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Household Consumption, Household Indebtedness, and Inequality in Turkey: A Microeconometric Analysis

by

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ABSTRACT

This paper examines whether relative income and income inequality within reference groups affect household consumption. Using the explanations of consumption behavior based on Dusenberry's relative income hypothesis, we test if household consumption levels in Turkey are affected by the household's relative position and inequality in the reference group between 2005–12 by employing cross-sectional household-level data. We find that household consumption is negatively related to the relative income indicator after controlling for absolute income, and positively related to the income inequality of the reference group, as the literature suggests. The paper also shows that household indebtedness has a positive impact on household consumption when inequality in the reference group and the relative position of households are controlled for. We confirm that the results are not sensitive to chosen relative income indicators and income inequality.

KEYWORDS: Consumer Behavior; Inequality; Relative Income Hypothesis; Household Debt

JEL CLASSIFICATIONS: D12; D63; G51

INTRODUCTION

Since the mid-1990s, there has been a credit expansion toward households all around the world and, since the 2000s, Turkey has also been part of this process (Bahçe and Köse 2016; Bahçe et al. 2016; IMF 2006; Karwowski and Stockhammer 2017; Lapavitsas 2009; dos Santos 2013). Household saving rates in Turkey have dropped to record low levels of 6.6 percent in 2012 from 17.5 percent in 2003 (Ministry of Development 2017; Tunç and Yavaş 2016). In line with this, households have started using bank loans through short- and long-term consumer credit and credit cards. Between 2003 and 2012, all segments of Turkish society increased their consumption level faster than their income grew (See tables 1 and 2). The macroeconomic dynamics behind this process and the consequences of high debt levels have attracted many economists to the subject, but there has been little research on household indebtedness and consumption trends in Turkey (Agarwal, Hadzic, and Yildirim 2015; Bahçe and Köse 2016; Karaçimen 2014a, 2014b, 2015). None of these works have looked at the relationship between household consumption/debt behaviors and households' position in the income distribution. Consumption theories based on the relative income hypothesis are increasingly used to explain the dynamics of household indebtedness and changes in consumption patterns in relation to income distribution. In this paper, by using household-level data, we try to see if the relative income hypothesis can explain household consumption behavior in Turkey in the 2000s.

Since the 2008 financial crisis, there has been a renewed interest in the causes of household indebtedness and its relation to income distribution and consumption behavior in explaining the dynamics of the crisis. Mostly based on US data, economists argued that since the early 1980s households have experienced a decline in their real incomes and compensated for this decline by debt-driven consumption (reducing savings and increasing debt) with the help of a deregulated financial system. Private household consumption and thus aggregate demand could stay high enough to keep unemployment relatively low, despite stagnating incomes (wages) for households, particularly those at the bottom and middle of the distribution. At the end, this process created a credit bubble, which caused the financial crisis when it burst. This line of analysis sees a very strong relationship between inequality, household indebtedness, and consumer behavior, and also makes clear that the Keynesian consumption theory and the

mainstream consumption theories are not capable of explaining the debt-driven consumption boom in this period (Barba and Pivetti 2009; Cardaci 2014; Dos Santos 2009; Cynmaon and Fazzari 2008, 2013a, 2013b, 2015; Goda 2013; Kumhof, Rancière, and Winant 2015; Kapeller and Schütz 2014, 2015; Lapavitsas 2009; Lucchino and Morelli 2012; Rajan 2010; Perugini, Hölscher, and Collie 2016; Stockhammer 2015; van Treeck 2012; Wisman 2013).[1] As is discussed briefly in the next section, Keynesian consumption theory and mainstream consumption theories take into account only own income levels (current or long term) of individuals/households and prices as the main determinants of the consumption level, ignoring the impact of the consumption level of others in the society.

Post-Keynesian macroeconomic analysis of inequality predicts that growing inequality in the functional distribution of income (as a result of real wage stagnation relative to labor productivity and the neoliberal treatment of capital since 1980s) would create demand drag in the economy through a reduction in personal consumption expenditures, as the propensity to spend out of wages is higher than profits. This prediction relies on Keynesian consumption theory, arguing that current consumption depends on current disposable income, and marginal and average propensity to consume decreases with income. The fact that this prediction of demand drag was not realized thanks to widened debt opportunities for households led researchers to look for alternative explanations to understand why consumers prefer to consume beyond their means (Onaran and Stockhammer 2005; Palley 2010, 2013; Setterfield 2012, 2013).[2] Therefore, the

[1] As Lavoie and Stockhammer (2013) also point out, the direction of causality between inequality, debt rise, consumption boom, and crisis varies for different authors. For Rajan (2010), for instance, "it is not the rise in inequality itself per se that caused the crisis, but rather the government's reaction to rising inequality" (Lavoie and Stockhammer 2013, 5). See Sturn and van Treeck (2012) for the literature on the relationship between inequality and crisis. However, for the sake of this paper, the important point is that economists increasingly see a strong relationship between those phenomena. See Galbraith (2012) for explanations of the rise in inequality and its creation of instability. By using a dynamic general equilibrium model, Iacoviello (2008) shows that the increase in income inequality explains the rise of household debt during 1980s and 1990s, and business cycle fluctuations account for only short-run changes in household debt.

[2] Another line of Post-Keynesian analysis of income distribution relates inequality in functional income distribution and growth, placing a "central role of functional income distribution in determining growth performance" (Lavoie and Stockhammer (2013, 5). Having classified growth regimes as wage-led and profit-led, this approach argues that since 1980, growth policies all around the world have been profit-led and distributional consequences of these policies were pro-capital. As a result of these policies, the wage share in economies declined, causing debt-led growth or export-led growth patterns (relying on low wages, further deteriorating inequalities and growth as most of the countries that are in a wage-led economic regime). This process was proven unsustainable with the 2008 crisis; see Lavoie and Stockhammer (2013).

next subsection will briefly discuss the evolution of consumption theories, with a special focus on the relative income hypothesis.

The contributions of this paper are threefold. First, as stated earlier, the empirical literature trying to explain consumer behavior in the "consumer age" has been mainly based on developed-country data. This paper is an attempt to contribute to the literature by providing findings from a developing-country example. Second, to the best of our knowledge, there is no empirical work on Turkey that analyzes how the relative position of households in the society and inequality affect consumption behavior. This paper will be the first one employing microeconometric analysis for this line of inquiry. Third, in spite of the fact that we can test the impact of debt status and debt level on household consumption in only a limited way due to data restrictions, our analysis is still the first micro-level analysis of the relationship between inequality, relative income position, consumption, and indebtedness. In this paper, we look for the reasons for debt-driven consumption behavior given the supply-side effects (macroeconomic policies such as low interest rates, financial deregulation and innovation, increase in financial profitability, and housing boom and property prices; see Dos Santos [2013] and Stockhammer and Wildauer [2018]).

The structure of the paper is as follows. The next section briefly explores the literature on the relative income hypothesis. The third section discusses the Turkish case to provide background information for the empirical analysis of the paper, followed by a section describing the data and empirical methodology used. The fifth section contains the estimation results. The final section contains concluding remarks.

RELATIVE INCOME HYPOTHESIS

Economists have tried over the years to explain consumer behavior, as consumption spending is seen as a generally steady and important part of aggregate demand (constituting approximately two-thirds of GDP for most countries, it hit 70 percent on average in Turkey after 2003). There are three major groups of theories that attempt to explain consumer behavior, namely: the

conventional/mainstream theories of Modigliani and Brumberg (1954); the life-cycle theory of consumption and Friedman's (1957) permanent income hypothesis; and Keynesian consumption theory and Duesenberry's (1949) relative income hypothesis. As the dominant consumption theories since the 1970s, the conventional theories of consumption are based on an atomistic, isolated, utility-maximizing individual's responses to changes in prices and wealth without regard for what Palley (2010, 42) called "socially determined preferences." Consumers are far-sighted and rational, forming intertemporal plans aimed at smoothing their standard of living (consumption) across "predictable" income changes over their lifecycle. As a result, consumption and savings rates are expected to remain stable (Cynamon and Fazzari 2008; Frank, Levine, and Dijk 2014).[3] Current consumption does not depend on current disposable income, as Keynesian aggregate consumption theory suggests, nor is it affected by other people in a society's income and consumption. As long as there are effective credit markets, households borrow only against transitory shocks to their permanent incomes to smooth consumption. Furthermore, the conventional theories see no link between income inequality or an individual's relative position in the income distribution and aggregate personal consumption (Cynamon and Fazzari 2013a; van Treek 2012), which is another way of stating that individuals are indifferent to other people's income and consumption. However, researchers have become more aware that the conventional approach does not really explain households' consumption behavior, particularly in the "consumer age" (Cynamon and Fazzari 2013a; Ravina 2005).[4]

Keynesian aggregate consumption theory was the dominant consumption theory after the Second World War. The critical point of Keynesian theory is that current consumption depends on current disposable income and that the marginal and average propensity to consume decrease with income. This prediction of Keynesian consumption theory was instrumental for policies supporting full employment and more equal distribution of income after the WWII (Bunting 2012; Glyn 1995; Lavoie and Stockhammer 2013). However, the Keynesian consumption function is not sensitive to other people's income and not helpful for understanding the social dimension of consumption behavior (Palley 2010). By linking Keynesian and institutional

[3] See Lavoie (2012) and Bunting (2012) for a short review of the problems of neoclassical consumer and consumption theory.
[4] Cynamon and Fazzari (2013a, 2013b) defines the period between the mid-1980s and 2007 as the consumer age.

analyses of consumption (Palley 2010, 42), Duesenberry came to build a consumption theory to explain consumption expenditures determined "independently of price and income considerations" by taking social influences into account (Mason 2000, 555).

As Keynesian consumption theory relies on the current income level, it does not propose any explanation of why and how households have been consuming more than their incomes in the last few decades. The mainstream theories of consumption are also silent as to why people might increase their consumption standards even as their permanent incomes have stagnated. Hence, increasing numbers of economists have embraced Duesenberry's relative income theory[5] in trying to explain current consumption behaviors, particularly in relation to household debt phenomenon and inequalities. Cynamon and Fazzari (2015) and van Treeck (2013) review the recent literature on the relationship between inequality, household debt, and consumption behavior. Duesenberry's basic intuition was that households are concerned about community (or "reference group") consumption standards and that this concern leads to a certain part of consumption expenditures being determined independently of price and own income considerations[6]: "Given the importance of social considerations in determining expenditures, Duesenberry argued that it was relative, rather than absolute, levels of income that determined the nature and direction of much individual consumption and saving" (Mason 2000, 556). The most important point the literature makes following Duesenberry is that people tend to compare themselves to people with higher incomes and status. The concept of "expenditure cascades" is based on this point (Verme 2013, 4; Frank, Levine, and Dijk 2010).[7] This tendency, also called the "keeping up with Joneses effect," became very important to understanding consumer behavior since the 1990s. The keeping up with Joneses effect implies that people consume to gain social status[8] or to keep the social status they have been enjoying even if their income level

[5] Social influences on consumer behavior were first introduced by Veblen with the concept of conspicuous consumption. Duesenberry's analysis was mostly ignored by mainstream economics as being a "Veblen-like hypothesis" and not a work in economics (Mason 2000). See Crescenzi (2012) for Veblen's analysis. Mason (2000) provides a historical review of the relative income hypothesis and its impact on economics.

[6] Mason (2000, 555) points out that even if social influence on consumption was recognized by 1949 as "Veblen effects," mainstream economists mainly ignored these effects and took them as "relatively trivial sociological observations."

[7] "People tend to discount or ignore downward comparisons while consider or even overvalue upward comparisons" (Verme 2013, 4).

[8] Social status is defined in a broad sense "one's relative standing in a society" (Paskov, Gërxhani, and van de Werfhorst 2013, 4). Paskov, Gërxhani, and van de Werfhorst (2013) explains why social status is important for

is not high enough to do so. In the case of real income stagnation, individuals can maintain their consumption standards with the help of credit markets.[9, 10]

Following Duesenberry's seminal insights and Veblen's concept of conspicuous consumption, a rich empirical and theoretical literature has been developing on the impact of inequality and the relative position of households on household consumption and debt, although most of it is on developed-country cases. One of the latest papers, Wildauer and Stockhammer (2018), shows that the main reasons behind the consumption surge are supply-side effects. However, as Setterfield and Kim (2016) rightly points out: "But if credit *facilitates* autonomous consumption, what actually *causes* household spending to become disconnected from household income? In keeping with the insights of the relative income hypothesis (Duesenberry 1949), one source of this disconnect is the propensity of households to emulate contemporary standards of consumption established by others." Mainly having this perspective,[11] the literature provides evidence supporting the relative income hypothesis. Alvarez-Cuadrado and Japaridze (2017) finds for the United States that individual debt-to-income ratios decrease with income, increases in consumption of rich households lead to increases in consumption of the rest, and aggregate borrowing increases with income inequality. Klein (2015) also finds a long-run relationship between income inequality and leverage in developed economies. Alvarez-Cuadrado and Van Long (2011) shows that positional concerns lead agents to overconsume, overwork, and

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people: people are eager to attain status because it is associated with economic rewards and social benefits, which include being treated well, with respect, and possibly gaining the care and attention of others. People also seek recognition from those who they think have higher social status, as this recognition also brings feelings of worthiness and self-respect. Please see Paskov, Gërxhani, and van de Werfhorst (2013) for further discussion on social status. Corneo and Jeanne (1997, 58) argues that in economic terms social status can be taken as a "socially provided private good."

[9] See Cynamon and Fazzari (2008) for supply-side developments in credit markets enabling households' desire for higher consumption relative to their incomes. See Karacimen (2015) and Agarwal, Hadzic, and Yildirim (2015) for parallel developments and their impacts on consumption in Turkey.

[10] The first paper on Duesenberry's relative income theory for the Turkish case was written very early by Boratav (1963). Boratav discusses the relevance of Duesenberry's relative income hypothesis for Turkey using field work conducted for higher middle-income classes of the capital city of Ankara in the 1960s. By focusing on the argument that improvements in inequality by redistribution would cause a decrease in savings and in turn investment, Boratav concludes that this can happen only when a socially independent Keynesian consumption function prevails all the time for the whole part of consumption expenditures. By accepting Duesenberry's relative income theory, this argument would not materialize.

[11] This point is particularly important for a country like Turkey where it is hard to talk about financial stability, as it has been going through financial crises almost every ten years since 1980. It is hard to imagine that Turkish consumers, particularly the low-income households, would go into debt to finance their expenses given their persistent mistrust in the financial system.

undersave relative to the welfare-maximizing levels that a planner would choose. Christen and Morgan (2005) shows that rising income inequality contributed to increased consumer borrowing (particularly conspicuous consumption), because household indebtedness is more sensitive to changes in income inequality than changes in interest rates, and inequality affects all components of household debt but acts strongest on nonrevolving debt (instalment loans for consumer durables). Krueger and Perri (2006), Ravina (2005), and Charles, Hurst, and Roussanov (2009) also provide evidence that a certain part of a household's consumption expenditure is affected by their relative position in their communities and the inequality in it. Abdel-Ghany, Silver, and Chelken (2002) shows by using Canadian data that both permanent and relative income considerations matter for determining consumption expenditures.

Theoretical works that model household consumption behavior by taking relative income concerns into account have increasingly been introduced in the Post-Keynesian literature as well (Kapeller and Schütz 2014, 2015; Kim, Setterfield, and Mei 2013; Setterfield and Kim 2016, 2017; Ryoo and Kim 2013).

To our knowledge there is a very limited empirical work analyzing the relevance of the relative income theory in developing countries. There are two studies on China, although at first their findings seem to be inconsistent (Jin, Li, and Wu 2011; Sun and Wang 2013). By using rotating panel data for urban China (Urban Household Survey conducted by the National Bureau of Statistics of China) from 1997 to 2006, Jin, Li, and Wu (2011) found that income inequality has a negative effect on household consumption net of education expenditures and status-showing expenditures (conspicuous consumption). However, they find that rising income inequality has a positive effect on education expenditures. They explain their results imply that inequality increases savings tendencies at the bottom of the distribution and they take the education expenditures as an investment in status seeking. Sun and Wang (2013) also studies China using panel data on rural China from 2003 and 2006. They found that the household's consumption rate is negatively related to their relative income position after controlling for absolute income, and positively related to the income inequality of the village, as the relative income theory predicts. Even though these two studies provide contradicting results on the status-seeking

consumption behavior of households, it should be taken into account that while the first study is focused on urban China, the second analyzes rural China.

Finally, we need to explain how concepts such as consumption norms and positional goods are described in the literature. Coming from the recent literature on social status and the relative income hypothesis, Cynamon and Fazzari (2008, 7) define a consumption norm "as the standard of consumption an individual considers normal based on his group identity, determined by both the cross-sectional and time-series references." Consumption norms are set by those who benefit from rising inequality (Cynamon and Fazzari 2015). However, not all goods are suitable for gaining social status and recognition. Positional goods (Frank 2005), or status goods, are those that are suitable for fulfilling this goal. Positional goods are a matter of empirical question, can vary with society and time, and in general are defined as those goods where comparisons with others matter most. On the other hand, nonpositional goods are goods that are mostly socially invisible and so matter least in comparison and status gain (van Treeck 2013). Quality of education, cars, houses, clothes, jewelry, cell phones or other electronic devices, and so on are generally taken as positional or status goods in the literature.

Turkey

Turkey is one of the countries with the highest level of income inequality among OECD countries. Their real wages have stayed below unit productivity even though the period under analysis saw a relative improvement in the size distribution of income, thanks to social transfer programs targeting the very bottom of the income distribution (Albayrak 2013: Yilmaz 2015). Since the 1980s, Turkey has been following export-oriented growth policies, where the main strategy for increasing competitiveness has been suppressing real wages, and therefore dropping the share of real wages in the functional income distribution (Boratav and Yeldan 2006; Onaran and Stockhammer 2005; Oyvat 2010; Yeldan 2007). In accordance with the Post-Keynesian literature, Onaran and Stockhammer (2005) show for Turkey, as a wage-led country, that decreasing the wage share did not stimulate accumulation, growth, or employment, and following these policies resulted in a widening of the gap between real wages and productivity, as well as weak domestic demand for most of the period after the 1980s. These trends can be

seen in figure 1.[12,13] However, between 2002 and 2011 (apart from the short period after the 2008 crisis),[14] Turkey witnessed higher average growth rates relative to the previous period. The growth Turkey experienced during 2000s was mainly driven by domestic demand fed by foreign capital inflows, which led to internal and external imbalances (Ersoy 2016; Dufour and Orhangazi 2009; Orhangazi and Özgür 2015; Subaşat 2014; Yeldan and Ünüvar 2016).

Figure 1: Development of Real Labor Cost and Productivity Indices for Manufacturing Industry, 1985–2015 (1985=100)

Source: Author's own calculations.

[12] Per labor product as an indicator of the productivity in the manufacturing sector in figure 1 is calculated by dividing manufacturing value-added at constant prices by the number of workers employed in the manufacturing industry. For manufacturing value-added at constant prices, the national accounts statistics provided by the Turkish Statistical Institute (TurkStat) are used. Two series of national accounts are used to calculate the per labor product. For the years between 1985–97, the national accounts with base year 1987 are used; for the years between 1998–2015, the national accounts with base year 1998 are employed. The real hourly labor cost index is taken from the Turkish Confederation of Employer Associations' "2015 Labour Statistics and Labour Cost" as a proxy variable for real wages; available at: http://tisk.org.tr/wp-content/uploads/2017/01/2015- percentC3 percent87 percentC4 percentB0 percentC4 percentB0M-Ek.pdf

[13] See Onaran and Yenturk (2001) and Elgin and Kuzubas (2012) for the widening gap between real wages and productivity since 1980s. Oyvat (2010) also shows that decreasing wage shares in the manufacturing industry to increase competitiveness in world trade since 1980s gave rise to functional inequality. Another factor contributing to real wage stagnation in Turkey was "jobless growth." Even though manufacturing production increased, it was not creating the same level of employment, widening the gap between productivity gains and wages. Yeldan (2011) presents that between 2008–12, real manufacturing production increased 30 percent, though employment in manufacturing increased only 5 percent. Aldan, Bağır, and Torun (2018) presents a sector-based analysis of labor productivity and real wages for Turkey between 2009 and 2017. Although all sectors experienced productivity gains in the period after the global crisis, real wages had a declining trend and stayed well below labor productivity throughout the period. The gap between labor productivity and real wages widened at the highest level, particularly in the construction sector, which benefited the most from the debt-driven consumption demand.

[14] See Cömert and Çolak (2014) for the impact of 2008 global financial crisis on Turkey.

The same period also witnessed very sharp growth in consumer credit (Ersoy 2016; OECD 2014, 2016). As seen in table 1, consumption spending was 70 percent of GDP (at current prices) in 2012 (71.7 percent in 2010) in Turkey. Average GDP growth between 2003–12 was 5.05 percent and 3.5 percentage points of this rate came from private consumption (69 percent of it). After the financial crisis of 2008, in 2009 GDP decreased 4.8 percent; however, private consumption dropped only 2.3 percent. As in developed countries, the rise in household consumption was accompanied by a rise in household debt levels. At the beginning of the 2000s, households in Turkey started using bank loans through short- and long-term consumer credits and also credit cards, which carried the share of consumer credit to 39 percent of the total credit volume in 2009—the highest level since the beginning of 2000s.[15] Figure 2 also presents the household debt level with different indicators.

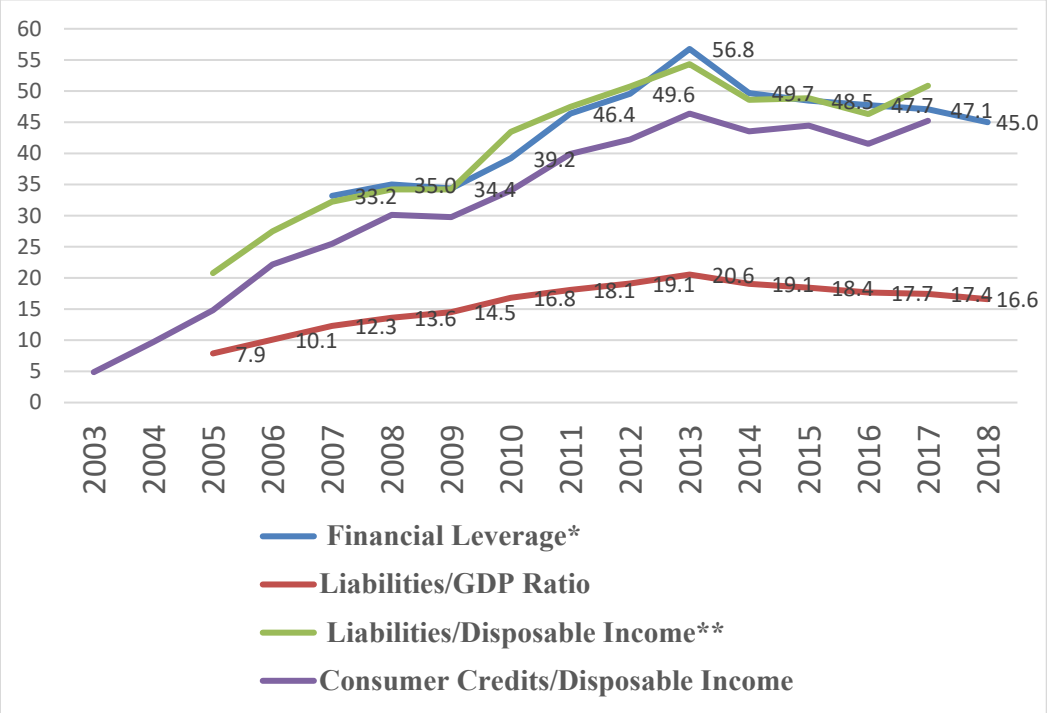
[15]The economic risk the increased household debt level may carry, however, is still manageable thanks to the regulations. Despite the increase, debt service costs remained manageable at 5.4 percent of disposable income in late 2013. Interest rate and foreign currency risks are limited, as most loans are fixed rate (except for a small share of housing loans) and lending in foreign currency (as well as indexed loans in foreign currency) has been forbidden since June 2009. Indeed, the household sector holds a sizeable long position in foreign currency (particularly recently as a sign of dollarizaton), which amounted to around USD 191 billion (23 percent of Turkey's GDP) as of early 2013 (OECD 2014). However, Duman (2013) argues that even if liability ratios seem manageable, as homeownership rates decline for the median group of households and low- and middle- income households' debt keeps increasing, the debt dynamic can become fragile very easily in the future. This trend for household indebtedness was turned to a decreasing trend since 2016 as a result of currency depreciation followed by a hike in interest rates. However, for the period examined here (2005–12), the rising trend had continued.

Table 1: Private Savings, Consumption, and Household Credits in Turkey

	Private savings in GDP	Private consumption of residents in GDP	Financial leverage*	Liabilities/ GDP ratio	Liabilities/ disposable income**
1999	25.1	68.49			
2000	21.8	70.50			
2005	13.2	71.72		7.90	20.8
2008	15.1	69.85	35.0	13.60	34.2
2009	14.1	71.47	34.4	14.50	34.2
2010	12.0	71.69	39.2	16.82	43.5
2011	10.7	71.19	46.4	18.07	47.5
2012	11.6	70.19	49.6	19.11	50.7
2013	9.9	70.81	56.8	20.56	54.3
2014	11.7	68.89	49.7	19.06	48.6
2015		68.70	48.5	18.43	48.9

Source: CBRT Financial Stability Reports (November), TurkStat, and Ministry of Development
Notes: *Household leverage is calculated simply as a ratio of household liabilities to household assets. Numbers were taken from CBRT Financial Stability Reports (November). **Household disposable income comes from Household Budget Surveys of TurkStat.

Figure 2: Household Debt Indicators



Source: CBRT Financial Stability Reports and Household Budget Surveys

In line with this, household saving rates in Turkey dropped to record low levels of 12 percent in 2014 from 25 percent in 1999 (table 1).[16] Despite the sharp rise in the period we analyze until 2013,[17] Turkish household debt remains moderate compared to other countries (OECD 2014). Household liability ratios, on the other hand, have more than doubled since 2005, reaching about 20.56 percent of GDP and 54.3 percent of disposable income by 2013 (table 1). Financial leverage for households, calculated simply as a ratio of household debt to household assets, reached to its highest level of 56.8 percent in 2013. By the end of the first decade of the 2000s, almost all segments of society could increase their consumption level beyond their income levels thanks to debt opportunities (table 2). Supply-side factors in the financial system were also crucial to making debt-driven consumption possible for families. The decreasing trend in interest rates since 2002 as an indicator for favorable supply-side developments can be seen in figure 3.[18]

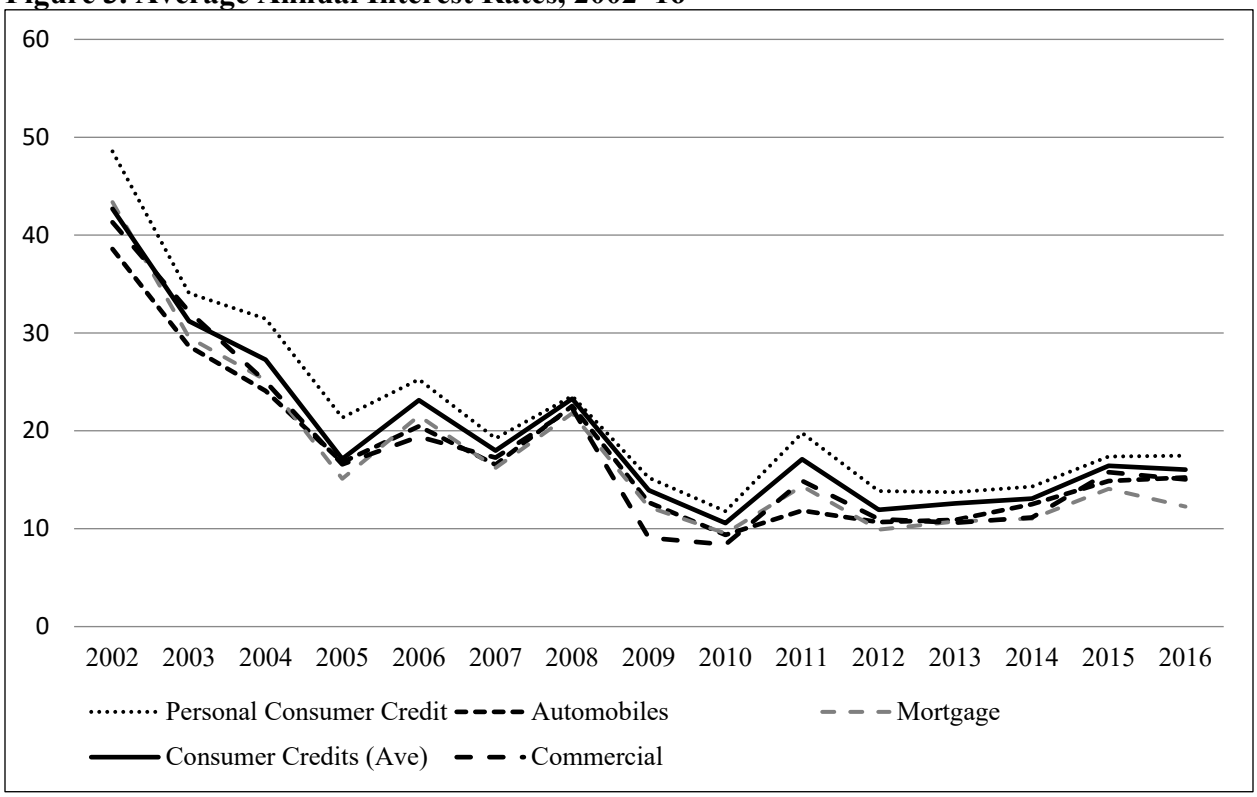
Table 2: Mean Household Disposable Income and Expenditure 2003–12

	2003 (Turkish lira)		2012 (Turkish lira)		Percent change	Percent change
Deciles	**Expenditure**	**Income**	**Expenditure**	**Income**	**Expenditure**	**Income**
1	8,850	6,716	15,047	11,095	70.0	65.2
2	10,898	10,219	18,440	16,056	69.2	57.1
3	12,479	12,278	20,571	19,338	64.9	57.5
4	13,708	14,443	22,247	21,287	62.3	47.4
5	15,203	16,443	23,891	24,212	57.1	47.3
6	16,746	18,727	26,949	27,242	60.9	45.5
7	18,171	21,169	28,966	30,712	59.4	45.1
8	20,342	25,072	31,527	34,311	55.0	36.9
9	24,304	31,774	38,526	43,833	58.5	38.0
10	42,777	66,118	57,720	78,129	34.9	18.2
Turkey	**18,351**	**22,301**	**28,387**	**30,619**	**54.7**	**37.3**

Source: Household Budget Surveys
Note: 2003 numbers are inflated to 2012 using the CPI

[16] Tunç and Yavaş (2016) provides evidence that the primary reason for the recent decrease in the private saving rate in Turkey is the high growth rate of mortgage and nonmortgage (although with smaller impacts) consumer credit.
[17] Due to the increasing interest rates after 2013 and government measures aiming to limit installment loans on credit cards to control the current account deficit, household debt started to decline.
[18] See Karacimen (2014b) for more detailed information on the supply-side factors.

Figure 3. Average Annual Interest Rates, 2002–16



Source: CBRT

The striking difference between Turkey and developed countries is that Turkey's debt-driven consumption period that we examine is also the period that household income and consumption inequalities had a mildly declining trend from their previously high levels (see table 3) (OECD 2011).[19] However, Albayrak (2013) shows that without public transfers, growth in market incomes of low-income groups does not catch up with Turkey's average income growth between 2003–10. As a result, the same group's debt level kept rising with their propensity to consume. On the other hand, even though the general trend in the size distribution of income in the period was downward, the inequality in the size distribution increased in some subgroups of the society, such as in the regions of Istanbul, and South and North East Anatolia (figure 4). In the next

[19] OECD reports that countries such as Chile, Mexico, Greece, Turkey, and Hungary reduced income inequality considerably in 2000s—often from very high levels. Hence the report suggests that the world seems to converge toward a common and higher average level of inequality across OECD countries (OECD 2011). See table 3 for inequality rates in Turkey since 2006. Gini coefficients for adult equivalent household disposable income were 0.49 in 1994 according to TurkStat's own estimations. However, the level of inequality in Turkey and these OECD countries is still high and started increasing again after 2014.

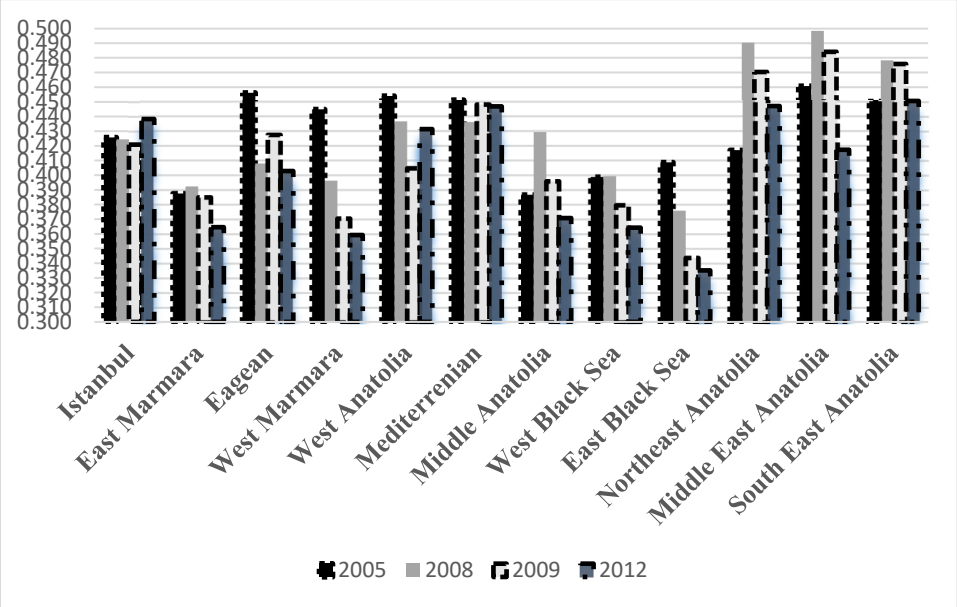
section, we will show how consumption patterns and household debt have evolved in the 2000s after describing the data.

Table 3. Inequality and Poverty in Turkey

	Gini coefficient	Poverty rate (percent)*
1994	0.49	
2003	0.42	
2006	0.428	25.4
2007	0.406	23.4
2008	0.405	24.1
2009	0.415	24.3
2010	0.402	23.8
2011	0.404	22.9
2012	0.402	22.7
2013	0.400	22.4
2014	0.391	21.8
2015	0.397	21.9
2016	0.404	21.2
2017	0.405	20.1
2018	0.408	21.2

Source: Official inequality and poverty rates by TurkStat.
Notes: Poverty line is taken as 60 percent of median equivalized household disposable income; Gini coefficient is calculated for equivalized household disposable income.

Figure 4: Gini Coefficient of per capita Household Income by Region



DATA AND EMPIRICAL METHODOLOGY

Data

In order to conduct this analysis, we need information on demographic, economic, and social characteristics of individuals/households, and the debt status/level and consumption expenditures of households. Unfortunately, there is no single dataset for Turkey providing all this information, particularly household income, expenditure, and debt information together. However, the Turkish Statistical Institute (TurkStat) provides the two micro-level, nationally representative datasets having the variables we need, and, by applying statistical matching methodology, we bring these variables together to create a synthetic data file. The first dataset is the annual Household Budget Survey (HBS). The HBS provides household consumption expenditure data, in addition to individual/household income variables. The second dataset is the Annual Survey of Income and Living Conditions (SILC). The SILC contains information on income sources at both the individual and household level, as well as on homeownership, mortgage and consumer debt, and—to some extent—debt servicing burden. Except for 2003, the HBS does not allow for regional disaggregation, whereas the SILC is regionally representative (12 geographical regions). As mentioned before, regional disaggregation is important to determine reference groups. Hence, transferring household expenditure from the HBS to the SILC will allow us to test whether the relative income hypothesis explains the relationship between a household's position in the income distribution, household indebtedness, and consumption behavior in Turkey.

These two datasets have been used separately by researchers so far; however, they have never been used together. Following the methodology of constrained statistical matching (CSM) using estimated propensity scores developed in Kum and Masterson (2010), household consumption expenditure is transferred from the HBS to the SILC, creating the synthetic dataset needed to study four years, namely, 2005, 2008, 2009, and 2012.[20] Although the credit expansion toward households more or less started in Turkey around 2003 (after the recovery from the 2001 crisis[21]), this work will treat 2005 as a "counterfactual" in the sense that, relative to 2005, in the

[20] Please see Albayrak and Masterson (2016) for the statistical matching procedure used and the quality assessment of the matching.
[21] Please see Akyüz and Boratav (2003) for one of the many studies on Turkey's 2001 crisis.

following years (2008, 2009, and 2012) we expect to see the expanded credit opportunities' impact on households' consumption preferences depending on their position in the income distribution.

Basic information for the datasets is displayed in table 5. After dropping outliers[22] at the bottom of the data, we ended up having a total of 54,779 families that we use for the pooled ordinary least square (OLS) (10,915 households for 2005; 11,865 for 2008; 12,105 for 2009; and 19,894 for 2012).

Table 5. Survey Sample Size (in 1,000)

	2005		2008		2009		2012	
Survey	**SILC**	**HBS**	**SILC**	**HBS**	**SILC**	**HBS**	**SILC**	**HBS**
Number of individuals	42.8	35.5	45.4	33.3	45.4	38.5	73.5	36.3
Population	67,600	71,600	70,500	69,700	71,300	70,500	74,500	74,500
Number of households	10.9	8.6	11.9	8.5	12.1	10.0	19.9	10.0
Weighted number of households	17,300	17,500	19,200	17,800	19,300	18,400	20,600	20,100

Descriptive Statistics

Table 6 presents the average propensity to consume by income deciles by both the matched data and the original HBS data from which household expenditure is transferred. Apart from the poorest decile of 2012, the match is very accurate. According to the HBS, since 2003 the average propensity to consume has risen from 0.98 to 1.05 for Turkey overall, and according to the matched data it rose from 1.08 to 1.14 between 2005 and 2012, indicating Turkish society started to consume beyond their means after 2003. Except for the bottom decile, the propensity to consume increased for all parts of the distribution. The reason for this observation is that credit opportunities are more limited[23] at the very bottom part of the distribution, as these individuals

[22] Outliers are defined as families with an annual household disposable income of less than 600 Turkish lira (TL) (2005), 700 TL (2008, 2009), and 800 TL (2012). As a result, we dropped four households from the 2005 data, six households from 2008 and 2009 data, and five households from 2012 data.

[23] Although obtaining a credit card is not an issue, banks demand individuals provide evidence of their income and asset levels to make short- and long-term consumer loans. As unrecorded workers do not have any official documentation showing their work status and income levels, it is hard for these workers to get consumer loans from the financial system. However, installments through credit cards are common and they substitute for short-term consumer credits easily. Most families use credit cards to buy durable goods (such as expensive electronic items and

mostly work in the informal sector—unrecorded and with no contracts—or hold temporary jobs.[24]

Table 6: Average Propensity to Consume by Income Deciles (household expenditure/disposable income)

Matched Data	**2003**	**2005**	**2008**	**2009**	**2012**
1		1.77	1.75	1.64	1.75
2		1.28	1.34	1.32	1.37
3		1.17	1.17	1.17	1.21
4		1.07	1.13	1.06	1.16
5		1.01	1.03	1.02	1.10
6		0.98	0.98	1.00	1.03
7		0.97	0.99	0.99	1.00
8		0.90	0.93	0.94	0.99
9		0.90	0.90	0.87	0.96
10		0.73	0.77	0.78	0.85
Turkey		1.08	1.10	1.08	1.14
HBS	**2003**	**2005**	**2008**	**2009**	**2012**
1	1.57	1.72	1.51	1.74	1.46
2	1.10	1.20	1.26	1.24	1.16
3	1.05	1.13	1.15	1.13	1.09
4	0.98	1.02	1.12	1.07	1.07
5	0.95	0.98	1.05	1.02	1.01
6	0.93	0.95	1.00	1.00	1.02
7	0.89	0.93	0.98	0.98	0.96
8	0.84	0.92	0.93	0.95	0.95
9	0.80	0.87	0.87	0.88	0.91
10	0.73	0.81	0.79	0.77	0.84
Turkey	0.99	1.05	1.07	1.08	1.05

Note: Households are ranked by per capita disposable household incomes.

The rest of the section deals with the incidence of debt to figure out who are the borrowers in the society. The SILC provides information on whether households have a mortgage on their main

furniture) and pay in up to 12 months with installments. Credit card installments are not limited to purchasing durable goods. You can buy a wide range of products, from books to textiles and even airplane tickets, with your credit cards and pay in 2–6 months, depending on your bank's agreement with the company you shop from.

[24] Although according to the SILC, the number of unrecorded employed people has dropped from 53 percent to 39 percent between 2005–12: 73 percent (from 89 percent in 2005) of those in the poorest decile are employed informally and 52 percent (68 percent in 2005) of those work with temporary or fixed-term contracts.

residence and on whether they are holding consumer credit.[25] At least in part, the debt-servicing burden faced by households can also be measured, as the survey includes information on mortgage-debt interest payments. Therefore, we create three variables as indicators for debt status/debt level. Out of these three, two of them are dummies indicating if families have any mortgage (*mortgager*) or both mortgage and consumer credit (*debtor*). The final variable created is a proxy for the level of the debt burden (*INTYrate*), or the ratio of interest payments on mortgage credit to household disposable income. Given the fact that only 3 percent to 6.4 percent of households have mortgage credits according to our data, this proxy variable for the debt burden unfortunately will carry limited information for our analysis.

Tables 7 and 8 present debt-holder families by income, education, age, and occupation groups. While almost 73 percent of total households had mortgage or nonmortgage consumer debt in 2005, this number increased to 77 percent in 2012. As is clearly seen from the tables, the percentage of families with nonmortgage consumer debt decreases with income, implying low-income households have easier access to shorter-term credit, such as auto loans and credit cards. However, mortgage holders are concentrated more at middle-income ranges, as regulations are more restricted for mortgage credit (such as a down payment equal to 25 percent of the house's value). Nevertheless, while only 2.9 percent of total households had mortgage credits in 2005, this number reached to 6.4 percent in 2012 according to the SILC dataset used. Indebtedness is concentrated in households with middle-age and educated household heads, although the percentage of households with debt in the youngest age group is over Turkey's average. Another important observation from these tables is regarding the high ratio of indebted households with an employed head. As can be seen from table 8, 70 percent of indebted households have an employed household head. While 80 percent of households with an employed head were indebted in 2005, this reached to 85 percent in 2012. This observation implies that the employed

[25] The question the SILC does not ask directly is if the households have any mortgage or nonmortgage debt. There are two variables in the data used to create debt-related variables, namely HE010 and HE030. These variables in the questionnaire ask if the household is having any problem with rent or interest payments on a mortgage. The variables take four values: "Yes (once)," "Yes (more than once)," "No," and "There is no such debt." We create the variable *morgager* by matching homeowner households with the households saying "yes" or "no" to this question. On the other hand, the variable HE030 asks if the household is having problems making payments on credit card, installment, or other debt. We create the dummy variable *debtor* for the households who do not choose "there is no such debt."

individuals, whose real wage level stayed below labor productivity in the period we analyze, compensate for this through debt.[26]

Table 7: Debt Holders (Mortgage and Nonmortgage) by Income Ranges

Percentage of debt holders by income ranges

Income ranges (TL)	2005	2008	2009	2012
0–12,000	66.39	66.95	65.61	69.18
12,000–24,000	79.29	79.53	77.10	82.59
24,000–36,000	82.00	80.92	82.89	86.59
36,000–60,000	81.66	80.98	81.31	89.76
60,000+	79.99	75.44	80.92	85.59
Total	72.80	73.55	72.23	77.35

Distribution of debt holders by income ranges

Income ranges (TL)	2005	2008	2009	2012
0–12,000	48.33	44.29	44.81	40.65
12,000–24,000	35.31	37.40	37.58	39.42
24,000–36,000	9.97	11.54	11.35	11.87
36,000–60,000	4.52	4.87	4.49	6.11
60,000+	1.86	1.90	1.76	1.94
Total	100	100	100	100

Distribution of nonmortgage debt holders by income ranges

Income ranges (TL)	2005	2008	2009	2012
0–12,000	48.40	44.46	44.94	40.84
12,000–24,000	35.26	37.39	37.63	39.34
24,000–36,000	9.94	11.43	11.28	11.76
36,000–60,000	4.53	4.84	4.43	6.10
60,000+	1.87	1.88	1.73	1.96
Total	100	100	100	100

Distribution of mortgage holders by income ranges

Income ranges (TL)	2005	2008	2009	2012
0–12,000	22.92	18.71	10.52	11.82
12,000–24,000	41.94	38.48	34.01	44.98
24,000–36,000	25.49	25.29	30.26	23.64
36,000–60,000	7.53	12.85	17.46	14.88
60000+	2.12	4.67	7.75	4.67
Total	100	100	100	100

Note: Income ranges are deflated by the CPI; 2005 is used as reference year.

[26] Karaçimen's (2015) findings from field work in Istanbul supports this observation.

Table 8: Debt Holders (Mortgage and Nonmortgage) by Income Ranges (household head)

Percentage of households with consumer debt by education levels

	2005	2008	2009	2012
Primary	67.77	68.44	67.10	71.68
Secondary	76.81	76.52	76.56	80.95
High school	80.40	80.48	79.17	83.33
Higher education	84.99	82.15	81.67	86.64
Turkey	**72.47**	**72.93**	**71.95**	**76.79**

Percentage of households with consumer debt by age groups

	2005	2008	2009	2012
15–29	75.14	76.70	74.64	79.41
30–45	76.36	76.99	76.80	81.69
45–64	73.92	75.72	73.81	78.59
65+	55.42	53.68	53.25	59.67
Turkey	**72.47**	**72.93**	**71.95**	**76.79**

Distribution of households with consumer debt by occupation

	2005	2008	2009	2012
Employee	66.69	65.73	67.57	69.73
Employer	9.77	7.37	6.44	6.76
Self-employed	23.09	25.65	25.05	22.60
Unpaid family workers	0.45	1.24	0.93	0.91
Total	**100**	**100**	**100**	**100**

Source: SILC

Empirical Model

As mentioned before, microeconometric studies on the relative income hypothesis for developing countries are limited. We follow Jin, Li, and Wu (2011) and Sun and Wang (2012) while deciding on our empirical model. Sun and Wang (2012) tests both the impact of the income inequality level in the reference group to which households belong (in their paper, the village) and the position of the households in the village relative to the average income of the village. As a measure for the relative position of households, Sun and Wang (2012) employs income rank and the indices of relative deprivation, whereas Jin, Li, and Wu (2011) prefers to use the place of households in the income distribution—the poor for the bottom one-third of the income distribution within the reference group, the middle class for the middle one-third, and the rich for the top one-third.

To identify the effect of income inequality and relative income on consumption behavior, we estimate the following empirical model:

$$ln(C) = \alpha + \beta * \ln(Y) + \gamma * INEQ + \theta * RelY + \delta * X + \varepsilon \quad (1)$$

where C is a household's total consumption expenditure, *Y* is real[27] household disposable income, *INEQ*[28] is the income inequality indices for income, *RelY* is the relative income indicator, and *X* includes all other control variables, such as the reference individual's age and education, household size, and year dummies. To test the relative income theory in addition to total household expenditure, we use three other dependent variables, namely, total household expenditure net of education expenditures, education expenditures, and conspicuous/positional expenditures (expenditures on phone, cars, clothing, personal care, and education).

Conspicuous/positional expenditures reflect Duesenberry's "demonstration effects," which reflect social influence on consumer behavior. We have two definitions for this category of expenditures. There are studies in the literature suggesting that education expenditures should be taken as investment instead of consumption (Jin, Li, and Wu 2011); it has also been widely discussed that education expenditures are positional goods that denote social prestige and future social status opportunities (Adnett and Davies 2002). This is particularly true for developing countries such as Turkey, where returns to education are high and can represent social prestige for parents (Duman 2008; Öksüzler 2008; Tansel and Bodur 2012). Therefore, we run our model first for total household expenditure with education expenditures as a dependent variable and then we run our regression for household expenditures without education spending. Secondly, in Turkish society, clothing, telephones, cars, and other expenditures such as jewelry are considered status expenditures. We form a second separate expenditure variable for conspicuous/positional goods using these expenditure subcategories.

[27] We transformed all the nominal income and expenditure variables into real variables, inflating them with the CPI to 2012.
[28] We use Gini index, Theil index, and 90/10 and 75/25 percentile income ratios for 60 reference groups. Gini coefficients for 60 reference groups can be found in table 10.

To test the observation that people are not only concerned with their own income but also with their own income relative to others, the group of people to whom one compares oneself—their "reference group"[29]—should be defined. Different reference groups have been assumed in the empirical literature by using geographical area and different combinations of social and demographic indicators, such as gender, age, education, main occupation or employment, and literacy (Verme 2013). In the empirical literature, researchers base their reference group identification on the results of empirical studies that question with whom individuals compare themselves (Sun and Wang 2012). However, to our knowledge, there is no such work on Turkey. Therefore, we base our identification on the empirical works of other countries. Location appears the most common parameter, if the data allow, so firstly we use Turkey's 12 regions to identify the reference group. After checking descriptive statistics, we realized that age is the most important demographic characteristic for consumption behavior, so we use a region-age[30] reference group.

Throughout the paper, consumption means total household consumption expenses, unless otherwise specified. Moreover, we use the Gini coefficient[31] in the reference group rather than the inequality of whole society, accepting that people compare themselves with their peers. Specifically, we use inequality within the region-age reference group. All inequality indices are based on income per capita.[32]

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[29] Reference group is defined as internal and external. While an *internal* reference points to intertemporal self-comparisons of individuals with past and future incomes, "*external* reference points [are] where the reference group is represented by other members of society or other societies" (Verme 2013:10). We consider only the external reference group in this study.

[30] SILC is disaggregated into 12 regions and we use five age categories to generate our reference group. Hence our reference group has 60 subgroups. Age categories are defined as 15–29, 30–39, 40–49, 50–64, and 65 and above. Age group was also used as one of the strata variables for the statistical matching procedure.

[31] We run regressions with other inequality indices to see if the results are sensitive to the chosen index. The results with other inequality indices will be given in the subsection for the sensitivity analysis.

[32] We also run regressions with the equivalence scale. However, as the results are not sensitive to the equivalence scale chosen, we only report the results with income per capita. By following Deaton and Zaidi (2002), household size is converted into adult equivalent (AE) using the following formula for the household *i*:

$$\mathrm{AE_i} = (\mathrm{A_i} + \alpha C_i)^{\theta}$$

where A_i is the number of adults in the household, C_i is the number of children, and α and θ are parameters. Children are individuals aged 14 and below. The parameter α is the cost of a child relative to that of an adult, and lies somewhere between 0 and 1. The other parameter, θ, which also lies between 0 and 1, controls the extent of economies of scale. We apply a value of θ=0.6 and α=0.9 following World Bank (2005). Adjusted adult equivalent size of the household *i* (AE^*_i) following Deaton and Zaidi (2002) is defined as:

We define two relative income indicators. Following Kosicki (1987), Abdel-Ghany, Silver, and Gehlken (2002), and Sun and Wang (2012) our first indicator is standardized rank (*Rank*) defined as below:

$$Rank = \frac{R_i}{N} \tag{2}$$

where R_i is household i's ranking number. We order households according to their disposable per capita income at the reference group level. The highest ranking number is given to the household with the highest per capita income. N is the total number of households sampled in the reference group.

Rank in the reference group reduces the collinearity between rank and income measurement.[33] We expect that a household's consumption decreases with their relative position in the reference group they belong to. Therefore, we are expecting a strong negative coefficient for the rank variable if the relative position of households in their reference group is important for consumption decisions.

The second indicator for relative position is based on the concept of relative deprivation (RD). RD uses a household's income rank information in its reference group but it also takes into account the level of income difference between the household and other households above it (Deaton 2001; Stark and Yitzhaki 1988; Sun and Wang 2015; Wildman 2003). The RD index developed in Stark and Yitzhaki (1988) is as follows:

$$RD^i = \int_{y^i}^{y^h} g[1 - F(x)]dx \tag{3}$$

$$\mathrm{AE}^*_{\mathrm{i}} = \frac{A_0 + C_0}{(A_0 + \alpha C_0)^{\theta}} AE_i$$

where A_0 and C_0 are the number of adults and children in the "pivotal" households (average number of adults and children in Turkey, which varies year by year) and A_i and C_i are the number of adults and children in the ith household.

[33] In our sample, the correlation between the standardized rank and real household permanent income is 0.58

where y_i is the household's income, and y_h denotes the highest reference group's income. As suggested by Stark and Yitzhaki (1988) and used in Sun and Wang (2015) to simplify the computation, the above equation becomes g[1- F(x)] =1-F(x). The right-hand side of the above expression of RD in equation (3) can be decomposed into the product of the mean excess income of households richer than the household with income y_i and the proportion of households in the reference group that are richer than the household with income y_i. The RD index of Deaton (2001) is the above RD value divided by the reference group's average income. Deaton's index also indicates the level of deviation from the average standards in the reference group.

Relative deprivation decreases with income. The RD indices we use also convey information on the level of inequality in the reference group and deviation from the average standards. Therefore, we expect a positive sign for RD indices if the keeping up with Joneses effect is present. As the RD indices convey the information on income disparity as well, we do not need to regress household consumption on an inequality indicator when we use RD indices. The model we predict with RD indices becomes:

$$ln(C) = \alpha + \beta * \ln(Y) + \theta * RD + \delta * X + \varepsilon \quad (4)$$

The models are estimated with the pooled OLS. The results from a sample of data pooled over the 2005–12 study period are presented in the next section.

Table 10: Gini Coefficient of per capita Household Income by Year and Reference Group

Region	2005	2008	2009	2012
Istanbul				
15–29	0.419	0.393	0.364	0.418
30–39	0.412	0.414	0.428	0.471
40–49	0.438	0.440	0.419	0.450
50–64	0.382	0.403	0.411	0.393
65+	0.416	0.371	0.352	0.400
East Marmara				
15–29	0.398	0.325	0.336	0.382
30–39	0.443	0.441	0.399	0.397
40–49	0.382	0.404	0.430	0.381
50–64	0.329	0.379	0.374	0.341
65+	0.367	0.345	0.337	0.318
Aegean				
15–29	0.461	0.408	0.428	0.392
30–39	0.453	0.461	0.432	0.431
40–49	0.479	0.445	0.430	0.405
50–64	0.411	0.360	0.446	0.398
65+	0.439	0.334	0.329	0.356
West Marmara				
15–29	0.409	0.393	0.393	0.397
30–39	0.457	0.405	0.355	0.398
40–49	0.478	0.399	0.363	0.390
50–64	0.432	0.374	0.351	0.319
65+	0.351	0.343	0.330	0.277
East Anatolia				
15–29	0.396	0.426	0.404	0.475
30–39	0.497	0.499	0.441	0.483
40–49	0.411	0.443	0.411	0.451
50–64	0.438	0.378	0.373	0.368
65+	0.423	0.392	0.360	0.377
Mediterranean				
15–29	0.446	0.391	0.476	0.404
30–39	0.451	0.428	0.417	0.458
40–49	0.457	0.455	0.503	0.444
50–64	0.434	0.432	0.442	0.452
65+	0.425	0.380	0.329	0.408

Table 10: Gini Coefficient of per capita Income by Year and Reference Group, Continued

Region	2005	2008	2009	2012
Middle Anatolia				
15–29	0.422	0.411	0.433	0.394
30–39	0.392	0.412	0.394	0.406
40–49	0.364	0.417	0.359	0.394
50–64	0.373	0.460	0.411	0.321
65+	0.375	0.357	0.325	0.331
West Black Sea				
15–29	0.432	0.444	0.507	0.404
30–39	0.397	0.371	0.396	0.411
40–49	0.391	0.434	0.386	0.380
50–64	0.394	0.393	0.350	0.330
65+	0.359	0.326	0.329	0.326
East Black Sea				
15–29	0.418	0.318	0.249	0.430
30–39	0.439	0.402	0.395	0.418
40–49	0.440	0.409	0.370	0.356
50–64	0.385	0.361	0.306	0.268
65+	0.323	0.319	0.303	0.292
Northeast Anatolia				
15–29	0.430	0.598	0.507	0.540
30–39	0.428	0.577	0.573	0.500
40–49	0.420	0.426	0.421	0.427
50–64	0.409	0.414	0.401	0.406
65+	0.347	0.374	0.382	0.366
Middle East Anatolia				
15–29	0.435	0.463	0.494	0.490
30–39	0.483	0.545	0.520	0.425
40–49	0.464	0.471	0.447	0.387
50–64	0.455	0.506	0.485	0.397
65+	0.351	0.427	0.409	0.325
South East Anatolia				
15–29	0.418	0.456	0.460	0.508
30–39	0.429	0.442	0.451	0.492
40–49	0.480	0.412	0.421	0.404
50–64	0.442	0.444	0.442	0.400
65+	0.427	0.590	0.568	0.390

ESTIMATION RESULTS

This section reports regression results. All regressions are OLS estimations. Standard errors are robust to heteroskedasticity and clustered at the 60 region-age level.[34] First, we focus on the results using the Gini coefficient as the measure for income inequality. Estimates based on other inequality measures show similar patterns and are reported in table 15. Table 11 reports the results of five regressions where the dependent variable is total household expenditure. We control for family income, age, sex and education level of household's head, the ratio of the number of children to total household size, region-age group, and year dummies in these regressions. The results strongly support the hypothesis that relative income is an important determinant of household consumer behavior after controlling for the absolute income level and other household characteristics. The variable *Rank* in columns (1) to (3) has a statistically significant negative impact on total consumption expenditures, meaning that the lower-ranked households are spending a higher proportion of their net income on consumption to "keep up with the Joneses." The results in first three columns of table 11 also confirm the hypothesis that the reference group income inequality measured by Gini coefficient increases the household's consumption rate.

The first column shows that when income increases by 1 percent, consumption rises by 0.626 percent, which implies that the average propensity to consume declines by 0.374 percent. The coefficient for *Rank* has a statistically significant negative sign, as expected, supporting the hypothesis that relative income is an important determinant of household behavior after controlling for the absolute income level and other household characteristics. As the *Rank* rises with income, the negative coefficient means that the lower-ranked households are spending a higher proportion of their disposable income on consumption to keep up with the Joneses.

We take both relative income and inequality measures together as regressors, following Stark (2006). Stark illustrated, "under the theory of social status seeking, how both relative income

[34] As two of our regressors, namely the inequality indices and the indices for the relative position of individuals, are calculated at the 60 region-age reference group, we cluster the standard errors at the 60 reference group level so that we could take into account the possible dependence between the errors of households within a reference group.

rank and the level of income inequality will matter" (Sun and Wang 2012: 535). The Gini coefficient has a significant positive effect on household consumption. More specifically, when the Gini coefficient rises by 0.1, household consumption rises by 2.7 percent. The last two columns present the regression results with RD indices. The sign of the coefficients for both indices are positive and statistically significant, as expected. However, the index suggested by Stark and Yitzhaki is very small, even if strongly significant. On the other hand, the Deaton RD index is quite high. As explained earlier, Deaton's index for RD indicates the deviation from the average income level in the reference group, too. Thus, we can interpret this result as another support for relative income theory in the sense that the average living standards set in the reference group are effective in consumption behavior.

The Impact of Household Debt

In order to see the impact of households' debt status on consumption, we use the dummy showing if households hold any debt (both mortgage and any other consumer debt: *debt holder*). The estimated coefficients for the dummy have positive signs and are statistically significant for all regressions. The second debt-related variable and the only indicator for the debt level the data provides us is the ratio of households' mortgage interest payments to their disposable income.[35] The third column gives the results with debt variables. The coefficient for the ratio of interest payments to income is positive and very large. We were expecting that when we add the debt variables to the regression, the impact of inequality and relative position on household consumption would rise. However, the coefficients of the inequality indicators and relative position stay the same after adding the debt variables, even though they are statistically significant and have the right signs. We think that the level of debt is more relevant than debt status in explaining the relationship between inequality, household debt, and consumption. Even though the microeconometric analysis suggests a positive relationship between household indebtedness and consumption, the limited information that we have on debt levels is not enough

[35] The variable for interest payments on mortgage is unfortunately not very reliable for the year 2012 in the sense that some households did not report any interest payments though they seem to be mortgage holders. Using the Stata imputation program, we imputed interest payments for the households who reported that they have a mortgage but did not report any interest payments for this year. The independent variables used for the imputation are the sex, age, and education level of the household head, household total consumption and income, and a dummy indicating if households live in urban areas or not.

to reflect household indebtedness's exact level of impact on household consumption through inequality and the relative position of the household in the society.

Table 11: The Effect of Relative Income Position and Inequality on Household Consumption

Dependent Variable: Log (total household consumption expenditures)

		RANK-Kosicki		RD_Deaton	RD_Yitzhaki
	1	2	3	4	5
Gini		0.274***	0.273***		
		[0.090]	[0.090]		
Log(income)	0.626***	0.628***	0.627***	0.642***	0.619***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.010]
Rank	-0.0822***	-0.0874***	-0.0875***	0.196***	0.0000140***
	[0.028]	[0.028]	[0.028]	[0.041]	[0.000]
Age	0.0429***	0.0383***	0.0373***	0.0323***	0.0420***
	[0.009]	[0.009]	[0.009]	[0.008]	[0.009]
Age^2	-0.00335***	-0.00295***	-0.00287***	-0.00266***	-0.00329***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Education	0.0454***	0.0456***	0.0453***	0.0468***	0.0449***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Male	0.0252***	0.0249***	0.0250***	0.0185**	0.0288***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.007]
Junior ratio	0.109**	0.103**	0.0996**	0.0572	0.105**
	[0.047]	[0.046]	[0.046]	[0.047]	[0.045]
Junior ratio^2	-0.306***	-0.309***	-0.304***	-0.257***	-0.271***
	[0.067]	[0.067]	[0.068]	[0.069]	[0.069]
Debt holder			0.00987**	0.00911**	0.0101**
			[0.005]	[0.005]	[0.005]
Ratio of mortgage interest payment to income			0.138***	0.166***	0.158***
			[0.049]	[0.055]	[0.055]
Observations	54779	54779	54779	54779	54779
R2	0.527	0.527	0.527	0.528	0.528
adj. R-sq	0.527	0.527	0.527	0.528	0.528

Note: We control for the year and region in all regressions. Standard errors are robust to heteroscedasticity and clustering at the region-age group. *** Indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

As discussed earlier, we run regressions on household total expenditure without education expenditures as the dependent variable. As can be seen in table 12, the results are almost the same as the results for those with total household expenditure as the dependent variable.

We then run the same regressions for education and conspicuous expenditures (clothing, telephone, car, and other expenditures) separately (tables 13 and 14). With the regression for education expenditures, we consider only families with children between the ages of 3 and 25 who are still students because there is generally very little education investment for adults. In the case where education expenditures are the dependent variable, education expenditures are strongly affected by inequality in the region-age reference groups and all relative income indicators. For the conspicuous expenditures, the coefficient signs stay the same, whereas the size of the coefficients for both the Gini and the relative income indicator increases (table 14). We can interpret the increase in the size of the coefficients for the inequality and rank variables for these positional goods in a way that the part of the total expenditure that goes to positional goods is more affected by inequality and the relative status of households in their reference groups. Therefore, our results are in line with the relative income hypothesis. We confirm that thanks to debt opportunities households in Turkey also have a tendency to spend more on education and positional goods to compensate for their relatively worse-off position in their respective communities.

Finally, table 15 provides the results of the sensitivity analysis for alternative inequality indices. We confirm that the results are not sensitive to the chosen indices of income inequality, except for 75/25 percentile ratio.

Table 12: The Effect of Relative Income Position on Household Consumption

Dependent variable: Log (total household consumption expenditures without education)

		RANK-Kosicki		RD_Deaton	RD_Yitzhaki
	1	2	3	4	5
Gini		0.263***	0.262***		
		[0.088]	[0.089]		
Log(income)	0.616***	0.618***	0.617***	0.632***	0.609***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.010]
Rank	-0.0814***	-0.0864***	-0.0864***	0.192***	0.0000141***
	[0.028]	[0.028]	[0.028]	[0.041]	[0.000]
Age	0.0344***	0.0299***	0.0290***	0.0240***	0.0334***
	[0.009]	[0.009]	[0.009]	[0.008]	[0.008]
Age^2	-0.00283***	-0.00245***	-0.00237***	-0.00216***	-0.00277***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Education	0.0416***	0.0417***	0.0414***	0.0429***	0.0411***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Male	0.0276***	0.0273***	0.0274***	0.0211***	0.0310***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.007]
Junior ratio	0.0894*	0.0842*	0.0808*	0.0394	0.0844*
	[0.045]	[0.044]	[0.044]	[0.045]	[0.043]
Junior ratio^2	-0.288***	-0.291***	-0.286***	-0.240***	-0.252***
	[0.065]	[0.065]	[0.065]	[0.066]	[0.067]
Debt holder			0.00995**	0.00920*	0.0101**
			[0.005]	[0.005]	[0.005]
Ratio of mortgage interest payment to income			0.126**	0.154***	0.146***
			[0.050]	[0.055]	[0.055]
Observations	54779	54779	54779	54779	54779
R2	0.519	0.519	0.519	0.52	0.519
adj. R-sq	0.518	0.519	0.519	0.519	0.519

Note: We control for the year and region in all regressions. Standard errors are robust to heteroscedasticity and clustering at the region-age group. *** indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 13: The Effect of Relative Income Position on Household Consumption

Dependent variable: Log (household education expenditures)

		RANK-Kosicki		RD_Deaton	RD_Yitzhaki
	1	2	3	4	5
Gini		1.516***	1.508***		
		[0.538]	[0.538]		
Log(income)	1.250***	1.259***	1.249***	1.296***	1.172***
	[0.061]	[0.058]	[0.058]	[0.060]	[0.047]
Rank	-0.409***	-0.437***	-0.436***	0.826***	0.0000350**
	[0.133]	[0.129]	[0.129]	[0.193]	[0.000]
Age	0.745***	0.720***	0.712***	0.702***	0.754***
	[0.067]	[0.065]	[0.065]	[0.071]	[0.065]
Age^2	-0.0478***	-0.0456***	-0.0450***	-0.0449***	-0.0481***
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Education	0.341***	0.342***	0.339***	0.344***	0.332***
	[0.016]	[0.016]	[0.016]	[0.017]	[0.015]
Male	-0.160***	-0.162***	-0.161**	-0.181***	-0.127**
	[0.060]	[0.061]	[0.061]	[0.062]	[0.059]
Junior ratio	1.909***	1.879***	1.855***	1.729***	2.034***
	[0.323]	[0.327]	[0.326]	[0.338]	[0.291]
Junior ratio^2	-1.285***	-1.304***	-1.266***	-1.107**	-1.324***
	[0.479]	[0.474]	[0.473]	[0.499]	[0.453]
Debt holder			0.0796***	0.0779**	0.0834***
			[0.030]	[0.030]	[0.030]
Ratio of mortgage interest payment to income			0.843**	0.860**	0.827**
			[0.359]	[0.415]	[0.412]
Observations	54779	54779	54779	54779	54779
R2	0.192	0.193	0.193	0.193	0.193
adj. R-sq	0.192	0.192	0.193	0.193	0.193

Note: We control for the year and region in all regressions. Standard errors are robust to heteroscedasticity and clustering at the region-age group. *** Indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 14: The Effect of Inequality and Relative Income Position on Household Consumption

Dependent variable: Log (household conspicuous expenditures)

		RANK-Kosicki		RD_Deaton	RD_Yitzhaki
	1	2	3	4	5
Gini		0.592***	0.589***		
		[0.174]	[0.175]		
Log(income)	0.931***	0.934***	0.931***	0.963***	0.904***
	[0.027]	[0.027]	[0.027]	[0.027]	[0.021]
Rank	-0.177***	-0.188***	-0.188***	0.417***	0.0000211***
	[0.058]	[0.058]	[0.058]	[0.082]	[0.000]
Age	0.0964***	0.0865***	0.0842***	0.0738***	0.0984***
	[0.016]	[0.015]	[0.015]	[0.016]	[0.017]
Age^2	-0.00865***	-0.00778***	-0.00761***	-0.00718***	-0.00871***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Education	0.0899***	0.0902***	0.0895***	0.0927***	0.0873***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
Male	0.0339*	0.0332*	0.0335*	0.0197	0.0457***
	[0.018]	[0.018]	[0.018]	[0.019]	[0.016]
Junior ratio	0.374***	0.362***	0.355***	0.265**	0.405***
	[0.105]	[0.103]	[0.103]	[0.104]	[0.106]
Junior ratio^2	-0.607***	-0.614***	-0.603***	-0.503***	-0.590***
	[0.152]	[0.150]	[0.151]	[0.155]	[0.159]
Debt holder			0.0260**	0.0247**	0.0273**
			[0.012]	[0.012]	[0.012]
Ratio of mortgage interest payment to income			0.251**	0.241*	0.224*
			[0.108]	[0.125]	[0.126]
Observations	54779	54779	54779	54779	54779
R2	0.33	0.331	0.331	0.331	0.33
adj. R-sq	0.33	0.33	0.331	0.331	0.33

Note: We control for the year and region in all regressions. Standard errors are robust to heteroscedasticity and clustering at the region-age group. *** Indicates statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

Table 15: The Effect of Relative Income Position on Household Consumption

Dependent variable: Log (total household consumption expenditures)

	Gini	THEIL Index	90/10 percentile income ratio	75/25 percentile income ratio
Inequality	0.273***	0.0890**	0.00822***	0.0166
	[0.090]	[0.041]	[0.003]	[0.011]
Log(income)	0.627***	0.626***	0.629***	0.627***
	[0.013]	[0.013]	[0.013]	[0.013]
Rank (Kosicki)	-0.0875***	-0.0845***	-0.0902***	-0.0871***
	[0.028]	[0.028]	[0.028]	[0.028]
Age	0.0373***	0.0380***	0.0430***	0.0422***
	[0.009]	[0.009]	[0.009]	[0.009]
Age^2	-0.00287***	-0.00299***	-0.00326***	-0.00327***
	[0.001]	[0.001]	[0.001]	[0.001]
Education	0.0453***	0.0452***	0.0453***	0.0452***
	[0.002]	[0.002]	[0.002]	[0.002]
Male	0.0250***	0.0252***	0.0240***	0.0244***
	[0.008]	[0.008]	[0.008]	[0.008]
Junior ratio	0.0996**	0.104**	0.0985**	0.0998**
	[0.046]	[0.046]	[0.047]	[0.046]
Junior ratio^2	-0.304***	-0.304***	-0.303***	-0.299***
	[0.068]	[0.067]	[0.068]	[0.067]
Debt holder	0.00987**	0.00986**	0.00964**	0.00965**
	[0.005]	[0.005]	[0.005]	[0.005]
Ratio of mortgage interest payment to income	0.138***	0.164***	0.163***	0.164***
	[0.049]	[0.055]	[0.056]	[0.055]
Observations	54779	54779	54779	54779
R2	0.527	0.527	0.527	0.527
adj. R-sq	0.527	0.527	0.527	0.527

Note: We control for the year and region in all regressions. Standard errors are robust to heteroscedasticity and clustering at the region-age group. *** Indicate statistical significance at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level.

CONCLUSION

This paper examined if relative income and income inequality within reference groups affects household consumption for a developing country. Using the explanations of consumption behavior based on Duesenberry's relative income hypothesis, we test if households' consumption levels in Turkey are affected by their relative position and inequality in their reference group between 2005–12 by employing cross-sectional household-level data. We find that household consumption is negatively related to the relative income indicator after controlling for income, and positively related to the income inequality of the reference group, as the literature suggests. As the *Rank* indicator rises with income, a negative coefficient means that the lower-ranked households are spending a higher proportion of their disposable income on consumption to "keep up with the Joneses."

We test the theory of social status seeking to see if both the relative income rank and the level of income inequality matters. After we control for the relative income position, the Gini coefficient has a significant positive effect on household consumption. More specifically, when the Gini coefficient rises by 0.1, household consumption rises by 3.45 percent. We run two more regressions for education and conspicuous expenditures (clothing, telephone, car, and jewelry) separately and get the same results, with higher coefficients for inequality and relative income indicators. Therefore, we confirm that households in Turkey also have a tendency to spend more on positional goods to compensate for their relatively worse-off position in their respective communities.

Households in Turkey became highly indebted since 2003. We examine if the availability of debt opportunities in the same period helped households spend beyond their means. The results of the microeconometric analysis show that debt status and the level of debt are explanatory in consumer behavior. This finding suggests that the relatively worse-off households try to compensate with the help of debt. We confirm that the results are not sensitive to the chosen relative income indicator and income inequality.

The main shortcoming of our paper is regarding the data limitations. Since we had to transfer our household expenditure data from another micro-level data by using statistical matching methodology, the results of the econometric analysis may be taken with some caution. However, we ran a simple regression where household expenditure is the dependent variable and the regressors are strata variables of the statistical matching model both in HBS (donor data) and SILC (receiver data) for each year to see if we get parallel results from each dataset. The coefficients for the independent variables in both datasets have the same sign and very similar sizes. Therefore, we can say that our econometrical results can be acceptable. The second limitation of the paper is regarding the debt variables used in the analysis. Even though the microeconometric analysis suggests a positive relationship between household indebtedness and consumption as expected, unfortunately the limited information that we have on debt levels is not enough to reflect the exact level of impact of household indebtedness on household consumption through inequality and relative position of households in the society.

Studying consumption behavior is important for economic policy implications. Mainstream consumption theories, such as the permanent income theory, have been used to prove the ineffectiveness of active fiscal policies (Arestis and Sawyer 2004), providing an argument for austerity policies and monetary policy as crisis management strategies. The relative income theory suggests that not only absolute income levels but also relative income levels matter in explaining household consumption behavior and households have a tendency to spend beyond their current and permanent income in order to compensate for their relatively lower positions in their communities if debt opportunities are present. However, as the global financial crisis of 2008 indicated, debt-driven consumption should not be a source of reliable, stable demand. Moreover, it has been shown that high household debt levels reduce the capacity of households to consume in the medium and long run, and creates risks for future growth (Mian, Sufi, and Verner 2017). This has been the experience in eurozone countries with high household debt levels, which have been employing austerity policies after the crisis, and it also provides strong evidence that despite very low interest rates, consumption demand can stagnate for a longer term after a recession thanks to the inequality-enhancing austerity policies. Therefore, policies aimed at primary income distribution to increase the wage share in the economy—such as public employment programs to decrease high unemployment or labor market policies promoting more

job security—could instigate higher wage levels and provide more stable consumption without resorting to debt.[36] In addition, redistributive policies targeting secondary income distribution (income distribution after taxes and benefits) in favor of low- and middle-income families can be more expansionary than tax cuts at the top, and can be the basis for growth-enhancing policies during deflationary periods (Palley 2008). As a country with high income inequality, Turkey can benefit highly from more progressive tax policies aiming to reduce the tax burden[37] of low- and middle-income households to support private demand without debt. Hence, further research can focus on the impact of redistributive policies on consumption given the fact that consumption expenditures are affected not only by absolute income levels but also an individual's relative income level.

[36] Flexible labor market policies that decrease the level of job security and promote precarious forms of employment increase the chance for workers to fall into a debt trap and/or default on debt repayments in Turkey. It is clear that this harms the capacity of workers to consume in the medium and long term; see Karacimen (2014).
[37] Turkey's tax revenues mainly rely on indirect taxes (almost 70 percent of tax revenues come from indirect taxation). Tax policies worsen already high-income inequality in the country. Please see Albayrak (2010) and Albayrak et al. (2016) for analyses of regresiveness of the Turkish tax system.

REFERENCES

Abdel-Ghany, M., J. L. Silver, and A. Gehlken. 2002. "Do consumption expenditures depend on the household's relative position in the income distribution?" *International Journal of Consumer Studies* 26(1): 2–6.

Adnett, N., and P. Davies. 2002. "Education as a positional good: implications for market-based reforms of state schooling." *British Journal of Educational Studies* 50(2): 189–205.

Agarwal, S., M. Hadzic, and Y. Yildirim. 2015. "Consumption Response to Credit Tightening Policy: Evidence from Turkey." Unpublished manuscript. Available at: https://www.smeal.psu.edu/lema/AHY9242015.pdf

Akay, A., and P. Martinsson. 2011. "Does Relative Income Matter for the Very Poor? Evidence from Rural Ethiopia." *Economics Letters* 110(3): 213–15.

Akyüz, Y., and K. Boratav. 2003. "The making of the Turkish Financial Crisis." *World Development* 31(9): 1549–66.

Albayrak, Ö. 2010. "Redistributive Effects of Indirect Taxes in Turkey, 2003." *Ankyra Journal* (Ankara University) 2(1).

———. 2013. "Distributionally Adjusted Social Welfare in Turkey, 2003–2009." In T. Bulutay, D. Özkök-Çubukçu, and S. Soydemir (eds.), *Ismail Türk'e Armağan* . Ankara: Mülkiyeliler Birliği Publications (in Turkish). (also available at http://mulkiye.org.tr/wp-content/uploads/2015/09/50.pdf)

Albayrak, Ö., S. Bahce, and A. Pinar. 2016. "A Microsimulation Analysis for a More Progressive Tax Policies in Turkey: 2003–2013." *Ankara University SBF Journal* 71(1).

Albayrak, Ö., and T. Masterson. 2016. "Quality of Statistical Match of Household Budget Survey and SILC for Turkey." Levy Economics Institute Working Paper No. 885. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.

Aldan, A., Y. K. Bağır, and H. Torun. 2018. "A Micro Perspective on Wages and Labour Productivity." CBRT Blog, June 13. Available at: https://www.tcmb.gov.tr/wps/wcm/connect/blog/en/main+menu/analyses/a_micro_perspective_on_wages_and_labor_productivity. (Accessed March 2018)

Alpizar, F., F. Carlsson, and O. Johansson-Stenman. 2005. "How Much Do We Care About Absolute Versus Relative Income and Consumption?" *Journal of Economic Behavior and Organization* 56(3): 405–21.

Alvarez-Cuadrado, F., and N. Van Long. 2011. "The relative income hypothesis." *Journal of Economic Dynamics and Control* 35(9): 1489–501.

Alvarez-Cuadrado, F., and I. Japaridze. 2017. “Trickle-down consumption, financial deregulation, inequality, and indebtedness.” *Journal of Economic Behavior and Organization* 134: 1–26.

Arestis, P., and M. Sawyer. 2004. *Re-examining Monetary and Fiscal Policy for the 21st Century*. Cheltenham, UK and Northampton, MA: Edward Elgar Books.

Bacca, W. 2009. “The Relevance of Duesenberry Consumption theory: An Applied Case to Latin America.” *Revista de Economía del Caribe* (4): 19–36.

Bahçe, S., and A. H. Köse. 2016. “Financialisation/Borrowing Circle as a Solution to an Unpleasant Conundrum: Observations from the Mature Neoliberalism in Turkey.” *Research and Policy on Turkey* 1(1): 63–74.

Bahçe, S., H. Cömert, N. Erdem, E. Karaçimen, A. H. Köse, and Ö. Orhangazi. 2016. “Financialisation and the Financial and Economic Crises: The Case of Turkey.” In E. Hein, D. Detzer, and N. Dodig (eds.), *Financialisation and The Financial and Economic Crises*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.

Barba, A., and M. Pivetti. 2009. “Rising household debt: Its causes and macroeconomic implications—a long-period analysis.” *Cambridge Journal of Economics* 33(1): 113–37.

Boratav, K. 1963. “Income Distribution and Consumption Tendency.” *Ankara University SBF Journal* 18(1) (in Turkish).

Boratav, K., and E. Yeldan. 2006. “1980–2000: Financial Liberalization, Macroeconomic (In)-Stability, and Patterns of Distribution.” In L. Taylor (ed.), *External Liberalization in Asia, Post-Socialist Europe, and Brazil.* Available at: http://repository.bilkent.edu.tr/bitstream/handle/11693/37821/bilkent-research-paper.pdf?sequence=1

Bunting, D. 2012. “Consumption.” In J. E. King (ed.), *The Elgar Companion to Post Keynesian Economics*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.

Cardaci, A. 2014. “Inequality, Household debt and Financial Instability: An Agent-based Perspective.” *Journal of Economic Behavior and Organization* 149: 434–58.

Charles, K. K., E. Hurst, and N. Roussanov. 2009. “Conspicuous Consumption and Race.” *The Quarterly Journal of Economics* 124(2): 425–67.

Christen, M., and R. M. Morgan. 2005. “Keeping up with the Joneses: Analyzing the Effect of Income Inequality on Consumer Borrowing.” *Quantitative Marketing and Economics* 3(2): 145–73.

Cömert, H., and S. Colak. 2014. “The Impacts of the Global Crisis on the Turkish Economy and Policy Responses.” ERC-Economic Research Center Working Papers No. 1417. Ankara: Middle East Technical University.

Corneo, G., and O. Jeanne. 1997. “Conspicuous Consumption, Snobbism and Conformism.” *Journal of Public Economics* 66(1): 55–71.

Crescenzi, A. 2012. *Beyond the Keynesian Endpoint: Crushed by Credit and Deceived by Debt—How to Revive the Global Economy.* Upper Saddle River, NJ: Financial Times Press.

Cynamon, B. Z., and S. M. Fazzari. 2008. “Household debt in the consumer age: source of growth—risk of collapse.” *Capitalism and Society* 3(2).

———. 2013a. “The End of Consumer Age.” In B. Z. Cynamon, S. M. Fazzari, and M. Setterfield (eds.), *After the Great Recession: The Struggle for Economic Recovery and Growth.* New York: Cambridge University Press.

———. 2013b. “Inequality and Household Finance during the Consumer Age.” Levy Economics Institute Working Paper No. 752. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.

———. 2015. “Inequality, the Great Recession and Slow Recovery.” *Cambridge Journal of Economics* 40(2): 373–99.

Deaton, A., and S. Zaidi. 2002. “Guidelines for Constructing Consumption Aggregates for Welfare Analysis.” Living Standards Measurement Study (LSMS) Working Paper No. 15. Washington, DC: The World Bank.

Dos Santos, P. L. 2009. “At the Heart of the Matter: Household Debt in Contemporary Banking and the International Crisis.” *Ekonomiaz* 72(3): 54–77.

———. 2013. “A Cause for Policy Concern: The Expansion of Household Credit in Middle-income Economies.” *International Review of Applied Economics* 27(3): 316–38.

Duesenberry, J. S. 1949. *Income, Saving, and the Theory of Consumer Behavior*. Cambridge, MA: Harvard University Press.

Dufour, M., and Ö. Orhangazi. 2009. “The 2000–2001 Financial Crisis in Turkey: A Crisis for Whom?” *Review of Political Economy* 21(1): 101–22.

Duman, A. 2008. “Education and income inequality in Turkey: Does Schooling Matter?” *Financial Theory and Practice* 32(3): 369–85.

———. 2013. “Household Debt in Turkey: The Critical Threshold for the Next Crisis.” Unpublished manuscript prepared for EcoMod Conference 2013. Available at: https://econpapers.repec.org/paper/ekd004912/5259.htm

Dupor, B., and W.-F. Liu. 2003. “Jealousy and Equilibrium Overconsumption.” *The American Economic Review* 93(1): 423–28.

Elgin, C., and T. U. Kuzubas. 2012. “Wage-productivity Gap in Turkish Manufacturing Sector.” *Iktisat Isletme ve Finans* 27(316): 9–31.

Ergüneş, N. 2012. “Global Integration of Middle-Income Developing Countries in the Era of Financialisation: The Case of Turkey.” In C. Lapavitsas (ed.), *Financialisation in Crisis*. Boston and Leiden: Brill.

Ersoy, E. 2016. “The Chronic Balance of Payments Constraint on Economic Growth in Turkey.” *Review of Social Studies* 3(1).

Frank, R. H. 2005. “Positional Externalities Cause Large and Preventable Welfare Losses.” *The American Economic Review* 95(2): 137–41.

Frank, R.H., A.S. Levine, and O. Dijk. 2014. “Expenditure Cascades.” *Review of Behavioral Economics* 1(1–2): 55–73.

Friedman, M. 1957. *A Theory of the Consumption Function.* Princeton, NJ: Princeton University Press.

Galbraith, J. K. 2012. *Inequality and Instability: A Study of the World Economy Just Before the Great Crisis*. Oxford: Oxford University Press.

Glyn, A. 1995. “Social Democracy and Full Employment.” *New Left Review* 211(33).

Goda, T. 2013. “The Role of Income Inequality in Crisis Theories and in the Subprime Crisis.” Post Keynesian Economics Study Group Working Paper No. 1305. Available at: https://www.postkeynesian.net/downloads/wpaper/PKWP1305.pdf

Gomez-Salvador, R., A. Lojschova, and T. Westermann. 2011. “Household Sector Borrowing in the Euro Area: A Micro data Perspective.” European Central Bank, Occasional Paper No: 125. Frankfurt: European Central Bank.

IMF (International Monetary Fund). 2006. “Household Credit Growth in Emerging Market Countries.” *Global Financial Stability Report: Market Development and Issues*. Washington, DC: International Monetary Fund.

Iacoviello, M. 2008. “Household Debt and Income Inequality, 1963–2003.” *Journal of Money, Credit and Banking* 40(5): 929–65.

Jin, Y., H. Li, and B. Wu. 2011. “Income Inequality, Consumption, and Social-status Seeking.” *Journal of Comparative Economics* 39(2): 191–204.

Kapeller, J., and B. Schütz. 2014. “Debt, Boom, Bust: A theory of Minsky-Veblen Cycles.” *Journal of Post Keynesian Economics* 36(4): 781–814.

———. 2015. “Conspicuous Consumption, Inequality and Debt: The Nature of Consumption-driven Profit-led regimes.” *Metroeconomica* 66(1): 51–70.

Karaçimen, Elif. 2014a. “Interlinkages Between Credit, Debt and the Labour Market: Evidence from Turkey.” *Cambridge Journal of Economics* 39(3): 751–67.

———. 2014b. “Financialization in Turkey: The Case of Consumer Debt.” *Journal of Balkan and Near Eastern Studies* 16(2): 161–80.

———. 2015. “Consumer Credit as an Aspect of Everyday Life of Workers in Developing Countries Evidence from Turkey.” *Review of Radical Political Economics* 48(2): 252–68.

Karwowski, E., and E. Stockhammer. 2017. “Financialisation in Emerging Economies: A Systematic Overview and Comparison with Anglo-Saxon Economies.” *Economic and Political Studies* 5(1): 60–86.

Kim, Y., M. Setterfield, and Y. Mei. 2013. “A Theory of Aggregate Consumption.” *Journal of Economics and Economic Policies: Intervention* 11(1): 31–49.

King, J. E. 2012. “Consumption.” In J. E. King (ed.) *The Elgar Companion to Post Keynesian Economics*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.

Klein, M. 2015. “Inequality and household debt: a panel cointegration analysis.” *Emiprica* 42(2): 311–412.

Kosicki, George. 1987. “A Test of the Relative Income Hypothesis.” *Southern Economic Journal* 54(2): 422.

Krueger, D., and F. Perri. 2006. “Does income inequality lead to consumption inequality? Evidence and theory.” *The Review of Economic Studies* 73(1): 163–93.

Kum, H., and T. N. Masterson. 2010. “Statistical matching using propensity scores: Theory and application to the analysis of the distribution of income and wealth.” *Journal of Economic and Social Measurement* 35(3-4): 177–96.

Kumhof, M., R. Rancière, and P. Winant. 2015. “Inequality, Leverage, and Crises.” *American Economic Review* 105(3): 1217–45.

Kumhof, M., C. Lebarz, R. Rancière, A. W. Richter, and N. A. Throckmorton. 2012. “Income Inequality and Current Account Imbalances.” IMF Working Papers No. WP/12/08. Washington DC: International Monetary Fund.

Kumhof, M., and R. Rancière. 2010. “Leveraging inequality.” IMF Quarterly Finance and Development, December. Washington DC: International Monetary Fund.

Lapavitsas, C. 2009. “Financialised Capitalism: Crisis and Financial Expropriation.” *Historical Materialism* 17(2): 114–48.

Lavoie, M. 2012. “Consumer Theory.” In J. E. King (ed.), *The Elgar Companion to Post Keynesian Economics*. Cheltenham, UK and Northampton, MA: Edward Elgar Publishing.

Lavoie, M., and E. Stockhammer. 2013. “Wage-led growth: Concept, theories and policies.” In M. Lavoie and E. Stockhammer (eds.), *Wage-led Growth*. London: Palgrave Macmillan.

Lucchino, P., and S. Morelli 2012. “Inequality, Debt and Growth.” Report for the Resolution Foundation, London. Available at: https://www.resolutionfoundation.org/app/uploads/2014/08/Final-Inequality-debt-and-growth.pdf

Mason, R. 2000. “The social significance of consumption: James Duesenberry’s contribution to consumer theory.” *Journal of Economic Issues* 34(3): 553–72.

Mian, A., A. Sufi, and E. Verner. 2017. “Household Debt and Business Cycles Worldwide.” *The Quarterly Journal of Economics* 132(4): 1755–817.

Ministry of Development. 2017. “Development of Domestic Savings and Consumption in Turkey.” (In Turkish). Available at: http://onbirinciplan.gov.tr/wp-content/uploads/2018/02/T%C3%BCrkiye%E2%80%99de-Yurt-%C4%B0%C3%A7i-Tasarruflar%C4%B1n-Ve-T%C3%BCketimin-Geli%C5%9Fimi-Arka-Plan-%C3%87al%C4%B1%C5%9Fm....pdf (Accessed January 2019)

Modigliani, F., and R. Brumberg. (1954)2005. “Utility analysis and the consumption function: An interpretation of cross-section data.” In *The Collective Papers of Franco Modigliani, Volume 6*. Cambridge, MA and London: MIT Press.

OECD (Organisation for Economic Co-operation and Development). 2011. *Divided We Stand: Why Inequality Keeps Rising*. Paris: OECD Publishing.

———. 2014. “OECD Economic Surveys: Turkey.” Paris: OECD Publishing.

———. 2016. “OECD Economic Surveys: Turkey.” Paris: OECD Publishing.

Onaran, Ö., and E. Stockhammer. 2005. “Two different export-oriented growth strategies: accumulation and distribution in Turkey and South Korea.” *Emerging Markets Finance and Trade* 41(1): 65–89.

Onaran, Ö., and N. Yentürk. 2001. "Do Low Wages Stimulate Investments? An Analysis of the Relationship Between Distribution and Investments in Turkish Manufacturing Industry." *International Review of Applied Economics* 15(4): 359–74.

Onaran, Ö., and G. Galanis. 2012. "Is aggregate demand wage-led or profit-led." *National and Global Effects* 40.

Orhangazi, Ö., and G. Özgür. 2015. "Capital Flows, Finance-Led Growth and Fragility in the Age of Global Liquidity and Quantitative Easing: The Case of Turkey." Political Economy Research Institute (PERI) Working Paper No. 397. Amherst, MA: PERI.

Öksüzler, O. 2008. "Does education pay off in Turkey? An ordered logit approach." MPRA Paper No. 14375. Available at: https://mpra.ub.uni-muenchen.de/14375/

Oyvat, C. 2010. "Globalization, Wage Shares and Income Distribution in Turkey." *Cambridge Journal of Regions, Economy and Society* 4(1): 123–38.

Palley, T. I., 2008. "Keynesian models of deflation and depression revisited." *Journal of Economic Behavior & Organization* 68(1): 167–77.

———. 2010. "The Relative Permanent Income Theory of Consumption: A Synthetic Keynes–Duesenberry–Friedman Model." *Review of Political Economy* 22(1): 41–56.

———. 2013. "America's Exhausted Paradigm Macroeconomic Causes of the Financial Crisis and Great Recession." In B. Z. Cynamon, S. M. Fazzari, and M. Setterfield (eds.), *After the Great Crisis: The Struggle for Economic Recovery and Growth*. New York: Cambridge University Press.

Paskov, M., K. Gërxhani, and H. G. van de Werfhorst. 2013. "Income Inequality and Status Anxiety." *Growing Inequality Impacts* 90: 1–46.

Perugini, C., J. Hölscher, and S. Collie. 2016. "Inequality, Credit and Financial Crises." *Cambridge Journal of Economics* 40(1): 227–57.

Rajan, Raghuram. 2010. *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton, NJ: Princeton University Press.

Ravina, E. 2005. "Keeping up with the Joneses: Evidence from Micro Data." New York University Stern School of Business Working Paper. New York: Stern School of Business. Available at: http://repec.org/sed2005/up.23090.1107140609.pdf

Ryoo, S., and Y. K. Kim. 2013. "Income Distribution, Consumer Debt, and Keeping up with the Joneses: a Kaldor-Minsky-Veblen Model." Trinity College Department of Economics Working Paper. No. 1302. Dublin: Department of Economics of Trinity College.

Setterfield, M. 2012. “Real Sector Imbalances and the Great Recession” In H. Herr, T. Niechoj, C. Thomasberger, A. Truger, and T. van Treeck (eds.), *From Crisis to Growth? The Challenge of Debt and Imbalances*. Marburg: Metropolis Verlag.

———. 2013. “Wages, Demand and US Macroeconomic Travails: Diagnosis and Prognosis.” In B. Z. Cynamon, S. M. Fazzari, and M. Setterfield (eds.), *After the Great Crisis: The Struggle for Economic Recovery and Growth*. New York: Cambridge University Press.

Setterfield, M., and Y. K. Kim. 2016. “Debt Servicing, Aggregate Consumption, and Growth.” *Structural Change and Economic Dynamics* 36: 22–33.

———. 2017. “Household Borrowing and the Possibility of ‘Consumption-driven, Profit-led growth.’” *Review of Keynesian Economics* 5(1): 43–60.

Stark, O. 2006. “Status Aspirations, Wealth Inequality, and Economic Growth.” *Review of Development Economics* 10(1): 171–76.

Stark, O., and S. Yitzhaki. 1988. “Labour Migration as a Response to Relative Deprivation.” *Journal of Population Economics* 1(1): 57–70

Stockhammer, E. 2013. “Why Have Wage Shares Fallen? An Analysis of the Determinants of Functional Income Distribution.” In M. Lavoie and E. Stockhammer (eds.), *Wage-led Growth*. London: Palgrave Macmillan.

———. 2015. “Rising Inequality as a Cause of the Present Crisis.” *Cambridge Journal of Economics* 39(3): 935–58.

Sturn, S., and T. van Treeck. 2013. “The role of income inequality as a cause of the Great Recession and global imbalances.” In M. Lavoie and E. Stockhammer (eds.), *Wage-led Growth*. London: Palgrave Macmillan.

Subaşat, T. 2014. “The Political Economy of Turkey’s Economic Miracle.” *Journal of Balkan and Near Eastern Studies* 16(2): 137–60.

Sun, W., and X. Wang. 2013. “Do Relative Income and Income Inequality Affect Consumption? Evidence from the Villages of Rural China.” *Journal of Development Studies* 49(4): 533–46.

Tansel, A., and F. B. Bodur. 2012. “Wage Inequality and Returns to Education in Turkey: A Quantile Regression Analysis.” *Review of Development Economics* 16(1): 107–21.

Tunc, C., and A. Yavaş. 2016. “Not All Credit is Created Equal: Mortgage vs. Non-mortgage Debt and Private Saving Rate in Turkey.” *Central Bank Review* 16(1): 25–32.

van Treeck, T. 2012. “Did Inequality Cause the U.S. Financial Crisis?” Macroeconomic Policy Institute (IMK) Working Paper No. 91. Düsseldorf: Macroeconomic Policy Institute of the Hans-Böckler-Foundation

Verme, P. 2013. “The Relative Income and Relative Deprivation Hypotheses: A Review of the Empirical Literature.” World Bank Policy Research Working Paper No. 6606. Washington, DC: The World Bank.

Wildauer, R., and E. Stockhammer. 2018. “Expenditure Cascades, Low Interest Rates, Credit Deregulation or Property Booms? Determinants of Household Debt in OECD Countries.” *Review of Behavioral Economics* 5(2): 85–121.

Wildman, J. 2003. “Income related inequalities in mental health in Great Britain: Analyzing the causes of health inequality over time.” *Journal of Health Economics* 22(2): 295–312.

Wisman, J. D. 2013. “Wage Stagnation, Rising Inequality and the Financial Crisis of 2008.” *Cambridge Journal of Economics* 37(4): 921–45.

World Bank. 2005. “Turkey Joint Poverty Assessment Report.” Available at: http://documents.worldbank.org/curated/en/910241468312641389/Main-report

Yeldan, E. 2007. “Patterns of Adjustment under the Age of Finance: The Case of Turkey as a Peripheral Agent of Neoliberal Globalization.” Political Economy Research Institute (PERI) Working Paper No. 126. Amherst, MA: PERI.

———. 2011. *Macroeconomics of Growth and Employment: The Case of Turkey*. Geneva: International Labor Organization.

Yeldan, E., and B. Ünüvar. 2016. “An assessment of the Turkish economy in the AKP era.” *Research and Policy on Turkey* 1(1): 11–28.

Yilmaz, Z., 2015. “‘Strengthening the Family’ Policies in Turkey: Managing the Social Question and Armoring Conservative–Neoliberal Populism.” *Turkish Studies* 16(3): 371–90.