Household consumption, household indebtedness and inequality in Turkey: A Micro Econometric Analysis

Özlem Albayrak[1]

(DRAFT VERSION, PLEASE DO NOT REFER!)

ABSTRACT

This article examines if relative income and income inequality within reference group affects household consumption. Using the explanations of consumption behavior based on Relative Income Hypothesis of Duesenberry, we test if consumption level of households in Turkey is affected by their relative position and inequality in the reference group between 2005-2012 by employing cross sectional household level data. We find that household consumption is negatively related to the relative income indicator after controlling for the absolute income, and positively related to the income inequality of the reference group as the literature suggests. The paper also shows that the impact of relative position of households and inequality on consumption behavior becomes stronger with household indebtedness. We confirm that the results are not sensitive to chosen relative income indicator and income inequality.

1. INTRODUCTION

Since mid 1990s there has been a credit expansion towards households in all around the world and since 2000s Turkey has also been part of this process (IMF 2006; Lapavitsas 2009; dos Santos, 2013). Household saving rates of Turkey have dropped to record low levels of 6.6% in 2012 from 17.5% in 2003 (Ministry of Development, 2017). In line with this, households have started using bank loans through short and long term consumer credits and credit cards. Between 2003 and 2012 all segments of society increased their consumption level faster than their income

grew (See Table 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 in Turkey (Agarwal et al., 2015; Bahçe and Köse, 2016; Karaçimen 2014a, 2014b, 2015). None of these works has looked at the relation between household consumption/debt behaviors and households' position in the income distribution, as they do not use micro level data enabling this line of research. 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 decline in their real incomes and compensated 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 at the bottom and middle of the distribution. This process created at the end 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 well-known consumption theories are not capable of explaining 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,et al. 2015; Lapavitsas 2009; Rajan 2010, Perugini et al. 2016; Stockhammer 2015; van Treeck 2012; Wisman 2013)[2].

---

[2] As Lovie and Stockhammer (2013) also point out, the direction of casuality among 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" (Lovie 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 among those phenomena. See Galbraith (2012), for explanations of the rise in inequality and its creation of instability. By using dynamic general equilibrium model Iacoviello (2008) shows that the increase in income inequality explains the rise

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 neoliberal treatment to capital since 80s) 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 2010, 2012, 2013)[3]. Therefore, the next subsection will briefly discuss the evolution of consumption theories with a special focus on the Relative Income Hypothesis.

Wildauer, R., & Stockhammer, E. (2018) shows that the main reasons behind the consumption surge is supply side effects. However, as Setterfield and Kim (2015) points out righltly, "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." 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 crisis 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 because they trust the financial system and it was just offered to them.

---

of household debt during 1980s and 1990s and business cycle fluctuations account for only short-run changes in household debt.

[3] 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, 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 which are in a wage-led economic regime). This process was proven unsustainable with 2008 crisis. See Lavoie and Stockhammer (2013).

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. With this paper, we hope to contribute to the literature by providing findings from a developing country example. Second, there is no empirical work on Turkey trying to understand how relative position of households in the society and inequality affect their consumption behavior. Our paper will be the first one employing micro econometric 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 a limit 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) (Dos Santos, 2013; Stockhammer and Wildauer 2017).[4]

The structure of the paper is as follows. The next section 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. The following section describes the data and empirical methodology used. The fifth section contains the estimation results. And the final section contains concluding remarks (policy? Directions for further research?).

2. 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 of most countries, it hit 70% in Turkey in 2___?). There are three major groups of theories that attempt to explain consumer behavior, namely: the conventional/mainstream theories of Modigliani and Brumberg (1954), or the life-cycle theory of consumption and Friedman's (1957) permanent income hypothesis; and the Keynesian Consumption Theory and Relative Income Hypothesis of Duesenberry (1949). As the dominant consumption theories since 1970s, the conventional theories of consumption are based on an

---

[4] Stockhammer and Wildauer 2017 analyses together the impact of both property prices and inequality on household debt.

atomistic, isolated utility maximizing individual's responses to changes in prices and wealth without regard for "socially determined preferences" (Palley, 2010: 42). Consumers are far-sighted and rational, forming intertemporal plans aimed at smoothing their standard of living (consumption) across "predictable" income changes over their life-cycle. As a result, consumption and savings rates are expected to remain stable (Cynamon and Fazzari, 2008; Frank et al., 2010)[5]. Current consumption does not depend on current disposable income as Keynesian aggregate consumption theory suggests, nor is it affected by other people's income and consumption in the society. 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 the inequality of income or relative position of individuals in distribution of incomes and aggregate personal consumption (Cynamon and Fazzari, 2013a; van Treek, 2013) 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 the consumption behavior of households particularly in the "consumer age" (Cynamon and Fazzari, 2013a)[6].

Keynesian Aggregate Consumption Theory was the dominant consumption theory after the Second World War. According to Keynes, current aggregate consumption is a function of current aggregate income. 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 Second World War (Bunting 2012; Glyn 1995; Lavoie and Stockhammer, 2013). However, the Keynesian consumption function is not sensitive to other people's income and not helpful to understand the social dimension of consumption behavior (Palley 2010). By linking Keynesian and institutional 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 into account social influences (Mason 2000:555).

---

[5] See Lavoie (2012) and Bunting (2012) for a short review of the problems of neoclassical consumer and consumption theory.

[6] Cynamon and Fazzari (2013a, 2013b) defines the period between mid-1980s and 2007 as the consumer age.

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 the relative income theory of Duesenberry[7] 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 among inequality and 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 income considerations (Mason, 2000)[8]. "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 income and status. The concept of "expenditure cascades" is based on this point (Verme, 2013:4; Frank et al., 2010)[9]. This tendency, nicknamed the "keeping up with Joneses effect", became very important to understanding consumer behavior since the 1990s.[10] The keeping up with Joneses effect implies that people consume to gain social status[11] or

---

[7] 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 "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.

[8] 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 it as "relatively trivial sociological observations".

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

[10] Kapeller, J., & Schütz, B. (2014 and 2015): Bhaduri-Marglin model by assuming that relative consumption concerns matter primarily within the working class.

[11] Social status is defined in a broad sense "one's relative standing in a society" (Paskov et al 2013: 4). Paskov et al. (2013) explains why social status is important for 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 they have higher social status as this recognition also brings feel of worthiness and self-respect. Please see Paskov et al., 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".

to keep the social status they have been enjoying even if their income level 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[12].

Coming from the recent literature on social status and 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 fulfill this goal. Positional or status goods are a matter of empirical question and can vary with society and time. Positional goods are in general defined as those goods where comparisons with others matter most. On the other hand, non-positional goods are the goods mostly socially-invisible and so matter least in comparison and status gain (van Treeck, 2013). Quality of education, cars, houses, clothes, jewellery, cell phones or other electronic devices so on are taken generally as positional or status goods in the literature.

Turkey has been one of the countries with highest income inequality among OCED countries. The period we analyse saw a relative improvement in size distribution even though the real wages have kept stayed below unit productivity thanks to populist transfer programmes (Albayrak, 2011: Yilmaz 2015). So the literature on the developed countries rely on the increase in inequality and debt driven consumption.

Turkey

Since the 1980s, Turkey has been following export-oriented growth policies whose main strategy to increase competitiveness has been suppressing real wages, dropping its share in functional income distribution (Onaran and Stockhammer 2005; Oyvat 2010; Yeldan, 2007). Onaran and Stockhammer (2005) show for Turkey as a wage-led country that decreasing the wage share does not stimulate accumulation, growth, or employment. These policies resulted in a

---

[12] 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) parallel developments and their impacts on consumption in Turkey.

widening gap between real wages and productivity, and weak domestic demand for the most part of the period after the 1980s as Post-Keynesian literature predicts. These trends can be seen in Figure 1, below.[13]   However, between 2002 and 2011 (apart from the short period after 2008 crisis),[14] Turkey witnessed higher average growth rates relative to the previous period. Growth Turkey experienced during 2000s was mainly driven by domestic demand fed by foreign capital inflows, which has led to internal and external imbalances.

Figure 1: Development of Real Labour Cost and Productivity Indices for Manufacturing Industry 1985-2015 (1985=100)

---
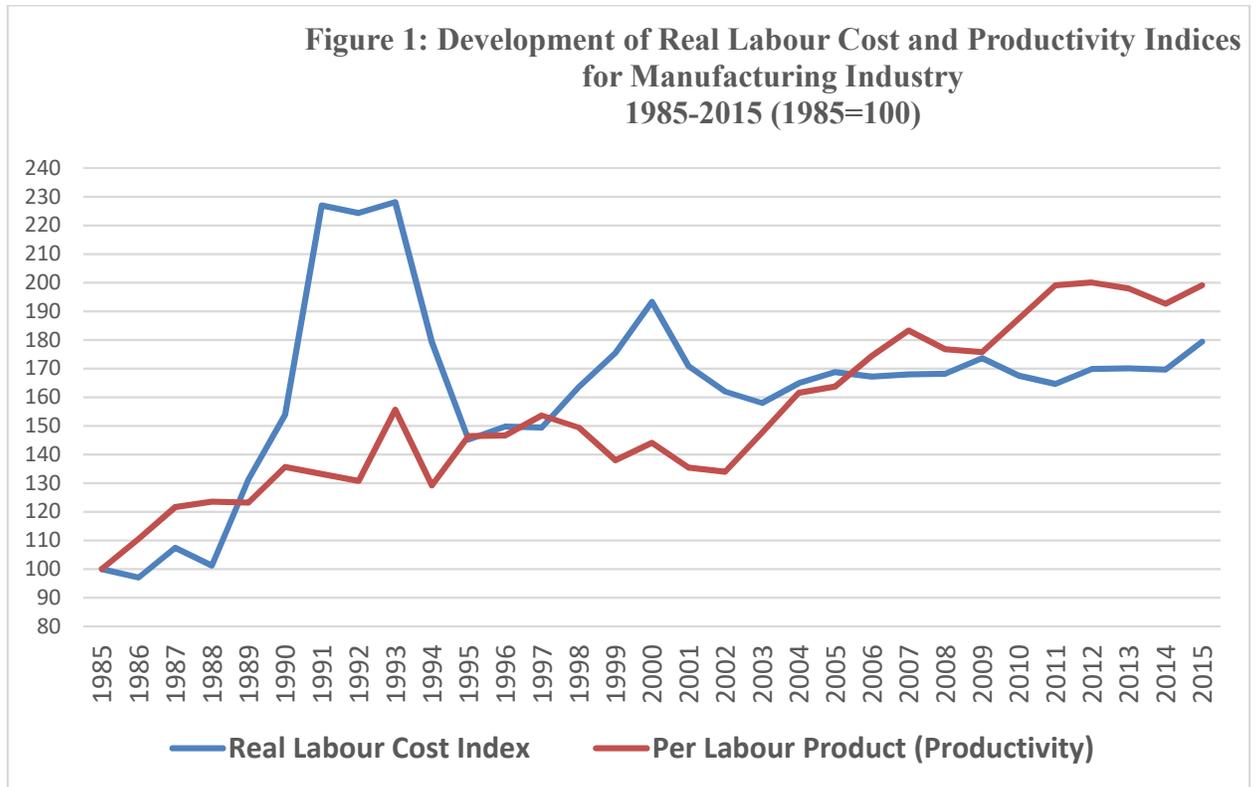
[13] See (Onaran and Yenturk 2001) and (Elgin and Kuzubas, 2012) for the widening gap between real wages and productivity since 1980s. Oyvat (2010) also shows that decreasing wage shares in the manufacturing industry to increase competitiveness in world trade since 1980s gave rise in functional inequality. Another factor contributing real wage stagnation in Turkey was the "jobless growth". Even though manufacturing production increases, it was not creating same level of employment, opening the gap between productivity gains and wages. Yeldan (2011) presents that between 2008-2012 real manufacturing production increased 30%, the employment in manufacturing increased only at 5%. Per Labour Product as an indicator of the productivity in the manufacturing sector in the Figure 1 is calculated as dividing manufacturing value added at constant prices by the number of workers employed by the manufacturing industry. For manufacturing value-added at constant prices, the national accounts statistics provided by Turkish Statistical Institute (TurkStat) is used. Two series of national accounts are used to calculate per labour product. For the years between 1985-1997 the national accounts with base year 1987, for the years between 1998-2015 the national accounts with the base year 1998 series are employed. Real Hourly Labour Cost Index is taken from the Turkish Confederation of Employer Associations' "2015 Labour Statistics and Labour Cost" (http://tisk.org.tr/wp-content/uploads/2017/01/2015-%C3%87%C4%B0%C4%B0M-Ek.pdf)

[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% of GDP (at current prices) in 2012 (71.7% in 2010) in Turkey. Average GDP growth between 2003-2012 was 5.05% and 3.5 of this rate came from the private consumption (69% of it). After the financial crisis of 2008 in 2009 GDP decreased 4.8%, however, the private consumption dropped only 2.3%. As in developed countries, rise in household consumption was accompanied by a rise in household debt levels. At the beginning of 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 credits to the highest 44% of total private credits in 2009[15]. Figure 2 also presents the household debt level with different indicators. Household financial leverage calculated as the ratio of total household debt to total household assets reached the highest level of 56.8% in 2013.

---

[15]Economic risk the increased household debt level may carry, however, is still managable thanks to the regulations. Despite the increase, debt service costs remained manageable at 5.4% 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 in foreign currency indexed loans) has been forbidden since June 2009. Indeed, the household sector holds a sizeable long position in foreign currency (particularly recently as a sign of dollarisaton), which amounted to around USD 191 billion (23% of GDP) as of early 2013 (OECD, 2014). However, Duman (2013) argues that even if liability ratios seem managable, as home ownership 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 rising trend for household indebtedness was turned to a decreasing trend since 2016. However, for the period we examine (between 2005-2012) the rising trend had continued.

Figure 2: Household Debt Indicators
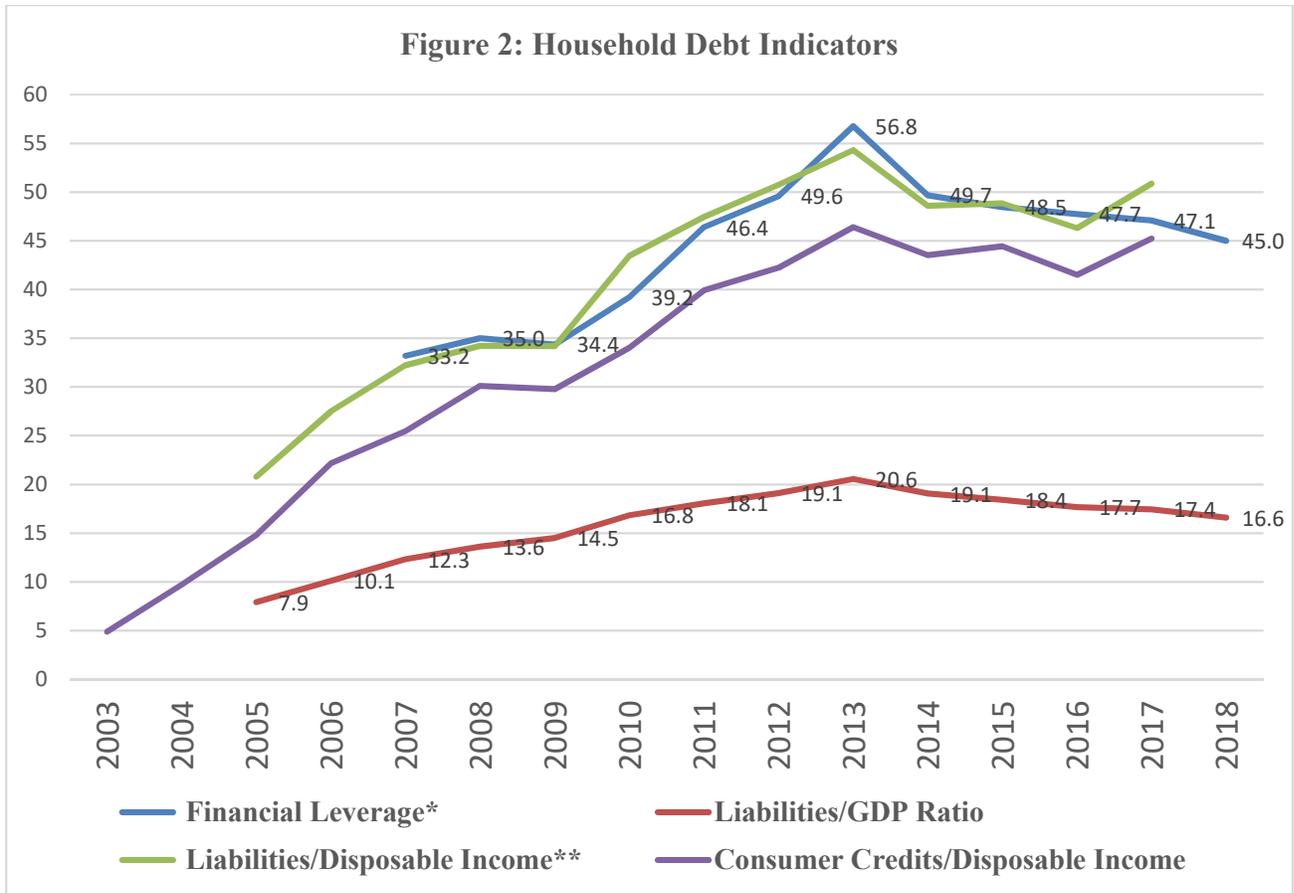
Source: CBRT Financial Stability Reports and Household Budget Surveys

In line with this, household saving rates in Turkey dropped to record low levels of 12% in 2014 from 25% in 1999 (Table 1)[16]. Despite the sharp rise, 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% of GDP and 54.3% of disposable income by 2013 (Table 1). Financial leverage for households which is calculated simply as a ratio of household debt to household assets reached to its highest level of 56.8% 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

---

[16] Tunç and Yavaş (2016) provides evidence that the primary reason for the recent decrease in private saving rate in Turkey is the high growth rate of mortgage and non-mortgage (although with smaller impact) consumer credit.

were also crucial to make debt-driven consumption possible for families. The decreasing trend of interest rates since 2002 can be seen in Figure 3.[17]

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	70.5			
2005	13.2	71.72		7.9	20.8
2008	15.1	69.85	35.0	13.6	34.2
2009	14.1	71.47	34.4	14.5	34.2
2010	12	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		68.7	48.5	18.43	48.9

Source: CBRT Financial Stability Reports (November), TurkStat and, Ministry of Development
*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.

---

[17] See (Karacimen 2014b) for more detailed information on the supply side factors.

Table 2: Mean Household Disposable Income and Expenditure 2003-2012

Deciles	2003		2012		% Change	% Change
	Expenditure	Income	Expenditure	Income	Expenditure	Income
1	8850	6716	15047	11095	70.0	65.2
2	10898	10219	18440	16056	69.2	57.1
3	12479	12278	20571	19338	64.9	57.5
4	13708	14443	22247	21287	62.3	47.4
5	15203	16443	23891	24212	57.1	47.3
6	16746	18727	26949	27242	60.9	45.5
7	18171	21169	28966	30712	59.4	45.1
8	20342	25072	31527	34311	55.0	36.9
9	24304	31774	38526	43833	58.5	38.0
10	42777	66118	57720	78129	34.9	18.2
Turkey	**18351**	**22301**	**28387**	**30619**	**54.7**	**37.3**

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

Figure 3. Average Annual Interest Rates, 2002-2016
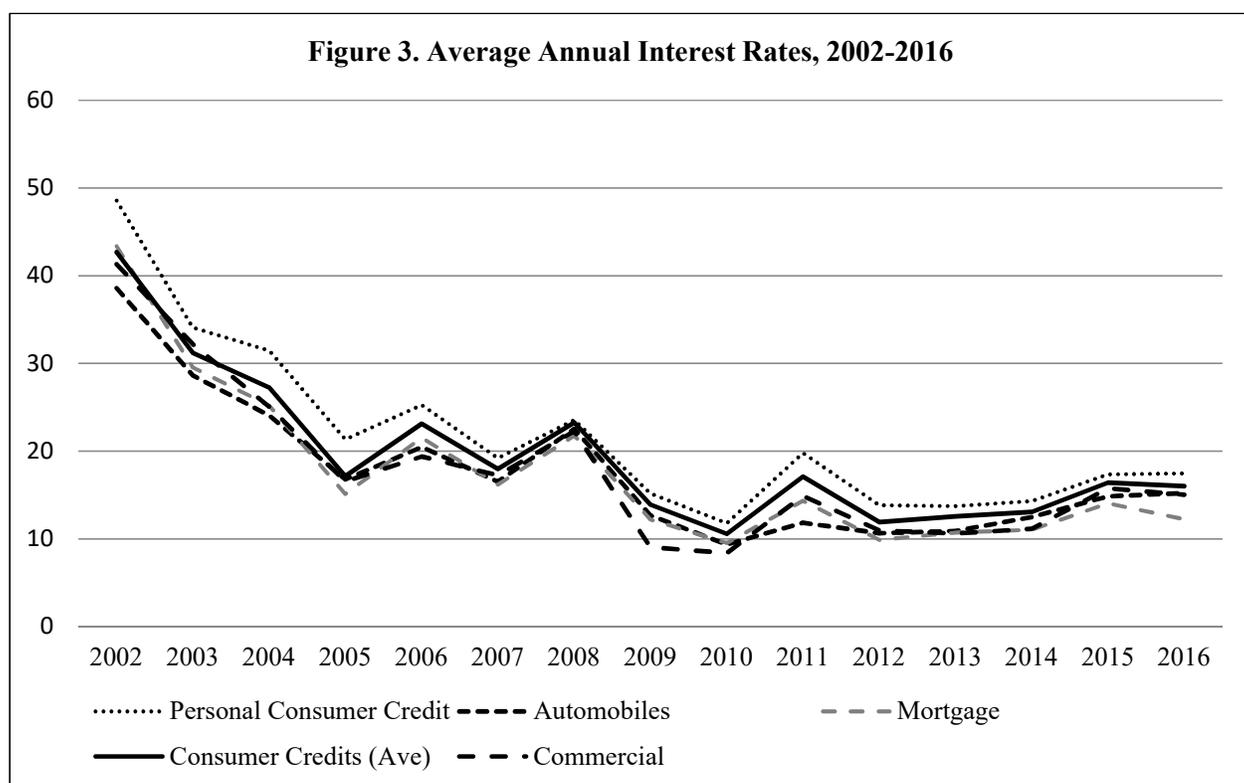
Source: CBRT

The striking difference between Turkey and developed countries is that the debt-driven consumption period of Turkey that we examine is also the period that household income and consumption inequalities had a mildly declining trend from very high levels (OECD, 2011)[18] (See Table 3). However, Albayrak (2014) shows that without public transfers, growth in market incomes of low income groups do not catch up with the average income growth of Turkey between 2003-2010. As a result, the same groups' debt level kept rising with propensity to consume. In the next section we will give how consumption patterns and household debt have evolved in 2000s after describing the data we use.

Table 3. Inequality and Poverty for Turkey

	Gini coefficient	Poverty rate (%)*
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

* Poverty line is taken as 60% of median equivalised household disposable income

Gini coefficient is calculated for equivalised household disposable income

[18] 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 towards a common and higher average level of inequality across OECD countries (OECD, 2011). See Table 3 for inequality rates in Turkey since 2006. Gini coefficent for adult equivalent household disposable income was 0.49 in 1994 according to TurkStat's own estimations.

3. 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 data set for Turkey providing all this information, particularly household income, expenditure and debt information together. However there are two micro level, nationally representative data sets having the variables we need provided by the Turkish Statistical Institute (TurkStat), and by applying statistical matching methodology, we bring these variables together to create a synthetic data file. The first is the annual Household Budget Survey (HBS). HBS provides household consumption expenditure data in addition to individual/household income variables. The second data set is the annual Survey of Income and Living Conditions (SILC). SILC contains information on income sources at both individual and household level, home ownership, mortgage and consumer debt, and – to some extent – the debt servicing burden. Except for 2003, the HBS does not allow for regional disaggregation, whereas SILC is regionally representative (12 geographical regions). As mentioned before, regional disaggregation is important to determine reference groups. Hence, transferring household expenditure from HBS to SILC will allow us to test whether the relative income hypothesis explains the relationship between households' position in the income distribution, household indebtedness and consumption behavior in Turkey.

These two data sets 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), we transferred household consumption expenditure from HBS to SILC and created the synthetic data set we need for four years, namely, 2005, in 2008, 2009 and 2012[19]. Although the credit expansion towards households more or less started around 2003 (after the recovery of the 2001 crisis) in Turkey, our work will treat 2005 as "counterfactual" in the sense that relative to 2005, in the following years, 2008, 2009 and 2012, we expect to see the impact of expanded credit opportunities towards households on consumption preferences depending on their position in income distribution.

---

[19] Please see Albayrak (2016) for the statistical matching procedure we use and the quality assessment of the matching.

Basic information for the data sets are in Table 5. After dropping outliers[20] at the bottom of the data we ended up having in total 54779 families that we use for the pooled OLS (10915 households for 2005, 11865 for 2008, 12105 for 2009 and 19894 for 2013).

Table 5. Sampling Size of Surveys (1000)

	2005		2008		2009		2012	
Surveys	**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 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 HBS since 2003 average propensity to consume has risen from 0.98 to 1.05 for overall Turkey and according to the matched data it has risen 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, propensity to consume increased for all parts of the distribution. The reason for that is that credit opportunities are more

---

[20] Outliers are defined as families with an annual household disposable income of less than 600 TL (2005), 700 TL (2008, 2009) and 800 TL (2012). As a result, we dropped 4 households from 2005 data, 6 families from 2008 and 2009 and 5 families from 2012.

limited[21] to the very bottom part of the distribution as they mostly work in informal sector, unrecorded with no contracts or hold temporary jobs[22].

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

* Households are ranked by per capita disposable household incomes

---

[21] Although obtaining a credit card is not an issue, banks demand from individuals to provide evidence of their income and asset level to loan short and long term consumer credits. As unrecorded workers do not have any official document showing their work status and income levels, it is very hard for these workers to get consumer loans from the financial system. However, installments through credit cards are very 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 furniture) and pay in up to 12 months with installments. Credit card installments are not limited for purchasing durable goods. You can buy a wide range of products from books to textile products, even plane tickets with your credit cards and pay in 2-6 months depending on your bank's agreement with the company you shop from.

[22] Although according to SILC, number of people employed unrecorded has dropped from 53% to 39% between 2005-2012, 73% (89% in 2005) of those in the poorest decile is employed informally and 52% (68% in 2005) of those work with temporary or fixed term contracts.

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 residence and on whether they are holding consumer credit. 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. It also contains information on financial distress indicating if families experience arrears on mortgage loan payments and on hire purchase installments or other loan payments. Therefore, we create five variables as indicators for debt status/debt level. Out of those five, two of them are dummies showing if families have any mortgage (*Mortgager*) or both mortgage and consumer credit (*Debtor*). Third and fourth dummies indicate if households experience any hardship to service their debts (*burden_mor* for mortgage holders) and (*burden_cons* for credit card installments and other consumer loans). The final variable created is a proxy for the level of debt burden (INTYrate), the ratio of interest payments on mortgage credit to household disposable income.

Table 7-9 present debt holder families by income, occupation, education, and age groups. While almost 73% of total households had mortgage or non-mortgage consumer debt in 2005, this number increased to 77% in 2012. As clearly seen from the tables, percentage of families with non-mortgage 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 25% down payment of house value).

Table 7: Percentage of Debt Holders (Mortgage and Non-Mortgage) by Income Ranges

Income ranges (TL)	2005	2008	2009	2012
0-12000	66.39	66.27	64.96	69.15
12000-24000	79.29	79.13	76.81	82.60
24000-36000	82.00	81.13	82.91	86.59
36000-60000	81.66	81.54	81.46	89.76
60000+	79.99	73.51	80.49	85.59
Total	**72.80**	**73.55**	**72.23**	**77.35**

Table 8: Percentage of Mortgage Holders by Income Ranges

Income ranges (TL)	2005	2008	2009	2012
0-12000	22.92	16.78	8.87	11.82
12000-24000	41.94	37.73	35.66	44.98
24000-36000	25.49	27.96	30.26	23.64
36000-60000	7.53	14.07	18.22	14.88
60000+	2.12	3.46	6.99	4.67
Total	100	100	100	100

Table 9: Percentage of Non-Mortgage Debt Holders by Income Ranges

Income ranges (TL)	2005	2008	2009	2012
0-12000	48.40	41.05	41.30	40.78
12000-24000	35.26	39.26	41.25	39.40
24000-36000	9.94	12.98	11.30	11.76
36000-60000	4.53	4.99	4.53	6.11
60000+	1.87	1.72	1.62	1.96
Total	100	100	100	100

Empirical Model

Microeconometric studies for relative income hypothesis on developing countries are limited. There are two studies on China using panel data at the village level, although their findings are not consistent (Jin et al., 2011; Sun and Wang, 2012). Abdel-Ghany et al., (2002) shows by using Canada data that both permanent and relative income considerations matter for determining consumption expenditures. Sun and Wang (2013) also tested both the effect of relative income position and income inequality. Their results are consistent with the predictions of the relative income hypothesis. They showed that household consumption rate is negatively related to the relative income position after controlling for the absolute income, and positively related to the income inequality of the village by using panel data.

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

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

where C is household total consumption expenditure, Y is real[23] household disposable income, *Gini* is the Gini coefficient, *RelY* is the relative income indicator, and *X* includes all other control variables such as reference individual's age and education. To test relative income theory 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 the social influence on consumer behavior. We have two definitions for this category of expenditures. There are studies in the mainstream literature suggesting that education expenditures should be taken as investment instead of consumption (Jin, Li, Wu, 2011). For this reason, education expenditures are either modelled separately or total consumption expenditures without education are taken. Education expenditures are also one of the status expenditures particularly in developing countries such as Turkey where return to education is high (Duman 2008; Öksüzler, 2008; Tansel and Bodur, 2012). Therefore, we run our model first with total education expenditures as dependent variable to test demonstration effects. Secondly, in Turkish society clothing, telephone, car and other expenditures such as jewelry are status expenditures. We form a second separate expenditure variable for conspicuous/positional goods using these expenditure subcategories.

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 called as "reference group[24]" 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 the empirical studies that question with whom individuals compare themselves with (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 12 regions to identify the

---

[23] We transformed all the nominal income and expenditure variables into real variables inflating them with the consumer price index to 2012.
[24] Reference group is defined as internal and external. While *internal* reference points intertemporal self-comparisons of individuals with past and future incomes, "*external* reference points where the reference group is represented by other members of society or other societies" (Verme, 2013:10)

reference group. After checking descriptive statistics, we realized that age is the most important demographic character for consumption behavior. So we use region-age[25] reference group.

Throughout the paper, consumption means total household consumption expenses, unless otherwise specified. Moreover, we use the Gini coefficient[26] 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 reference region-age group. All inequality indices are based on income per capita[27].

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

$$Rank = \frac{R_i}{N} \quad (2)$$

where R_i is the 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.

---

[25] SILC is disaggregated at 12 regions and we use 5 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.

[26] 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.

[27] 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:

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

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:

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

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.

Rank in the reference group reduces the collinearity between rank and income measurement[28]. We expect that household's consumption decreases with the relative income indicators. Therefore, we are expecting strong negative coefficient for 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). Relative deprivation uses household's rank information in its reference group but also it takes into account the level of income difference between the household and other households above it (Deaton, 2001; Stark and Yitzhaki, 1988; Stark and Taylor, 1991; Sun and Wang, 2015 and Wildman, 2003). The RD index developed in Stark and Yitzhaki (1988) is as follows:

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

where yi is the household's income, and yh denotes the highest reference group income. As suggested by Stark and Yitzhaki (1988) and used in Sun and Wang (2015) to simplify the computation, above equation becomes let 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 indicates also the level of deviation from the average standards in the reference group.

Relative deprivation decreases with income. Also RD indices we use carries the information of the level of inequality in the reference group and deviation from the average standards. Therefore, we expect positive sign for RD indices if "keeping up with Joneses effect" is present. The model is estimated with the pooled OLS. Results from a sample of data pooled over the 2005 – 2012 study period.

---

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

Figure 3: Gini Coefficient of per capita Household Income by Region

Legend:
- Istanbul
- East Marmara
- Eagean
- West Marmara
- East Anatolia
- Mediterrenian
- Middle Anatolia
- West Black Sea
- East Black Sea
- Norteast Anatolia
- Middle East Anatolia
- South East Anatolia

X-axis: 2003 (HBS), 2005, 2008, 2009, 2012
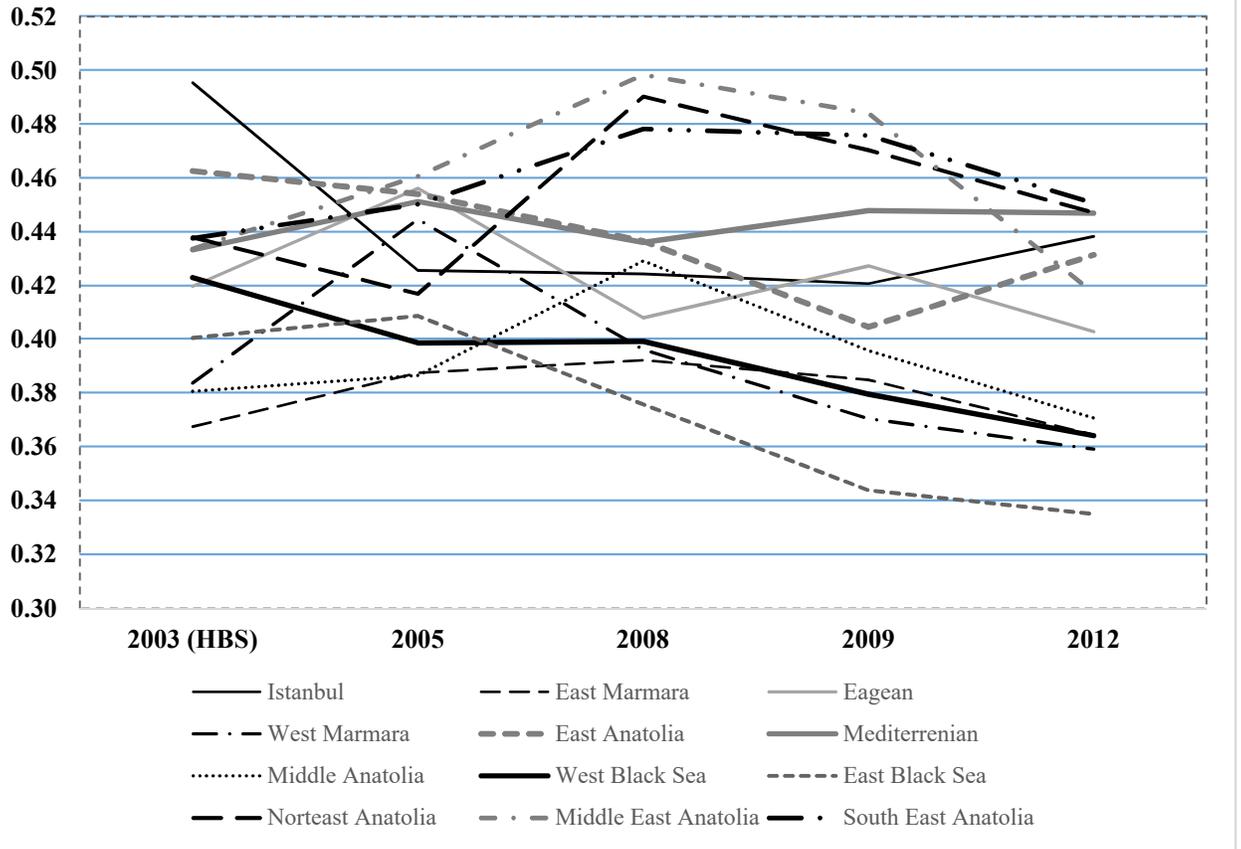
Table 10: Gini Coefficient of per capita household income by year and reference group				
Region	**2005**	**2008**	**2009**	**2012**
Istanbul				
15-29	0.419	0.393	0.364	0.418
30-39	0.412	0.414	0.428	0.471
40-49	0.438	0.440	0.419	0.450
50-64	0.382	0.403	0.411	0.393
65+	0.416	0.371	0.352	0.400
East Marmara				
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 household 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

4. ESTIMATION RESULTS

This section reports regression results. All regressions are Ordinary Least Square estimations. Standard errors are robust to heteroskedasticity and clustered at the 60 region-age level. First, we focus on the results using the Gini coefficient as the measure for income inequality and Relative Income Ratio as the indicator for relative income position of households. Estimates based on other measures show similar patterns and are reported in Table 15. Table 11 reports the results of 5 regressions where the dependent variable is total household expenditure. We control for family income, age of household's head, family size, average income of the reference group, region-age group, and year fixed effects in these regressions. The results strongly support the hypothesis that relative income is an important determinant of household consumer behaviour 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 the total consumption rate, meaning that the lower ranked households are spending a higher proportion of their net income on consumption to 'keep up with the Joneses'. In the meantime, consistent with the theory of permanent income, permanent income has a significant effect on consumption rate. The results in first three columns of Table 15 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%, consumption rises by 0.643%, which implies that the average propensity to consume declines by 0.357%. The coefficient for Rank has a statistically significant negative impact 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, 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 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 3.45%.

In order to see the impact of households' debt status on consumption, we use two dummies showing if households hold mortgage credit (*mortgage holder*) and if households have any debt (both mortgage and any other consumer debt-*debt holder*). The estimated coefficients for both dummies have positive signs and statistically significant. As remembered from the descriptive tables, almost all segments of the society have consumer credits, so the coefficient for the dummy *"debt holder"* is smaller than *"mortgage holders"*. The only indicator for the debt level the data provides us is the rate of interest payments for mortgage credits to household disposable income[29]. The last column gives the results with this debt variable. The coefficient for the rate of interest payments to income is positive and very large. 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, Deaton RD index is quite high. As suggested explained earlier, Deaton's index for relative deprivation 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 is effective in consumption behavior.

The mainstream literature suggests that education expenditure should be taken as investment instead of consumption (Jin, Li, Wu, 2011). Hence, we run regressions with household expenditure without education expenditure as dependent variable. We consider only families with children between age 3 and 25 but still students because there is generally very little education investment for adults. As can be seen in Table 12, the results are almost same with the results for the total household expenditure as dependent variable.

Then, we run the same regression for education, and conspicuous expenditures (clothing, telephone, car and other expenditures) separately (Table 13 and 14). In the case of education expenditures as dependent variable, education expenditures are strongly affected by inequality in region-age reference group and all relative income indicators. For the conspicuous expenditures coefficient signs stay same whereas the size of the coefficients for Gini and relative income

---

[29] The variable for interest payments on mortgage is not unfortunately very reliable for some years. So using Stata imputation program we imputed interest payments for the households who reported that they have mortgage, but reported any interest payments.

indicator rises (Table 14). Therefore, our results are in line with the relative income hypothesis. We confirm that households in Turkey also have a tendency to spend more on the education and positional goods to compensate for their relatively worse off position in their respective communities -thanks to debt opportunities.

Finally, Table 15 provides the results of the sensitivity analysis for alternative inequality indices. We confirm that the results are not sensitive to chosen indices of income inequality.

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	0.345***	0.345***	0.341***		
	[0.095]	[0.095]	[0.095]		
Log(income)	0.643***	0.643***	0.641***	0.654***	0.631***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.011]
Rank	-0.107***	-0.107***	-0.106***	0.212***	0.0000167***
	[0.025]	[0.025]	[0.025]	[0.037]	[0.000]
Reference Individual Age	-0.00655***	-0.00655***	-0.00630**	-0.00734***	-0.0100***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Reference Individual Education	0.0473***	0.0473***	0.0469***	0.0483***	0.0461***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Debt Holder			0.0136***	0.0123**	0.0144***
			[0.005]	[0.005]	[0.005]
Rate of Mortgage Interest Payment to Income			0.171***	0.173***	0.169***
			[0.055]	[0.054]	[0.054]
Observations	54779	54779	54779	54779	54779
R2	0.522	0.522	0.522	0.523	0.523
adj. R2	0.522	0.522	0.522	0.523	0.523

Note: We control for the year and region in all regressions.

Standard errors are robust to heteroskedasticity and clustering at the region-age group

*** Indicate statistical significance at the 1% level and ** at the 5% level and * at the 10% level.

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	0.313***	0.313***	0.309***		
	[0.093]	[0.093]	[0.093]		
Log(income)	0.631***	0.631***	0.629***	0.641***	0.620***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.011]
Rank	-0.100***	-0.100***	-0.0992***	0.199***	0.0000164***
	[0.025]	[0.025]	[0.025]	[0.037]	[0.000]
Reference Individual Age	-0.00661***	-0.00661***	-0.00637***	-0.00725***	-0.00978***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Reference Individual Education	0.0435***	0.0435***	0.0431***	0.0444***	0.0425***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.002]
Debt Holder			0.0131***	0.0119**	0.0138***
			[0.005]	[0.005]	[0.005]
Rate of Mortgage Interest Payment to Income			0.157***	0.159***	0.155***
			[0.055]	[0.055]	[0.054]
Observations	54779	54779	54779	54779	54779
R2	0.514	0.514	0.514	0.515	0.514
adj. R-sq	0.514	0.514	0.514	0.515	0.514

Note: We control for the year and region in all regressions.

Standard errors are robust to heteroskedasticity and clustering at the region-age group

*** Indicate statistical significance at the 1% level and ** at the 5% level and * at the 10% 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	3.630***	3.630***	3.603***		
	[0.928]	[0.928]	[0.921]		
Log(income)	1.490***	1.490***	1.472***	1.547***	1.282***
	[0.058]	[0.058]	[0.058]	[0.058]	[0.060]
Rank	-1.085***	-1.085***	-1.073***	1.846***	0.0000769**
	[0.128]	[0.128]	[0.129]	[0.179]	[0.000]
Reference Individual Age	-0.0501*	-0.0501*	-0.0477*	-0.0629**	-0.0851***
	[0.028]	[0.028]	[0.027]	[0.024]	[0.027]
Reference Individual Education	0.339***	0.339***	0.336***	0.342***	0.311***
	[0.018]	[0.018]	[0.018]	[0.018]	[0.018]
Debt Holder			0.127***	0.120***	0.146***
			[0.032]	[0.033]	[0.033]
Rate of Mortgage Interest Payment to Income			1.040**	1.067**	1.046**
			[0.423]	[0.445]	[0.447]
Observations	54779	54779	54779	54779	54779
R2	0.179	0.179	0.179	0.18	0.173
adj. R-sq	0.179	0.179	0.179	0.18	0.173

Note: We control for the year and region in all regressions.

Standard errors are robust to heteroskedasticity and clustering at the region-age group

*** Indicate statistical significance at the 1% level and ** at the 5% level and * at the 10% level.

Table 14: 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	0.875***	0.875***	0.869***		
	[0.195]	[0.195]	[0.194]		
Log(income)	0.978***	0.978***	0.973***	1.003***	0.933***
	[0.026]	[0.026]	[0.026]	[0.025]	[0.023]
Rank	-0.283***	-0.283***	-0.280***	0.535***	0.0000296***
	[0.052]	[0.052]	[0.051]	[0.073]	[0.000]
Reference Individual Age	-0.0394***	-0.0394***	-0.0387***	-0.0415***	-0.0481***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.007]
Reference Individual Education	0.0928***	0.0928***	0.0920***	0.0950***	0.0873***
	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]
Debt Holder			0.0353***	0.0325***	0.0392***
			[0.012]	[0.012]	[0.013]
Rate of Mortgage Interest Payment to Income			0.264**	0.270**	0.262**
			[0.122]	[0.124]	[0.123]
Observations	54779	54779	54779	54779	54779
R2	0.326	0.326	0.326	0.327	0.325
adj. R-sq	0.326	0.326	0.326	0.327	0.325

Note: We control for the year and region in all regressions.

Standard errors are robust to heteroskedasticity and clustering at the region-age group

*** Indicate statistical significance at the 1% level and ** at the 5% level and * at the 10% 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	0.341***	0.127***	0.00748**	0.0152
	[0.095]	[0.046]	[0.003]	[0.014]
Log(income)	0.641***	0.641***	0.643***	0.643***
	[0.013]	[0.013]	[0.013]	[0.013]
Rank	-0.106***	-0.105***	-0.110***	-0.108***
	[0.025]	[0.025]	[0.026]	[0.026]
Reference Individual Age	-0.00630**	-0.00783***	-0.00747***	-0.00839***
	[0.002]	[0.002]	[0.003]	[0.003]
Reference Individual Education	0.0469***	0.0469***	0.0468***	0.0468***
	[0.002]	[0.002]	[0.002]	[0.002]
Debt Holder	0.0136***	0.0135***	0.0137***	0.0137***
	[0.005]	[0.005]	[0.005]	[0.005]
Rate of Mortgage Interest Payment to Income	0.171***	0.174***	0.176***	0.176***
	[0.055]	[0.054]	[0.055]	[0.054]
Observations	54779	54779	54779	54779
R2	0.522	0.522	0.522	0.522
adj. R-sq	0.522	0.522	0.522	0.522

Note: We control for the year and region in all regressions.

Standard errors are robust to heteroskedasticity and clustering at the region-age group

*** Indicate statistical significance at the 1% level and ** at the 5% level and * at the 10% level.

5. CONCLUSION

This article examines if relative income and income inequality within reference group affects household consumption for a middle-sized developing country. Using the explanations of consumption behavior based on Relative Income Hypothesis of Duesenberry, we test if consumption level of households in Turkey is affected by their relative position and inequality in the reference group between 2005-2012 by employing cross sectional household level data. We find that household consumption is negatively related to the relative income indicator after controlling for the absolute income, and positively related to the income inequality of the reference group as the literature suggests. As the relative income ratio rises with income, 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 relative income rank and the level of income inequality matters. After we control for 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%. The estimated effect of inequality on consumption becomes stronger when we add more variables to indicate households' position in income distribution relative to reference group. We run two more regressions for education, and conspicuous expenditures (clothing, telephone, car and other expenditures) 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 the positional goods to compensate for their relatively worse off position in their respective communities.

Households in Turkey become 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 shows 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 chosen relative income indicator and income inequality.

6. REFERENCES

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

Agarwal, S., Hadzic, M., and Yildirim, Y. 2015. "Consumption Response to Credit Tightening Policy: Evidence from Turkey" *Available at SSRN 2569584*.

Akay, A., and Martinsson, P. 2011. "Does relative income matter for the very poor? Evidence from rural Ethiopia", *Economics Letters*, *110*(3), 213-215.

Albayrak, Ozlem. 2016. "Quality of Statistical Match of Household Budget Survey and SILC for Turkey", Levy Working Papers

Alpizar, F., Carlsson, F., and Johansson-Stenman, O. 2005. How much do we care about absolute versus relative income and consumption?. *Journal of Economic Behavior and Organization*, *56*(3), 405-421.

Barba, Aldo, and Massimo Pivetti. 2009. "Rising household debt: Its causes and macroeconomic implications—a long-period analysis." *Cambridge Journal of Economics* 33.1: 113-137.

Bunting, David. 2012. "Consumption". in King, J. E. (ed.) *The Elgar Companion to Post Keynesian Economics*, 72-77.

Cardaci, A. (2014). Inequality, household debt and financial instability: an agent-based perspective. *Imk report 99e, income and wealth distribution in Germany: A macro-economic perspective*.

Cömert, Hasan, and Selman Colak. 2014. *The Impacts of the Global Crisis on the Turkish Economy and Policy Responses*. No. 1417. ERC-Economic Research Center, Middle East Technical University.

Crescenzi, Anthony. 2012. Beyond the Keynesian Endpoint: Crushed by Credit and Deceived by Debt--how to Revive the Global Economy. FT Press.

Cynamon, Barry Z., and Steven M. Fazzari (2013a), "The End of Consumer Age" in Cynamon, Barry Z., Steven M. Fazzari, and Mark Setterfield, eds., After the Great Recession: The Struggle for Economic Recovery and Growth. New York: Cambridge University Press, chapter 6, 127-157.

Cynamon, Barry Z., and S. M. Fazzari (2013b), "Inequality and Household Finance during the Consumer Age", Levy Economics Enstitute Working Paper: 752, http://www.levyinstitute.org/pubs/wp_752.pdf

Cynamon, B. Z., and Fazzari, S. M. (2015). Inequality, the Great Recession and slow recovery. *Cambridge Journal of Economics*, bev016.

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

Dos Santos, Paulo L. (2009). "At the heart of the matter: household debt in contemporary banking and the international crisis." *Ekonomiaz* 72.3: 54-77.

Dos Santos, P. L. (2013). A cause for policy concern: The expansion of household credit in middle-income economies. *International Review of Applied Economics*, *27*(3), 316-338.

Duman, A. (2008). Education and income inequality in Turkey: does schooling matter?. *Financial Theory and Practice*, *32*(3), 369-385.

Dupor, Bill, and Wen-Fang Liu. 2003. "Jealousy and equilibrium overconsumption." *The American Economic Review* 93.1: 423-428.

Elgin, C., and Kuzubas, T. U. (2012). Wage-productivity gap in Turkish manufacturing sector. *Iktisat Isletme ve Finans*, *27*(316), 09-31.

Ersoy, Ertan. 2016. "The Chronic Balance of Payments Constraint on Economic Growth in Turkey." Review of Social Studies (RoSS), Vol.3 , No.1,

Frank, Robert H. 2005. "Positional externalities cause large and preventable welfare losses." *The American Economic Review* 95.2: 137-141.

Frank, Robert H., Adam Seth Levine, and Oege Dijk. 2010. "Expenditure cascades." *Social Science*.

 Galbraith, James K. 2012. *Inequality and instability: A study of the world economy just before the great crisis*. Oxford University Press

Glyn, Andrew. 1995. "Social democracy and full employment." *New Left Review* 211: 33.

Goda, Thomas. 2013. "The role of income inequality in crisis theories and in the subprime crisis." *Post Keynesian Economics Study Group Working Paper* 1305.

Gomez-Salvador, Ramon, A. Lojschova and T. Westermann (2011), "Household sector borrowing in the Euro area: A micro data Perspective", European Central Bank, Occasional Paper Series, No: 125, http://www.ecb.europa.eu/pub/pdf/scpops/ecbocp125.pdf

IMF (2006), 'Household Credit Growth in Emerging Market Countries', Chapter 2 in *Global Financial Stability Report: Market Development and Issues*. Washington: International Monetary Fund.

Corneo, Giacomo, and Olivier Jeanne. 1997. "Conspicuous consumption, snobbism and conformism." *Journal of public economics* 66.1: 55-71.

Jin, Ye, Hongbin Li, and Binzhen Wu. 2011. "Income inequality, consumption, and social-status seeking." *Journal of Comparative Economics* 39.2: 191-204.

Kapeller, J., & Schütz, B. (2014). Debt, boom, bust: a theory of Minsky-Veblen cycles. *Journal of Post Keynesian Economics*, *36*(4), 781-814.

Kapeller, J., & Schütz, B. (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* : beu016.

Karaçimen, Elif. 2014b. "Financialization in Turkey: The case of consumer debt." *Journal of Balkan and Near Eastern Studies* 16.2: 161-180.

Karaçimen, Elif. 2015a. "Consumer Credit as an Aspect of Everyday Life of Workers in Developing Countries Evidence from Turkey." *Review of Radical Political Economics* (2015): 0486613415591806.

Kim, Yun, Mark Setterfield, and Yuan Mei. 2013. "A theory of aggregate consumption." *Trinity College of Economics Working Paper*: 13-01.

King, John Edward. 2012. ed. *The Elgar Companion to Post Keynesian Economics*. Edward Elgar Publishing, 2012.

Klein, M. (2015). Inequality and household debt: a panel cointegration analysis. *Empirica*, *42*(2), 391-412.

Kolsuz, G., and Yeldan, A. E. (2013). 1980 Sonrası Türkiye Ekonomisinde Büyümenin Kaynaklarının Ayrıştırılması. *Çalışma Toplum*, *40*(1), 49-66.

Kumhof, M., Rancière, R., & Winant, P. (2015). Inequality, leverage, and crises. *American Economic Review*, *105*(3), 1217-45.

Kumhof, M., C. Lebarz, R. Ranci`ere, A. W. Richter and N. A. Throckmorton (2012) "Income Inequality and Current Account Imbalances", IMF, http://auburn.edu/~awr0007/AWR_files/ICAI.pdf

Kumhof, M. and R. Rancière, (2010), "Leveraging inequality", IMF Quarterly

Finance and Development, December

Lapavitsas, Costas. 2009. "Financialised capitalism: Crisis and financial expropriation." *Historical Materialism* 17.2: 114-148.

Lavoie, Marc. 2012. "Consumer Theory". in King, J. E. (ed.) *The Elgar Companion to Post Keynesian Economics*, 68-72.

Lavoie, Marc, and Engelbert Stockhammer. 2013. "Wage-led growth: Concept, theories and policies." *Wage-led Growth*. Palgrave Macmillan UK

Lucchino, Paolo and S. Morelli (2012), "Inequality, debt and growth", Report for the Resolution Foundation, http://www.resolutionfoundation.org/media/media/downloads/Final_-_Inequality_debt_and_growth.pdf

Mason, Roger. 2000. "The social significance of consumption: James Duesenberry's contribution to consumer theory." *Journal of Economic Issues* 34.3: 553-572.

Ministry of Development, (2017), Development of Domestic Savings and Consumption in Turkey, (In Turkish), 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 on January 2019)

OECD, 2011, Divided We Stand: Why Inequality Keeps Rising, OECD Publishing.

OECD. 2014. "OECD Economic Surveys: Turkey", OECD Publishing. http://dx.doi.org/10.1787/eco_surveys-tur-2014-e

Onaran, Özlem, and Stockhammer, E. (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, Özlem, and Nurhan 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, no. 4: 359–374.

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

Öksüzler, O. (2008). Does education pay off in Turkey? An ordered logit approach.

Oyvat, Cem 2010. "Globalization, wage shares and income distribution in Turkey", Cambridge Journal of Regions, Economy and Society 2010, 1–16 doi:10.1093/cjres/rsq032

Palley, Thomas I. 2010., "The Relative Permanent Income Theory of Consumption: A Synthetic Keynes–Duesenberry–Friedman Model", Review of Political Economy, Volume 22, Number 1, 41–56

Palley, Thomas I. 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, Part Two Recession: The Struggle for Economic Recovery and Growth*, New York: Cambridge University Press, 158-84.

Paskov, Marii, Klarita Gërxhani, and Herman G. van de Werfhorst. 2013. "Income Inequality and Status Anxiety." *Growing Inequality Impacts* 90: 1-46. ([http://www.gini-research.org/system/uploads/546/original/90.pdf- accessed online on 09.20.2016](http://www.gini-research.org/system/uploads/546/original/90.pdf-%20accessed%20online%20on%2009.20.2016))

Perugini, C., Hölscher, J., & Collie, S. (2016). Inequality, credit and financial crises. *Cambridge Journal of Economics*, *40*(1), 227-257.

Setterfield, M. (2012). Real sector imbalances and the Great Recession in: H. Herr, T. Niechoj, C. Thomasberger, A. Truger and T. von Treeck (eds) *From Crisis to Growth? The Challenge of Debt and Imbalances*, Marburg: Metropolis Verlag, 61-80.

Setterfield, M. (2013). Wages, Demand and US Macroeconomic Travails: Diagnosis and Prognosis 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, 158-84.

Stark, O. (2006). Status aspirations, wealth inequality, and economic growth. *Review of Development Economics*, *10*(1), 171-176.

Stockhammer, Engelbert. 2015. Rising inequality as a cause of the present crisis. *Cambridge Journal of Economics*, 39.3: 935-958.

Stockhammer, Engelbert. 2013, Why Have Wage Shares Fallen? An Analysis of the Determinants of Functional Income Distribution, in Lavoie, Marc, and Engelbert Stockhammer. 2013, p. 40-71

Sun, Wenkai and Xianghong Wang. 2013. Do Relative Income and Income Inequality Affect Consumption? Evidence from the Villages of Rural China. Journal of Development Studies, Vol: 49, No:4, 533-546

Tansel, A., & Bodur, F. B. (2012). Wage inequality and returns to education in Turkey: A quantile regression analysis. *Review of Development Economics*, *16*(1), 107-121.

Tunc, Cengiz, and Abdullah 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, Till. 2012. Did inequality cause the U.S. financial crisis?, IMK Working Paper, No. 91

Van Treeck, Till, and Simon Sturn. 2012. *Income inequality as a cause of the Great Recession?: A survey of current debates*. ILO, Conditions of Work and Employment Branch.

Verme, Paolo. 2013. The relative income and relative deprivation hypotheses: a review of the empirical literature. *World Bank Policy Research Working Paper*, (6606).

Wildauer, R., & Stockhammer, E. (2018). Expenditure cascades, low interest Rates, credit deregulation or property booms? Determinants of household Dbt in OECD countries. *Review of Behavioral Economics*, *5*(2).

Wisman, J. D. (2013). Wage stagnation, rising inequality and the financial crisis of 2008. *Cambridge Journal of Economics*, *37*(4), 921-945.

World Bank (2005), "Turkey Joint Poverty Assessment Report", http://www.worldbank.org.tr/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/TURKEYEXTN/0 ,,contentMDK:20697414~pagePK:141137~piPK:141127~theSitePK:361712,00.html

Yeldan, E. 2007. 'Patterns of Adjustment under the Age of Finance: The Case of Turkey as a Peripheral Agent of Neoliberal Globalization', PERI Working Paper 126

Yeldan, E. (2011). *Macroeconomics of growth and employment: the case of Turkey*. International Labor Organization.