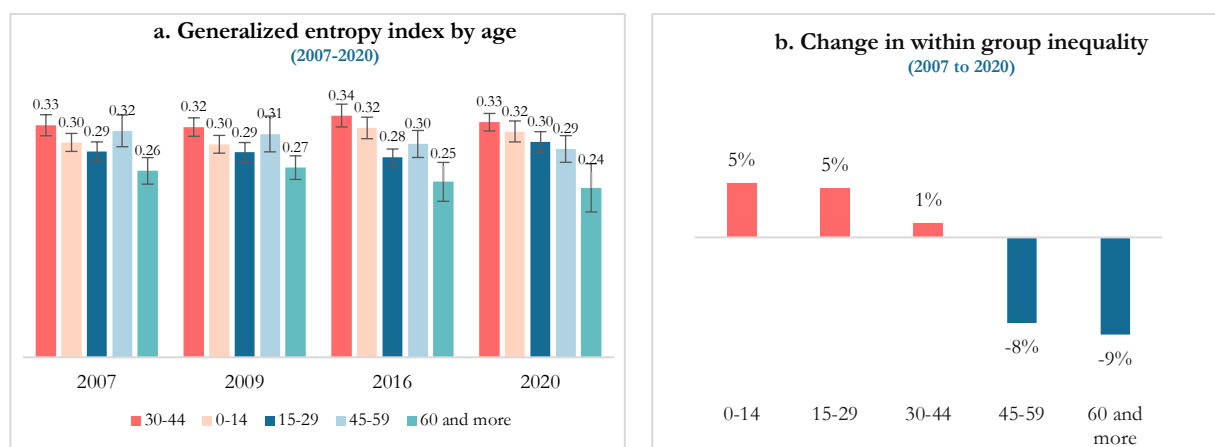
Source: World Bank staff calculations using Survey of Income and Living Conditions (2008/2010/2017/2021) data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year. Disaggregated age data was reported using a different categorization for the SILC surveys of 2011 and older. Individuals that are 19 years old and below are included in the child category for the household type classifications for the years 2009 and 2007.

*Indicates groups where the change in GE(0) index is statistically significant at the 5% level compared to the baseline index 2007.

Income inequality levels across different age groups remained relatively similar until 2020, without any statistically significant difference. However, in 2020, those aged 60 and over, including the majority of pension recipients, exhibited lower levels of within group income inequality compared to their younger counterparts. While GE(0) index has exhibited various levels of change for different age cohorts between 2007 and 2020, none of the changes were statistically significant at the 5% level (Figure 2.7).

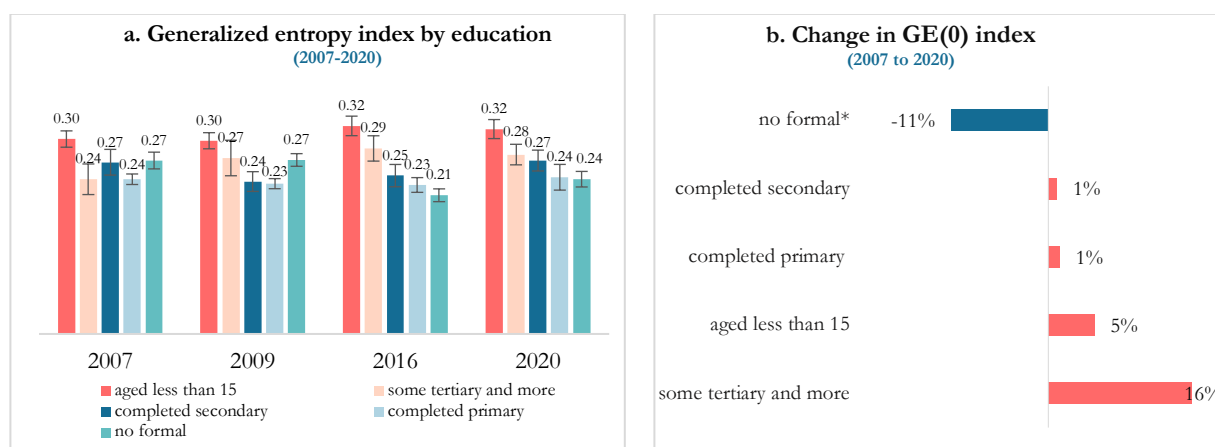
Figure 2.7: Decomposition of income inequality by age



Source: World Bank staff calculations using Survey of Income and Living Conditions (2008/2010/2017/2021) data from the Turkish Statistical Institute. Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

Analyzing income inequality through levels of schooling shows that all groups faced the similar levels of within group income inequality, without a statistically significant difference across them and over time. Comparison across years shows that the only significant decline in the GE(0) index was observed between 2007 and 2020 for individuals without any formal education, underscoring that income disparities have become less prominent for this group over time. The inequality levels among those with tertiary education increased by 16 percent during the same time period, but not high enough to be statistically significant at the 5% level (Figure 2.8).

Figure 2.8: Decomposition of income inequality by education



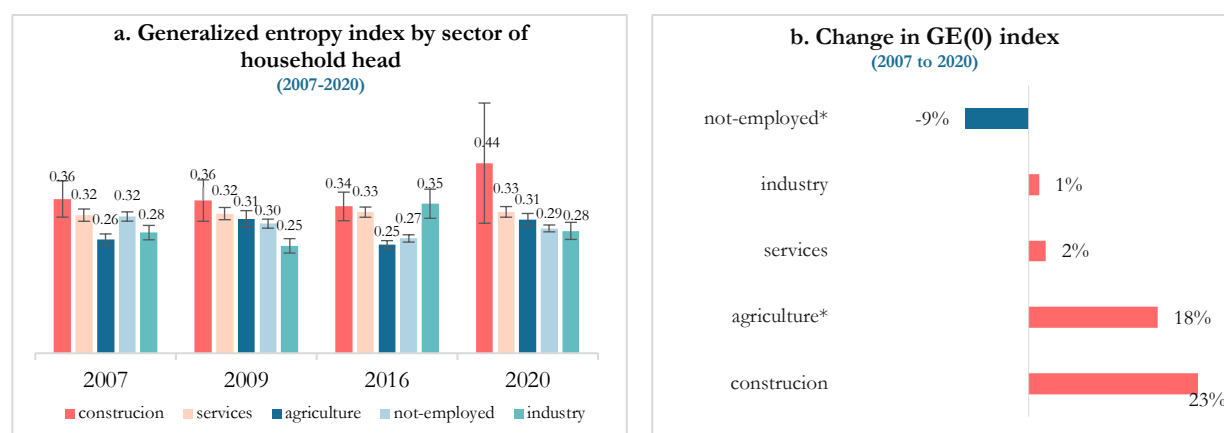
Source: World Bank staff calculations using Survey of Income and Living Conditions (2008/2010/2017/2021) data from the Turkish Statistical Institute. Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

*Indicates groups where the change in GE(0) index is statistically significant at the 5% level compared to the baseline index 2007.

The employment sector of the household head similarly stands out as another factor contributing to the variation observed in income gaps. In 2007, individuals living in households where the head was employed in

agriculture and industry had exhibited the least disparity in income distribution compared to other groups, while the change in the relative position of these groups over time resulted in a similar level of GE(0) indexes observed in 2020, without any statistically significant difference between groups. In fact, the income inequality had significantly declined between 2007 to 2020 for the population residing in households where the head was not employed, whereas it had become greater for individuals living in households where the head was employed in agriculture. The increase in the inequality index of households with heads employed in the construction sector was not statistically significant, despite being the greatest in size (Figure 2.9b).

Figure 2.9: Decomposition of income inequality by sector of household head



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008/2010/2017/2021) data from the Turkish Statistical Institute.

Notes: Using per capita income as welfare aggregate. Income reference periods are the previous calendar year.

*Indicates groups where the change in GE(0) index is statistically significant at the 5% level compared to the baseline index 2007.

While this cross-sectional analysis decomposes the overall inequality measure into different components, it provides limited insight into particular drivers of changes in inequality. A decomposition of the GE(0) index, developed by Mookherjee and Shorrocks (1982), delineates the contribution of three distinct factors to overall inequality change: changes within subgroup inequality, shifts in the population shares of different subgroups (disaggregated by the impact of within and between group inequality) and changes in relative incomes of the subgroups³⁵.

As indicated before (see Figure 2.1b) income inequality as measured by GE(0) has not changed significantly over the period of study. It fell 0.3 between 2009 and 2016, and then rose 0.2 between 2016 and 2020. A decomposition of these changes *a la* Mookherjee and Shorrocks (1982) is shown in Figures 2.10 to 2.13. No uniform patterns are seen in these figures. In some cases, changes in the population share of groups have contributed to an increase inequality (i.e., by household type and by schooling, Figures 2.10 and 2.12), but in others the effect had the opposite direction (by age and by employment of household head). Changes in within sub-group inequality by household type reduced inequality in the two periods (Figure 2.10), but changes in within sub-group inequality by schooling increased inequality (Figure 2.12) in the two periods.

Figure 2.10: Change in income inequality by household type

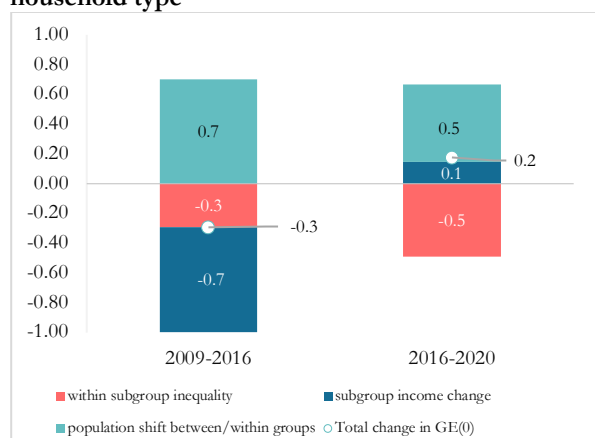


Figure 2.11: Change in income inequality by age

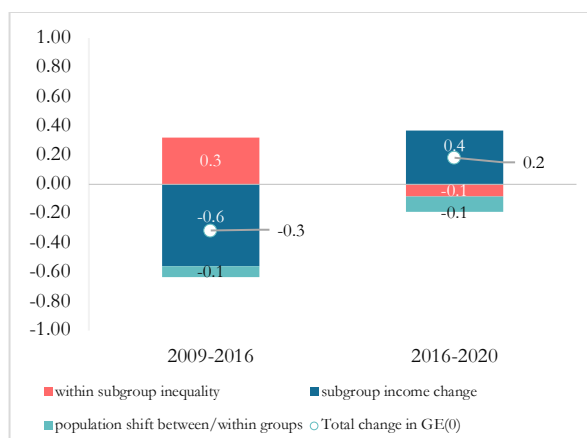


Figure 2.12: Change in income inequality by schooling

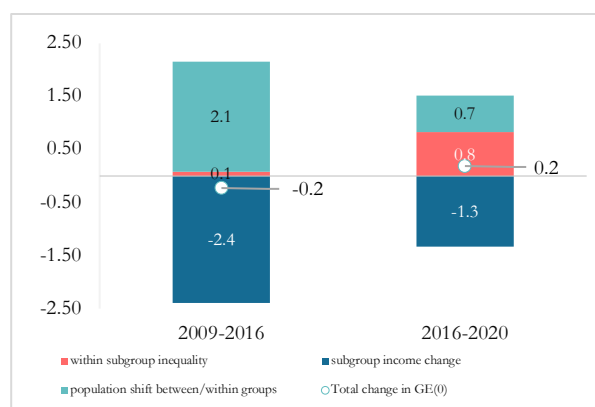
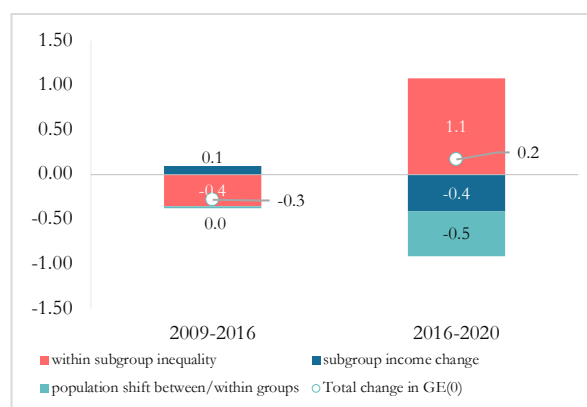


Figure 2.13: Change in income inequality by sector of household head



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC) data from the Turkish Statistical Institute.
 Notes: Using per capita income as welfare aggregate. Income Reference periods are the previous calendar year. The decomposition of change in generalized entropy index ($\alpha=0$) based on the method by Mookherjee and Shorrocks (1982) using STATA code MSDECO by Andrew Silva (2017) is reported on the second graph. Approximated values are given under the total change in GE(0). The changes in the GE(0) indices presented in the figure are multiplied by a factor of 100.

Still, the decomposition of change in income inequality across demographics reveals three primary findings. First, between 2009 and 2016, population subgroups benefitted from the income growth to different extents, but mainly favoring those with relatively lower per capita household income. Across all demographic decompositions, convergence in incomes played an important role to reduce income inequalities. However, in post-2016, income convergence had different directions across different demographic groups. For instance, individuals with higher levels of education experiencing negative income growth during this period, led to income convergence, whereas the negative income growth for families with 3 or more children exacerbated income inequality.

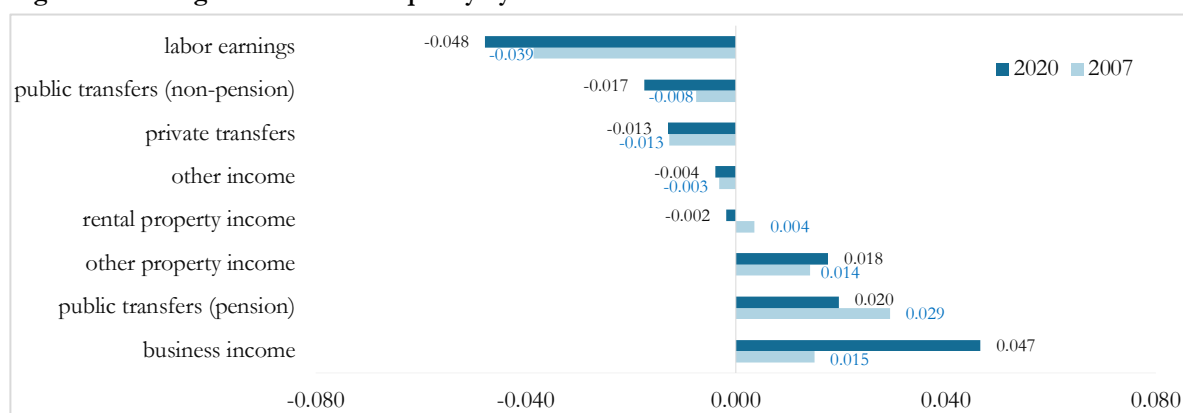
Second, compared to the general inequality reducing impact of income convergence between 2009 and 2016, demographic changes had mixed impacts on income inequality, depending on the categorization of demographic characteristics. During this period there was a clear shift in population towards single person households, individuals aged 60 and above and higher education levels. In the case of the shift towards older age brackets, a fall in levels of inequality was observed. On the other hand, moving to single person households, and higher education brackets have made the opposite impact raising inequality levels. Demographic changes made similar impacts on inequality levels during the post-2016 period, but at relatively lower levels.

Third, between 2009 to 2016, within subgroup inequality significantly decreased for individuals with no formal education, those living in multigenerational households, and those living in a household where the head was employed in the agriculture sector or did not work. However, after 2016, the fall in within group inequality for those groups reversed, sometimes returning to levels in 2009. As such, while economic growth witnessed during 2009-2016 reduced within group inequality for some segments of the population typically considered as more vulnerable, this trend was reversed between 2016 and 2020.

Inequality by sources of income

Across the years, labor income unsurprisingly had the largest equalizing effect on the income distribution. The coefficients shown in Figure 2.14, are the Gini elasticities of different income sources, and signify the percentage change in Gini index as a result of a marginal percentage change in an income component k^{36} . For instance, if one were to increase income of every individual that had positive labor income by 1 percent in 2020, Gini index of the population would fall by 4.8 percent. Between 2007 and 2020, the Gini elasticity of labor income increased mainly due to the fact that the share of labor incomes in lower quintiles of the population were greater than those experienced by the higher quintiles.

Figure 2.14: Marginal effects of inequality by income sources



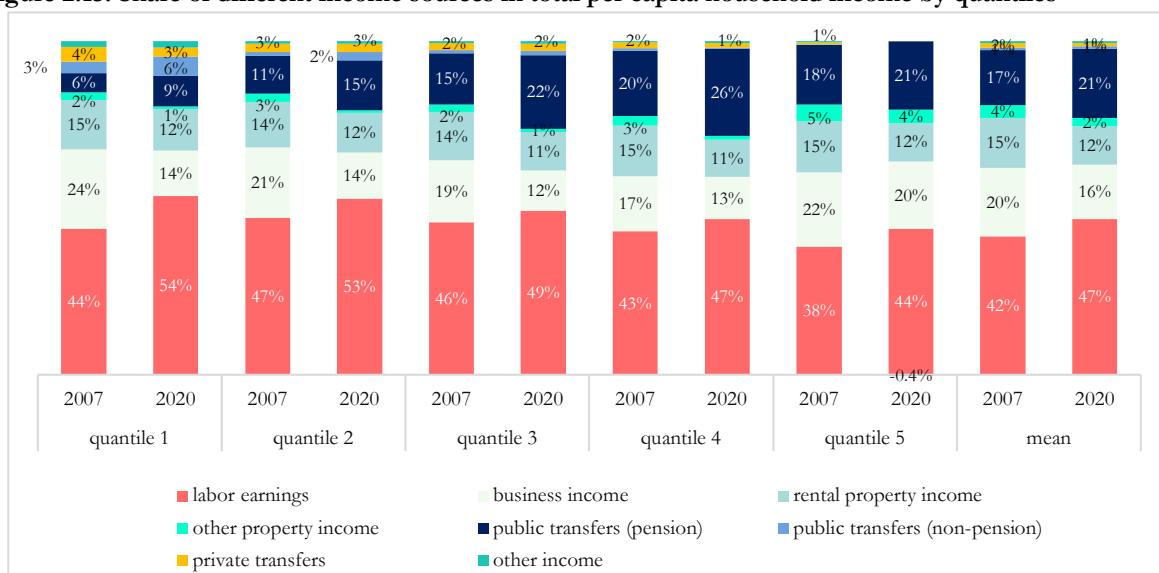
Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2021/2008) data from the Turkish Statistical Institute
Notes: Using per capita income as welfare aggregate. Reference periods are the previous calendar year. Decomposition of the Gini index based on the method by Lehrman and Yitzhaki (1985) with derivation and interpretation of marginal effects from Paul (2004) and Kinhi (2011). Computations using DASP 3.03 diginis command

In addition to the labor income, non-pension public transfers (mainly comprised of social assistance transfers) and private transfers also had an equalizing role on income distribution. The marginal impact of non-pension public transfers also increased considerably between 2007 and 2020. By 2020, the share of non-pension income in per capita household income of the 1st quantile reached 5.7 percent, having increased from 3.4 percent in 2007 (Figure 2.15). Similarly, the second and third quantiles increased their overall share of social assistance within total income during this period. The relative share of social assistance fell, on the other hand, for the top two quantiles, leading to an increase in its overall marginal effect on inequality.

On the other hand, pension income, other property income (such as portfolio investments), and business income demonstrated a disequalizing effect on total incomes across time. Old age pensions, stand out in particular in the context of Türkiye. More specifically, pension incomes constitute an increasing higher share of total incomes in upper quantiles. For instance, in 2020, they comprised a quarter of the incomes of the 4th quantile of the income distribution and more than one fifth of the 3rd and 5th quantiles. The corresponding shares are much lower for the lower end of the distribution, falling to 9 percent for the bottom decile. In 2020, one percent increase in the pension incomes of those that were receiving pensions would have led to a 2 percent increase in the Gini index. This rate fell in relative terms since 2007, (primarily between 2009-2016) but still has a disequalizing impact on the income distribution.

Business incomes (earned as employers or self-employment) similarly do have a significant disequalizing effect on income distribution, more so in 2020 than 2007. In 2007, business income was the second largest income source for the bottom three quantiles, while its relative share in incomes for these groups decreased over time. By 2020, business incomes made up 14 percent of the per capita household income for the 1st quantile, while the corresponding share was 20 percent for those at the top of the income distribution. Overall the share of business incomes fell across the population (from 20 to 16 percent), but the size of the decrease was much more pronounced for those at the bottom of the distribution. In 2020, a one percent increase in the business earnings of those who had business income, would have resulted in a corresponding 4.7 percent increase in the Gini index. Despite having a much smaller share of household incomes, “other property income” (such as returns from non-real estate investments), also declined as a share of total incomes over time but at a greater pace for the bottom of the distribution. The disequalizing effect of other property income also increased over time from 2007 to 2020.

Figure 2.15: Share of different income sources in total per capita household income by quantiles



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008/2021) data from the Turkish Statistical Institute
Notes: Using per capita income as welfare aggregate. Income reference years are the previous calendar year.

Shared Prosperity

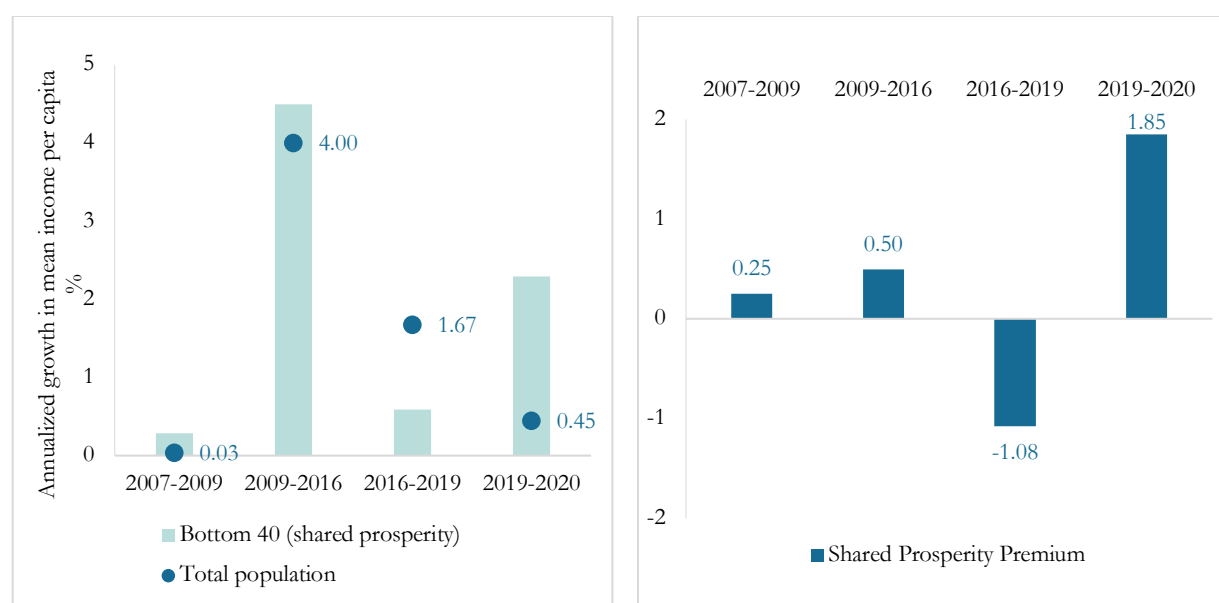
Shared prosperity is defined as the annualized growth rate in average income of the poorest 40 percent of the population, revealing the progress or deterioration in monetary welfare experienced by the most vulnerable population. Between 2007 and 2009, annual income growth remained limited for both the bottom 40 percent and the total population, as the global financial crisis slowed down growth. On average, the poorest 40 percent enjoyed a modest income growth with a 0.28 percent annual increase in average household income per capita. In comparison, the annualized income growth rate of the total population lagged behind the bottom 40 percent, with a 0.03 percent average increase per year (Figure 2.16).

Following the global financial crisis, rapid increases were observed in per capita household income. The average per capita household income per day increased to \$9.17 (2017 PPP) in 2016 for the poorest 40 percent, with a 4.49 percent annualized growth rate recorded between 2009 and 2016. However, this substantial progress in shared prosperity could not be sustained, and the income growth slowed down between 2016 and 2019, with a 3.90 percentage point decrease in shared prosperity. Although a similar downward trend was observed in the annualized income growth rate of the total population, the poorest population were disproportionately affected by the slowdown. Indeed, the average per capita income growth of the bottom 40 percent was almost three

times lower than the corresponding rate for the overall population. On the other hand, a notable shift favoring the bottom 40 percent was observed between 2019 and 2020, during the onset of the Covid-19 pandemic. The average per capita household income of the poorest 40 percent grew by 2.29 percent, while the average income growth rate was measured at 0.45 percent for the overall population.

Shared prosperity premium, which is defined as the difference between shared prosperity and the annualized growth in the average income of the total population, provides a more straightforward interpretation of these distributional shifts in economic gains. Except for the 2016-2019 period, the shared prosperity premium (SPP) was positive, indicating a faster income growth for the bottom 40 percent compared to the total population. In earlier periods, the poorest population had benefitted slightly faster income growth, whereas the negative SPP recorded in 2016 and 2019 (-1.08 percentage point) indicates a regressive shift in the distribution of economic gains.

Figure 2.16: Shared prosperity and shared prosperity premium for different time periods



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC 2008/2009/ 2010/ 2017/2020) data from the Turkish Statistical Institute.

Note: Using average household income per capita per day (2017 PPP). Reference periods are the previous calendar year. The annualized growth rate is calculated as $(\text{Mean per capita household income in end year} / \text{Mean per capita household income in baseline})^{1/(\text{End year} - \text{Baseline year})} - 1$.

The SPP trend reveals two distinct periods between 2007 and 2020 which are in line with the poverty and inequality trajectories observed over these years. An inclusive growth had continued until 2016, where the income growth was enjoyed by all segments, particularly by those who have concentrated on the lower end of the income distribution. Correspondingly, a notable income convergence between 10th and 50th percentiles experienced over the period spanning 2007 to 2016, led to the marked progress made in poverty reduction until 2016. However, the inclusive growth could not be sustained during post-2016, a period where the poverty reduction came to a halt, and regressive shifts in the distribution of economic gains resulted in widening income gaps.

The findings presented in this chapter complement and help understand the reasons behind recent trends in poverty rates in Türkiye. While there was no statistically significant change in the GE(0) and Gini indices in the country across time, the quantile ratio indices show that there was some convergence in incomes between the incomes of the bottom half of the income distribution between 2009 and 2016, as indicated by the QR(50,10) ratio. This is also supported by the fact that the income convergence component of the GE(0) was inequality reducing across most demographic groups during this period. Over time, between group disparities between regions declined and within group disparities increased instead. Similar to what was observed for poverty

rankings the relative position of children (ages 0-14) in terms of income inequality has remained stable – children consistently experienced highest income inequality over the years.

Labor incomes served as the most inequality reducing type of income across time. As more people from the bottom deciles increased their share of labor incomes faster than the top, the inequality reducing impact of labor income increased over time. Not surprisingly, non-pension public transfers (such as social assistance) also had an equalizing effect on income distribution, the impact of which also increased over time. On the other hand, pension incomes had an unequalizing effect on income distribution.

Following 2016, there was a reversal in the reduction of the QR(50,10) ratio, also in line with the findings of the previous chapter. While some groups (such as those with no formal education, those living in multigenerational households) were able to significantly reduce their within group inequalities between 2009 and 2016, this trend reversed and within group inequalities in these groups almost returned to their levels seen in 2009. This was primarily due to unchanging levels of labor incomes throughout the period, while pension and rent incomes increasing at greater levels for the higher deciles of the population. The negative Shared Prosperity Premium for the 2016-2019 period, was an indication of the regressive shift in the distribution of economic gains during this time, with a compensation in 2020 through to policies implemented to protect the population during the COVID-19 pandemic.

III. Income Mobility and Poverty Dynamics

Writers on income mobility have long emphasized that mobility has multiple dimensions. Some use the term mobility as individual income growth referring to an aggregate measure of the changes in income experienced by each individual within the society between two points in time, where the individual-level changes might be gains or losses. Income growth is defined for each individual separately, and income mobility for society overall is derived by aggregating the mobility experienced by each and every individual. Others define income mobility with reference to its impact on inequality in longer-term incomes. the inequality across individuals in these longitudinally averaged incomes will be less than the dispersion across individuals in their incomes for any single period. Mobility can therefore be characterized in terms of the extent to which inequality in longer-term income is less than the inequality in marginal distributions of period-specific income (for a summary of the literature on measures and definitions of mobility see, Jantti and Jenkins, 2015).

Changes in income (or consumption) over time may involve changes in poverty status and, as such, poverty dynamics is a form of economic mobility. Analyzing poverty dynamics, i.e. incorporating time dimension to the analysis, helps to better understand the characteristics and various facets of poverty. In addition to looking at persistent poverty, it is important to look at the probability of exiting and entering poverty in different groups of the population and at poverty trajectories of the poor. The results show great variations between countries even with similar at-risk-of-poverty rates when it comes to the duration of poverty and the probability of entering and exiting poverty. These results are important for formulating effective policies in particular for those most at risk of a long poverty spell.

Poverty headcount measured at one point in time does not disclose information on the past poverty trajectory of individuals. This is a weakness as it is increasingly acknowledged that poverty is not a static state but it develops over time. The length of the poverty spell provides more information on the severity of poverty. The longer the individual stays in poverty, the greater is the likelihood for permanent social exclusion. Taking into account time dimension is fundamental in order to gain a more comprehensive picture of the phenomenon and of the policies that can be effective in fighting it. Two principal themes have been covered in the literature on poverty dynamics: 1) the duration of poverty, and 2) the determinants of poverty transitions. For a summary of the literature on poverty dynamics in USA see Cellini, McKernan and Ratcliffe, (2008) and in Europe see Vaalavuo (2015).

Poverty dynamics is a term that refers to the study of how households escape or fall into poverty over time. Static analyses at a single point in time have limited explanatory power about what might be causing persistent poverty over time and what needs to be prioritized for its elimination. Tracking poverty over time has important policy implications. For instance, two countries may be experiencing similar levels of poverty rates, depth and severity, but in one country poverty could be mainly transitory and experienced by shorter periods of time by different groups of the population. In the other conversely, it might be the same group of people that are trapped in poverty for extended periods, even most of their lives. In both cases, different policy measures will be needed.

To be able to track household welfare over time, primarily panel surveys are utilized, where the same households and individuals are surveyed at more than one points in time. The main advantage that panel data presents is that one can measure who moves in and out of poverty over the time of the study, as well as characteristics associated with these individuals.

For this section we use the SILC panel surveys covering the periods 2006-2009 through 2017-2020. The SILC panel survey has a longitudinal structure that allows for tracking households and individuals over two-year, three-year, and four-year time periods³⁷. The survey has a rotational scheme where one section of the household stays in the sample frame from one year to the other, and the rest is replaced with new entrant households. Typically, around 25% of the households are removed from the panel sampling frame from one year to another. Households are interviewed between March and July each year. The panel survey is not designed to be

representative at the regional level and it is also not possible to combine the cross section and the panel modules of SILC using household and personal identifiers.

In order to see if the population who responded to all four panel survey rounds and those interviewed for the cross-sectional surveys (which are representative of the national population) have a similar profile, we compare the population characteristics of the panel and cross section survey samples at three points in time: 2010, 2015 and 2020. The results show that the two samples have similar characteristics, although the panel sample is relatively less wealthy, less educated and consists of larger families. In terms of age distribution, the panel data has a greater population of the youngest (ages 0-14) and the oldest (ages 45-59 and 60+) cohorts, and in terms of education levels, it has a higher share of individuals with no formal education and a lower share of individuals with tertiary level education. Panel sample also has a higher rate of male headship, and higher share of individuals living in households where the heads are employed in the agriculture and construction sectors or employed informally. The share of larger households (with more than 4 members) is greater in the panel data and the average per capita household income in the panel sample is 5 to 10 percent lower across the different years examined. On the other hand, panel data tends to have a higher percentage of persons living in dwellings that are self-owned, as opposed to rented. (See Table 3.1 for details).

The differences between the two samples seem to be explained by the likelihood of attrition associated with household visits for panel surveys. Families that do not move from their dwellings are more likely to be surveyed by the enumerators and families that move to a different location are more likely to be lost to attrition. As such, it would be expected to have a greater share of households with home ownership in the panel sample. A similar argument can be made about families with more children which might be less likely to move due to schooling commitments. While the characteristics of the 4-year panel and 1-year cross-section samples are similar enough to make conjectures about the trajectory of chronic poverty and mobility in the country over time, we do not consider the 4-year panel data to be representative at the national level.

Table 3.1: Description of panel and cross section surveys (in percentage of population surveyed)

		Survey 2010	Panel 2007-2010 (using last year of the panel i.e 2010)	Survey 2015	Panel 2012-2015 (using last year of the panel i.e. 2015)	Survey 2020	Panel 2017-2020 (using last year of the panel i.e. 2020)
<u>Population characteristics</u>							
sex							
	men	49.6%	49.4%	49.9%	49.0%	49.9%	49.1%
	women	50.4%	50.6%	50.1%	51.0%	50.1%	50.9%
age							
	0-15	26.4%	27.1%	24.2%	26.1%	23.6%	23.8%
	16-29	24.9%	20.7%	23.5%	19.6%	21.8%	19.4%
	30-44	22.8%	21.0%	23.5%	21.7%	23.0%	21.3%
	45-59	15.7%	18.2%	16.7%	18.3%	17.8%	19.3%
	60 and more	10.3%	13.0%	12.1%	14.3%	13.8%	16.2%
schooling							
	aged less than 16	26.4%	27.1%	24.2%	26.1%	23.6%	23.8%
	no formal	14.0%	15.9%	13.1%	15.0%	10.7%	12.2%
	completed primary	39.7%	39.8%	38.8%	39.6%	37.3%	40.0%
	completed secondary	13.1%	11.4%	13.3%	11.5%	15.3%	13.5%
	completed tertiary and more	6.7%	5.8%	10.3%	7.6%	13.0%	10.4%
	unknown/ did not respond	0.1%		0.3%		0.1%	
Age (years)		-	49.3	49.5	50.4	50.5	50.5
Gender (shares)							
	male	89.8%	92%	88.4%	89%	84.8%	88.2%
	female	10.2%	8%	11.6%	11%	15.2%	11.8%
Schooling (shares)							
	primary or less	73.6%	76%	70.6%	74%	65.3%	68.1%
	more than primary	26.3%	24%	29.3%	26%	34.6%	31.9%
	unknown/ did not respond	0.1%		0.1%		0.0%	
Employment activity (shares)							
	agriculture	14.6%	18%	10.9%	15%	9.3%	12.6%
	construction	5.9%	6%	7.3%	8%	5.1%	5.3%
	industry	14.0%	12%	13.5%	12%	13.9%	12.6%
	services	35.0%	34%	36.1%	33%	33.5%	32.6%
	non-employed	30.4%	30%	32.1%	33%	38.2%	37.1%
	unknown/ did not respond	0.1%		0.1%		0.0%	

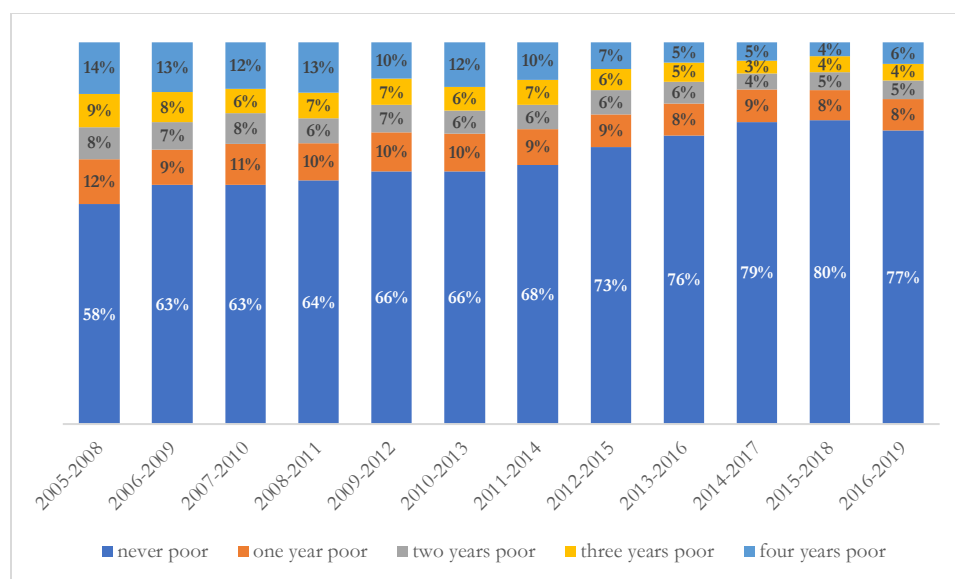
Employment sector (shares)							
formal	41.9%	37%	47.4%	43%	44.9%	42.9%	
informal	27.6%	33%	20.3%	24%	16.8%	20.2%	
non-employed	30.4%	30%	32.1%	33%	38.2%	37.1%	
unknown/ did not respond	0.1%		0.1%		0.0%		
<u>Household characteristics ¹</u>							
Household per-capita income (\$ PPP last year)*	6,643	6,344	7,758	7,067	9,184	8,341	
Family size (shares)							
Four or less members	57.8%	51.5%	56.7%	54%	60.2%	59%	
More than four members	42.2%	48.5%	43.3%	46%	39.8%	41%	
Home ownership (shares)							
no	40.0%	33%	39.6%	35%	42.2%	38%	
yes	60.0%	67%	60.4%	65%	57.8%	62%	
Number of Observations							
Households	19,321,196	2,448	21,849,637	5,048	24,951,877	5,284	
Individuals	71,342,705	9,467	76,368,842	18,752	81,872,735	18,334	

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute. The income reference years are the previous calendar year.

Distribution of poverty spells

Next, we measure the share of individuals from the panel sample who have been in poverty for different lengths, from no years in poverty up to 4 years in poverty. The trajectory of individuals across 4-year time periods shows that the share of individuals that were in poverty in all 4 years declined, while the share of individuals that were never below the poverty line rose over time. The only exception was a reversal in the 2016-2019 period, consistent with the findings from the cross-section data. Between the years 2005-2008 and 2015-2018 the share of individuals that were poor in all 4 years fell from 14 percent to 4 percent, although it later rose to 6 percent in the final panel round encompassing 2016-2019. Similarly, the share of individuals that were “never poor” in any of the 4 rounds rose from 58 to 80 percent during the same time period, but later fell to 77 percent during 2016-2019 (Figure 3.1).

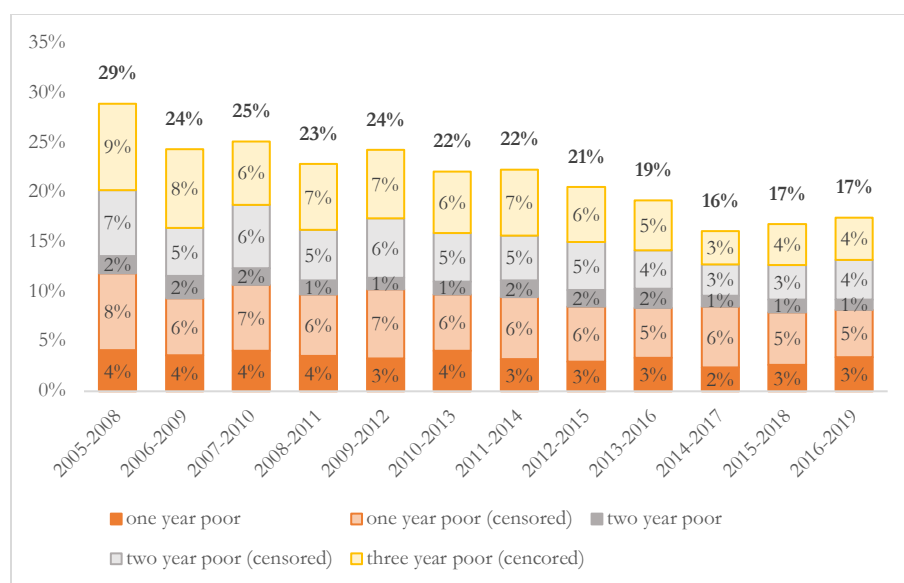
Figure 3.1: Evolution of crossings of the poverty line, in four-year panels (percentage of population surveyed)



Source: World Bank Staff calculations using SILC 2006-2009 to SILC 2017-2020 4-year panel datasets. The income reference periods are the previous calendar year.

The individuals that were below the poverty line in 1, 2 or 3 of the panel years also declined over time. However, in the majority of cases, poverty incidence corresponded with the first or the final years of the panel, or both. We refer to these events as “censored” and depict them in Figure 4.3 below. For instance, in the 2016-2019 panel, 8 percent of the surveyed individuals were poor in one year only. However, in 58 percent of these cases (in other words, 5 percent out of the 8 percent of individuals) poverty incidence coincided with the first or fourth years of the survey. This means that these individuals could have been poor during the year prior or following the panel data collection; it is known that they were poor at least for one year, but they could have been poor for more consecutive years, at times not measured by the panel data. Similarly, 5 percent of individuals were poor in 2 of 4 years during the same period, but in 80 percent of these cases, poverty incidence coincided with the first or last years of the survey. These individuals were poor for at least 2 years, but could have been undergoing longer spells of poverty, were their incomes measured in previous or consecutive years³⁸ (Figure 3.2).

Figure 3.2: Share of one, two and three-year poor, in four-year panels (percentage of population surveyed)

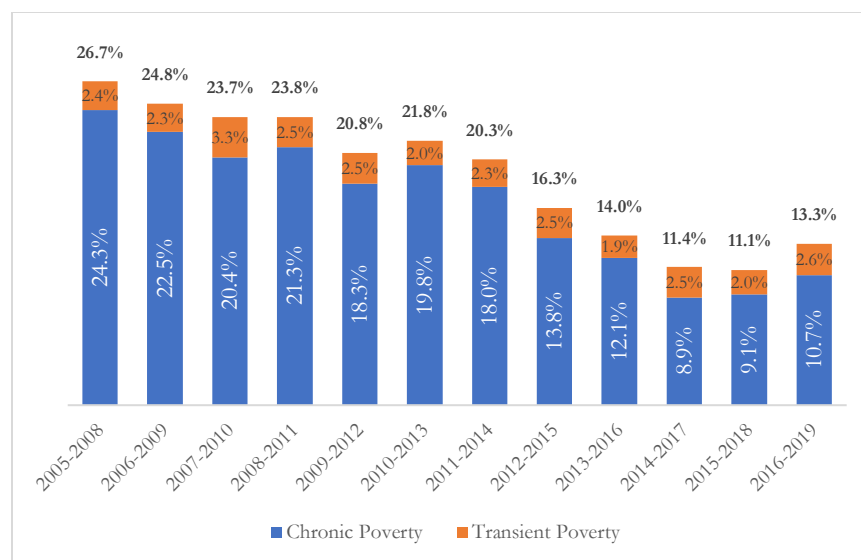


Source: World Bank Staff calculations using SILC 2006-2009 to SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

In addition to looking at the trajectory of the number of years spent in poverty, poverty over time can also be decomposed into chronic and transitory components using the approach developed by Jalan and Ravallion (1998)³⁹. According to this approach, the chronically poor is defined as having an average per capita income at or below the poverty line across the four years of study. This means that the individuals in this case are unable to smooth consumption over time and are in poverty due to low long-term welfare. Total poverty is defined as the percentage of individuals that are, on average, poor in at least one period. Transient poverty is the difference between total and chronic poverty and can be interpreted as the share of those that are poor from time to time, but not poor on average. In this respect, a household whose mean per capita income is above the poverty line cannot be chronically poor but may still experience transient poverty. Individuals in such households can avoid spells of poverty with better consumption smoothing.

In Türkiye, the share of total poverty declined significantly over time, from 26.7 percent in the 2005-2008 period to 13.3 percent in the 2016-2019 period. This is also in line with the nearly 50 percent decline in the poverty levels seen using cross section datasets, where the poverty levels had declined from 20.1 percent to 9.84 percent between 2007 and 2020. The difference in poverty rates between the panel and cross section data was mainly due to the differences in the sample characteristics of the two datasets, where the panel sample consisted of larger households with lower levels of per capita income. It is important to note that the decline in total poverty was primarily due to the fall in the chronic poverty component. Transitory poverty rate remained relatively stable over time, between 2 and 3 percentage points. On the other hand, chronic poverty rate declined remarkably, from 24.3 to 10.7 percent (Figure 3.3). For the 2016-2019 period an increase was observed in chronic poverty which rose from 9.1 percent to 10.7 percent.

Figure 3.3 Evolution of Chronic and Transitory Poverty in Türkiye



Source: World Bank Staff calculations using SILC 2006-209 through SILC 2017-2020, 4-year panel datasets. The income reference years are the previous calendar year.

Demographic profile of the different groups of poverty spells

In terms of different demographic groups, the youngest cohort (aged 15 and below) had the longest poverty spells across time. This group had the highest rates of four-year poverty spells, and the lowest rates of no time spent in poverty. Poverty spells are shorter among those in older age brackets. In the case of 60+ age cohort, 80 percent of the group was never poor during the 2006-2010 period -already a high baseline- and this rate had increased to 88 percent over the next 10 years. The youngest age cohort, however, had the highest increase in its share of the “never poor” during this period (from 47 to 64 percent), compared to older demographic groups. Unsurprisingly, the individuals with lower levels of education also experienced longer spells of poverty. 9 percent of those with no formal education had a four-year poverty spell between 2016 and 2019, down from 19 percent a decade before. The poverty spells of this demographic group were similar to outcomes of the youngest age cohort. Conversely, 96 of individuals with tertiary education and more had no time spent in poverty, across different years. Highly educated individuals also experienced the least amount of variation in terms of number of years spent in poverty over the years, indicating more stable living standards.

While there were no discernible differences across poverty rates in males and females in the population, there were some differences observed in poverty rates seen in households headed by males and females. Individuals living in female headed households, which made up 12 percent of the national population, had over time experienced shorter spells of poverty than individuals living in male headed households. On the other hand, there was also some convergence between the share of male and female headed households that spent 4 years in poverty, with the share of this group being higher at the baseline but falling faster for male headed households than female headed households (Figure 3.4).

Figure 3.4: Time spent in poverty across time for different demographic groups



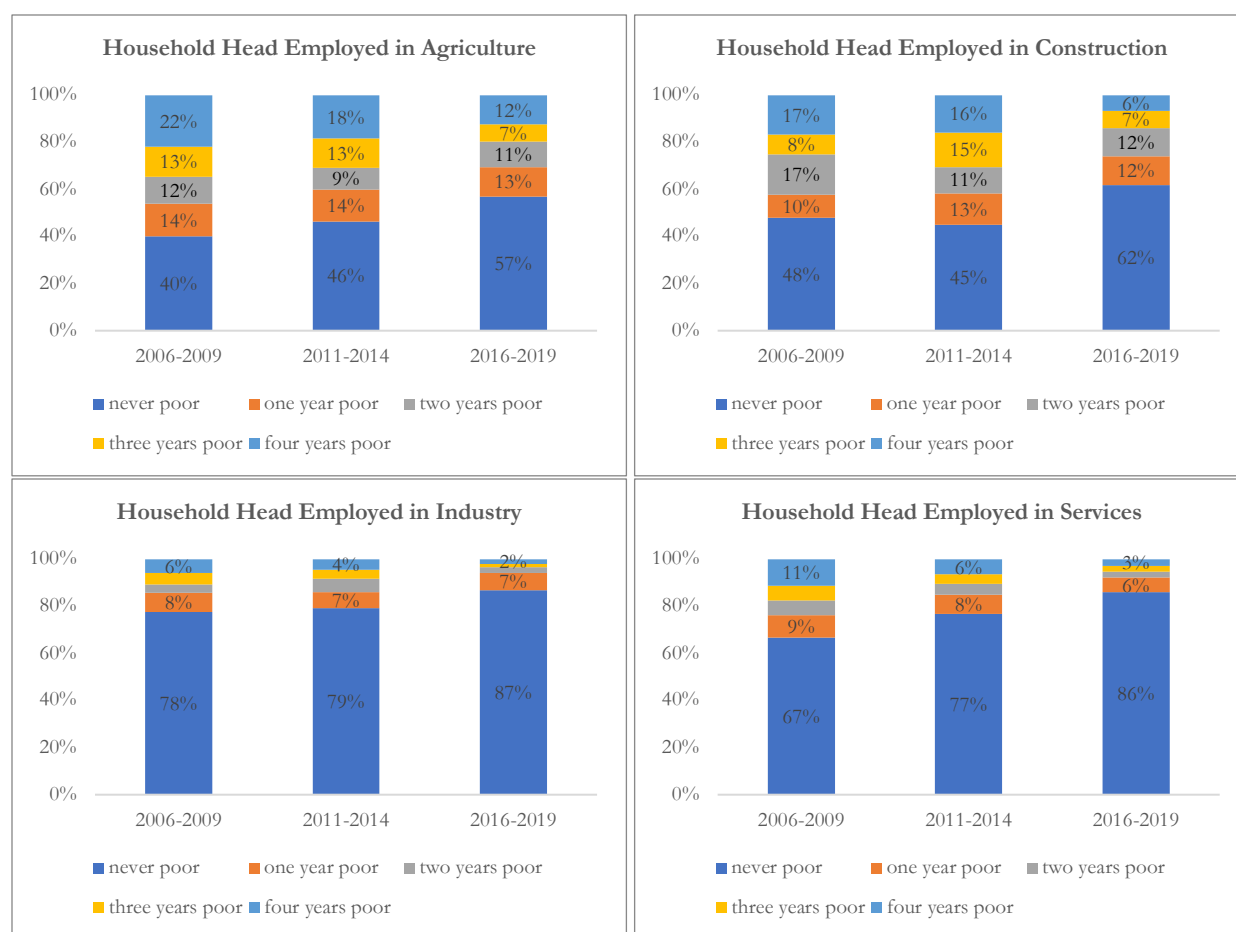
Source: World Bank Staff calculations using SILC 2007-2010, SILC 2012-2015 and SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

With respect to the employment sector of the household head, individuals living in households where the head is employed in the agriculture sector suffered the longest spells of poverty. Between 2016-2019, 12 percent of this group were under the poverty line in all 4 years. This was followed by households where the heads were employed in construction. Overall, households where the head is employed in the industry sector had the highest rates of no time spent in poverty, closely followed by households whose heads were employed in services. The biggest relative decline in the 4-year poverty spells were experienced by households in the services

sector, where the share of the group that spent 4 consecutive years in poverty fell from 11 to 3 percent between 2006-2009 and 2016-2019. Finally, households whose heads were employed in the informal sector, had the longest spells of poverty, at similar rates to those employed in agriculture, or construction sectors, which is a sector that tends to have high levels of informal unemployment. Similar to the case of the highly educated individuals, the distribution of poverty spells among the households with formal employment displayed the least amount of variation over time, which is an indication of more stable living standards. Households whose heads did not work (including being unemployed and out of labor force) underwent the shorter spells of years spent in poverty, as this group included retirees as well (Figure 3.5).

These results corroborate the findings presented in Chapter 1 on poverty trends: there has been some convergence in poverty rates between different demographic groups. The discrepancy between the rates of “never poor” among different age categories or sectors for instance, was much higher in 2009, compared to the dispersion of differences in 2019. This means that while all groups were able to benefit from an increase in their incomes, the poorest demographic groups benefited the most from this improvement.

Figure 3.5: Time spent in poverty across time, disaggregated by the sector of the household head





Source: World Bank Staff calculations using SILC 2007-2010, SILC 2012-2015 and SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

Households and individuals exhibited different characteristics based on duration spent in poverty. Nearly half of the individuals that lived below the poverty line for four consecutive years were younger than 16 years old. The incidence of poverty declined with age. The age composition of the “never poor”, was more evenly distributed among different age brackets, but still at higher rates for older cohorts when compared with their shares in the panel dataset. For instance, the 60+ cohort constituted 16.2 percent of the panel dataset sample in 2019 but 19 percent of the “never poor” for the 2016-2019 period. With respect to genders, the distribution of poverty periods was similar among men and women for the “never poor” group. For the group that spent 4 consecutive years in poverty, women had slightly higher rates of incidence with 52 percent during 2016-2019 and 53 percent during 2011-2014 (Table 3.2).

As expected, poverty levels declined with higher levels of education. The share of the individuals with tertiary education or more among those that experienced 4-year poverty spells was zero percent across the years. The rates were 3 percent for those that completed secondary education or less. Those without formal education and primary level of education constituted half of those that experienced 4-year poverty spells. The findings revealed that having at least a secondary education significantly reduced the likelihood in being in poverty for several consecutive years. For the never poor, the distribution within the education groups was similar to the distribution of the groups within the panel sample. During 2016-2019 those that completed primary education made up 40 percent of the sample and 41 percent of the never poor. On the other hand, the youngest cohort had worse outcomes compared to other groups. This group constituted 24 percent of the panel sample during the same year but about 20 percent of the never-poor during the same period (Tables 3.1 and 3.2).

Table 3.2: Profiles of the never-poor and four-years poor based on individual characteristics of the panel sample

	never poor			four years poor		
	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019
Ages 0-15	20%	21%	20%	48%	47%	47%
Ages 16-29	19%	18%	18%	20%	22%	22%
Ages 30-44	22%	23%	22%	19%	18%	18%
Ages 45-59	22%	21%	21%	8%	8%	9%
Ages 60 and over	17%	17%	19%	4%	5%	4%
Total	100%	100%	100%	100%	100%	100%
Male	49%	49%	49%	50%	47%	48%
Female	51%	51%	51%	50%	53%	52%
Total	100%	100%	100%	100%	100%	100%
Aged less than 16	20%	21%	20%	48%	47%	47%
No formal	12%	12%	10%	23%	22%	20%
Completed primary or less	43%	42%	41%	27%	28%	30%
Completed secondary	15%	15%	16%	2%	3%	3%
Completed tertiary or more	9%	11%	13%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Source: World Bank Staff calculations using SILC 2007-2010, SILC 2012-2015 and SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

In terms of the household head characteristics, during 2016-2019, almost half of the individuals who were in four years of consecutive poverty came from households where the head was non-employed. While the corresponding shares of households with non-employed heads were much smaller during earlier panels of 2006-2009 and 2011-2014, this rate has increased disproportionately for the 2016-2019. While this type of household made up 37 percent of the panel sample, it constituted 47 percent of the four years poor.

This was broadly in line with the findings from the cross-section data presented in Chapter 1. Over time, households with unemployed heads or heads out of labor force reduced their poverty rates more slowly compared to households where the heads were employed. Similarly, these households constituted almost half of the poor in 2020, up from 35 percent in 2016 and 29 percent in 2007. This is partially explained by the fall in labor and business incomes for these groups. Both during 2007-2009 and 2016-2020, households with unemployed heads experienced a net decline in both their labor and business earnings. Households with heads that are out of the labor force also experienced a net decline in labor earnings between 2016 and 2020. Even though these households enjoyed higher public transfers, they were not sufficient to compensate for the loss of labor income. Seeing similar trends replicated in panel data reveals an important finding: for households with heads that are non-employed, the pace of exiting poverty over time was slower and these households tended to have longer poverty spells.

Households whose heads were employed in agriculture made up the second highest share of the four-year poor population, with 28 percent, even though this group constituted a much smaller (12.6 percent) of the panel sample. Households where the head was employed in industry had the best performance. Individuals living in these households comprised 12.6 percent of the panel sample in 2016-2020 but only 4 percent of the 4-year poor and 14 percent of the never poor (Table 3.3).

Also in line with expectations, individuals living in households where the head was employed in the formal sector made up the largest share of the never poor (48 percent) and the smallest share of the four years poor (16 percent). This group had constituted 42.9 percent of the panel sample during 2016-2019. On the other hand, individuals living in households where the head was employed informally made-up 20.2 percent of the sample, but 37 percent of the 4-years poor and 16 percent of the never-poor. Also as expected, larger

households experience higher rates of long poverty spells. Among the four years poor, 95 percent of the group were made up of individuals living in households with more than 4 members, even though this group made up 41 percent of the sample size (Tables 3.3 and 3.1). This was also in line with the findings from the cross-section data. Across time, 80 to 88 percent of the poor population captured by the cross-section surveys consisted of individuals living in large families with more than 4 members.

Table 3.3: Profiles of the never-poor and four-years poor based on household head characteristics and household size of the panel sample

	never poor			four years poor		
	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019
Head employed in agriculture	12%	10%	9%	31%	28%	28%
Head employed in construction	5%	5%	4%	8%	12%	6%
Head employed in industry	14%	14%	14%	5%	5%	4%
Head employed in services	36%	38%	36%	29%	21%	16%
Head non-employed	33%	34%	36%	28%	33%	47%
Total	100%	100%	100%	100%	100%	100%
Head employed in formal sector	47%	49%	48%	7%	22%	16%
Head employed in informal sector	20%	18%	16%	65%	45%	37%
Head non-employed	33%	34%	36%	28%	33%	47%
Total	100%	100%	100%	100%	100%	100%
Household with four members or less	68%	69%	71%	7%	5%	5%
Household with more than four members	32%	31%	29%	93%	95%	95%

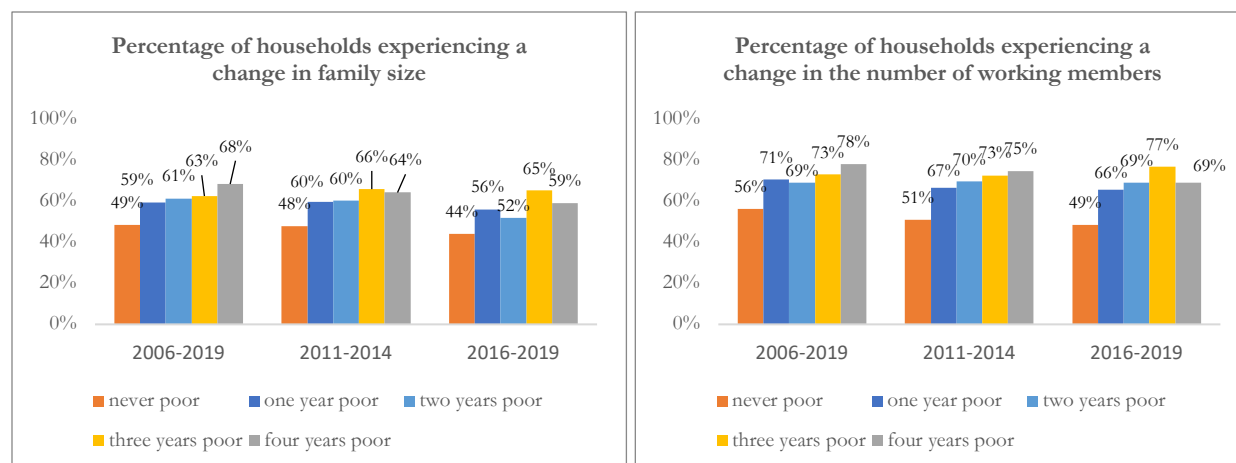
Source: World Bank Staff calculations using SILC 2007-2010, SILC 2012-2015 and SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

In general, the composition of the never-poor and four-year poor with respect to demographic characteristics did not display any significant changes over time. (For the profiles of the one-year, two-year, and three-year poor, see Appendix tables A.3 and A.4). The only exception to this was that among the four-year poor, the share of the households with non-employed heads increased over time and replaced the share of households with heads employed in the informal sector. A similar change in the share of the four-year poor was also observed between households with non-employed heads and heads employed in agriculture. This was mainly due to the convergence between households with non-employed heads and household with heads employed in agriculture/informal sectors, in terms of improving outcomes associated with years spent in poverty. Over the years, households with heads employed in informal sectors, increased their share in no time spent in poverty, and reduced their shares of four-years spent in poverty faster than households with non-employed heads. Even though households with non-employed heads had a lower likelihood of spending four years in poverty compared to households with informal heads, the latter had a better performance of reducing this likelihood over time. This was also the case when households with heads employed in agriculture were compared with the households with non-employed heads.

The majority of the households also experienced a change in the household size and working members over different periods. Of the never poor households, approximately 50 percent experienced a change in the number of household members and working household members across different time periods. On the other hand, this rate was higher in households that experienced one, two or three years in poverty. Given the close relationship between the household size and length of poverty spells, the household sizes likely decreased for households

experiencing shorter spells of poverty and likely increased for those experiencing longer spells of poverty (Figure 3.6).

Figure 3.6 Percentage of households experiencing a change in family size and number of working members over time, for different poverty lengths



Source: World Bank Staff calculations using SILC 2007-2010, SILC 2012-2015 and SILC 2017-2020 4-year panel datasets. The income reference years are the previous calendar year.

Transitions into and out of poverty

Having looked at the trends in chronic and transitory poverty rates, it will be useful to complement the analysis with unconditional probabilities of exiting poverty after one and two years of poverty spells, and the unconditional probabilities of entering poverty after one and two years of non-poverty spells⁴⁰. This is carried out to see if there is any persistence in poverty over time; in other words, does being in poverty for one or two years make it more or less likely to escape poverty later on, and if there is such a persistence, does its prevalence change over time? In order to do this, we use only non-censored observations as described earlier in the chapter, because of the fact that it is not possible to know the actual amount of years spent in poverty for censored observations. While this makes sure that all the observations kept in the sample are comparable to each other, it also reduces the number of observations and leads to an increase in the confidence intervals associated with entry/exit probabilities.

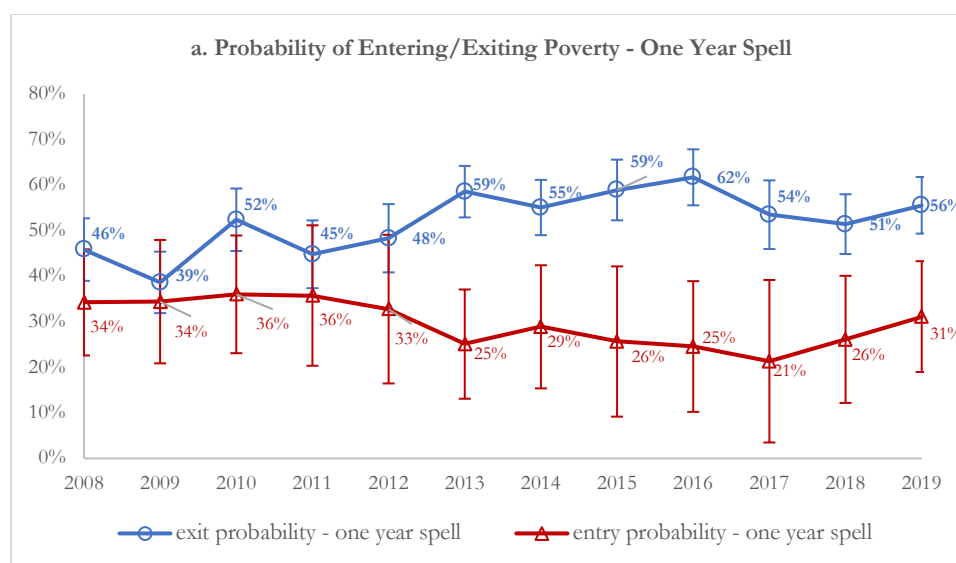
The findings show that for those that experienced one year poverty spells, there has been an upward trend in the probability of exiting poverty between 2008 and 2016, but the trend had reversed ever since. In other words, for those individuals that spent one year in poverty, the likelihood of escaping poverty the next year increased between 2008 and 2016 and reversed thereafter. By 2019, there was no statistically significant difference left between exiting poverty after a one-year spell in 2008 and in 2019. By the same token, the probability of being poor after being non-poor for one year declined between 2008 and 2017, before reversing thereafter. Similar to the probability of exiting poverty, by 2019, there was no statistical difference left in the probability of entering into poverty for one-year non-poverty spells between 2008 and 2019 (Figure 3.7a).

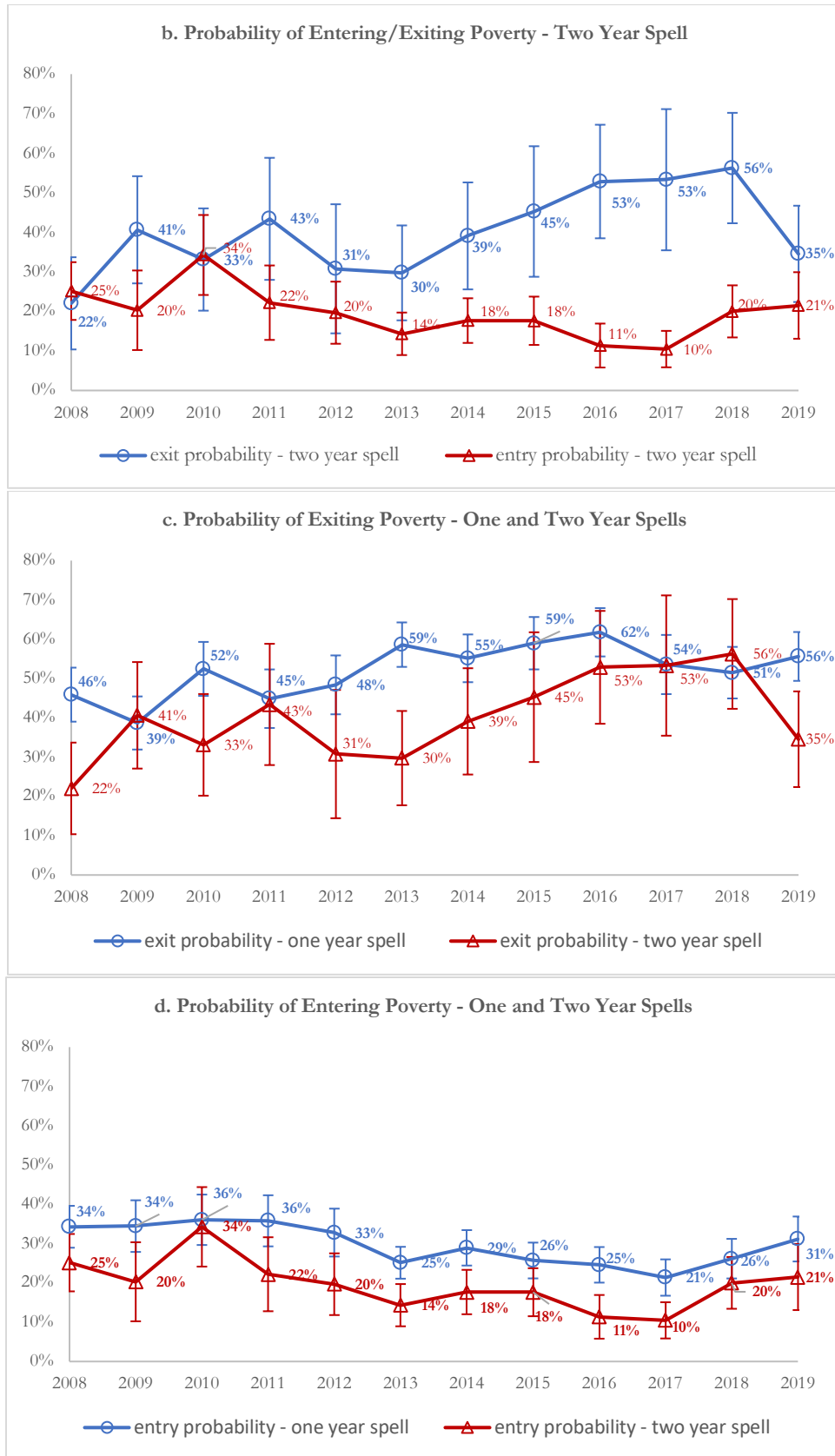
For those that experienced two-year poverty spells, there was also a gradual increase in the probability of exiting over time. Even though the differences were not high enough to be statistically different between consecutive panels, by 2017, the probability of exiting poverty after a two-year poverty spell was higher than that of 2008. On the other hand, this trend was reversed in 2019, and the probability of escaping poverty after a two-year spell was not statistically higher in 2018 compared to its level observed in 2008. This was also partially due to the high confidence intervals associated with fewer number of observations with two years in poverty⁴¹. While the point estimates between 2008 and 2019 varied by 13 percentage points, statistically speaking the two

estimates were not different from each other. A similar opposite trend in the probability of entering poverty after a two-year non-poverty spell was also observed. Between 2008 and 2016, this probability had declined over time, but a reversal was seen after 2018 (Figure 3.7b). In the end, the exit and entry, one and two year, probabilities show that point estimates of exit probabilities have almost always been higher than entry probabilities (although not always statistically different) which confirms a long period of improving living standards and lower risks to falling into poverty.

The difference between the probabilities of entry/exit following one and two-year consecutive spells did not paint a clear picture due to high levels of confidence intervals. Overall, the entry and exit probabilities for two-year consecutive spells were lower than those of one-year spells, but the differences were statistically significant for only a few years. Specifically, exit probabilities for two-year poverty spells were below those of one-year poverty spells in 2008, 2013 and 2019 (Figure 3.7c). The entry probabilities for two-year non-poverty spells were below those of one-year non-poverty spells in 2013, 2014, 2016 and 2017 (Figure 3.7d). As a result, while the overall trends showed that there was likely some persistence in the unconditional probability of exiting/entering poverty based on the previous lengths of poverty/non-poverty spells, i.e. the more an individual spent in poverty the less likely it was for them to escape it (and vice versa), but the confidence intervals prevented a definite conclusion. Again, the point estimates show some evidence of persistence, i.e., the larger the duration of poverty (or non-poverty), the lower the probability to escape from it (enter it), the statistical significance fails to provide an unequivocal proof of it.

Figure 3.7 Unconditional probabilities of exiting/entering poverty after different lengths of spells





Source: World Bank Staff calculations using SILC 2006-2009 through SILC 2017-2020, 4-year panel datasets. The income reference years are the previous calendar year.

Identifying A Vulnerability Threshold for Türkiye

As a natural next step following the discussion on one and two-year transitions into and out of poverty, we propose a measure of the middle class for Türkiye based their vulnerability to poverty - defined as having a significant probability of being poor in the next period⁴². In order to do this, we follow the pivotal paper in the literature by López-Calva and Ortiz-Juarez (2012) entitled “*A vulnerability approach to the definition of the middle class*” published in the Journal of Economic Inequality. The authors use panel data for three countries in Latin America (Chile, Mexico and Peru) and estimate, based on an empirical approach, a vulnerability threshold for these countries. They start with a baseline poverty line of \$4 per capita per day and identify the \$10 per capita per day line as the threshold to distinguish between those that are vulnerable to fall into poverty (those below this cutoff) and the middle class (those above).

The methodological steps of the paper can be summarized as follows:

[1] Construct transition matrices from panel data using the most common poverty line used for this set of countries. Then classify households in four mutually exclusive categories, namely [a] never poor, [b] always poor, [c] exited poverty and [d] entered poverty.

[2] Estimate the probability (p_t^f) of falling into poverty between the initial (t_0) and final year (t_1) on different demographic indicators, labor market resources, and shocks affecting the household.

[3] Regress income (base year) on the same independent variables and plot predicted probabilities

For a household i , the estimated probability (p_{it}) of falling into poverty between the initial (t_0) and final year (t_1) is given by:

$$p_{it} = E(\text{poor}_{it+1} | X_{it}) = F(X_{it} \cdot \beta_t)$$

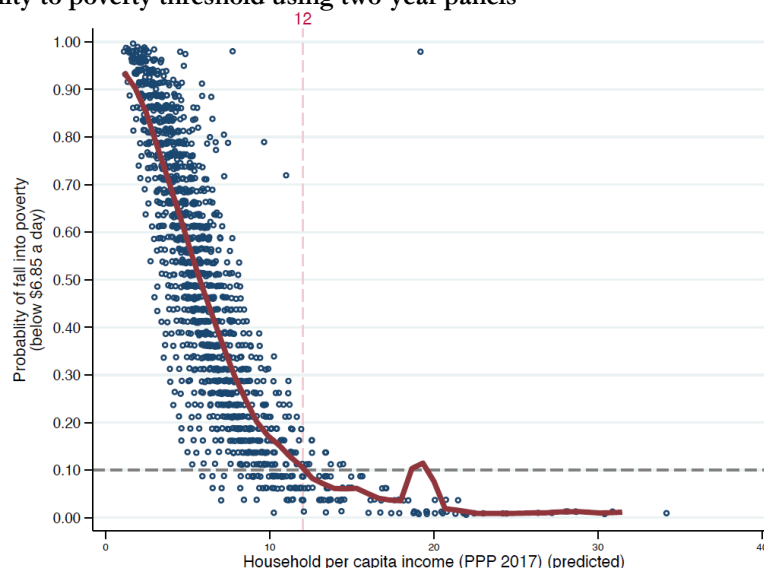
where poor_{it+1} is the dependent variable taking the value of 1 if households are identified as falling into poverty between t_0 and t_1 and 0 otherwise; X_{it} is a vector of observable characteristics including demographic indicators and labor market resources; and β_t is a vector of the model parameters.

For Türkiye, we exploit the same panel data component of the SILC, where we pool all two-year panel survey rounds together i.e., twelve panels from 2008-09 to 2019-2020. Second, we use the \$6.85 poverty line (in 2017 PPP) to construct the transition matrices. Third, we use the following variables: in order to estimate the model: [a] age, [b] age squared, [c] gender, [d] education, [e] marital status, [f] education, [g] formal employment, [h] sanitation, [i] water, [j] change in the number of household members [h] change in the number of employed household members [i] change in the number of members with physical limitations [j] occupational categories.

For the line dividing the vulnerable and the middle-class, we follow the definition specified by López-Calva and Ortiz-Juarez (2012): households with low risk of falling into poverty over time - specifically with less than 10 percent probability of being poor in the next period - are identified as “middle class”. The predicted income associated with this probability is used to delineate between economic security and vulnerability and defined as the lower threshold for the middle class.

Figure 3.8 shows the average income corresponding to different levels of probabilities to fall into poverty (using a \$6.85 line). The grey-dashed horizontal line indicates where the ten percent probability lies. The findings show that the vulnerability threshold falls to \$12 per capita per day. Therefore, we identify the \$12 per capita per day as the empirical threshold to distinguish vulnerable from middle class households.

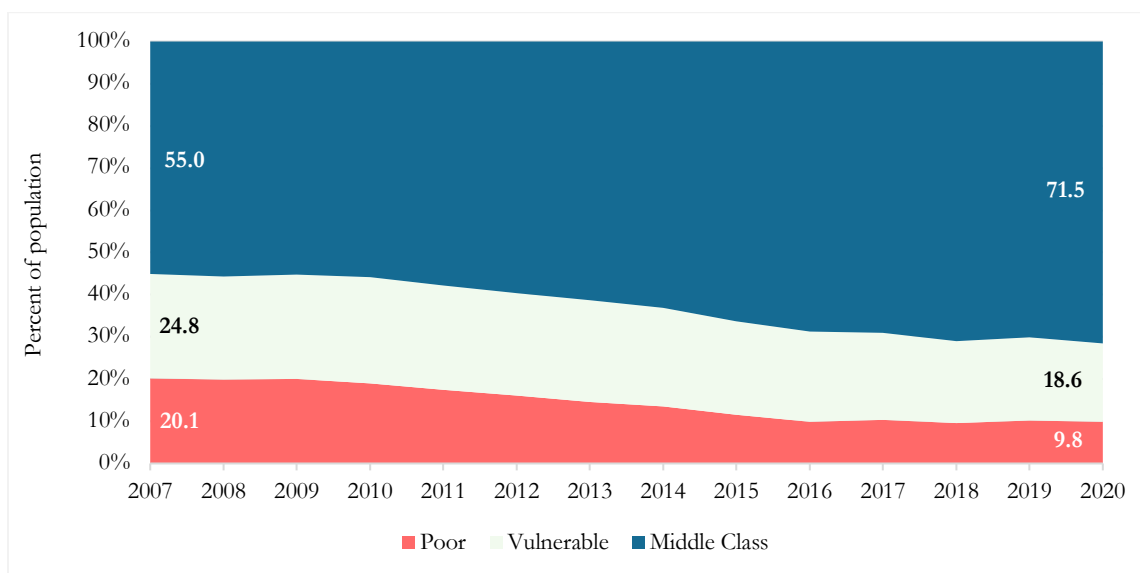
Figure 3.8 Vulnerability to poverty threshold using two-year panels



Source: World Bank Staff calculations using SILC 2008-2009 through SILC 2019-2020, 2-year panel datasets.

After identifying this cutoff line, we use cross-section modules of the SILC data to quantify the composition and evolution of the different socioeconomic groups. The findings are presented in Figure 3.9 below for the period between 2007 and 2020. The figure suggests a positive story where the evolution of the middle class went from 55 percent of the population in 2007 to approximately 71.5 percent in 2020. While the share of the poor declined from 20.1 to 9.8 percent, the share of the vulnerable to poverty also declined over time, from 24.8 to 18.6 percent.

Figure 3.9 Socioeconomic Classes in Türkiye, 2007-2020



Source: World Bank staff calculations using Survey of Income and Living Conditions (SILC), 2008-2021. The income reference periods are the previous calendar year.

Note: Poor refers to proportion of people with per capita income below \$6.85 per day 2017 PPP. Vulnerable refers to proportion of people with per capita income above \$6.85 and below \$12 per day in 2017 PPP, and Middle Class refers to proportion of people with per capita income above \$12 per day 2017 in PPP.

The findings from the panel data also complement and verify the findings presented in previous chapters. Exploiting a long series of 4-year panel datasets for Türkiye provides additional insights about the characteristics associated with duration of poverty and probabilities of escaping/entering poverty over time, and also enables differentiation between chronic and transitory poverty and observation. The findings show that chronic poverty, defined as having an average per capita income at or below the poverty line during the four years of study, has declined considerably in Türkiye over time. Specifically, this rate has declined by more than 50 percent, from 24.3 to 10.7 percent between 2005-2008 and 2016-2019. Transitory poverty, on the other hand, remained stable at relatively low levels over time, approximately at 2.5 percent of the population. However, in line with the trends observed using cross section data, there was an uptick in the rate of chronic poverty during 2016-2019, from 9.1 to 10.7 percent.

Similarly, the share of individuals that spent four consecutive years in poverty also declined from 14 to 4 percent between 2005-2008 and 2015-2018, before rising back up to 6 percent during 2016-2019. The share of the “never poor”, in other words the population that never fell below the poverty line during the four years of panel study, rose from 58 to 80 percent during the same period, before falling to 77 percent during 2016-2019. This was indicative of a reversal in the positive progress made in poverty reduction over the decade between 2006 and 2016 and was also observed in the trend of unconditional probabilities of entering/exiting poverty over time. While the unconditional probability of exiting poverty after one or two consecutive years spent in poverty increased over time until 2016, a downward trend was seen in the probabilities to exit poverty since then. Similarly, the probability of entering poverty, after one or two consecutive years not being in poverty, declined over time until 2017, rising thereafter.

Another consistent finding with previous chapters was the convergence in poverty rates between different demographic groups. For instance, the discrepancy between the rates of “never poor” across different groups (such as age groups, or household sectors), declined considerably over time. This meant that less wealthy groups were able to benefit from an increase in incomes at a greater pace. While the share of children (ages 15 and less) had the longest poverty spells across time, they were also the group that were able to reduce their relative share of the “never poor” at the highest rate. Those aged 60+ had the lowest spells in poverty over time, and they were the group that decreased their share of the four-year poor at the highest rate, reducing it from 4.3 to 1.4 percent – a 68 percent decrease.

Overall, households where the head is employed in the industry sector had the highest rates of no time spent in poverty, closely followed by households whose heads were employed in services. Households with non-employed heads, had higher rates of no time spent in poverty compared to households with heads in agriculture and construction sectors and also heads that are informally employed. They also had lower rates of four consecutive years in poverty. That said, the relative performance of the households with heads, in agriculture, construction and informal sectors in terms of improving their poverty outcomes has been better than those with non-employed households. During 2016-2019, almost half of the individuals who were in four years of consecutive poverty came from households where the head was non-employed, rising from 33 percent in 2011-2014 and 28 percent in 2006-2009. This closely dovetailed the trajectory of non-employed households as a share of the poor in the cross section data. The share of the households with non-employed heads within the poor in 2007, 2016 and 2019 were 29 percent, 35 percent, and 47 percent respectively.

Last but not least, based on the specific vulnerability threshold identified for Türkiye using panel data, a clear trajectory is seen in the growth of the middle class. As the chronic poverty declined in the country over time, the share of the vulnerable, as well as the share of the poor also declined respectively, leading to a rise in the share of the middle class, from 55 percent in 2007 to over 70 percent in 2020. While this is a very positive story of poverty reduction over time there is, however, still room for caution: as of 2020, in addition to the 9.8 percent of the poor in the country, an additional 18 percent were “vulnerable to poverty”, that is had more than 10 percent chance of being poor in the next period.

References

- Acar, Aysenur, and Ximena del Carpio. 2019. "Turkey Jobs Diagnostic." World Bank, Washington, DC.
- Alkire, Sabina, and James Foster. 2011. "Counting and Multidimensional Poverty Measurement." *Journal of Public Economics* 95 (7): 476–87. doi: 10.1016/j.jpubeco.2010.11.006.
- Alkire, Sabina, Usha Kanagaratnam, and Nicolai Suppa. 2022. "The Global Multidimensional Poverty Index (MPI) 2022 Country Results and Methodological Note." OPHI MPI Methodological Note 52, Oxford Poverty and Human Development Initiative, University of Oxford.
- Aran, Meltem, Sırma Demir, Özlem Sarıca, and Hakan Yazıcı. 2010. "Poverty and Inequality Changes in Turkey (2003-2006)." Working Paper 1, Welfare and Social Policy Analytical Work Program, Ankara.
- Azevedo, João P., and Aziz Atamanov. 2014. "Pathways to the Middle Class in Turkey : How Have Reducing Poverty and Boosting Shared Prosperity Helped?" Policy Research Working Paper 6834, World Bank, Washington, DC.
- Azevedo, João P., Minh Nguyen and Viviane Sanfelice. 2012. "DECOMP: Stata module to estimate Shapley Decomposition by Components of a Welfare Measure" Statistical Software Components S457562, Boston College Department of Economics.
- Barros, Ricardo Paes de., Mirela de Carvalho, Samuel Franco, and Rosane Mendonça. 2006. *Uma Análise das Principais Causas da Queda Samuel Recente na Desigualdade de Renda Brasileira*. Rio de Janeiro: Ipea (Instituto de Pesquisa Econômica Aplicada).
- Bayar, Ayşe A., and Öner Günçavdı. 2021. "Economic Reforms and Income Distribution in Turkey." *Economic Systems* 45 (1). doi: 10.1016/j.ecosys.2020.100778.
- Calì, Massimiliano, Hillary C. Johnson, Elizaveta Perova, Nabil R. Ryandiansyah. 2022. Caring for Children and Firms?: The Impact of Preschool Expansion on Firm Productivity. Policy Research Working Paper 10193, World Bank, Washington, DC.
- Cellini, Stephanie R., Signe-Mary McKernan, and Caroline Ratcliffe. 2008. "The Dynamics of Poverty in the United States: A Review of Data, Methods, and Findings." *Journal of Policy Analysis and Management* 27(3): 577-605. doi: 10.1002/pam.20337.
- Ceritoğlu, Evren. and Özlem Sevinç. 2023. "The Effects of the Kahramanmaraş Earthquake Disaster on House Prices and Rents." Unpublished manuscript.
- Dalgıç, Başak, Pelin Varol İyidoğan, and Aytekin Güven. 2015. "Yoksulluk ve Yoksulluk Geçişlerinin Belirleyenleri: Türkiye Örneği." *Sosyoekonomi* 23 (24): 51-70. doi: 10.17233/se.64331.
- Deaton, Angus, and Salman Zaidi. 1999. "Guidelines for Constructing Consumption Aggregates for Welfare Analysis." Working Paper 192, Woodrow Wilson School Development Studies.
- Deaton, Angus, and Salman Zaidi. 2002. "Guidelines for Constructing Consumption Aggregates for Welfare Analysis." Living Standards Measurement Study (LSMS) Working Paper 135, World Bank, Washington, DC.
- Deaton, Angus. 2019. *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. Washington, DC: World Bank. <http://hdl.handle.net/10986/30394>.
- Diaz-Bonilla, Carolina, Carlos Sabatino, Haoyu Wu, Minh C. Nguyen. 2022. "October 2022 Update to the Multidimensional Poverty Measure: What's New." Global Poverty Monitoring Technical Note 26, World Bank, Washington, DC.
- Foster, James E., and Anthony F. Shorrocks. "Poverty Orderings." *Econometrica* 56 (1): 173–77. doi: 10.2307/1911846.

- García-Gómez, César, Ana Pérez, and Mercedes Prieto-Alaiz. 2019. "A Review of Stochastic Dominance Methods for Poverty Analysis." *Journal of Economic Surveys* 33 (5): 1437- 1462. doi: 10.1111/joes.12334.
- Halim, Daniel Zefanya, Elizaveta Perova, Sarah Reynolds. 2021. Childcare and Mothers' Labor Market Outcomes in Lower- and Middle-Income Countries. Policy Research Working Paper 9828, World Bank, Washington, DC.
- Haughton, Jonathan, and Shahidur R. Khandker. 2009. *Handbook on Poverty and Inequality*. Washington, DC: World Bank. <http://hdl.handle.net/10986/11985> License: CC BY 3.0 IGO.
- Kılıç, İbrahim Engin, and Senem Çakmak Şahin. 2021. "Poverty Dynamics in Turkey: A Multinomial Logit Model." *Ekonomika* 100 (2): 133-143. doi: 10.15388/Ekon.2021.100.2.6
- Kimhi, Ayal. 2011. "Comment: on the Interpretation (and Misinterpretation) of Inequality Decompositions by Income Sources." *World Development* 39 (10): 1888-1890. doi: 10.1016/j.worlddev.2011.08.001.
- Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *The American Economic Review* 45 (1): 1-28. pp. 1–28. <http://www.jstor.org/stable/1811581>.
- Jäntti, Markus, and Stephen P. Jenkins. 2015. "Income Mobility." In *Handbook of Income Distribution Volume 2A*, edited by Anthony B. Atkinson and François Bourguignon, 807–935. Elsevier. doi: 10.1016/B978-0-444-59428-0.00011-4.
- Jolliffe, Dean, and Espen B. Prydz. 2016. "Estimating International Poverty Lines from Comparable National Thresholds." *The Journal of Economic Inequality* 14 (April): 185–198. doi: 10.1007/s10888-016-9327-5.
- Jolliffe, Dean, Daniel G. Mahler, Christoph Lakner, Aziz Atamanov, and Samuel Kofi Tetteh-Baah. 2022. "Assessing the Impact of the 2017 PPPs on the International Poverty Line and Global Poverty." Policy Research Working Paper 9941, World Bank, Washington, DC.
- Lakner, Christoph, Daniel Gerszon Mahler, Mario Negre, and Espen Beer Prydz. 2019. "How Much Does Reducing Inequality Matter for Global Poverty?" Policy Research Working Paper 8869, World Bank, Washington, DC. <http://hdl.handle.net/10986/31796>.
- Lerman, Robert I., and Shlomo Yitzhaki. 1985. "Income Inequality Effects by Income Source: A New Approach and Applications to the United States." *The Review of Economics and Statistics* 67(1): 151–156. doi: 10.2307/1928447.
- López-Calva, Luis F., and Eduardo Ortiz-Juarez. 2014. "A vulnerability Approach to the Definition of the Middle Class." *Journal of Economic Inequality* 12(1): 23-47. doi: 10.1007/s10888-012-9240-5.
- Mahler, Daniel Gerszon, R. Andres Castaneda Aguilar, and David Newhouse. 2021. "Nowcasting Global Poverty." Policy Research Working Paper 9860, World Bank, Washington, DC. <http://hdl.handle.net/10986/36636>.
- Mancini, Giulia, and Giovanni Vecchi. 2022. *On the Construction of a Consumption Aggregate for Inequality and Poverty Analysis (English)*. Washington, DC: World Bank <http://documents.worldbank.org/curated/en/099225003092220001/P1694340e80f9a00a09b20042de5a9cd47e>.
- Mookherjee, Dilip, and Anthony Shorrocks. 1982. "A Decomposition Analysis of the Trend in UK Income Inequality." *The Economic journal* 92 (368): 886-902. doi: 10.2307/2232673.
- Özler, Berk, Çiğdem Çelik, Scott Cunningham, P. Facundo Cuevas, and Luca Parisotto. 2021. "Children on the Move: Progressive Redistribution of Humanitarian Cash Transfers Among Refugees." *Journal of Development Economics* 153 (2021). doi: 10.1016/j.jdeveco.2021.102733.
- Paul, Satya. 2004. "Income Sources Effects on Inequality." *Journal of Development Economics* 73 (1): 435-451. doi: 10.1016/j.jdeveco.2003.02.004.

- Pollak, Robert A., and Terence J. Wales. 1979. "Welfare Comparisons and Equivalence Scales." *The American Economic Review* 69 (2): 216–221. <http://www.jstor.org/stable/1801646>.
- Ravallion, Martin. 2015. "The Luxembourg Income Study." *The Journal of Economic Inequality* 13 (March): 527–547. doi: 10.1007/s10888-015-9298-y.
- Ravallion, Martin. 2016. *The Economics of Poverty: History, Measurement, and Policy*. New York: Oxford University Press. Online edition. doi: 10.1093/acprof:oso/9780190212766.001.0001.
- Ravallion, Martin, and Gaurav Datt. 1991. "Growth and Redistribution Components of Changes in Poverty Measures : A Decomposition with Applications to Brazil and India in the 1980." Living Standards Measurement Study (LSMS) Working Paper 83, World Bank, Washington, DC.
- Ravallion, Martin, and Monika Huppi. 1991. "Measuring Changes in Poverty: A Methodological Case Study of Indonesia during an Adjustment Period." *The World Bank Economic Review* 5 (1): 57–82. doi: 10.1093/wber/5.1.57.
- Shorrocks, Anthony F. 1983. "Ranking Income Distributions." *Economica* 50 (197): 3–17. doi: 10.2307/2554117.
- Silva, Andrew. 2017. "MSDECO: Stata Module to Calculate the Mookherjee & Shorrocks (1982) Over-Time Inequality Decomposition by Subgroup" Statistical Software Components S458373, Boston College Department of Economics.
- Şeker, Sırma D., and Meltem Dayıoğlu. 2015. "Poverty Dynamics in Turkey." *Review of Income and Wealth* 61 (3): 477–493. <https://hdl.handle.net/11511/40107>.
- Şeker, Sırma D., and Stephen P. Jenkins. 2015. "Poverty Trends in Turkey." *The Journal of Economic Inequality* 13, 401–424. doi: 10.1007/s10888-015-9300-8.
- Tamkoç, Mehmet N., and Orhan Torul. 2020. "Cross-Sectional Facts for Macroeconomists: Wage, Income and Consumption Inequality in Turkey." *The Journal of Economic Inequality* 18 (2): 239–259. doi: 10.1007/s10888-019-09436-4.
- Tekgüç, Hasan. 2018. "Declining Poverty and Inequality in Turkey: The Effect of Social Assistance and Home Ownership." *South European Society and Politics* 23 (4): 547–570. doi:10.1080/13608746.2018.1548120.
- Torul, Orhan, and Oğuz Öztunalı. 2018. "On Income and Wealth Inequality in Turkey." *Central Bank Review* 18 (3): 95–106. doi: 10.1016/j.cbrev.2018.06.002.
- Türkiye, Aile Çalışma ve Sosyal Hizmetler Bakanlığı. 2021. *2020 Yılı Faaliyet Raporu [Annual Implementation Report 2020]*. <https://www.aile.gov.tr/media/73627/2020-faaliyet-raporu.pdf>.
- UNDP (United Nations Development Programme), and OPHI (Oxford Poverty and Human Development Initiative). 2022. *2022 Global Multidimensional Poverty Index (MPI): Unpacking Deprivation Bundles to Reduce Multidimensional Poverty*. New York. <https://hdr.undp.org/system/files/documents/hdp-document/2022mpireportenpdf.pdf>.
- Vaalavuo, Maria. 2015. "Poverty Dynamics in Europe: From What to Why." Working Paper 03/2015, Publications Office of the European Union, Luxembourg. doi: 10.2767/956213.
- World Bank. 2005a. *Turkey - Joint Poverty Assessment Report: Volume 1. Main Report*. Washington, DC: World Bank. <http://hdl.handle.net/10986/8308>.
- World Bank. 2005b. *Turkey Poverty Policy Recommendations, Volume 2*. Washington, DC: World Bank. <http://hdl.handle.net/10986/8702>.
- World Bank. 2018. *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle*. Washington, DC: World Bank. <http://hdl.handle.net/10986/30418>.

World Bank. 2020. *Poverty and Shared Prosperity 2020: Reversals of Fortune*. Washington, DC: World Bank.
<http://hdl.handle.net/10986/34496>.

World Bank. 2023. *Türkiye Public Finance Review : Leveraging Fiscal Resources for Stability and Resilience (English)*. Washington, DC: World Bank.
<http://documents.worldbank.org/curated/en/099061223051040196/P1739790d808590290a2420a500bf6fc3b3>

World Bank. *Türkiye Systematic Country Diagnostic*. Washington, DC: World Bank. (Forthcoming)

World Bank. *Türkiye Employment and Jobs Country Economic Memorandum*. Washington, DC: World Bank. (Forthcoming)

ANNEX:

Methods and Data

Measurement of monetary poverty rates can differ mainly due to 4 main methodological components: the selection of poverty indices (usually the poverty headcount index, but others like the poverty gap are often considered), the identification of the relevant poverty line (absolute or relative), the selection of welfare aggregate (either income or consumption expenditures), and the selection of population of concern (persons, households, etc.) as well as the usage -or not- of equivalence scales to adjust for household size. While there are other approaches to measuring destitution and wellbeing beyond monetary poverty (including multidimensional approaches that cover health, education and quality of life outcomes) the most commonly used approach is to measure monetary poverty, using data derived from household surveys. The four methodological components, and the choices for this poverty assessment, are discussed in this section.

The Turkish Statistical Institute (TUIK) is the institution that leads the official collection, production and dissemination of statistical information on different aspects of the population's well-being, including poverty and inequality. TUIK conducts regular surveys on a wide array of economic and social issues. There are three specific surveys of interest that include key data on the socio-economic indicators, standards of living and structure of the labor force. These are: the Survey of Income and Living Conditions (SILC), the Household Budget Survey (HBS) and the Household Labor Force Survey (LFS).

The Government of Türkiye uses the household income data collected by the SILC survey to measure its poverty and inequality indicators. The official poverty indicator monitored by TUIK is the relative poverty rate. This is defined according to the European Statistical Office's (EUROSTAT) methodology as the proportion of people with an equivalized disposable income below 50 percent of the median equivalized disposable income. Relative poverty measures the share of individuals who earn less than what is needed to maintain a certain level of income in comparison to other people in the society. It is a poverty measure very often adopted by developed countries where absolute poverty is low or insignificant. Based on this definition, TUIK has computed that the persons living below the relative poverty line was 14.4 percent as of 2020. This rate usually does not exhibit too much variation over time. In the case of Türkiye, the maximum and minimum relative poverty rates observed in the country between 2007 and 2020 were 17.1 and 13.9 percent respectively.

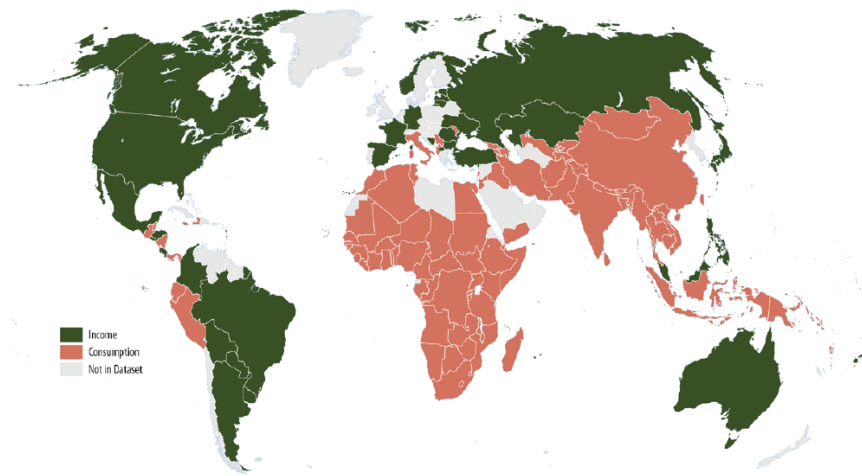
On the other hand, the World Bank uses absolute poverty lines to measure what is called absolute poverty rates. Absolute poverty rate is defined as the share of the population that lives below a pre-determined poverty line, which represents the minimum amount of income (or consumption expenditures) needed to meet the minimum living standards in that specific country. These minimum living standards are usually defined in terms of a basket of food to provide a minimum caloric intake, plus an additional amount for other living expenditures associated to basic clothing and housing needs⁴³. For monitoring global absolute poverty rates, the World Bank has been using the 'dollar a day' approach since 1990. The methodology has been developed and improved over time to monitor absolute poverty and provide a framework for comparability of poverty statistics across countries. The absolute international poverty line has been updated several times since the 1990s with evolving differences in price levels in the poorest countries. Starting from Fall 2022, the international absolute poverty line has been updated from \$1.90 to \$2.15 per person per day in 2017 PPP, derived as the median of the national poverty lines of 28 of the world's poorest countries.

However, the \$2.15 line does not mean much in the context of Türkiye. While this line is the most relevant in measuring poverty in low-income countries. For richer countries two higher lines are used for measuring monetary poverty. These lines are \$3.65 for lower-middle-income countries and \$6.85 for upper-middle-income countries⁴⁴. In the case of Türkiye, an upper middle-income country (UMIC), the poverty line is defined as \$6.85 per capita per day in 2017 PPP. As it has been discussed in the initial chapter, the absolute poverty rate in Türkiye stands at 9.84 percent as of 2020. Having a common absolute poverty line for UMICs enables

researchers to make comparisons in poverty rates across different countries of similar living standards. Moreover, having an absolute poverty line allows tracking progress in poverty reduction in a country over time independently of changes in the distribution of welfare, something that cannot be done if using a relative poverty line. That said, another way of approaching absolute poverty rates would be to compute a specific poverty line for Türkiye, based on a cost of basic needs approach. This involves constructing a food basket based on the requirements for adequate nutrition of the population, and a non-food basket to incorporate other needs. Using this approach allows to define thresholds that are customized to the country's context, and to understand which households in the population have income levels that do not meet the minimum food and non-food thresholds.

In their seminal paper on the construction of consumption aggregates for welfare analysis, Deaton and Zaidi (2002) write: “among economic measures of living standards, the main competitor of a consumption-based measure is a measure based on income”. Indeed, the choice of income versus consumption-based poverty measures can be an important one, depending on the country context. In most high-income, industrialized countries, living standards and poverty are assessed with reference to income, as opposed to consumption. Türkiye and most Latin American countries also follow this tradition, while consumption-based household surveys are carried out in most of Africa and South and Southeast Asia. In fact, Türkiye is one of the few countries that collects both consumption and income household data.

Figure A.1: Consumption vs income-based welfare measurement



Source: Mancini and Vecchi (2022)

Based on the discussion above, this poverty assessment will use an absolute poverty line (the US\$ 6.85/capita per day in 2017 PPP terms), on household per-capita income from the SILC datasets between 2005 and 2021. This methodological stance differs from what has been done in the country in the past. This has consequences that can be described and justified, as follows.

In order to demonstrate how the poverty (and inequality) rates would change when using different welfare aggregates (i.e., consumption expenditures vs. income) in Türkiye, we present below a comparison of FGT (and Lorenz) curves using both welfare aggregates. We present findings at two points in time: in 2019, when the most recent consumption levels as measured by the HBS is available, and in 2010, one of the earlier years of the study following the global financial crisis. The FGT curves show the poverty rates -in the vertical axis- at increasing levels of poverty lines -in the horizontal axis-, starting from \$0 (0 percent poverty rate) and ending at the level where everybody in the population would be considered below the poverty line (100 percent poverty rate). We also provide the difference in FGT (and Lorenz) curves in order to evaluate first order stochastic dominance. In the context of FGT curves, one variable (e.g. per capita income) with a cumulative distribution

G stochastically dominates another variable (e.g. per capita consumption) with a cumulative distribution F, if and only if

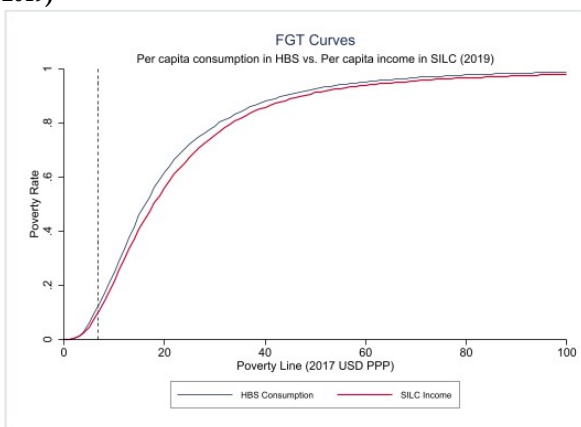
$$G(x) \leq F(x) \forall x \in R_+,$$

with strict inequality for at least one x. That is, if G is never above F. Intuitively speaking, if x denotes an income (or consumption expenditure) level, then the first order stochastic dominance means that the proportion of ‘rich’ people (or non-poor people, that is people with an income greater than x) in distribution G is at least as great as the proportion of ‘rich’ people in distribution F for any poverty line defined at any level x.⁴⁵

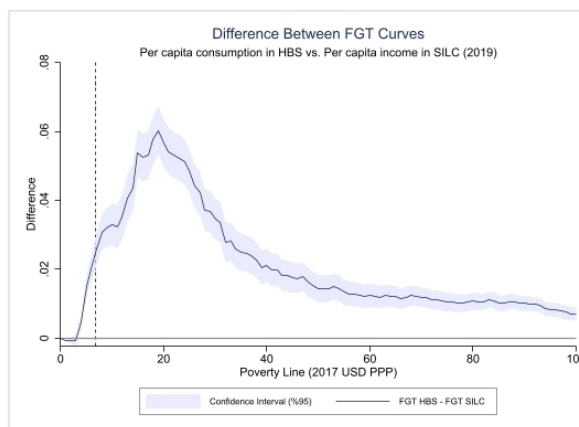
Figure A.2 shows a comparison of poverty rates in the left-hand side panels (and the difference in poverty rates, in the right-hand side panels) at different poverty lines, using the cumulative distributions of per capita consumption and income. In the year 2019, there is no stochastic dominance between the distributions of per capita consumption and per capita income. Even though the consumption-based poverty rate is higher for the vast majority of poverty line levels, for poverty lines below \$3 per day, income-based poverty rate is higher (although not statistically significantly different). At the World Bank’s poverty line of \$6.85 however, consumption-based poverty rate is higher, by 2.47 percentage points. Specifically, the consumption-based poverty rate is 12.61 percent, and the income-based poverty rate is 10.14 percent. The difference between consumption and income-based poverty rates can go up to 8 percentage points for higher levels of poverty lines until the poverty line of \$19 and starts to decline thereafter. Similarly, for the year 2010, there is no stochastic dominance between income and consumption welfare aggregates. At the \$6.85 line, consumption-based poverty is slightly lower (19 percent vs. 18.21 percent) but at greater levels of poverty lines, income-based poverty rates become lower than those based on consumption. That said, at any level of poverty line, the gap between income-based and consumption-based poverty rate does not exceed 4 percentage points.

Figure A.2: Comparison of welfare aggregates for poverty measurement in 2019 and 2010 (using HBS per capita consumption and HBS per capita income)

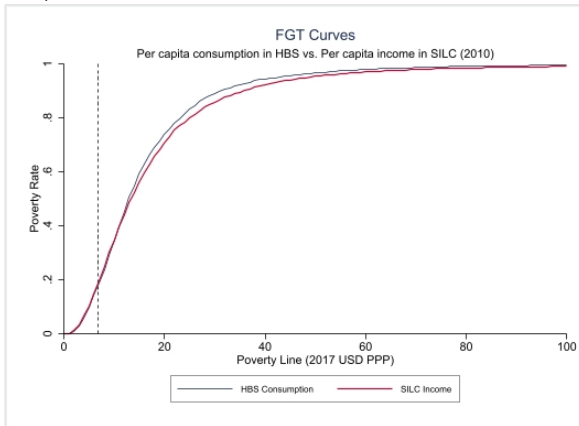
a. FGT curves: per capita household consumption (HBS) and per capita household income (SILC) (Reference Year: 2019)



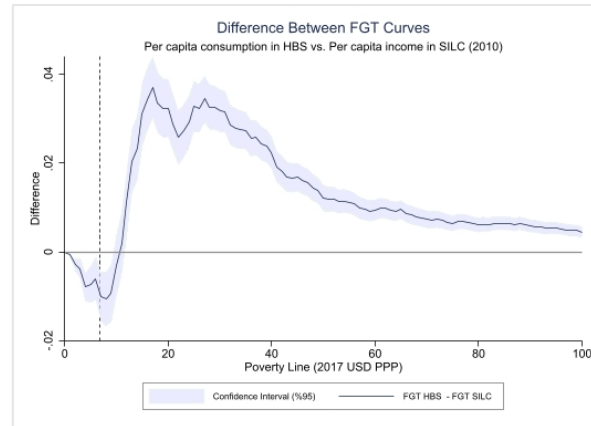
b. FGT curves difference (2019):



c. FGT curves: per capita household consumption (HBS) and per capita household income (SILC) (Reference Year: 2010)



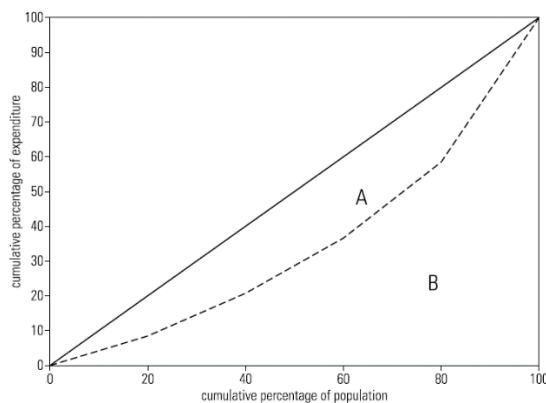
d. FGT curves difference (2010):



Source: World Bank staff calculations using HBS 2019, HBS 2010, SILC 2020 and SILC 2011 data
Note: The reference period of income in the SILC survey is the previous calendar year.

We then repeat the same exercise using income and consumption-based Lorenz curves to examine which distribution is considered more equal than the other. The Lorenz curve is a graphical representation of the distribution of the welfare aggregate within a population. It plots the cumulative percentage of households (from poor to rich) on the horizontal axis against the cumulative percentage of welfare (income/consumption) on the vertical axis. This line can then be compared with the 45-degree line, which represents perfect equality. One of the most commonly used indicators of inequality, the Gini coefficient, is based on the Lorenz curve. The Gini coefficient can be computed using the basic formula: $A/(A+B)$, where A and B are the areas shown in Figure A.3 below. A Gini coefficient of 0 means perfect equality, where everybody in the population has the same level of income, whereas a Gini coefficient of 1 means complete inequality, where only one person possesses the entire wealth of the population.

Figure A.3: The Lorenz Curve



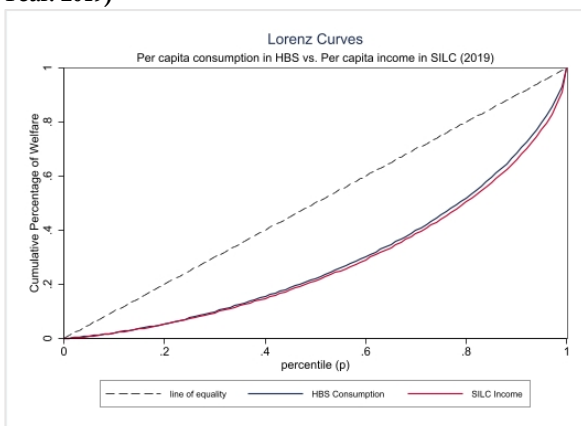
Source: Haughton and Khandker (2009)

When comparing Lorenz curves of two distributions, we consider Lorenz dominance. A distribution G Lorenz dominates another distribution F, if $L_G(p) \geq L_F(p)$ for all $p \in [0, 1]$. The inequality goes in the other direction compared to what is used in the definition of stochastic dominance, because the Lorenz curve for G is closer to the 45-degree line than that of F, which means that there is less inequality in G⁴⁶. In both 2019 and 2010, shown in Figure A.4, the distribution of the consumption aggregate “Lorenz dominates” that of the income aggregate. In other words, the consumption aggregate is more equally distributed among the population. Using consumption as a welfare aggregate would make Türkiye look less unequal compared to using income as the

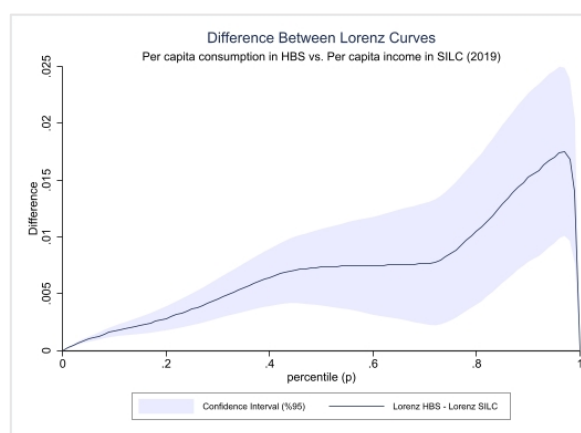
main welfare aggregate. This is not unexpected as individuals tend to smooth their consumption over time, whereas incomes can show more volatility from one year to next.

Figure A.4: Comparison of welfare aggregates for inequality measurement in 2019 and 2010 (using HBS per capita consumption and SILC per capita income)

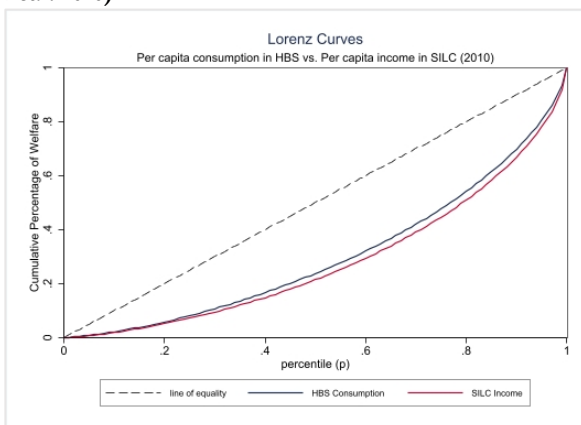
a. Lorenz curves: per capita household consumption (HBS) vs. per capita household income (SILC) (Reference Year: 2019)



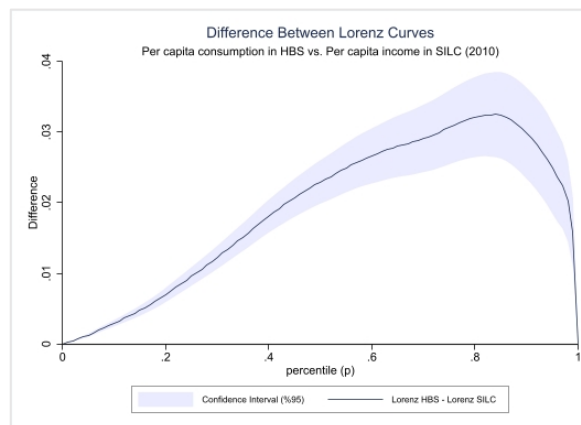
b. Lorenz curves difference (2019):



c. Lorenz curves: per capita household consumption (HBS) vs. per capita household income (SILC) (Reference Year: 2010)



d. Lorenz curves difference (2010):



Source: World Bank staff calculations using HBS 2019, HBS 2010, SILC 2020 and SILC 2011 data

Note: The reference period of income in the SILC survey is the previous calendar year.

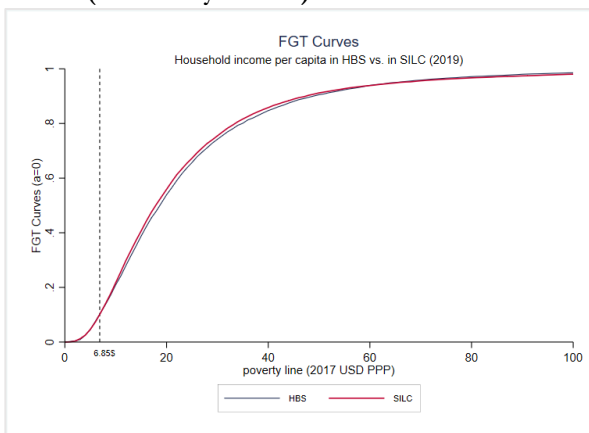
While there are different valid arguments in support of using consumption or income as the main welfare aggregate⁴⁷, for Türkiye, this study will use per capita household income data from the SILC surveys as its main welfare aggregate. One of the main reasons for this is the fact that this is also in line with the Turkish Statistical Institute's practice, which uses SILC income data for its relative poverty and inequality measurements. Another reason is the fact that Türkiye is an upper-middle income country with a fully operating market economy and high-quality income data collected according to international guidelines, which provides the right context required to implement an income-based conceptual framework. Last but not least, using income as the main welfare aggregates enables researchers to conduct detailed decompositions with respect to the household's income generating capacity, which is crucial for any investigation of causes of poverty and ensuing public policy recommendations.

This study is based on the per capita income values as presented in SILC surveys. As mentioned before, because TUIK uses income data from SILC in its official poverty and inequality rate calculations. HBS data is designed to collect detailed information about the consumption patterns of households, but TUIK also produced statistics of income distribution using the HBS until 2005. Starting in 2006, SILC –which specializes in income data- was started to be carried within the scope of the studies in compliance with the European Union. One additional advantage of the SILC surveys is that they also have rotating panel component, which enables researchers to study poverty dynamics and mobility (as we do, in chapter 3 of this study). Nonetheless, it is worth asking whether incomes collected in HBS are different from incomes collected in SILC.

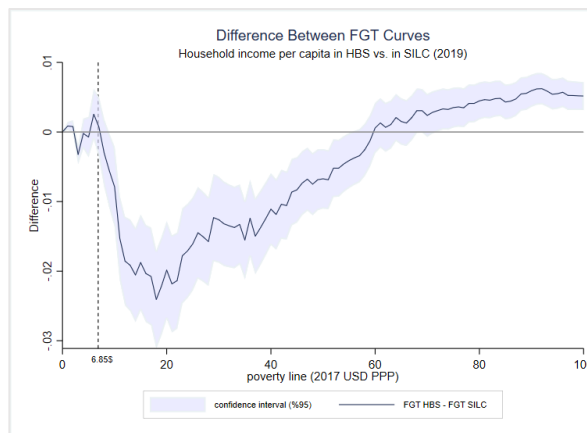
Next, we examine how much would the poverty and inequality rates would be different if one were to choose between the income aggregate provided by the Household Budget Survey versus the income aggregate provided by SILC. Figure A.5 below shows, FGT curves and the difference in FGT curves when comparing the per capita income variables in the HBS and SILC surveys. As was the case before, there is no first order stochastic dominance between one distribution and the other. In 2019, poverty rates using the HBS income aggregate exhibited lower poverty rate results for poverty lines between \$8 and \$59. There is some variation in the relative size of the poverty rates when using poverty lines below \$8. In 2010, poverty rates calculated using HBS per capita income are lower when the poverty lines around the range \$7-\$18. For poverty lines outside that range, poverty rates implicated by the SILC are lower. That said, the most important and striking finding is that for both of the years 2010 and 2019, there is so statistical difference between the poverty rates as measured by HBS and SILC per capita income statistics if using the poverty line adopted by the World Bank for upper middle-income countries (i.e., \$ 6.85 in 2017 PPP).

Figure A.5: Comparison of welfare aggregates for poverty measurement in 2019 and 2010 (using HBS and SILC per capita income)

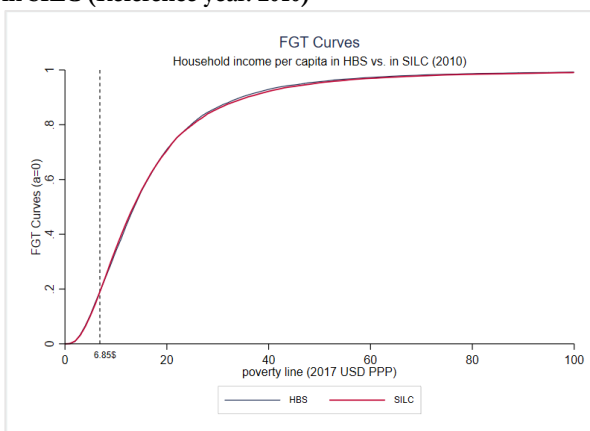
a. FGT curves: household income per capita in HBS and in SILC (Reference year: 2019)



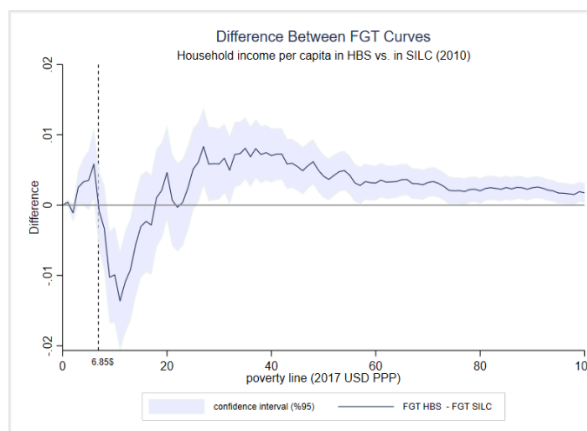
b. FGT Curves Difference (2019)



c. FGT curves: household income per capita in HBS and in SILC (Reference year: 2010)



d. FGT Curves Difference (2010)

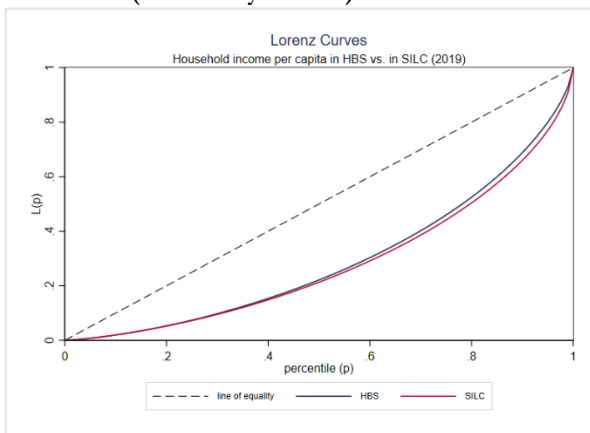


Source: World Bank staff calculations using HBS 2019, HBS 2010, SILC 2020 and SILC 2011 data
Note: The reference period of income in the SILC survey is the previous calendar year.

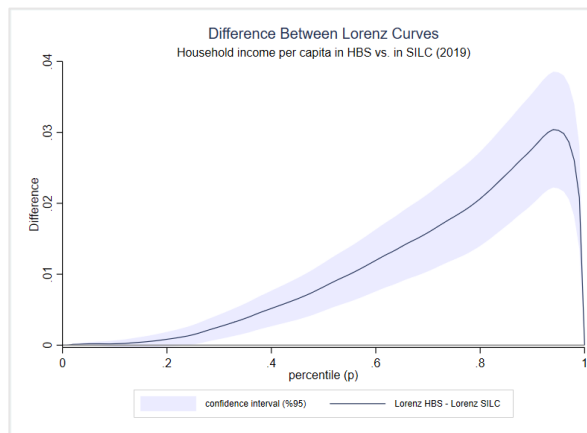
In Figure A.6, we show Lorenz curves in 2019 and 2010, comparing the distribution of per capita income from HBS and SILC. Both in 2019 and 2010, HBS Lorenz dominates SILC data. The distribution of income in HBS is overall more equal compared to that of SILC, especially for the higher percentiles of the population.

Figure A.6: Comparison of welfare aggregates for inequality measurement in 2019 and 2010 (using HBS and SILC per capita income)

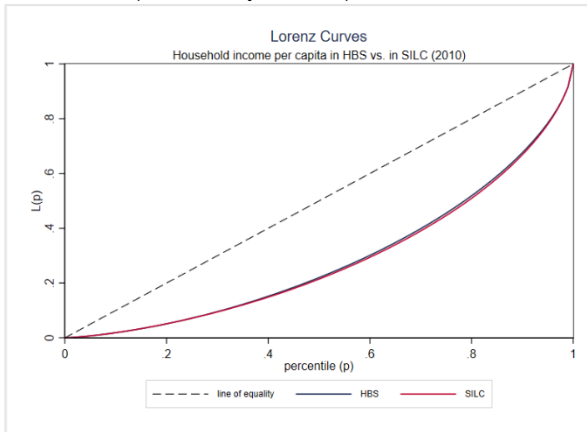
a. Lorenz curves: household income per capita in HBS and in SILC (Reference year: 2019)



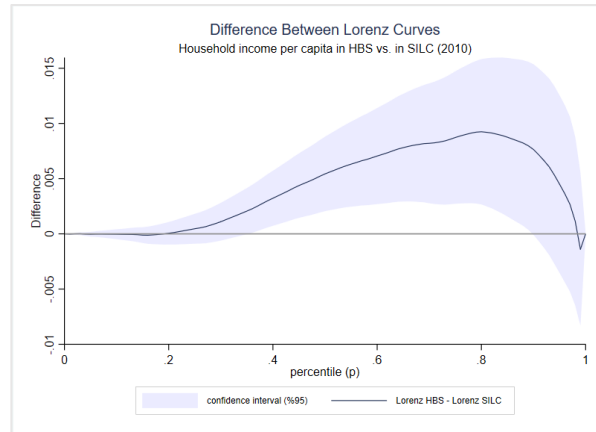
b. Lorenz Curves Difference (2019)



c. Lorenz curves: household income per capita in HBS and in SILC (Reference year: 2010)



d. Lorenz Curves Difference (2010)



Source: World Bank staff calculations using HBS 2019, HBS 2010, SILC 2020 and SILC 2011 data
Note: The reference period of income in the SILC survey is the previous calendar year.

Another debated issue in poverty measurement is the usage of equivalence scales and which equivalence scale to use. While welfare, living standards and poverty are individual level attributes,⁴⁸ data is almost always collected at the household level. While there is some very interesting research on the intra-household allocation of resources, these generally are not integrated into routine poverty monitoring practices. Rather, each household member is assigned a specific share of household resources to reach average per-member income or consumption. One common practice is to divide the household income/consumption by the number of persons living in the household to calculate the per-capita income/consumption measures. Another practice is to calculate an adjusted household size (usually measured in male adult equivalents - AME) based on the composition household members. The main arguments for this practice are that the amounts of food consumed by children are generally less than working age adults, and that there are economies of scale for larger households, that is, a household of 4 people generally doesn't need twice as much resources as a household of 2 people.

There are several equivalence scales used by researchers. Equivalence scales can be of the form:

$$ES = (A + \alpha K)^\theta$$

where A is the number of adults and K is the number of children. α is a parameter (presumably less than 1) capturing the relative cost of a child and θ is a parameter capturing economies of scale. Deaton and Zaidi (2002) recommend using this in low-income countries with parameters $\alpha=0.25$ to 0.33 and $\theta=0.9$. The Luxembourg income scale⁴⁹ is:

$$ES_{LIS} = \sqrt{N}$$

a specific case with parameters taking on the values $\alpha = 1$ and $\theta = 0.5$. The OECD also uses two different equivalence scales:

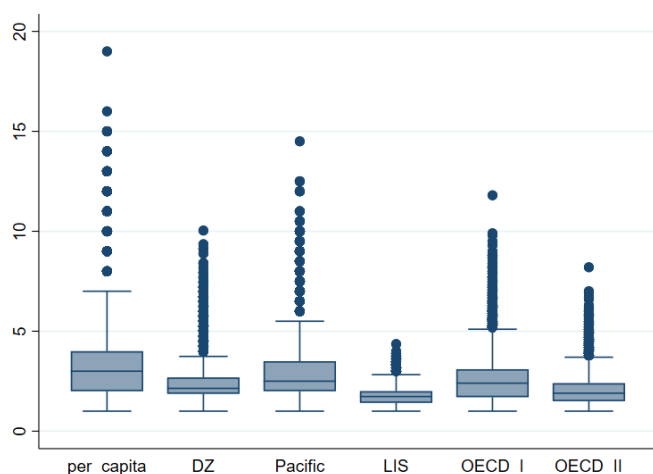
$$ES_1 = 1 + 0.7A + 0.5K$$

$$ES_2 = 1 + 0.5A + 0.3K$$

The first is commonly known as the “Oxford Scale” or the “old OECD scale”. The second one is referred to as the “OECD-modified equivalence scale” and is used by the Statistical Office of the European Union to calculate monetary poverty for EU countries. In line with EU practices, TUIK also uses the modified OECD equivalence scale to calculate the household size based on adult equivalents. The poverty and inequality calculations are then conducted based on “equivalized income”, in other words income per adult equivalent. There are other equivalence scales used by other organizations. FAO for instance, also has different equivalence scales to adjust for food and non-food components of the welfare aggregate.

While these equivalence scales are highly correlated, the absolute value of equivalence can vary widely. Figure A.7 shows below the distribution of household size using the latest available SILC data from 2021. As expected, the highest variance is seen when household size is expressed in per capita terms. In the example below, there are some households with the number of members reaching almost 20 persons. The least amount of variance is seen in the Luxembourg scale. The larger the (equivalized) household size, the lower will be the size of resources distributed among each (equivalized) household member, which will translate to higher poverty rates.

Figure A.7: Distribution of equivalized household size calculated using SILC 2021 data

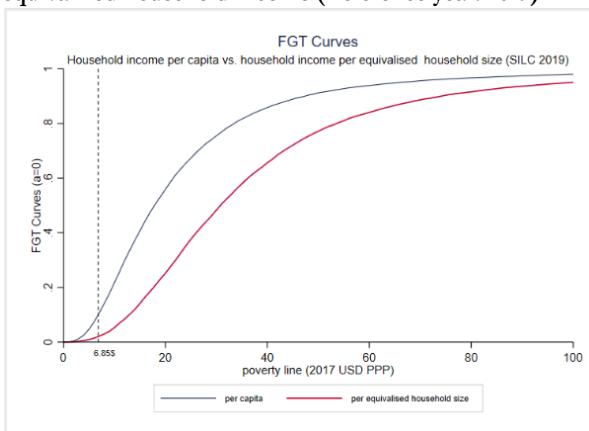


Source: World Bank staff calculations using SILC 2021 data

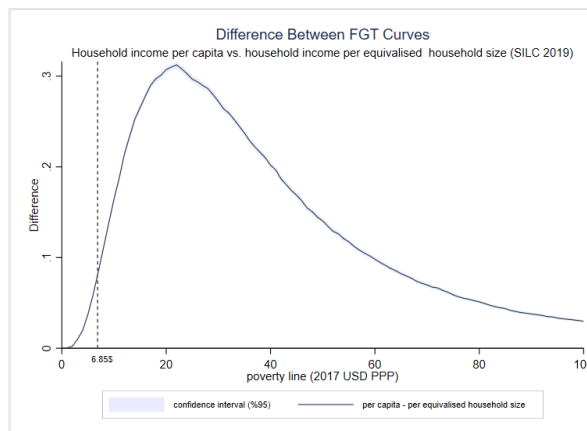
Figure A.8 below demonstrates the difference in poverty headcount rate when using per-capita household income compared to equivalized household income as per the modified OECD-scale. As expected, in both 2019 and 2010, the distribution of income per adult equivalent exhibits stochastic dominance over that of per capita income. That means, regardless of the level of the poverty line, the poverty rates calculated using adult equivalence scales will be lower. Given the large share of children among the Turkish households, the household size is adjusted downward using the modified OECD equivalence scale, and income per each adult equivalent is higher when compared with income per capita. In 2019, at the \$6.85 poverty line, the poverty rate using per capita income is approximately 8 percentage point when compared to the poverty rate calculated using per adult equivalent. The difference is starker in 2010. There is approximately a 14 percentage point difference between the poverty rates in 2010, when per capita and per adult equivalent rates are compared. The poverty rate was 19 percent in Türkiye in 2010 using income per capita as the main welfare aggregate, while the poverty rate drops down to around 5 percent, when the modified OECD equivalency scale is used.

Figure A.8: Comparison of welfare aggregates for poverty measurement in 2019 and 2010 (per capita household income and household income per adult equivalent)

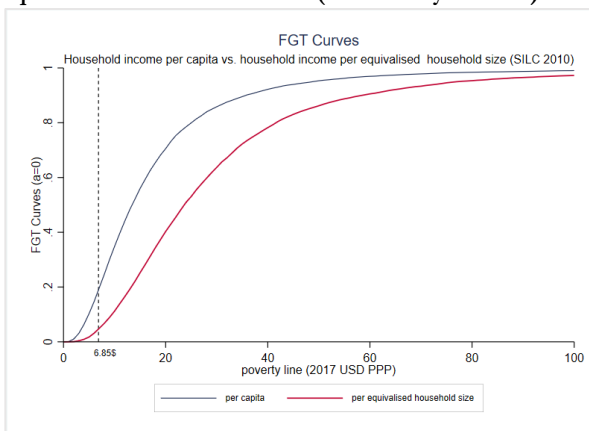
a. FGT curves: per capita household income and equivalized household income (Reference year: 2019)



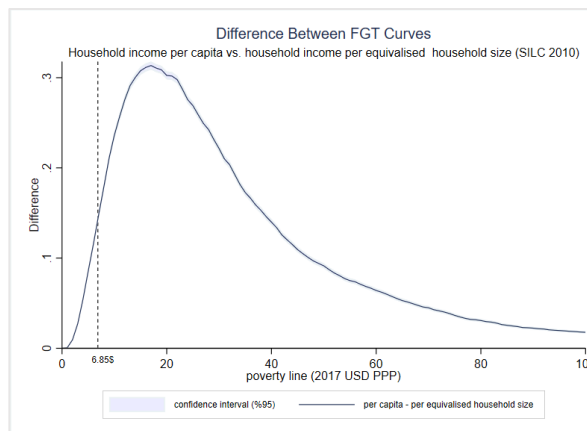
b. FGT curves difference (2019):



c. FGT curves: per capita household income and equivalized household income (Reference year: 2010)



d. FGT curves difference (2019):



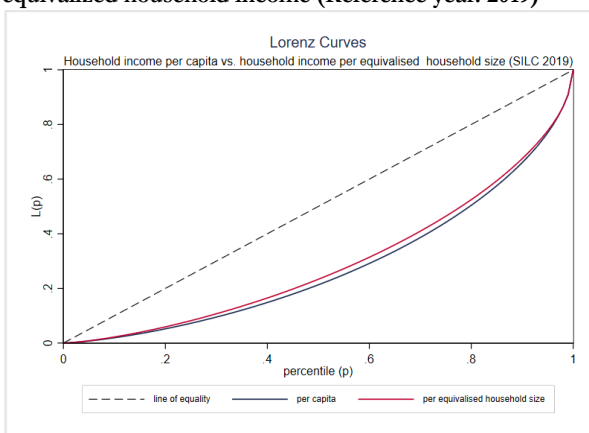
Source: World Bank staff calculations using SILC 2020 and SILC 2011 data

Note: The reference period of income in the SILC survey is the previous calendar year.

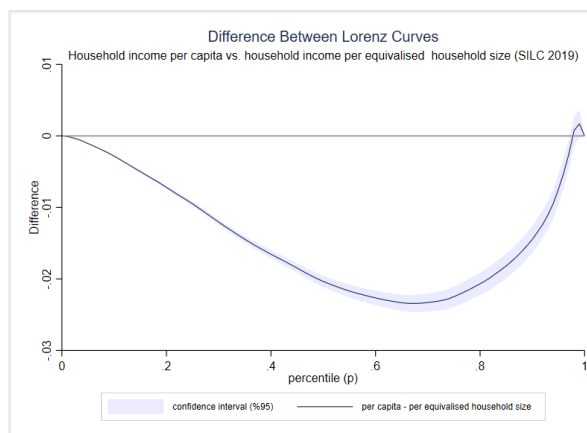
Also not surprisingly, the distribution of income is more equal when using equivalized household income as opposed to per capita income. Equivalized income measures Lorenz dominates per-capita income measures both in 2019 and 2010. (In 2019, while the point estimates of the difference between the two Lorenz curves is positive, when confidence intervals are taken into account, it is still not statistically different than zero). Shortly put, equivalized household income is more equally distributed than per capita income – using an equivalized family size renders a less poor and more equal view of Türkiye's income distribution (Figure A.9).

Figure A.9: Comparison of welfare aggregates for inequality measurement in 2019 and 2010 (per capita household income and household income per adult equivalent)

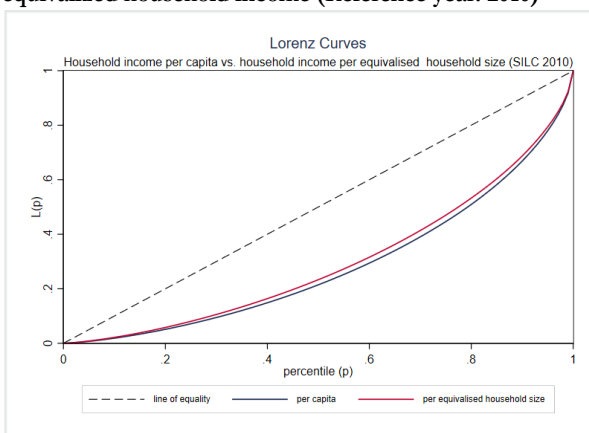
a. Lorenz curves: per capita household income and equivalized household income (Reference year: 2019)



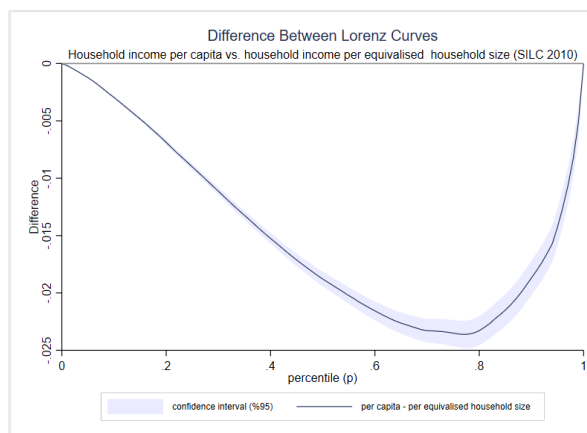
b. Lorenz curves difference (2019):



c. Lorenz curves: per capita household income and equivalized household income (Reference year: 2010)



d. Lorenz curves difference (2010):



Source: World Bank staff calculations using SILC 2020 and SILC 2011 data

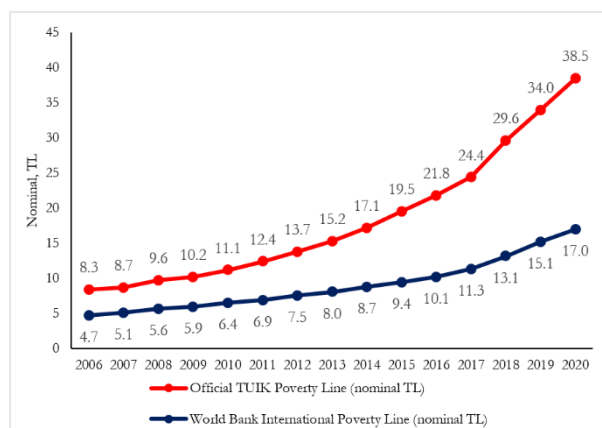
Note: The reference period of income in the SILC survey is the previous calendar year.

This study makes use of per-capita income measure to examine the trends in poverty and inequality over time. The main reason for this is the fact that per-capita income/consumption measures have been used by the World Bank to measure global poverty trends over time to make international comparisons. This has been the practice since the “dollar a day” poverty line began to be used in 1990 to measure global poverty rates. Additionally, there is no consensus on the right equivalence weights to use in all contexts, and while countries with younger populations will exhibit different rates of poverty based on the choice of the equivalence scale, for more developed countries, or as countries age and experience a demographic transition, the choice of the equivalency scale will not matter as much. Also as mentioned, equivalency scales are highly correlated with each other, and the ranking of households do not change drastically based on which scale is used. Finally, most governments base the targeting of their social assistance programs aimed to reduce poverty on per capita household income, as opposed to using equivalence scales. The Türkiye Family Support Program, one of the important cash social assistance programs in Türkiye, is means tested. To operationalize its poverty-targeting approach, Türkiye uses means testing based on having a household per capita income lower than a certain threshold (very often one-third of the net minimum wage)⁵⁰, rather than equivalence scale. Based on this consideration, the primary analysis of this report uses per capita household income, without making adjustments based on equivalence scales.

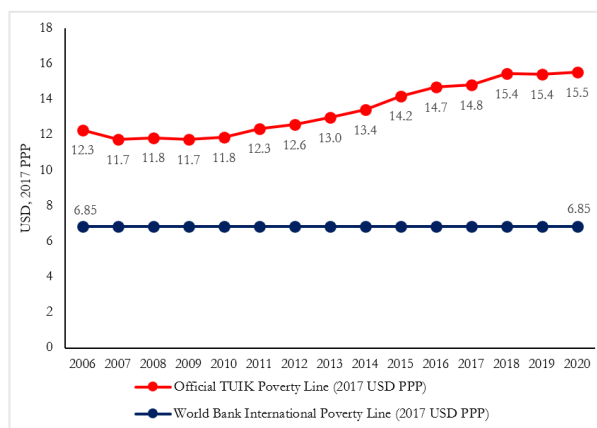
Next, we discuss the choice of absolute versus relative poverty in measuring poverty rates in the country. As mentioned, the official poverty rates in Türkiye as calculated by TUIK are based on relative poverty measures. Relative poverty lines depend on the distribution of income of whole population, and in the case of Türkiye is defined as the 50 percent of median household income based on the OECD equivalence scale. This changes from one year to another. On the other hand, the World Bank uses the \$6.85 (in 2017 PPP) UMIC absolute poverty line for Türkiye, which does not change in real terms from year to year. However, the nominal value of the line in Turkish Lira gets updated each year based on the annual average of monthly consumer price index levels. Figure A.10 below depicts the value of poverty lines in Türkiye, both in nominal terms and in \$ 2017 PPP terms across time. With increasing income levels in the country, the nominal relative poverty lines in Türkiye increased from 8.3 TRY per day to 38.5 TRY per day in 2020 (Figure A.10a – red line). When adjusted by CPI levels and converted into \$ in 2017 PPP, the real increase in the relative poverty line grew from \$12.3 to \$15.5 (Figure A.9b – red line). By the same token, the absolute poverty line in \$ PPP terms was set at \$6.85 across all years (Figure A.10b – blue line). However, when converted into nominal TRY values and adjusted for average annual CPI levels, the value of the poverty line increased over time, in line with rising consumer price inflation.

Figure A.10: A comparison of relative and absolute poverty lines in Türkiye

a. Official TUIK Relative Poverty Line (50% of median equivalized household income) vs. World Bank International Absolute Poverty Line (\$6.85 per capita household income in 2017 PPP) - Nominal TL, Daily



b. Official TUIK Relative Poverty Line (50% of median equivalized household income) vs. World Bank International Absolute Poverty Line (\$6.85 per capita household income in 2017 PPP) - \$ 2017 PPP, Daily



Source: TUIK World Bank staff calculations using SILC data

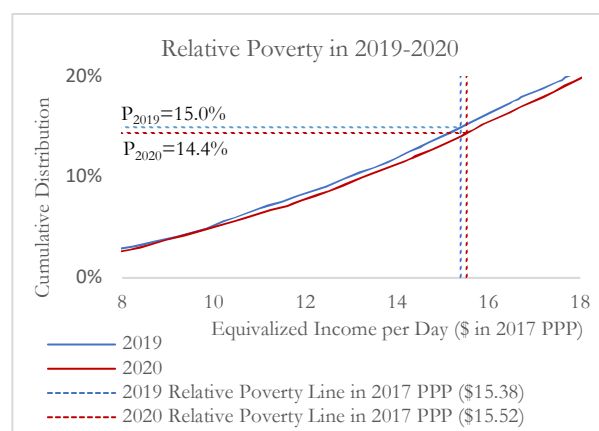
Lastly, we examine how the poverty rates as measured by TUIK and the World Bank differ in different years based on the absolute and relative poverty lines described above. Figures A.11a depicts the cumulative distribution of equivalized household income in 2019 and 2020 converted to \$ 2017 PPP terms. We zoom in the section of the cumulative distribution curve around the TUIK relative poverty lines (\$15.39 and \$15.52 2017 PPP respectively for 2019 and 2020) in order to provide a clearer depiction of the change in the relative poverty rate between the two years. As seen from the charts, the relative poverty rate in Türkiye declined from 15 percent to 14.4 between 2019 and 2020. This is contrasted by the cumulative distribution of per capita household income in 2019 and 2020 intersected by the absolute poverty line used by the World Bank. Again, we zoom in on the section of the cumulative distribution curve around the \$6.85 absolute poverty line. In this instance, absolute poverty rate changed from 10.14 percent to 9.84 between 2019 and 2020.

Similarly, in Figures A.11c and A.11d, we compare the FGT curves of equivalized household income and per capita household income (also in \$ 2017 PPP terms) in 2019 and 2010. Figure A.11c shows that in 2010, the value of the relative poverty line was \$11.85 in 2017 PPP terms, and the corresponding relative poverty rate, as measured by TUIK, was 16.1 percent. By 2019, the relative poverty line increased to \$15.39 but relative poverty

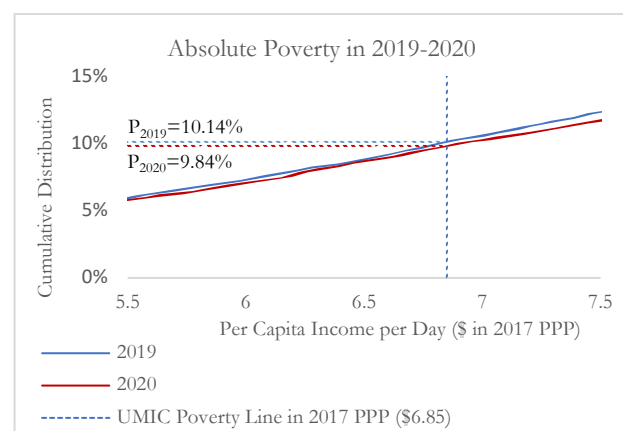
rate declined by 1.1 percentage points to 15 percent - an indication of lower income deciles increasing their income faster than that of the median. This is contrasted by the Figure A.11d which compares absolute poverty rates as measured by the World Bank. While the absolute poverty line stayed constant at \$6.85, the absolute poverty rates based on per capita income declined by 8.9 percentage points from 19 percent to 10.14 percent. This shows that, according to a relative poverty measure, poverty has hardly declined over a decade, but according to an absolute measure, poverty rate fell in nearly a half. And finally, figure A.11e juxtaposes the historical trend in the relative poverty rate as measured by TUIK and absolute poverty rate using the World Bank methodology. The figure is consistent with the previous observations, i.e., significantly declining poverty rates over time using the World Bank's absolute poverty line.

Figure A.11: A comparison of relative and absolute poverty rates in Türkiye

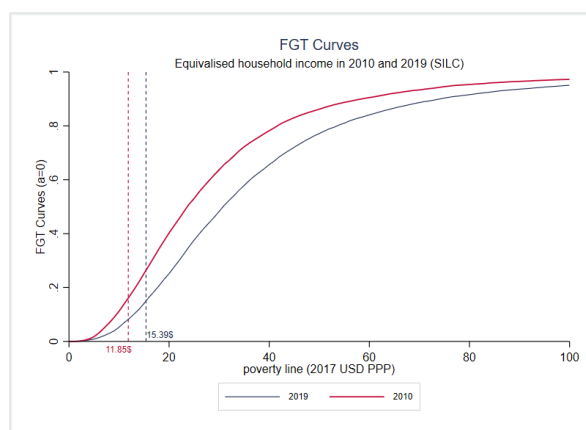
a. Relative Poverty Rates as based on TUIK's relative poverty line (Reference years: 2020 and 2019)



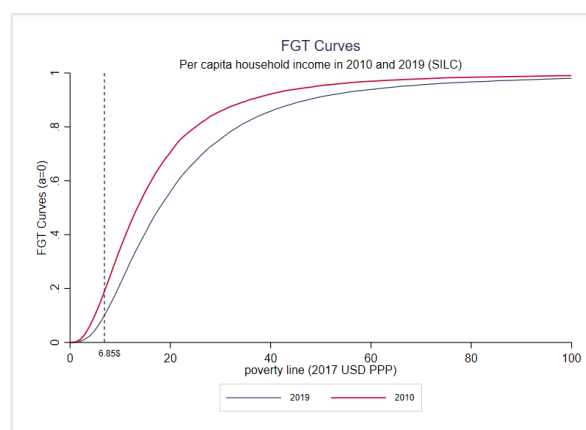
b. Absolute Poverty Rates as based on the World Bank's UMIC absolute poverty line (Reference years: 2020 and 2019)



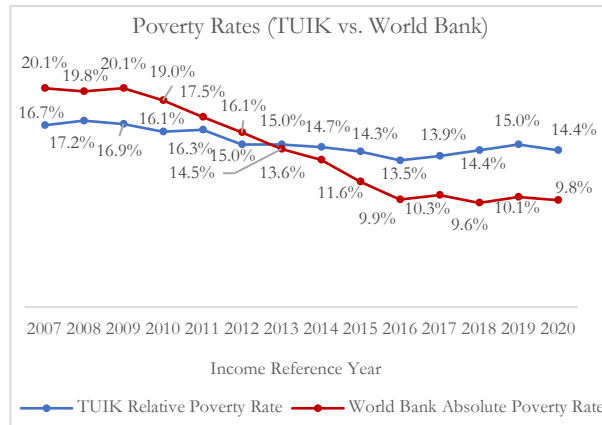
c. FGT Curves: Equivalized household income and relative poverty lines in \$ 2017 PPP (Reference years: 2019 & 2010)



d. FGT Curves: per-capita household income and absolute poverty line in \$ 2017 PPP (Reference years: 2019 & 2010)



e. Comparison of TUIK relative poverty rate and World Bank absolute poverty rate (2007-2020)



Source: TUIK and WB Staff calculations using Survey of Income and Living Conditions 2021, 2020 and 2011
 Note: The reference period of income in the SILC survey is the previous calendar year.

The choice between relative and absolute poverty lines and the right level of poverty line is a highly debated subject in welfare economics. This study uses absolute poverty rates in its analysis because the main purpose is to observe the trajectory of the share of the population that is living below the minimum level of income needed to meet the minimum living standards in the country. While relative poverty rates will always be positive except in the extreme case of everyone in the population having the same exact level of income, absolute poverty can be eradicated, which is one of the main mandates of the World Bank. The \$6.85 line is used in the context of international comparisons for Upper Middle-Income Countries. That said, monitoring the cost of basic needs for each specific country context is considered to be the best-practice approach to monitoring absolute poverty.

In the past, TUIK used to monitor absolute poverty using cost of basic needs. Starting from 2002, an official absolute poverty line was published every year, with updates using the Consumer Price Index to account for inflation. Absolute poverty in the country was monitored in this way in Türkiye until 2009. After 2009, the practice was discontinued. Resuming it would bring value-added to the system of official statistics on the population's wellbeing that are monitored in Türkiye. In addition to the \$6.85 line that the World Bank uses for international comparisons of upper-middle-income countries like Türkiye, having a bespoke absolute national poverty line that is specific to the Turkish context would help fill in data gaps in existing poverty studies and serve as a key source of information for policy makers seeking to eradicate absolute poverty in the country.

As discussed, the level of poverty rates in any country will be sensitive to the key methodological decisions made at the beginning of the computation process. In the context of Türkiye, the World Bank's poverty rate is lower than the official poverty rate published by the Turkish Statistical Institute, due to the use of an absolute poverty line, as opposed to a relative one. On the other hand, the use of per capita measures and income-based welfare aggregates lead to higher estimates of inequality and poverty. While different arguments can be made in favor of the selection of different measures, this section showcases the sensitivity of poverty and inequality outcomes to these choices. The main advantages of the welfare aggregates and poverty lines selected for this poverty assessment is that it involves a more dynamic poverty rate that is not affected by changes in the poverty line, is consistent over a long period of time and allows for international comparisons.

ANNEX TABLES

Table A.1: Changes in Poverty in Türkiye by sector of the household head (2009-2016)

	2009 - 2016		
	poverty component (in ppt)	population component (in ppt)	poverty component %
agriculture	-2.17	-1.39	23%
industry	-1.05	0.01	11%
construction	-1.04	0.49	11%
services	-2.52	0.14	26%
unemployed / out of labor force	-0.76	-0.10	8%
out of labor force	-1.99	0.17	21%
unknown/ did not respond	-0.03	0.01	0%
Change in Poverty	-9.55	-0.53	
Total Intra-sectoral effect			95%
Population shift effect			5%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Note: The table shows the Ravallion-Huppi (1991) decomposition of changes in poverty rates. Within group poverty effects represents the change in the poverty rate in in respective demographic group, weighted by its average population share. Population shift effects represents the amount of poverty rate change attributed to population movements from one group to another.

Table A.2: Shares of income components in total income the sector of the household head

Sector of Household Head		labor earnings	business income	rental property income	other property income	public transfers (pension)	public transfers (non-pension)	private transfers	other income
agriculture	2009	17%	49%	12%	3%	17%	1%	0%	0%
	2016	21%	47.3%	10%	2%	20.4%	0.4%	-1%	0%
	2020	19%	48.4%	9%	1%	22.2%	0.5%	-1%	1%
services	2009	55%	22%	13%	4%	6%	0%	0%	0%
	2016	62.0%	21%	8%	3%	7%	0%	-1%	0%
	2020	62.1%	19%	9%	3%	6%	0%	0%	0%
unemployed	2009	51%	5%	19%	4%	8%	6%	6%	1%
	2016	61%	7%	10%	2%	6%	5%	7%	1%
	2020	55%	7%	12%	1%	9%	6%	10%	1%
out of labor force	2009	22%	6%	22%	5%	41%	0%	3%	0%
	2016	27%	6%	15%	3%	46%	0%	2%	1%
	2020	23%	6%	16%	2%	50%	0%	2%	1%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Table A.3: Profiles of the one year, two years and three years poor based on individual characteristics and household size of the panel sample

	one year poor			two years poor			three years poor		
	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019
Ages 0-15	28%	31%	29%	34%	33%	35%	39%	37%	41%
Ages 16-29	25%	23%	22%	24%	25%	26%	24%	26%	23%
Ages 30-44	20%	21%	20%	20%	20%	19%	20%	18%	20%
Ages 45-59	17%	15%	15%	15%	13%	13%	11%	12%	10%
Ages 60 and over	10%	10%	14%	7%	9%	6%	7%	7%	6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Male	49%	52%	50%	48%	50%	50%	49%	50%	49%
Female	51%	48%	50%	52%	50%	50%	51%	50%	51%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aged less than 16	28%	31%	29%	34%	33%	35%	39%	37%	41%
No formal	17%	17%	18%	20%	24%	18%	26%	22%	18%
Completed primary or less	46%	43%	41%	39%	35%	36%	32%	36%	36%
Completed secondary	8%	7%	9%	6%	7%	8%	3%	4%	4%
Completed tertiary and more	1%	2%	3%	1%	1%	2%	0%	1%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

Table A.4: Profiles of the one year, two years and three years poor based on household head characteristics and household size of the panel sample

	one year poor			two years poor			three years poor		
	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019	2006-2009	2011-2014	2016-2019
Head employed in agriculture	27%	21%	19%	30%	22%	28%	30%	28%	21%
Head employed in construction	6%	11%	8%	14%	14%	13%	6%	17%	9%
Head employed in industry	10%	8%	11%	6%	11%	6%	7%	7%	4%
Head employed in services	34%	29%	24%	31%	23%	17%	27%	21%	20%
Head non-employed	22%	31%	37%	20%	31%	38%	30%	29%	46%
Total	100%	100%	100%	100%	100%	100%	100%	102%	100%
Head employed in formal sector	34%	43%	33%	26%	32%	30%	22%	25%	20%
Head employed in informal sector	44%	27%	30%	55%	39%	33%	48%	48%	34%
Household head non-employed	22%	31%	37%	20%	31%	38%	30%	29%	46%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Household with four members or less	46%	41%	38%	33%	27%	19%	21%	15%	8%
Household with more than four members	54%	59%	62%	67%	73%	81%	79%	85%	92%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: World Bank staff calculations using Survey of Income and Living Conditions data from the Turkish Statistical Institute.

ENDNOTES:

¹ Baez Ramirez, Javier Eduardo; Celik, Cigdem; Nebiler, Metin; Yasar, Pinar; Kindap, Ahmet; Duman, Erkan; Kshirsagar, Varun Sridhar; Cesur, Ozge Elif; Aydemir, Abdurrahman Bekir; Garriga, Santiago; Meliz Tyurkileri.

Prosperous Places: Advancing Spatially Inclusive Development in Türkiye (English). Washington, D.C: World Bank Group. <http://documents.worldbank.org/curated/en/099041323033537685/P17543406c8c1804b0b6de01114d7af5d59>

² In a separate study Torul and Oztunali (2018) study income and wealth distribution in Türkiye using a model-based approach based on a modified version of general equilibrium model by Aiyagari (1994). They compare Türkiye's calculated inequality measures with those of other countries and find that Türkiye qualifies as one of the more unequal economies by any income inequality metric. Unlike other studies mentioned in this section, this study does not use survey data but rather a general equilibrium model to estimate and compare inequality.

³ Baez, Inan, Nebiler (2021)

⁴ The reason for using 12-month annual CPI averages as opposed to y-o-y increases is to be consistent with the methodology of updating the poverty lines in local currency each year, which is carried out based on annual averages.

⁵ Even though the more recent rounds of HBS and SILC were released, the report primarily relies on HBS 2019 and SILC 2021, most recent publicly available data sources in the course of report production. Forthcoming regular studies from the World Bank will discuss the most recent data regarding the national accounts, SILC and HBS.

⁶ The standard deviation of the Gini index is computed for the period of the study, i.e. from 2007 to 2020. This was equal to 0.5897 points, or approximately 1.365% of the Gini index registered in 2020 (43.20).

⁷ Acar, Aysenur, and Ximena del Carpio. 2019. "Turkey Jobs Diagnostic." World Bank, Washington, DC.

⁸ World Bank.2022. Türkiye in Transition - Next-Generation Human Capital Investments for Inclusive Jobs: Policy Note . Washington, D.C.: World Bank Group.

⁹ World Bank.2022. Türkiye in Transition - Next-Generation Human Capital Investments for Inclusive Jobs: Policy Note . Washington, D.C.: World Bank Group.

¹⁰ Baez Ramirez, Javier Eduardo; Celik, Cigdem; Nebiler, Metin; Yasar, Pinar; Kindap, Ahmet; Duman, Erkan; Kshirsagar, Varun Sridhar; Cesur, Ozge Elif; Aydemir, Abdurrahman Bekir; Garriga, Santiago; Meliz Tyurkileri.

Prosperous Places: Advancing Spatially Inclusive Development in Türkiye (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/099041323033537685/P17543406c8c1804b0b6de01114d7af5d59>

¹¹ The forthcoming Türkiye Systematic Country Diagnostic (SCD) 2023 report includes a more detailed diagnosis of trends in the country's total factor productivity and inclusion in the labor market and provides a list of development priorities accompanied with related policy recommendations. Similarly, the forthcoming Türkiye Employment and Jobs Country Economic Memorandum (CEM) includes a detailed study of the country's labor and unemployment challenges, particularly related to youth and female unemployment, and identifies policy options for better employment creation.

¹² Please see Acar and del Carpio (2019) for a more detailed discussion of recommended policy actions

¹³ Some recent examples of research includes Halim, Perova, Reynolds (2021) and Cali, Johnson, Perova, Ryandiansyah (2022)

¹⁴ Acar and del Carpio (2019)

¹⁵ Public Finance Review, 2023

¹⁶ The initial two years of the SILC survey were dropped from the analysis. This is due to several reasons. The first is, as also mentioned in other studies (see e.g., Hasan Tekgüç (2018) Declining Poverty and Inequality in Türkiye: The Effect of Social Assistance and Home Ownership, South European Society and Politics, 23:4, 547-570, DOI: 10.1080/13608746.2018.1548120), the income levels in 2005 are low and have internal inconsistencies - for instance, households with high school graduate heads are poorer than households with less educated heads. Secondly, there is a very sharp movement and variation between the income-based poverty rates seen in 2005, 2006 and 2007 (26.4, 17.9 and 20.1 percent respectively). The main reason for this seems to be the considerably high rent computations across the vast majority of regions in 2006, which is highly disproportionate in the case of Istanbul, leading to real rent income in the city to be higher in 2006 compared to its most recent levels in 2020. There is additionally a 5 percentage point difference between the income-based poverty rates found in the SILC and those computed using the income module of Household Budget Survey, which is otherwise at lower levels (with a maximum of 2 ppt) in later years. These internal inconsistencies were not found in the surveys of later years and the initial two years of the SILC surveys were excluded from the analysis, to provide more robust results.

¹⁷ Source: Strategy and Budget Office

https://www.sbb.gov.tr/wp-content/uploads/2021/02/2020_Aralik_Ayi_MYB_Gerceklemleri-15012021.pdf

¹⁸ Social Assistance information from Ministry of Family, Labor and Social Services 2020 Annual Implementation Report. The SILC survey captures approximately 48 percent of the social assistance expenditures and 40 percent of the national income, so the actual amount needed to eradicate poverty will likely be higher.

¹⁹ Regional disaggregation at the NUTS2 level only became available in SILC starting with the SILC 2014 survey. The changes between 2007 and 2020 are thus presented at the NUTS1 level.

²⁰ World Bank, 2023

²¹ Rental prices within regions impacted by the earthquake have significantly increased (Ceritoğlu and Sevinç, 2023), which may exacerbate the financial burden on poor households, given that rent represents a substantial fraction of their household expenditures. One implication of this might be a possible deterioration in regional convergence for 2023 and beyond.

²² Ibid.

²³ Since the data collected for income and living condition surveys is at the household level, the way to interpret this finding is that the greatest proportion of the individuals living in poor households were from the 0-14 age group.

²⁴ For this analysis, total compensation of workers taken from National Accounts Data was used in order to calculate compensation per worker. Nominal values were converted into 2009 base real terms using GDP deflators for each corresponding year.

²⁵ Agriculture and construction sectors, yield lower compensation per worker (as indicated by Figure 1.12), and also exhibit higher rates of informal employment. Wage dynamics in these sectors may be impacted by changes from informal to formal sector.

²⁶ Labor income includes wage income for employees and excludes business incomes declared by the self-employed and employers.

²⁷ Pension income includes old age retirement benefits, retirement grants, survivors' benefits and disability benefits.

²⁸ Non pension public transfers include unemployment benefits (including severances), education related allowances, children related allowances (in cash and in kind), housing allowances, other social allowances (in cash and in kind), minus regular taxes paid (including tax for the dwelling, motor vehicles tax and regularly paid wealth tax and excluding income tax)

²⁹ The household income per capita for a given household can be decomposed as:

$$Y_h = \frac{A_h L_h}{M_h A_h} \left(\sum_{i \in L_h} \frac{w_{i,h}}{L_h} \right) + \frac{K_h}{M_h} + \frac{T_h}{M_h}$$

where Y_h stands for household h income per capita, M_h stands for number of household members in household h , A_h stands for number of household members who are adults, L_h stands for number of household members with paid work, K_h stands for capital and other non-labor incomes, and T_h stands for net-transfers.

³⁰ Rental property income includes rent income received from the rental of assets or land and the imputed rent income of the dwelling based on market prices if the household owns its own property.

³¹ Other property income includes investment income obtained from stocks, securities and other non-physical investment property.

³² Private transfers include net value of regular allowances in cash received from other households or persons, net value of regular allowances in kind received from other households or persons and net value of alimonies received from other persons.

³³ Single person families and couples with up to 3 children also had high confidence intervals.

³⁴ While couples without children experienced the greatest decline in GE(0) in terms of point estimates, this change was not statistically significant due to high confidence intervals.

³⁵ msdeco is a STATA command that performs these decomposition and reports the decomposition results in four components, labeled A, B, C, and D, which correspond to equations (14a), (14b), (14c), and (14d) in the original paper, respectively. This is a slight approximation of the exact decomposition, but offers a more practical interpretation that the exact decomposition. Using the author's original notation, the components are:

A: $\text{SUM} \{ m(v_k) D(l_k) \}$ (Effect due to changes in within subgroup inequality)

B: $\text{SUM} \{ m(l_k) D(v_k) \}$ (Effect due to changes in population shares of within component)

C: $\text{SUM} \{ [m(\lambda_k) - m(\log \lambda_k)] D(v_k) \}$ (Effect due to changes in population shares of between component)

D: $\text{SUM} \{ [m(\theta_k) - m(v_k)] D(\log \mu_k) \}$ (Effect due to relative changes in subgroup means)

where SUM is the summation operator, summing over index k

$m()$ is the mean-over-time operator

$D()$ is the "delta" difference-over-time operator.

$v_k = n_k/n$, or the proportion of the population in group k;

I_k is the GE(0) of group k;

$\lambda_k = \mu_k/\mu$, the relative mean income of group k to the mean of the entire population

$\theta_k = v_k * \lambda_k$, the income share of group k

³⁶ Paul (2004)

³⁷ For this section, we make use of 4-year panels in order to be able to observe the individuals for the maximum duration of time possible.

³⁸ It will be important to identify these individuals before conducting further analysis on poverty dynamics later in the chapter, as only non-censored observations will be used in calculating the unconditional probabilities of entering or exiting poverty after various lengths of spells.

³⁹ Let y_t^i be the income of individual in period t and μ_t be the average income over the T periods for that same individual I, $i=1, \dots, N$. Total poverty is defined as:

$$TP(\alpha, z) = \frac{\sum_{i=1}^T w_i (z - y_t^i)_+^\alpha}{T \sum_{i=1}^N w_i}$$

The chronic poverty component is then defined as:

$$CPC(\alpha, z) = \frac{\sum_{i=1}^T w_i (z - \mu_i)_+^\alpha}{\sum_{i=1}^N w_i}$$

Transient poverty equals:

$$TPC(\alpha, z) = TP(\alpha, z) - CPC(\alpha, z)$$

⁴⁰ In all cases we use non-censored observations (i.e., those with one or two years of poverty in second and/or third waves only). Exit probabilities (non-parametric estimates) are calculated using the following steps:

- 1) Take all observations with poverty in year 2, but not in year 1; that is:

$$Z = \{\forall y_{i,t} | P(y_{i,t=2}) = 1 \text{ and } P(y_{i,t=1}) = 0\}$$

- 2) Identify the subset of these observations that are non-poor next year; that is:

$$X = \{\forall y_{i,t} \in Z | P(y_{i,t=3}) = 0\}$$

- 3) Take all observations with poverty in year 3, but not in year 2, that is:

$$W = \{\forall y_{i,t} | P(y_{i,t=3}) = 1 \text{ and } P(y_{i,t=2}) = 0\}$$

- 4) Identify the subset of these observations that are non-poor next year; that is:

$$V = \{\forall y_{i,t} \in W | P(y_{i,t=4}) = 0\}$$

- 5) Then, exit probability after one-year spell of poverty is:

$$ES^1 = \frac{X + V}{Z + W}$$

- 6) Take all observations with poverty in year 2 and 3, but not in year 1; that is:

$$U = \{\forall y_{i,t} | P(y_{i,t=2}) = P(y_{i,t=3}) = 1 \text{ and } P(y_{i,t=1}) = 0\}$$

- 7) Identify the subset of these observations that are non-poor next year, that is:

$$T = \{\forall y_{i,t} \in U | P(y_{i,t=4}) = 0\}$$

- 8) Then, exit probability after two-year spell of poverty is:

$$ES^2 = \frac{T}{U}$$

Entry probabilities (non-parametric estimates) are calculated using the following steps:

- 1) Take all observations non-poor in year 2, but poor in year 1; that is:

$$A = \{\forall y_{i,t} | P(y_{i,t=2}) = 0 \text{ and } P(y_{i,t=1}) = 1\}$$

- 2) Identify the subset of these observations that are poor next year; that is:

$$B = \{\forall y_{i,t} \in A | P(y_{i,t=3}) = 1\}$$

- 3) Take all observations non-poor in year 3, but poor in year 2, that is:

$$C = \{\forall y_{i,t} | P(y_{i,t=3}) = 0 \text{ and } P(y_{i,t=2}) = 1\}$$

- 4) Identify the subset of these observations that are non-poor next year; that is:

$$D = \{\forall y_{i,t} \in C | P(y_{i,t=4}) = 1\}$$

- 5) Then, re-entry probability after one-year non-poor spell is:

$$RS^1 = \frac{B + D}{A + C}$$

- 6) Take all observations non-poor in years 2 and 3, but poor in year 1; that is:

$$E = \{\forall y_{i,t} | P(y_{i,t=2}) = P(y_{i,t=3}) = 0 \text{ and } P(y_{i,t=1}) = 1\}$$

- 7) Identify the subset of these observations that are poor next year, that is:

$$F = \{\forall y_{i,t} \in E | P(y_{i,t=4}) = 1\}$$

- 8) Then, re-entry probability after two-year non-poor spell is:

$$RS^2 = \frac{F}{E}$$

⁴¹ For the one-year poverty and non-poverty spells, the number of observations varied between 220 and 530, depending on the year of panel data. For the two-year poverty and non-poverty spells, the number of observations that fit the definitions above was much lower, changing between 35 and 223 and leading confidence interval levels too high to say something firm about the statistical significance of the trend over the years.

⁴² For Türkiye, we set the vulnerability threshold having 10 or higher probability of being poor in the next year. This approximately equals the poverty headcount rate in the country since 2016 – a cutoff point frequently used by researchers.

⁴³ For a technical discussion see Ravallion, M. 2016, *The Economics of Poverty*, chapters 3 and 4.

⁴⁴ For more technical details, see Jolliffe and Prdyz (2016) and Jolliffe et al. (2022) for the derivation of the international poverty line and higher lines with the 2011 and 2017 PPPs, respectively.

⁴⁵ Gomez et al. (2019)

⁴⁶ Davidson, Russell (2017). *Inequality, Poverty, and Stochastic Dominance*. p.38

<https://www.ncer.edu.au/events/documents/slides.stochdom.pdf>,

Deaton, A. (1997) *The Analysis of Household Surveys. A Microeconometric Approach to Development Policy* pp 157 - 169.

⁴⁷ Please refer to Manchini and Vecchi (2023) p. 151 for a detailed matrix of the advantages and disadvantages of using both kinds of welfare aggregates.

⁴⁸ Chapter 4 of this report uses this panel data to study poverty dynamics

⁴⁹ Referred to as the Luxembourg Income Scale, as it is the equivalence scale used in the Luxembourg Income Study, which provides public access for research purposes to harmonized unit-record data sets for multiple, primarily high-income countries. See Ravallion (2015) for details.

⁵⁰ The scope of the Türkiye Family Support Program is limited to households with a per capita income of less than one-third of the net minimum wage among those covered by Law No. 3294.