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Cem Başlevent

HOUSEHOLD ASSET INEQUALITY IN TURKEY: HOW INFORMATIVE IS THE SURVEY OF INCOME AND LIVING CONDITIONS?

Cem Başlevent

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Send correspondence to:
Cem Başlevent
Istanbul Bilgi University
cbaslevent@bilgi.edu.tr

Abstract

Using micro data from the Survey of Income and Living Conditions conducted by TurkStat, we apply the capitalization method in an attempt to determine the extent of wealth inequality in Turkey. This well-established method involves the estimation of household wealth based on the amounts of income resulting from the ownership of various types of assets. In addition to the calculation of wealth inequality, capitalized incomes are entered into a decomposition analysis to find out which factors contribute to inequality more than the others. Due to data limitations, we are restricted to an analysis that makes use of financial and rental income figures and imputed rents, while wealth in the form of land, gold, or stock ownership is mainly unaccounted for. The Gini coefficient figure of 0.54 implies that wealth inequality measured at the household level for Turkey is not extremely high. However, additional computations suggest that inequality is quite higher at the individual level.

ملخص

في هذه الورقة نســـتخدم بيانات جزئية من مســـح الدخل وظروف المعيشـــة الذي أجرته الدولة في تركيا، ونطبق طريقة الرســـملة في محاولة تحديد مدى عدم المســاواة في الثروة في تركيا. تتضـــمن هذه الطريقة الراســخة تقدير ثروة الأسـرة المعيشـية اسـتناداً إلى مبالغ الدخل الناتجة عن ملكية أنواع مختلفة من الأصـــول. وبالإضـــافة إلى حســـاب عدم المســـاواة في الثروة، يتم إدخال الدخول المرســملة بتحليلها إلى عناصـرها لمعرفة العوامل التي تسـاهم أكثر من غيرها في عدم المسـاواة. ونظرًا لقيود البيانات، سـنقتصـر على التحليل الذي يستخدم أرقام الدخل المالي والإيجاري والإيجارات المحسوبة، في حين أن الثروة في شكل أراضي أو ذهب أو ملكية أسهم غير معلومة بشكل رئيسي. يشير رقم معامل جيني البالغ 0.54 إلى أن عدم المساواة في الثروات المقاسة على مستوى الأسرة المعيشية في تركيا ليست عالية للغاية. ومع ذلك، تشير الحسابات الإضافية إلى أن عدم المساواة أعلى على المستوى الفرد من على مستوى الأسر المعيشية.

1. Introduction

Wealth inequality has climbed up the global economic agenda since the financial crisis of 2008/09, and it is now one of the biggest challenges facing decision-makers as they try to address the needs of large masses of citizens who feel disenfranchised. Feelings of social, economic and political inequality can ferment revolution, as in the case of the Arab Spring, or the rise of populist right-wing parties, as in Europe (Gilmore, 2016). What forms the link between such socio-political developments and the distribution of wealth is the widely-held belief that neoliberal policies that have dominated the global economic scene have has shifted income and wealth in the direction of those who were wealthy to begin with. As summarized in Kotz (2002), the policy recommendations of neoliberalism include the deregulation of business, privatization of public activities and assets, cutbacks in social welfare programs, and the reduction of taxes on businesses. In the international sphere, neoliberalism calls for free movement of goods, services, capital, and money (but not people) across national boundaries. The widespread implementation of these principles is said to be mainly responsible in many parts of the world for rising poverty among the working class as well as the erosion of the middle class.

In his hugely popular book "Capital in the Twenty-First Century", French economist Thomas Piketty (2014) argues that the main reason behind the recent rise in wealth inequality is that wealth does not flow down from the rich to the rest of society. Piketty cites unequal distribution of wealth as a cause of social and economic instability and proposes that it should be addressed by taxing wealth held by individuals around the world, to allow a share of that wealth to be redistributed. However, the globalization of wealth creation has made it easier for individuals and businesses to choose where and how to invest, making it more difficult for national tax legislation to have an impact on national outcomes.

Dobbs et al. (2013) discuss the distributional effects of policies implemented by major central banks in response to the global financial crisis. Embarking upon an unprecedented effort to stabilize and inject liquidity into financial markets, central banks had brought interest rates to ultra-low levels between 2007 and 2012. The authors argue that, ultra-low interest rates produced large distributional effects on different sectors in advanced economies through changes in interest income and interest expense. Households in the United States, the United Kingdom, and the Eurozone are estimated to have lost hundreds of billions of dollars in net interest income, but the impact has varied across demographic groups. Younger households that are net borrowers have benefited, while older households with interest-bearing assets have lost income. While households have fared less well in terms of interest income and expense, the negative impact on household income may have been offset by wealth gains from increased asset prices. What makes these patterns particularly relevant for the current study is that Turkey is one of the countries where asset prices, especially of housing, have risen sharply during the said period due to the massive flow of financial capital to emerging markets.

Since the economic crisis that hit the country in 2001, Turkey has registered a sizeable improvement in its income distribution and has managed to bring its Gini coefficient below the 0.40 mark. However, estimates of wealth inequality suggest that the disparity in asset ownership remains at a very high level. In fact, as in many other parts of the world, wealth inequality seems to be on the rise. According to the 2015 edition of Credit Suisse Research Institute's Global Wealth Report, wealth inequality throughout the world has widened in the aftermath of the financial crisis of 2008-9 (Shorrocks, Davies, and Lluberas, 2015). In the report, the recent increase in global wealth inequality is attributed to the rise in equity prices and in the size of financial assets in high-wealth countries.

In the latest edition of the Global Wealth Report, released in November 2016, the mean and median 'wealth per adult' values given for Turkey are $ 19,685 and $ 4,339, respectively. The

mean wealth per adult figure is obtained by subtracting the average debt figure of about six thousand dollars from the sum of financial and non-financial wealth figures which are around 10 and 15.7 thousand dollars, respectively. The Gini coefficient of wealth inequality given for Turkey in the report is 0.832, which is actually lower than the figures for Europe (0.849) and the world (0.927). In the absence of a household wealth survey, the Gini coefficient for Turkey was obtained by the researchers using standard regression methods that primarily take into account the degree of *income* inequality (which is estimated annually by an official survey). The parameters of the association between income inequality and wealth inequality are estimated from the subset of countries for which both figures are available. This methodology will be explained in more detail in the next section.

Even when data on household wealth is available, there are several reasons why the measurement of wealth through a household survey is difficult. First, compared to other survey topics, respondents may be relatively reluctant to answer questions about wealth and income. According to Fries *et al.* (1998), respondents may have concerns about disclosure even if confidentiality is ensured. Secondly, the values of assets and liabilities can be hard to report accurately. Respondents may not know the current market value of some of their assets, or they may forget to report some of their assets or debts. Finally, ordinary random samples are likely to contain an inadequate number of wealthy households to be representative of the full distribution of wealth because the ownership of wealth is relatively highly concentrated.

The main purpose of the current study is to determine the extent of wealth inequality in Turkey using a technique known as 'the capitalization method'. The available income survey data allow us carry out this exercise by 'capitalizing' the amounts of various types of income received by households. Since no information on household wealth is available in the survey, our analyses of wealth inequality are based on capitalized incomes, i. e. the imputed amounts of financial and other types of assets. In other words, the stock of wealth is derived from the flow of income resulting from asset ownership during the reference period of the survey. The main difference between this methodology and the one employed in the Global Wealth Report is that we construct the wealth figures from the income figures at the household level rather than using the overall Gini coefficient of income inequality for the whole country.

In the empirical work, we first examine the contribution of all sources of income recorded in the Survey of Income and Living Conditions (including returns to assets) to income inequality. We than make use of the financial and rental income (from financial asset and real estate ownership) and imputed rent figures provided in the survey to obtain estimates of household wealth that is in the form of financial assets and housing. The estimated amounts of wealth are imputed using the annual non-labor income figures and the actual rates of return to the corresponding types of assets in the year the survey was administered. Finally, the estimated quantities of household wealth are utilized in a household-level asset inequality analysis.

Wealth inequality and the capitalization method
In a recently published paper, Saez and Zucman (2016) combine income tax data from the Survey of Consumer Finances with macroeconomic household balance sheets to estimate the distribution of wealth in the United States. The key aspect of their empirical work is the use of the capitalization method. In making use of this methodology, the authors start with the capital income reported by taxpayers to the Internal Revenue Service (IRS). For each asset class including dividends, interest, and rents, they compute a capitalization factor that maps the total flow of tax income to the amount of wealth recorded in the household balance sheet of the US Financial Accounts. Finally, they obtain wealth by multiplying individual income components by the corresponding capitalization factors. Assets that do not generate taxable income are also

accounted for. These assets (owner-occupied homes and pensions, in particular) are well covered by alternative data sources in the case of the United States.

According to Saez and Zucman, the capitalization method of estimating a household's or an individual's wealth through the capital income declared to the IRS faces two main potential obstacles. The first one, as alluded to above, is that not all assets generate taxable investment income. Secondly, within a given asset class, rates of returns may vary with wealth. Additional problems with this approach, including the fact that tax avoidance could bias the results, are pointed out Kopczuk (2015). However, the capitalization method proves to be successful in tests performed by Saez and Zucman on three micro datasets where both income and wealth are observed.[1] Reeves (2015) also argues that, despite its shortcomings, there is probably no better way of measuring wealth than the capitalization method. Elsewhere, Lundberg and Waldenström (2016) apply the method to Swedish data and conclude that although capitalized wealth estimates do a good job of approximating overall inequality levels and trends, they are highly sensitive to assumptions and the quality of the underlying data sources. Fagereng *et al.* (2016) examine the consistency of capitalized estimates of financial assets using Norwegian data, and observe an overall poor performance of the capitalization method in matching the Gini coefficient.

To the best of our knowledge, there is no existing empirical study on Turkey that involves the use of an income survey to construct financial and non-financial wealth figures at the household level to be utilized in an asset inequality analysis. Our results will reveal whether wealth inequality figures based on this methodology are similar to, or vary substantially from those reported in the Global Wealth Report for Turkey. We hope that the current study will also spark discussions on how the existing income survey can be revised to improve the implementability and reliability of the capitalization method in the Turkish context.

2. Measurement of wealth inequality in the Global Wealth Report

The aim of the Global Wealth Report (GWR), which is the most comprehensive source of global household wealth figures, is to provide estimates of the wealth holdings of households around the world and the distribution of individual net worth within and across nations. In the report, personal wealth is defined as the marketable value of financial assets plus non-financial assets (principally housing and land) less debts. What makes the project summarized in the report particularly challenging is that "no country in the world has a single comprehensive source of information on personal wealth, and many low and middle income countries have little direct evidence of any kind" (Shorrocks, Davies, and Lluberas, 2015; p. 5). However, relevant data from a variety of different sources in a growing number of countries can be used in order to achieve the objectives of the project.

The procedure used in the GWR to measure within-country wealth inequality involves three main steps. The first step establishes the average level of wealth for each country using household balance sheet (HBS) data (where available) or econometric techniques which generate estimates of the level of wealth in countries that lack direct information for one or more years. This methodology was used earlier in Davies *et al.* (2008, 2011). In the second step, which also follows Davies *et al.* (2008, 2011), the pattern of wealth holdings within nations are constructed. In the 2015 edition of the GWR, the authors report that data on the distribution of wealth are available for only 31 countries, whereas the World Development Indicators of the World Bank and the World Income Inequality Database contain income distribution data for 166 countries. The inspection of data for these countries suggests a strong relationship between wealth distribution and income distribution. For the 31 countries which have data on both wealth and income distribution, the Lorenz curves for wealth are lower

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[1] The capitalization method has also been used by King (1927), Stewart (1939), Atkinson and Harrison (1978), Greenwood (1983), and Mian, Rao, and Sufi (2013).

everywhere than for income, indicating that wealth is more unequally distributed than income. The authors exploit this relationship in order to provide a rough estimate of wealth distribution for the remaining 135 countries, which have data on income distribution but not on wealth ownership. An 'ungrouping program' is then used to generate all the Lorenz curve values required for the template employed for wealth distribution.

It is stated in the GWR that the need for a third step arises from the inadequacies of the traditional sources of wealth distribution in accounting for large amounts of wealth possessed by billionaires. The existing data are, thus, unlikely to provide an accurate picture of wealth ownership in the top tail of the distribution for most countries. To overcome this deficiency, the authors make use of the information in the rich lists published by Forbes Magazine and others to adjust the wealth distribution pattern in the highest wealth ranges.

The choice of the appropriate unit of analysis is another important issue that is explained in the GWR. The authors agree that a case can be made for basing the analysis on households or families. However, they also argue that personal assets and debts are typically owned (or owed) by named individuals, and may be retained by those individuals if they leave the family. Furthermore, it is unusual for household members to have an equal say in the management of assets, or to share the proceeds equally if the asset is sold. For all these reasons, – and the practical consideration that the number of households is unknown in most countries – the authors prefer to carry out an individual level analysis. Since children have little formal or actual wealth ownership, the authors focus on wealth ownership by adults, which they define as 'individuals aged 20 or above'.

3. The Data and Methodology

In the empirical work, we use data drawn from the 2014 Survey of Income and Living Conditions (SILC) conducted by the Turkish Statistical Institute (TurkStat). The income figures provided in the SILC data include after tax in-cash and in-kind payments from primary and secondary jobs (and jobs previously held during the past year), as well as income from non-labor sources such as interest and rent incomes, dividends, and transfers. Also reported are imputed rents (i.e. self-reported figures for the annual amount of rent households would have paid if they had rented their homes) which were shown by Dayıoğlu and Başlevent (2006) to have a non-negligible negative contribution to income inequality in Turkey.

The SILC data set distinguishes between several types of income received by individuals aged 15 and above during the reference period of the survey's 2014 edition, which is the year 2013. The two types of income representing labor market earnings are 'wage and salary' and self-employment incomes (i.e. the incomes of employers and those engaging in own-account work). Retirement payments (including survivor benefits), and disability allowances are the two types of income received by inactive individuals. While almost all men in our sample receive retirement payments in return for their own contributions, more than half of the women in this category are receiving survivor benefits.

Unlike labor market incomes and retirement payments which are recorded at the individual level in the SILC, the remaining types of non-labor income including rental income and income from financial assets, as well as in-kind and cash transfers from various social assistance programs are recorded at the household level. Obviously, this precludes us from identifying which household member owns the asset that yielded the income during the reference period. Consequently, we need to carry out our asset inequality analysis at the household level, unlike in the Global Wealth Report where an individual-level analysis is conducted.

According to the 2014 SILC, over 21 million households across the nation had an average annual disposable income of 32 thousand TL in the year 2013, which corresponds to a grand total of 684 billion TL. These figures are obtained by making use of the expansion factors

available in the micro data set that contains 22,740 observations at the household level. As presented in Table 1, the highest average income is observed in the province of Istanbul, which - given its population of nearly 15 million - is a statistical region on its own. The lowest average incomes are observed in the three regions in eastern Anatolia.

Table 1: Average household income by region

Code	Region	Average household income (TL)	Number of households	Number of observations in SILC
TR1	İstanbul	40,636	4,182,065	2,015
TR2	Batı Marmara	27,739	1,134,649	1,518
TR3	Ege	29,887	3,254,678	3,191
TR4	Doğu Marmara	33,676	2,057,016	2,002
TR5	Batı Anadolu	38,431	2,202,091	2,104
TR6	Akdeniz	27,397	2,828,480	2,771
TR7	Orta Anadolu	29,325	1,025,766	1,507
TR8	Batı Karadeniz	27,873	1,246,921	2,099
TR9	Doğu Karadeniz	29,193	739,820	709
TRA	Kuzeydoğu A.	27,534	435,611	1,258
TRB	Ortadoğu A.	25,843	750,904	1,420
TRC	Güneydoğu A.	23,815	1,521,695	2,146
	TURKEY	32,000	21,379,696	22,740

As the above presentation implies, the SILC data allows us to obtain estimates for only certain types of assets owned by the household members. First of all, using the imputed rent figures, it is possible to compute an estimate of the value of the housing unit that home-owner households currently live in. Under the assumption that the value of a housing unit in Turkey is 18 times its annual rental value, the imputed rent figure given in the data is multiplied by 18 to find the approximate value of the house that the family is living in.[2] Similarly, annual rental income figures are multiplied by 18 to obtain the value of other real estate units owned by household members. Finally, the value of the financial assets of households are approximated by multiplying the annual financial income figures by 12, implying an annual rate of return of just over 8 percent, which is a reasonable figure for the year 2013. Admittedly, utilizing the same rate of return for all households across the country is not a very realistic assumption. Those with larger amounts of wealth may have access to financial instruments with higher returns. However, the bias our assumption leads to in terms of overall asset inequality is likely to be negligible.

Unfortunately, we are unable perform similar exercises to estimate the amount of household wealth which is in the form of gold or land as, in most cases, it does not yield any income. According to estimates of Istanbul Gold Refinery, the amount of gold 'kept under the pillow' by Turkish households could be as large as 5,000 tonnes, which is worth over six hundred billion Turkish Liras. The total value of privately-owned land is probably just as large, but it is even more difficult to attach a monetary amount to, not only due to the lack of income generation, but also because of the absence of a market for land in rural areas. The lack of information on these two traditional types of asset ownership is probably the biggest drawback of the method of imputing the amount of wealth from annual income flows. Another measurement problem we are unable to overcome is accounting for the amount of wealth that is held in business enterprises for re-investment and not reported as part of entrepreneurial income.

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[2] Various figures have apperaed in the Turkish media regarding the ratio of house prices to annual rental values. The consensus seems to be that the ratio is between 15 and 20. Though 18 is an arbitrarily chosen figure, it is likely to be a good estimate of the nationwide pattern.

According to the statistics published by the central bank of Turkey (CBRT), around the middle of 2013, the total financial asset holdings of Turkish households amounted to over 600 billion Turkish Liras (CBRT, 2013). The types of financial assets that bring sizeable and regular non-labor incomes to households (mainly time deposits in TL's) amounted to just over 300 billion TL's. Our estimate derived from the SILC for this type of wealth is around 225 billion TL's (10,5 thousand TL's of financial wealth per household × 21,4 million households) which actually is not a very bad estimate given the large degree of under-reporting present in income surveys.

Also according to the CBRT statistics, time deposits in foreign currencies corresponded to one-fifth of the financial asset holdings of Turkish households in 2013. Since the interest earned from these accounts is typically on the order of only 1-to-2 percent per annum, we can concede that our methodology does not account adequately for this type of wealth. As of 2013, household wealth kept in private pension funds and in the form of stocks traded in the Istanbul stock exchange (Borsa Istanbul) accounted for about ten percent of Turkish households' financial assets. The amount of money in circulation made up another ten percent of total financial holdings. Unfortunately, we are unable to account for these types of assets either, as they do not yield any interest and do not figure in our computations.

The CBRT statistics also reveal that the financial liabilities of Turkish households had reached a substantial level by the year 2013. The total amount owed by the households to banks and other institutions corresponded to just over 50 percent of the total value of their financial assets. A similar financial liability-to-asset ratio is given for Turkey in the 2013 edition of the Global Wealth Report. Since the survey we work with does not contain any information on the debts of household members, our asset inequality analysis will be based on *gross* wealth figures unlike in the GWR where amounts of *net* wealth are under examination.

4. A brief look at income inequality in Turkey

We begin the empirical work by observing the extent of inequality in total household income and how income from assets contributes to it. The household incomes from the 2014 SILC on which we base our analysis include wage and salary, self-employment, retirement, and disability incomes, imputed rents, rental income, returns to financial assets, unemployment benefits, income received from social assistance programs and relatives, and other types of income such as alimony payments that add up to only a small portion of household incomes in Turkey.

One exercise we can carry out using the income quintile assignments of households is to see how each subcomponent of income is allocated among the income quintiles. Before these incomes are entered into an inequality analysis, however, they must be adjusted for household size and composition using an 'adult equivalence scale' so that they more accurately reflect the material well-being of the households. In line with common practice, we use the 'Eurostat' (a.k.a. the 'modified OECD') scale that distinguishes between adults and children to obtain the effective number of adults (or adult equivalents) in the household. Under this scale, the number of adult equivalents in the household is calculated by counting the first adult in the household as 1 person and each other adult as the equivalent of 0.5 adults. The children (i.e. ages less than 15 years) are counted as 0.3 adults. In this part of the empirical work (i.e. Tables 2 and 3), the income figures on which the households' rankings and the inequality measures will be based will be the amounts obtained after the raw income figures are divided by the number of adult equivalents. However, when we deal with asset inequality in the next section, we will work with unadjusted figures since wealth is not something that household members jointly consume with 'economies of scale'.

Table 2: Allocation of subcomponents of income into income quintiles (% shares)

	Bottom	2nd	3rd	4th	Top
Male wage and salary	7.2	12.0	15.2	22.2	43.3
Female wage and salary	2.2	5.1	9.4	17.4	65.9
Male self-employment	6.2	9.0	12.2	18.6	53.9
Female self-employment	4.6	7.0	10.3	16.2	61.9
Male retirement	4.0	15.1	22.7	28.1	30.2
Female retirement	4.1	10.9	20.5	25.3	39.3
Male disability	29.5	27.4	21.9	15.2	6.0
Female disability	30.8	31.8	19.1	14.1	4.2
Imputed rents	10.1	13.7	18.4	23.1	34.6
Rental income	1.6	3.5	8.0	17.2	69.6
Financial income	4.1	7.2	10.7	16.9	61.1
Unemployment benefits	6.8	12.1	17.7	21.4	42.0
Social assistance	58.5	22.0	9.9	5.6	4.1
Family assistance	12.8	14.6	17.7	21.9	33.0
Other	8.1	8.6	7.1	11.5	64.8
Total Income	6.3	10.9	15.2	21.5	46.0

According to figures presented in Table 2, households in the top quintile receive 46 percent of total household income. With figures above 60 percent, the share received by the top quintile is the largest in the case of rental and financial income, female self-employment income, and female wage and salary income. Households in the bottom quintile, on the other hand, receive only 2 to 5 percent of these types of income.

Examination of the distribution of the various types of income into income quintiles provides only a rough idea of which types enhance inequality and which ones work against it. In order to quantify the contributions of these 'factors' to household income inequality, there are several decomposition techniques that can be used. The technique developed in Shorrocks (1982) is a relatively simple one that considers all of the components simultaneously and measures their "proportionate contributions". The formulation is based on the covariances between the values of the factors and total income, and it is independent of the choice of the measure of inequality. As defined, the sum of the proportionate contributions is 100 percent, with positive values implying a positive impact of the factor on overall inequality.

All of the different types of income presented earlier are treated as separate factors in our decomposition analysis. We are primarily be interested in the contributions of financial and rental income. The proportionate contribution figures are presented in the second-to-last column of Table 3. As would be expected, the per-unit contributions of rental and financial incomes is also quite large. The combined proportionate contribution of these two types is nearly 14 percent despite the fact that their share in total income is only 6 percent. Apparently, the wealth distribution, which is known to be highly unequal, is having a considerable impact on the income distribution as well.

Table 3: The Contribution of subcomponents of income to household-level inequality

	Share of h'holds. receiving factor (%)	Share of factor in total income (%)	Coefficient of variation for factor	Proportionate contribution of factor to inequality (%)	Per-unit contribution of factor
Male wage and salary	58.7	34.2	1.5	28.0	0.8
Female wage and sal.	26.3	11.7	2.8	16.5	1.4
Male self-employment	24.8	13.8	3.5	22.8	1.7
Female self-empl.	5.2	1.4	11.1	3.3	2.4
Male retirement	29.1	11.4	2.0	4.5	0.4
Female retirement	18.7	7.3	2.8	3.7	0.5
Male disability	2.2	0.3	8.5	− 0.1	− 0.4
Female disability	0.9	0.1	13.2	0.0	− 0.4
Imputed rents	75.4	9.2	1.1	4.8	0.5
Rental income	14.3	3.3	5.9	7.5	2.3
Financial income	30.8	2.8	5.6	6.1	2.1
Unemp. benefits	3.4	0.3	10.5	0.1	0.4
Social assistance	12.8	0.3	5.0	− 0.2	− 0.6
Family assistance	18.8	3.0	4.2	1.2	0.4
Other	11.2	0.9	11.5	1.8	1.9

Notes: The figures reported here are based on amounts adjusted by an adult equivalence scale. The per-unit contributions reported in the last column are obtained by dividing the proportionate contributions by the share of income type in total household income. The Gini coefficient of total household income is 0.39. The exercise was carried out using software package STATA (Jenkins, 1995, 1999).

5. Asset inequality analysis

In examining the extent of asset equality in Turkey, we first look at the mean values of several indicators across the income quintiles to have a better idea of the incidence of asset ownership in the population. In this section, when sorting the households into income quintiles, we use total unadjusted (or unequivalized) income figures, as we are simply interested in observing to what extent the amounts of income and wealth are correlated. To enhance the comparability of our work with the GWR, a small number households with no members at or above the age of 20 are excluded from the analysis. According to figures presented in Table 4, the rate of home-ownership is highly uniform across quintiles. In each quintile, around three-quarters of households are recipients of imputed rents. This does not mean, however, that the value of owner-occupied housing is also uniform across the quintiles. While the average value of this variable (including the zeros for non-homeowners) is 32 thousand TL's in the bottom quintile, the average in the top quintile is 81 thousand TL's (See Table 5).

Table 4: The rate of asset ownership by income quintile (%)

	Bottom	2nd	3rd	4th	Top	All
Recipient of ...						
Imputed rent	74.9	73.7	75.4	75.8	77.8	75.5
Rental income	7.0	9.2	11.7	16.3	27.6	14.3
Financial income	15.4	23.6	28.7	34.0	52.7	30.9

It turns out that only 7 percent of the households in the bottom income quintile are recipients of rental income as opposed to nearly 28 percent in the top quintile. Consequently, going from the bottom to the top quintile, the average value of wealth in the form of rented (or non-owner-occupied) housing units increases sharply from 2 to 58 thousand TL's. In each income quintile, the share of financial income recipients is roughly two times that of rental income recipients.

On the whole, 31 percent of households have received some income from financial assets. However, since the financial income figures are relatively smaller, the estimated value of financial assets is less than that of rented housing (10.5 vs. 18 thousand in the whole population).

Also given in Table 5 are the average total household income figures for each quintile. From the bottom to the top quintile, mean household income increases from around 10 to 72 thousand TL's. Of the three types of assets we are dealing with, only wealth in the form of owner-occupied housing has a more equal distribution than household income. However, since the total amount of this type of wealth is nearly two times the sum of the value of rented housing units and financial assets, it is likely to keep asset inequality figures at a relatively low level. In fact, the Gini coefficient of total household wealth (that which we can account for, obviously) is 0.538. This is a relatively large figure in comparison to the Gini coefficient of total household income (which was around 0.39), but it is also a lot smaller than the Gini coefficient of wealth given in the GWR for Turkey (which was more than 0.80).

Table 5: Average household income and wealth by income quintile (TL)

	Bottom	**2nd**	**3rd**	**4th**	**Top**	*All*
Total annual household income	10,420	17,611	25,010	35,584	71,582	32,038
Household wealth in the form of …						
Housing (owner-occupied)	31,873	40,465	47,982	55,089	81,378	51,355
Housing (rented)	2,019	5,036	9,253	15,531	58,032	17,972
Financial assets	2,116	4,404	6,380	10,071	29,643	10,522

We continue our asset inequality analysis with a decomposition exercise in which we observe the contributions of financial and rental incomes and imputed rents to inequality measured at the household level. The output of the Shorrocks decomposition of household wealth is presented in Table 6. It turns out that wealth in the form of owner-occupied housing makes up almost two-thirds of household wealth, but its proportionate contribution to inequality is only 22 percent. The reason for this is that, as mentioned earlier, it is much more equally distributed than the other two types. Both in absolute terms and in relation to its share in total wealth, the proportionate contribution of wealth in the form of rented housing is the largest. The per-unit contribution of this type of wealth is twice that of financial assets. Taking also into account the uniformity of home-ownership across income quintiles, an interesting finding emerges: Regardless of the level of income, being a home-owner is something that Turkish households place much importance on. They probably view home-ownership as a safety net in times of economic hardship. Purchasing additional housing units, however, is an investment that a much smaller share of households can afford. Given the high price tags attached to those units, rented housing turns out to be the greatest contributor to wealth inequality.

Table 6: The contribution of its subcomponents to household-level wealth inequality

	Share of h'holds. owning factor (%)	Share of factor in total wealth (%)	Coefficient of variation for factor	Proportionate contribution of factor to inequality (%)	Per-unit contribution of factor
Housing (owner-occupied)	75.5	64.3	0.9	22.3	0.3
Housing (rented)	14.3	22.5	5.0	58.8	2.6
Financial assets	30.9	13.2	4.5	19.0	1.4

Notes: The figures reported here are based on raw amounts of wealth which were not adjusted by an adult equivalence scale. The Gini coefficient of total household wealth is 0.538.

Wealth inequality at the individual level

As explained previously, the reason our asset inequality analysis has the household as its unit of analysis is that the flows of income from asset holdings of household members are recorded in the SILC at the household level as a single total amount. Asset inequality at the individual level must be larger than what our estimates suggest, since - in most cases - not all members of an household have an equal share in those holdings. In an effort to obtain rough estimates of wealth inequality in Turkey at the individual level, we conduct two exercises that make different assumptions about the allocation of wealth among adult household members. One exercise is based on the assumption that total household wealth is shared equally by all household members who are 20 years old or older. The other exercise assumes that all household wealth is owned by one member only, while the other adult members have no wealth. In both exercises, household members who are less than 20-years-old are excluded from the analysis.

The proportionate contribution to wealth inequality and the Gini coefficient figures obtained from the two exercises are given in Table 7 along with the household level results presented above. It turns out that the proportionate contributions of the three factors to wealth inequality are quite similar regardless of the unit of analysis and the allocation of wealth among household members. However, as would be expected, wealth inequality is estimated to be much higher when it is assumed that all household wealth is owned by one adult only. The Gini coefficient of 0.805 obtained under that assumption is in fact very close to the estimate reported in the Global Wealth Report for Turkey.

Table 7: Household and individual level wealth inequality under different assumptions

	Proportionate contribution of factor to inequality (%)			Gini coefficient of wealth
	Housing (owner-occupied)	Housing (rented)	Financial assets	
Household level	22.3	58.8	19.0	0.538
Individual level (equal shares)	24.4	55.9	19.7	0.567
Individual level (1 adult takes all)	30.1	52.1	17.9	0.805

6. Conclusion

We applied the capitalization method to official household income survey data to determine the extent of wealth inequality in Turkey, which is believed to be larger than income inequality as in the rest of the world. To the best of our knowledge, the only available estimates for the Gini coefficient of wealth distribution in Turkey are reported annually in the Global Wealth Report. Those estimates have persistently been above 0.80 since 2011, but their reliability is questionable given the methodology used and the size of the informal economy in Turkey. In applying the capitalization method to come up with alternative estimates of wealth inequality,

we computed household wealth figures from the amounts of income resulting from the ownership of various types of assets during the reference period of the Survey of Income and Living Conditions (SILC).

Due to data limitations, including the fact that non-labor income figures were recorded at the level of the household, we were restricted to a household-level inequality analysis that made use of financial and rental income figures and imputed rents. It turned out that wealth inequality measured at the household level was not extremely high, as the Gini coefficient figure we obtained was 0.54. In a decomposition analysis which involved the three asset types we were able to obtain estimates for, wealth in the form of rented housing units was found to be the biggest contributor to inequality, as only 14 percent of households were owners of this type of asset. While it seems unlikely that the SILC can easily be revised to make it possible to impute the amounts of wealth in the form of land, gold, or stock ownership, a couple of additional questions on who owns the deed to the currently-occupied housing unit and who has control over the interest-generating financial assets could go a long way in measuring wealth inequality at the individual level.

The fact that only 31 percent of the households in our dataset are holders of financial assets is a striking result which implies that there is a lot of potential for growth in the financial sector. It also suggests that for many Turkish families, gold continues to be the primary form of savings. In light of the anecdotal evidence that gold ownership is especially popular among the low and middle income groups, it is likely that lower asset inequality figures would have been obtained if we had information on the amount of gold held by households. On the other hand, if information on household debt was also available, it would have allowed us to work with net wealth figures which would probably have produced higher inequality figures, provided that lower income groups are in greater debt. In any case, even if no new information becomes available, the application of the capitalization method to data from the future editions of the SILC will be a useful exercise that sheds light on an aspect of the Turkish economy which is also socially and politically relevant.

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