

# Durable and nondurable consumption, health and education expenditures over the life-cycle in Turkey

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## Abstract

In this paper, we investigate the life-cycle profiles of household consumption and its components in Turkey using the 2003 Turkish Household Budget Survey. We find that consumption tracks income quite closely over the life-cycle, which contradicts the implication of the life-cycle model. However, the adult-equivalent consumption profile is much flatter. Although this could be interpreted in favor of the life-cycle model, some life-cycle dynamics are still apparent in the adult-equivalent consumption profile. Other major findings are: i) The durable consumption profile of Turkish households peaks at a much later age than those of their counterparts in developed countries. ii) Out-of-pocket health expenditures are quite constant over the life-cycle, which is likely to stem from the Turkish Social Security System. iii) There is substantial difference in education expenditures according to the household head's education, which suggests that children with less-educated parents might be mired in a low human-capital trap.

*Key words:* Household consumption, components of consumption, life-cycle model, Turkey  
*JEL classification:* C34, D12, I14, I24

## 1. Introduction

In this paper, we investigate the life-cycle profiles of household consumption and its components in Turkey using the 2003 Turkish Household Budget Survey (HBS).<sup>1</sup> In this analysis, we decompose consumption into four components: durable

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<sup>1</sup> We choose this particular year because the sample size is much larger in this year.

consumption, nondurable consumption, education expenditures, and health expenditures. This decomposition of consumption is important because the effects of the expenditures on durable commodities and on services such as health care and education last in time-unlike those of nondurables. These durable commodities and services could be considered as saving.<sup>2</sup> We carry out our analyses for different education groups in order to control for the relationship between the variables of interest and permanent income. Since household consumption is the total consumption of the individuals living in the same household, we also investigate the evolution of the household structure over the life-cycle of the household head.<sup>3</sup>

Our analysis of income and consumption profiles over the life-cycle, corrected for the changes in household structure over the life-cycle, also allows us to test certain implications of the life-cycle model (Modigliani and Brumberg, 1954) in the Turkish context. According to this model, individuals smooth consumption by keeping their marginal utility of consumption constant over their life-cycle—which implies that their consumption levels are approximately the same over time. Permanent income theory, developed by Friedman (1957), asserts that consumption depends on the lifetime permanent income and is not influenced by temporary income shocks. Therefore, this theory also implies that consumption does not track current income over the life-cycle.<sup>4</sup>

The crucial link between savings and investment, as well as economic growth, is well-known. In this respect understanding the behavior of consumption (and also saving) is very important for all but particularly less developed countries. Moreover, insufficient amount of savings aggravate the current account deficit and therefore increase vulnerability of the economy. If deficit is financed by short-term capital inflows, as in the case of Turkey, a sudden and sharp outflow of the capital applies depreciative pressure on the national currency, which hampers growth and subsequent employment. From a micro perspective, due to lack of efficient credit markets in developing countries, household savings are the most important tool to smooth consumption. Insufficient amount of savings could also lead households to postpone their investments in human capital, which jeopardizes their prospects of higher future income.

<sup>2</sup> In addition, they are also important within the life-cycle model of consumption framework since durability brings about intertemporal non-separability in the utility function (Attanasio, 1994).

<sup>3</sup> The member of the household who is assigned as the household head is provided in the data. This person is the member of the household who has the highest responsibility in household income and consumption.

<sup>4</sup> If permanent income is taken to be annuity value of life-time resources, the life-cycle model and permanent income model are very close. In the literature many names are given to those models but the most common is permanent income hypothesis model (PIH). Most of the recent studies use the rational expectations version of permanent income model, which is first used by Hall (1978).

Most of the earlier empirical studies investigating consumption in developing countries, including Turkey, employ macro data (see, for example, Haque and Montiel, 1989; Corbo and Schmidt-Hebbel, 1991; Loayza et al., 2000; Özmen and Yavan, 1999; Akçin and Alper, 1999). However, using micro data could be more appropriate because the consumption theory applies to an individual or a household. Moreover, with micro data, it is possible to control for individual characteristics, whereas using aggregate data in a representative agent framework destroys all individual personality. Despite these advantages, in developing countries, little afford is paid to understanding the saving and consumption behavior of households mainly due to the lack of surveys.<sup>5</sup>

Few studies that employ micro data are carried out for Turkey as well. Van Rijckeghem and Ucer (2008) analyze the determinants of savings and how saving behavior change over time in Turkey using the Household Budget Surveys. Using the same surveys, Yükseler and Türkcan (2008) investigate the changes in different types of consumption in various income quartiles. Duygan (2005) finds that the probability of being unemployed has a negative effect on the durable consumption using 1994 Household Budget Survey. In another study, using the same survey, Duygan (2006) analyzes the impact of 1994 economic crises on the consumption patterns across various socio-economic groups. By using 1994 and 2002 Household Budget Surveys, Duygan and Güner (2007) examine income and consumption inequality in Turkey. Using the 2003-2008 waves of same data set, Aktaş et al. (2012) investigate the structural determinants of household saving for alternative saving definitions and find significant effects of the dependency ratio, female labor force participation, and self-employment. Finally, Ceritoglu (2013b) find that labor income risk is one of the main determinants of household saving using the 2003-2009 Household Budget Surveys.

The contributions of this paper are as follows. First, there is no other study that analyzes household consumption and its components over the life-cycle in Turkey, despite the importance of the issue. Second, by examining the change in the household structure over the life-cycle along with consumption, we establish important links between household structure and household consumption as well as its components. Third, the analysis is conducted by the education of the household head. By doing so, we not only control for the effect of permanent income but also understand the level of inequality in different components of consumption by education.

We find that the aggregate household consumption exhibits a hump shape; however, this hump is not as pronounced as those reported for several developed countries. Moreover, conditional on educational attainment, the household

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<sup>5</sup> Some exceptions are Attanasio and Szekely (2000) and Marku (2004).

consumption profiles becomes even flatter over the life-cycle. An important reason for this fact is that, multiple generations of families live in the same household in Turkey, particularly among the low-income groups, which helps them to smooth income (consumption). The durable consumption profile of Turkish households peaks at much later ages than those of their counterparts in developed countries. While the share of health expenditures in total consumption slightly increases at the end of the life-cycle, its amount stays flat over the life-cycle. This is likely to stem from the good coverage of the Turkish Social Security System. There is a substantial gap in education expenditures across education groups. Since the less-educated groups spend less for education, they might be mired in a low-income trap.

We find that consumption tracks income quite closely over the life-cycle, which could be considered as an indicator of the failure of the life-cycle model. However, the adult-equivalent consumption profiles are much flatter. Although this could be interpreted in favor of the life-cycle model, some life-cycle dynamics are still apparent in the adult-equivalent consumption profiles, such as an increase until retirement and a decline with retirement. The presence of liquidity constraints and precautionary-saving motives could be the reasons for this fact. Finally, our regression analyses of the correlates of the fractions of expenditures allocated to durable goods, education, and health reveal that expenditures on durable goods and education are much more responsive to increases in household income than expenditures on health are.

The rest of the study is organized as follows. In section 2, the data and method are introduced. Section 3 presents the life-cycle analyses of household consumption and its components. Section 4 concludes the paper.

## 2. Data and method

We use the 2003 Household Budget Survey (HBS), which contains detailed information on household income and its composition, as well as on household composition and household's socioeconomic characteristics. HBS is representative of the Turkish resident population. Nonetheless, the institutionalized population is excluded from the surveys. Surveys cover urban (population with 20,001 people and above) and rural (population with fewer than 20001 people) households. The sample unit is a household that comprises one person living alone or a group of people living in the same dwelling who depend on pooled income for major expenses. In conducting the survey, households are visited eight times during the interview month. Non-respondents are replaced by households with similar characteristics.

Household expenditures are recorded to a diary by a household member during the interview month. In addition to that diary, members above the age fourteen are given an individual expenditure diary to record individual expenditures

on a daily basis. Consumption expenditures include not only the purchases of goods and services but also the consumption of the goods derived from the economic activities of household members and the expenditures on the gifts given to the other households or institutions. In constructing the consumption data set, the consumption of goods and services are classified according to the classification of individual consumption by purpose (COICOP)<sup>6</sup>. This classification captures durable goods as well. In calculating the household total monthly consumption expenditures variable, which is given in household data set, the expenditures on durable goods are included by dividing the durable expenditures by 12. The yearly consumption expenditures are obtained by multiplying the monthly values with 12. As mentioned above, we decompose consumption into four components: nondurable consumption, durable consumption, education expenditures, and health expenditures. Durable consumption includes the expenditures on furnishings, jewelry, vehicles, major home appliances (white goods), and such. Health expenditures capture all out of pocket health expenditures such as medical fees, pharmacy spending, and private health insurance premiums. Money spent on all levels of educational institutions and writing materials are included in education expenditures. Finally, all types of nondurable goods and semi-durables such as clothes are considered as nondurables.

Our methodology is based on graphical analysis: we plot the life-cycle profiles of household consumption and its components. In order to obtain pure life-cycle profiles, one would need panel data that follow individuals for a long period of time. However, since such data are not available in Turkey, we rely on cross-sectional data – which certainly have some limitations. By using a single cross-section, we follow the variable of interest at different ages for individuals who are born at different dates and, accordingly, face different lifetime profiles of income, education and so forth due to the secular time trends in these variables. The shape and level of life-cycle profiles would be affected from these secular time trends. For instance, people who are born later would have higher lifetime earnings in the case of a positive real wage growth. This would make the cross-sectional income trajectories low among the old and high among the young household heads and, consequently, result in a clockwise rotation of the true age profile.

As a partial solution to this problem, we conduct our life-cycle analyses conditional on the educational attainment of household heads. This allows us to at

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<sup>6</sup> The classification is as follows: 1. Food, beverages and tobacco, 2. Alcoholic beverages, tobacco and narcotics, 3. Clothing and footwear, 4. Housing, water, electricity, gas and other fuels, 5. Furnishings, household equipment and routine households maintenance, 6. Health, 7. Transport, 8. Communication, 9. Recreation and culture, 10. Education, 11. Restaurants and hotels, 12. Miscellaneous goods and services.

least avoid the problems associated with comparing birth-cohorts with very different average educational attainment by examining the life-cycle profiles conditional on educational attainment. Moreover, since educational attainment is a good indicator of permanent income, conducting the analysis conditional on educational attainment allows us to examine life-cycle income profiles separately for subpopulations with different permanent income levels. Towards that end, we divide the sample into four groups based on the educational attainment of the household head: less than primary education, primary education, high school, and university<sup>7</sup>.

In order to maintain adequate numbers of observations in each cell, we group ages in five-year intervals while constructing the life-cycle profiles. The number of observations in each cell by age and education is given in Table 1. Except for the oldest age-groups among the university graduates and the youngest age-group among the less than primary graduates, these numbers are higher than 100. In constructing life-cycle consumption profiles, we use mean values. Our calculations employ the sampling weights provided in the survey, which are proportional to the reciprocal of the probability of each household being included in the survey.

**Table 1**  
Number of Observations by Age-Group and Educational Attainment of the Household Head

Age group	Less than Primary School	Primary	High school	University	Total
25-29	44	736	783	215	1778
30-34	106	1383	1172	341	3002
35-39	147	1854	1209	380	3590
40-44	207	1970	1262	351	3790
45-49	224	1698	859	372	3153
50-54	311	1623	660	322	2916
55-59	324	1107	385	183	1999
60-64	465	932	201	96	1694
65-69	475	761	136	57	1429

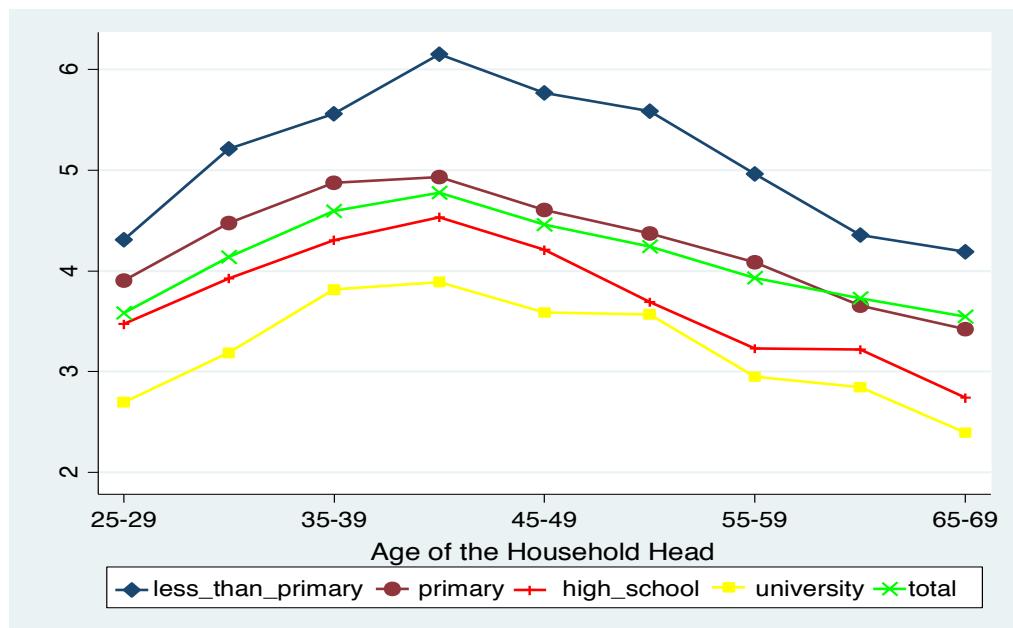
<sup>7</sup> The 1997 education reform increased the years of compulsory schooling from 5 to 8 years. However, since we use the 2003 data and restrict the minimum age of the household head as 25, the household heads in our sample are not affected by this policy and, thus, the duration of schooling for the primary school graduates in our sample is five.

### 3. Analyses of household consumption and its components

Since the consumption of a household depends on the number of people living in that household, we first derive the life-cycle profile of household size by educational attainment of the household head (Figure 1).

**Figure 1**

Number of Household Members by Educational Attainment of the Household Head (2003)



According to Figure 1, household size presents a hump-shaped profile that peaks at ages 40 to 44 regardless of the household head's education. Moreover, family size is inversely related to education. At all ages, household heads with the lowest education have the largest family size. For 40- to 44-year-olds, the mean household size of the least educated group is 1.58 times as much as that of university graduates. The hump shape in the profile of household size over the life-cycle for Turkey is not as pronounced as those for the US (Attanasio and Weber, 1995), Norway (Halvorsen, 2003), and Iran (Marku, 2004).<sup>8</sup> A possible reason for this is

<sup>8</sup> While the life-cycle profile of household size for Turkish households is similar to the one for Mexico, it is different from that of Thailand which exhibits a very sharp increase until the middle ages and stays relatively flat thereafter (Attanasio and Szekely, 2000). Moreover, the family size of Turkish

that multiple generations of families live together in the same household. Cilaşun and Kirdar (2013) report that almost 20% of the household heads younger than 35 live with their parents and more than 30% of the household heads older than 50 live either with their married children or with their parents.

Figure 2 displays aggregate household consumption, aggregate household income,<sup>9</sup> and aggregate household adult equivalent consumption<sup>10</sup>. Aggregate consumption exhibits a hump shape which peaks at ages 50 to 54. However, this hump is not as pronounced as the ones for the US (Attanasio, 1994), Norway (Halvorsen, 2003), and Iran (Marku, 2004). Another important feature of the figure is that household income and household consumption move parallel over the life cycle. Carroll and Summers (1991) interpret the similarity between income and consumption as evidence against the life-cycle theory<sup>11</sup>. However, the effects of household composition and labor supply decision, both of which have an influence on the life-cycle dynamics of household income, are ignored in these graphs. As shown in Figure 1, household size—which obviously affects consumption patterns of households—also follows a similar hump-shaped curve. Therefore, the similarity between income and consumption profiles, which could be interpreted as a rejection of the life-cycle model, could result from the dynamics of household composition<sup>12</sup>. In this respect, we construct the adult-equivalent consumption profile to test the life-cycle model, which is displayed in Figure 2. As can be seen from this profile, although some life-cycle dynamics are still apparent (such as an increase until retirement and decline with retirement), this life-cycle profile is much flatter—

households is higher compared to Thailand and Taiwan (Attanasio and Szekely, 2000) and lower compared to Iran (Marku, 2004).

<sup>9</sup> Aggregate household income is calculated as the sum of disposable incomes of individuals' within a household (labor income (including wages, salaries, overtime bonuses, fringe benefits and payments in kind, agricultural and self-employed income and income from copyrights), capital and property income (including rent, interest income and dividends) and transfers (including tax refunds, pension benefits, unemployment and illness compensation, student grants, alimony, remittances and payments in kind)) plus imputed rent minus expenditures other than consumption (taxes such as property tax, customs, fines due to late payment, traffic fines, alimony and alms prescribed by Islam) and regular financial assistance given by households to institutions and other households.

<sup>10</sup> Adult equivalent consumption profile is constructed by following the OECD modified scale, which assigns a value of 1 to the household head, 0.5 to each additional adult member (individuals older than age 13), and 0.3 to each child (individuals younger than age 14).

<sup>11</sup> Ceritoğlu (2013a) finds a statistically significant relationship between consumption growth and expected income changes and interprets this result as a failure of the strict version of the rational-expectations permanent-income hypothesis in the Turkish context.

<sup>12</sup> The empirical failure of the life-cycle model is often attributed to the presence of liquidity constraints and precautionary savings. The lack of efficient financial markets in Turkey leads to limited borrowing opportunities. Moreover, the number of people who do not have any social security, and therefore who could be saving with precautionary motives, is high in Turkey. These facts could explain why consumption appears to somewhat track income over the life cycle even after controlling for household size.

which lends more support for the life-cycle model<sup>13</sup>. Similar evidence is reported by Attanasio (1994) and Villaverde and Krueger (2004) for the US, Banks and Blundell (1994) and Attanasio and Browning (1995) for the UK and Attanasio and Szekely (2000) for Peru, Mexico and Thailand.

**Figure 2**  
Mean Household Aggregate Income, Consumption and Adult Equivalent Consumption (2003, TL)

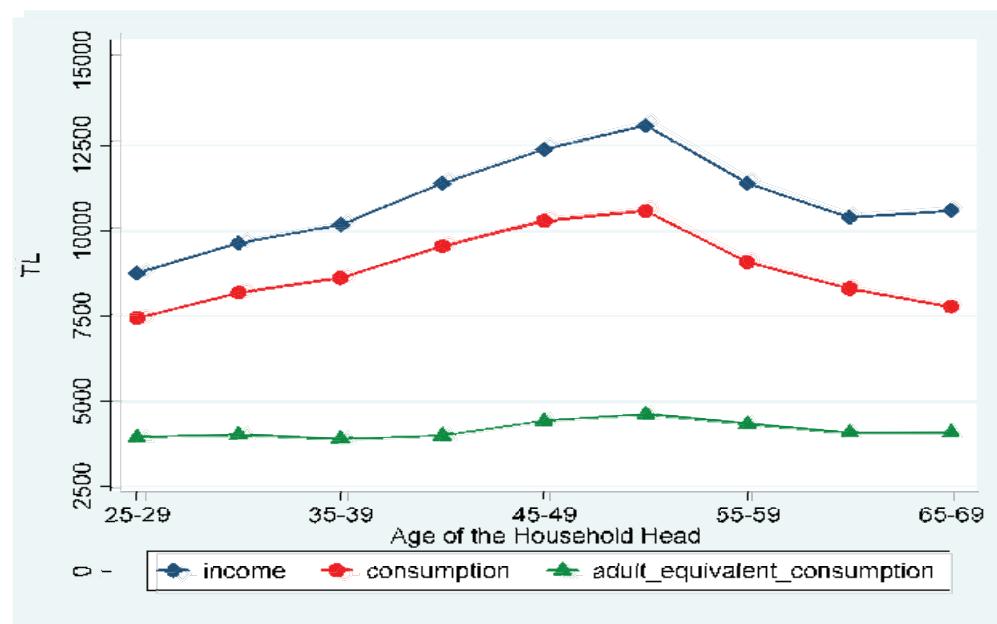


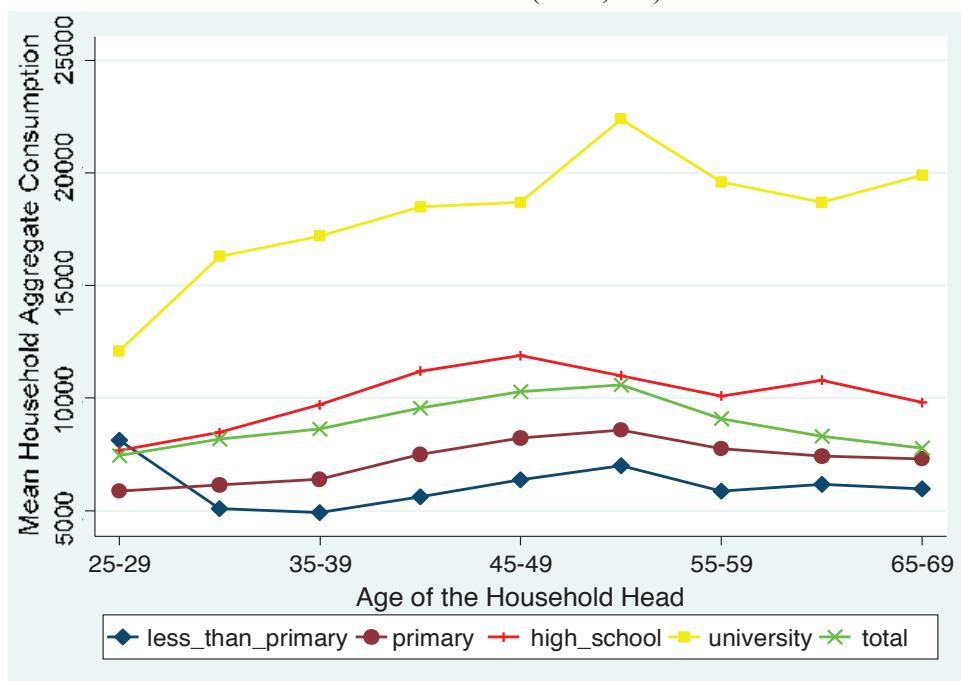
Figure 3 illustrates the mean household consumption by age and education. For the two lower education groups, the mean consumption profiles display an increasing trend at first, and stay relatively constant afterwards.<sup>14</sup> On the other hand, contrary to the findings for several developed countries (see, e.g., Poterba [1994]), we find an increasing profile for university graduates. However, since the share of the university graduates is low among the older household heads, the profile for the total population still exhibits a hump shape. Consumption profiles of all education

<sup>13</sup> For instance, while the consumption profile increases 42% until the peak point, adult equivalent consumption profile exhibits only a 17% increase.

<sup>14</sup> The high consumption of the less than primary group at ages 25-29 is the effect of an outlier. Since the number of young people who do not complete the primary education is low due to legal obligations, this group is more sensitive to the presence of outliers.

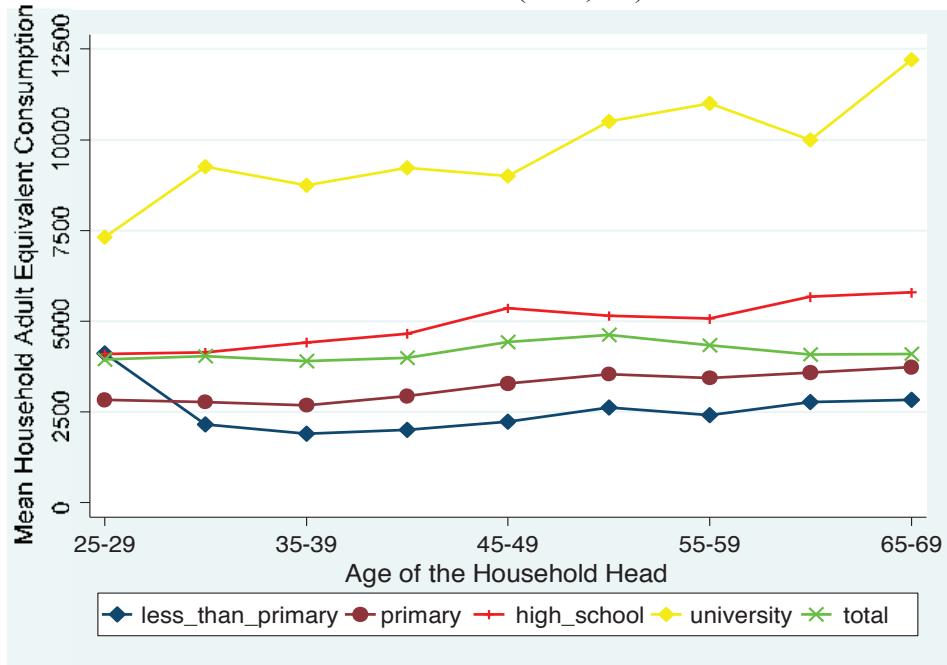
groups are quite familiar with their income profiles (see Cilasun and Kirdar, 2013). In this respect, household consumption is expected to be affected from the factors that affect the household income such as the fact that different generations of families live in the same household. This fact is more common for lower education groups since in the presence of efficient credit markets, they could only smooth their income (consumption) in this way. The relatively flat pattern at the end of the life-cycle for the two least educated groups could be an outcome of this behavior. Finally, as can be seen in Figure 3, consumption inequality between the high and lower education groups is increasing with the age of the household head even though the number of people living in the same household is lower for the university graduates. While the consumption of university graduates is 1.5 times as much as that of high school graduates at the beginning of the life-cycle, the former becomes more than twice as much as the latter at the end of the life-cycle.

**Figure 3**  
Mean Household Aggregate Consumption by Educational Attainment of the Household Head (2003, TL)



**Figure 4**

Mean Household Adult Equivalent Consumption by Educational Attainment of the Household Head (2003, TL)



As mentioned above, since the household structure in Turkey exhibits life-cycle properties, we drive the adult-equivalent consumption profiles (Figure 4). Unlike for the consumption profiles, adult-equivalent consumption profiles of all education groups increase with age. In other words, their weak hump shapes disappear and the profiles become smoother—as the life-cycle theory predicts—when we control for the household structure. The gap between the profiles of different education groups increases with education; in other words, consumption inequality between education groups increases with education.

### *3.1 Components of consumption*

We decompose consumption into four components: nondurables, durables, health expenditures, and education expenditures. Nondurable consumption excludes all expenditures on health, education, and durables but not semi-durables such as clothes. Figure 4 plots the mean household nondurable consumption against the age of the household head by education groups and for the total sample. Since the share of nondurables in aggregate consumption is very high, its profile is very

similar to that of aggregate consumption<sup>15</sup>. This similarity is also evident in Attanasio (1994) for the US, Banks and Blundell (1994) for the UK and Burbidge and Davies (1994) for Canada. For the total sample, the profile exhibits a weak hump shape, with a 40% increase until ages 50 to 54 and a 27% decrease from these ages to the end of the life-cycle. Except for the university graduates, the profiles of the education groups increases until the middle ages and stays relatively flat thereafter. The evolution of household structure could lead to that sort of profiles. The profile for university graduates exhibits an increasing trend with age.

**Figure 5**  
Mean Household Nondurable Expenditure by Educational Attainment of the Household Head (2003, TL)

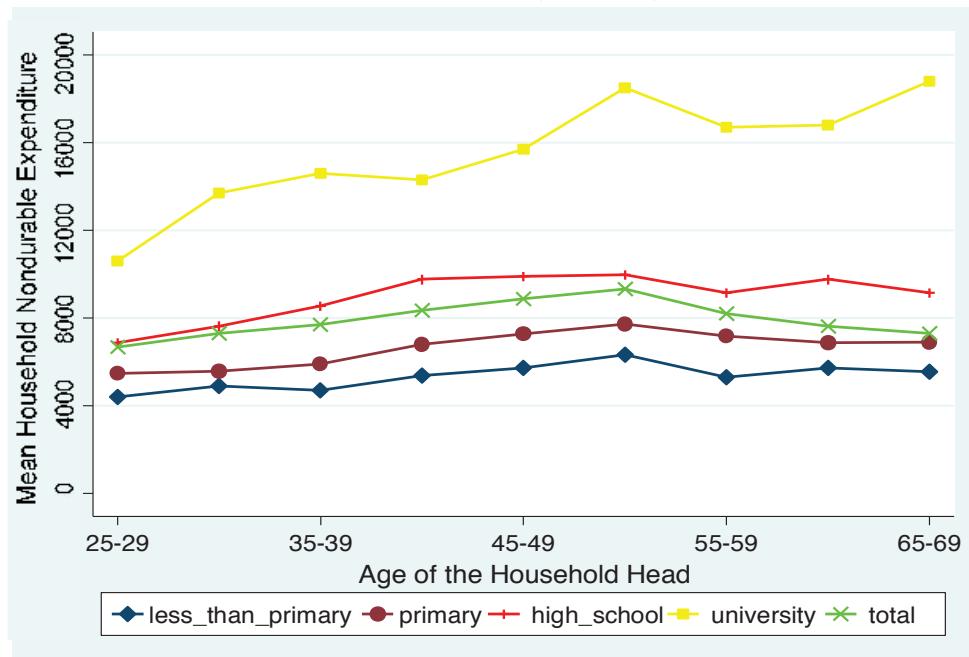


Figure 6 presents the mean household durable consumption by age and education. Unlike the corresponding figures in studies for developed countries (see, for instance, Burbidge and Davies, 1994 for Canada and Villaverde and Krueger, 2004 for US)—which exhibit a leftward skewed profile—the durable consumption profile of Turkish households presents a hump shape. In other words, compared to

<sup>15</sup> The share of durable consumption in total consumption is around 90% of the total consumption for all age and education groups (see Table A1).

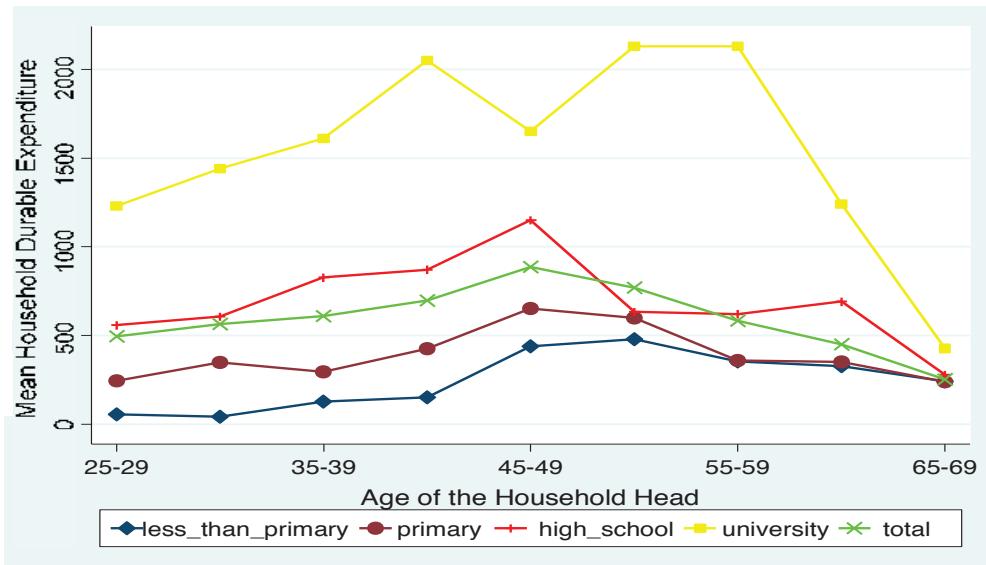
their western counterparts, Turkish households do their durable consumption later in their life-cycle. For the two least educated groups, the durable consumption presents a flat pattern until the age group 35-39. A number of factors would contribute to the late hump in Turkey. First, due to lower average household income in Turkey, it takes a longer time for the average household to accumulate wealth to finance the purchase of durable goods. Second, as mentioned before, since the fraction of young individuals living with their families is high, they do not need durable goods as their parents already have them<sup>16</sup>. Unlike for aggregate consumption and nondurable consumption, the profile of university graduates exhibits a sharp decline at the end of the life-cycle. The short life expectancy of the oldest households makes them to prefer not to buy durables, which is evident from the graph as a decline for all the profiles at the end of the life-cycle. Figure 6 also shows that durable consumption increases with education. Consumption inequality between education groups is more significant for durable consumption than for aggregate and nondurable consumptions, except for that for older household heads. For instance, for the group aged 45-49 years, compared to the mean household nondurable consumption of the group with less than primary education, that of primary-school graduates is 1.27 times as high, that of high-school graduates is 1.72 times as high, and that of university graduates is 2.73 times as high. On the other hand, the similar comparison of the mean household durable consumption for the same age group is as follows: compared to the consumption of the group with less than primary education, that of primary-school graduates is 1.49 times as high, that of high-school graduates is 2.63 times as high, and that of university graduates is 3.77 times as high.

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<sup>16</sup> The fraction of individuals who live with their parents is only 70% for the age group 25-35. For the same age group, if we focus on men (who are more frequently assigned as the household head in Turkey) we see that 41 percent of men live with their families. Moreover, in terms of household heads, as mentioned above, almost 20% of the household heads younger than 35 live with their parents.

**Figure 6**

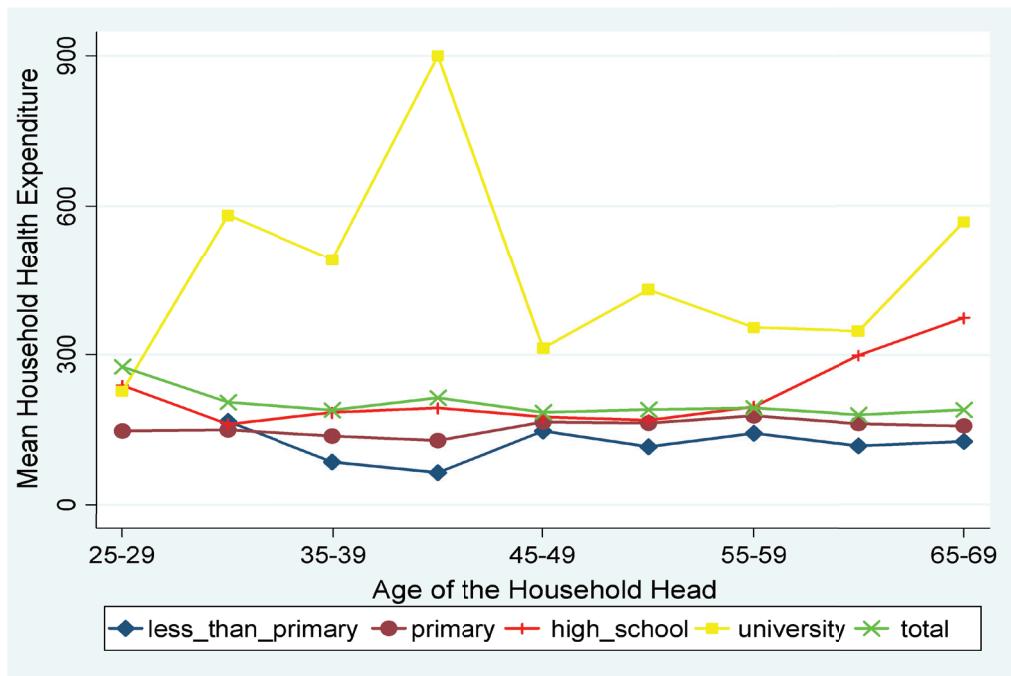
Mean Household Durable Expenditure by Educational Attainment of the Household Head (2003, TL)



Expenditures on education and health could be considered as investment and saving because their benefits are received in long term. The profile for the mean household health expenditures (out of pocket) are presented in Figure 7. One might expect a hump-shaped profile because household health expenditures depend on the number of people in the household. On the other hand, since the probability of old people getting sick is higher, an increasing profile with age could also be expected as the case in the US (Attanasio, 1994). However, the mean health expenditures profile for Turkey exhibits a flat pattern over the life-cycle. This could result from the health coverage of the Turkish Social Security System. Health expenditure profiles are close to each other for the lowest three education groups. However, as for other components of income, university graduates spend significantly more than other education groups. (Except for the first age group, the mean health expenditure of the university graduates is more than 1.5 times as much as that of high school graduates throughout the life-cycle.) In Turkey, private hospitals generally offer better quality service than public hospitals and therefore higher educated households could prefer to go to these hospitals. Moreover, higher educated households could choose to participate in private health insurance programs. The higher level of the health expenditures of university graduates could be as a result of these facts.

**Figure 7**

Mean Household Health Expenditure by Educational Attainment of the Household Head (2003, TL)<sup>17</sup>

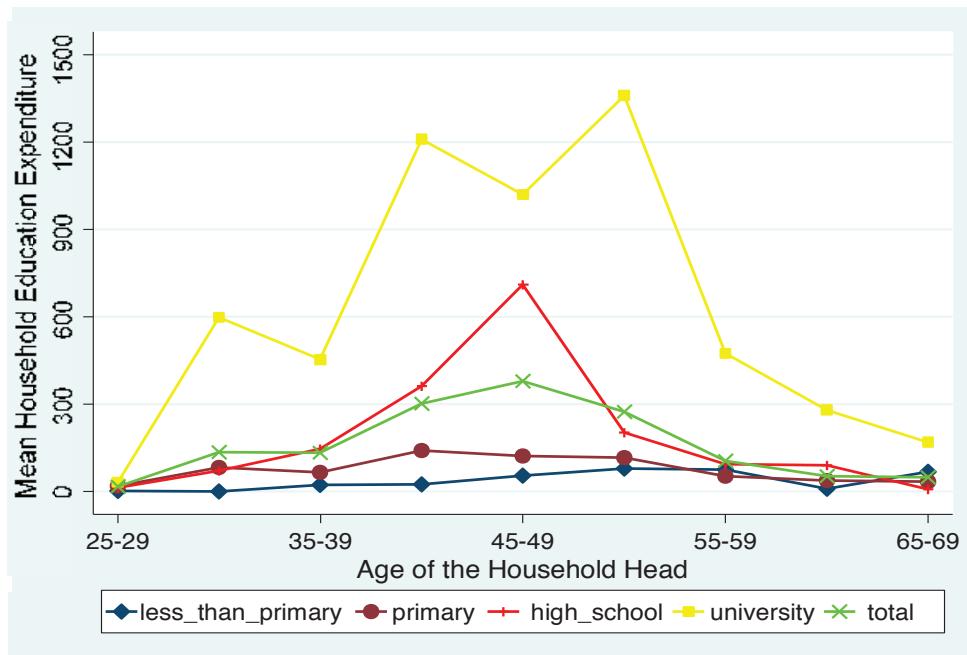


The final component of consumption that we investigate is education expenditures. Figure 8 displays the mean household education expenditure by age and education. The shape of the profile for the total sample, as expected, is correlated with the average number of children: the profile increases until ages 45-49 and declines afterwards. Although education is freely provided by the government in Turkey, households who have school-age children would still spend on books, writing materials and so forth. Moreover, the existence of testing systems in the transition to higher educational levels forces households to spend on preparatory classes and private lessons. The observed hump-shape in the education expenditure profile could stem from these facts. For high school and university graduates, the profiles exhibit hump shapes as well. However, the profile of university graduates peaks later most probably due to the fact that they prefer to

<sup>17</sup> The health expenditure of below primary group for the 25-29 age group is very high (3680 TL) and the existence of this observation alters the visibility of the shapes of profiles. In order to overcome this problem, we have excluded this observation from the graph.

have children later for the career reasons<sup>18</sup>. The two lowest education groups have relatively flat profiles. The amount of education expenditures is around zero over the life-cycle for the below primary group and it is just a little higher for primary school graduates. Financial aid from the government, NGOs, and/or relatives would help these households in keeping their educational expenditures low. The gap between high school graduates and primary school graduates is higher than it is in all other components of income.<sup>19</sup> Since the less-educated groups spend less on their children's education, they might be mired in a low-income trap.

**Figure 8**  
Mean Household Education Expenditure by Educational Attainment of the Household Head (2003, TL)



<sup>18</sup> The average age of the children of household heads aged 30-35 by education is as follows: 7.33 for the group with a schooling level of primary education or lower, 6.48 for primary school graduates, 5.69 for high school graduates and 4.23 for university graduates.

<sup>19</sup> The mean education expenditure of 45- to 49-year-old high school graduates is 5.8 times as much as that of primary school graduates of the same age group and 12.9 times as much as that of the group with less primary education.

Table A1 in the Appendix presents the components of consumption as the shares of total consumption. The share of nondurables is very high (around 90%) and displays a flat pattern over the life cycle. The profile for the share of durables exhibits a hump a shape with a peak at 45-49. People accumulate assets and buy durables over time. Moreover, this age group corresponds to the retirement age in Turkey. People seem to prefer to buy durables with their post-retirement gratuity. Although the share of durables is higher than the education and health expenditures, it is still very low (at its peak it is around 8.5%). The share of health expenditure stays relatively flat over the life-cycle. Still, it exhibits a slight increase at the end of the life cycle, though the amount of spending did not change. Finally, the share of education expenditure has a hump shape as expected. It steadily increases until the age 45-49 (with the starting of the children to the school), sharply declines until 55-59 and steadily declines afterward.

### *3.2 Regression analyses*

In this section, we examine the correlates of expenditures on durable goods, education, and health. For this purpose, we define three dependent variables: the fraction of household expenditures that are allocated on durable goods, the fraction on health, and the fraction on education. Since the distribution of each one of these three variables has a mass at zero-as a significant fraction of households spend zero liras- we use Tobit analysis as our estimation method, which allows for such a mass. The regression results are given in Appendix Table A2. The sample includes 25,377 households with a household head aged 25 or above. The control variables in these regressions can be grouped into three categories: household characteristics, geographical controls, and household head characteristics.

In terms of the age structure of household members, we find that each household member aged 6 to 14 increases the fraction of expenditures on education by 0.020, and each member aged 15 to 24 increases it by 0.028. The fraction of expenditures on health increases, not surprisingly, in household members aged above 65; each such member increases the fraction of health expenditures by 0.014. We find that the expenditures on durable goods and education are more sensitive to household income than the expenditures on health. A doubling of household income increases the fraction of expenditures on durable goods by 0.065 and the fraction on education by 0.069, whereas it increases the fraction on health only by 0.015.

In terms of location of residence, we find that households in urban areas allocate a higher fraction of their expenditures on durable goods and education. In fact, the fraction of expenditures on education is 0.038 higher in urban areas than in rural areas. Households in the Istanbul Region place a lower fraction of their expenditures on durable goods than households in all other regions of the country. Similarly, they also place a lower fraction of their expenditures on education than

households in all other regions but the Central Anatolia, the Northeast Anatolia, the Central East Anatolia, and the Southeast Anatolia Regions (all of which are in eastern Turkey); in fact, households in the Southeast Anatolia Region place an even lower fraction of their expenditures on education than households in the Istanbul Region. On the contrary, households in the Istanbul Region allocate a larger fraction of their expenditures on health than households in all other regions but the West Marmara Region.

In terms of household-head characteristics, we find that holding a green card and having no insurance are both positively associated with health expenditures. While the latter is expected, the former implies that green card coverage of health expenses might not be sufficient—given that these people spend more on health than people with mandatory health insurance. With respect to marital status, we find that household heads who are married or were formerly married (widowed, divorced, separated) allocate a higher fraction of their expenditures on durable goods, education, and health than single household-heads. In terms of education, households with a more educated head spend more on education. For instance, compared to households with a head whose education level is lower than primary school, the fraction of education expenditures is 0.037 higher for households with a high-school-graduate head and 0.058 higher for households with a college-graduate head. More educated household heads spend less on health, presumably because they are more likely to have health insurance. Finally, age dummies show that the fraction of expenditures on durable goods decreases by age, as expected. Compared to 25- to 29-year-old household heads, there is evidence for less spending on durable goods for all household heads above the age of 40. The age-profile of the fraction of expenditures on education also exhibits a declining trend by age—although at first it increases by age until the mid-40s.

#### 4. Conclusion

This study examines the life-cycle profiles of household consumption and its components by the educational attainment of the household head, using micro data from the 2003 Turkish Household Budget Survey. We also examine the household structure over the life-cycle because household consumption and its evolution over the life-cycle are strongly associated with household structure.

Aggregate household consumption exhibits a hump shape but this hump is not as pronounced as the ones for the US (Attanasio, 1994), Norway (Halvorsen, 2003), and Iran (Marku, 2004). Conditional on educational attainment, household consumption profiles are even flatter over the life-cycle. In fact, for household heads with university degrees, the consumption profile keeps rising even at later ages. Since it is common that multiple generations of families live together in the

same household in Turkey, particularly among the low-income groups, there are no significant drops in the household consumption at the two ends of the life-cycle.

Since the share of nondurables in aggregate consumption is very high (around 90%), its profile for the total sample and education groups are very similar to those of aggregate consumption. Unlike the finding in developed-country studies, which reveal a left-skewed profile, the durable consumption profile of Turkish households presents a hump shape that peaks at ages 45–54. For household heads with primary or lower education, durable consumption presents a flat pattern until mid-40s, possibly due to insufficient financial resources and/or cohabitation with parents that eliminates the need for durable goods.

While the share of health expenditures in total consumption slightly increases at the end of the life-cycle, overall it stays flat over the life-cycle. Presumably, this results from the good coverage of the Turkish Social Security System. As expected, education expenditures present a hump-shaped profile for the total sample, as well as for high school and university graduates. The peak occurs when the household head is aged 45–49, that is, when the number of school-age children is the highest. The education expenditure profiles for household heads with primary or lower education are flatter and at a significantly lower level—which implies less intergenerational mobility in terms of educational attainment.

Consumption tracks income quite closely over the life cycle and this could be considered as an indicator of the failure of the life-cycle model. However, once we derive the per-adult-equivalent consumption over the life cycle, we find a much flatter profile. While this could be interpreted as empirical support for the life-cycle model, some life-cycle dynamics are still apparent in the adult-equivalent consumption profile such as an increase until retirement and decline with retirement. Liquidity constraints and precautionary savings could explain this phenomenon.

## Appendix

**Table A1**

Shares of Components of Consumption in Aggregate Consumption by Educational Attainment of the Household Head (2003)

Education	Type of Expenditure	Age Groups								
		25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
Less than Primary	Nondurable	0.541	0.961	0.953	0.957	0.900	0.903	0.903	0.927	0.928
	Durable	0.007	0.008	0.026	0.027	0.069	0.068	0.060	0.053	0.040
	Health	0.453	0.033	0.017	0.011	0.023	0.017	0.024	0.019	0.021
	Education	0.000	0.000	0.004	0.004	0.009	0.011	0.013	0.002	0.011
Primary	Nondurable	0.930	0.906	0.922	0.907	0.886	0.898	0.924	0.926	0.943
	Durable	0.042	0.056	0.046	0.057	0.079	0.070	0.046	0.047	0.033
	Health	0.025	0.024	0.021	0.017	0.020	0.019	0.023	0.022	0.021
	Education	0.003	0.013	0.010	0.019	0.015	0.013	0.007	0.005	0.004
High School	Nondurable	0.894	0.901	0.881	0.871	0.832	0.906	0.906	0.904	0.933
	Durable	0.073	0.072	0.085	0.078	0.097	0.058	0.061	0.064	0.028
	Health	0.031	0.019	0.019	0.017	0.015	0.015	0.019	0.028	0.038
	Education	0.002	0.008	0.015	0.032	0.060	0.018	0.009	0.008	0.001
University	Nondurable	0.876	0.840	0.849	0.773	0.840	0.826	0.852	0.898	0.945
	Durable	0.102	0.088	0.094	0.111	0.088	0.095	0.109	0.066	0.021
	Health	0.019	0.036	0.029	0.049	0.017	0.019	0.018	0.019	0.028
	Education	0.003	0.037	0.026	0.065	0.055	0.061	0.024	0.015	0.008
Total	Nondurable	0.895	0.890	0.891	0.873	0.860	0.879	0.903	0.917	0.937
	Durable	0.066	0.069	0.071	0.073	0.086	0.073	0.064	0.054	0.032
	Health	0.037	0.025	0.022	0.022	0.018	0.018	0.021	0.022	0.024
	Education	0.002	0.016	0.015	0.032	0.037	0.026	0.011	0.006	0.006

**Table A2**  
Regression Results

	Dependent Variable		
	Fraction Expenditures on Durable Goods	Fraction Expenditures on Education	Fraction Expenditures on Health
<b>Household Characteristics</b>			
# Members younger than 5 years	-0.004 [0.004]	-0.030*** [0.006]	0.003 [0.002]
# Members aged 6 to 14	-0.001 [0.003]	0.020*** [0.005]	-0.002 [0.002]
# Members aged 15 to 24	0.004 [0.003]	0.028*** [0.005]	-0.003* [0.001]
# Members aged 25 to 64	-0.002 [0.002]	0.007* [0.004]	0.001 [0.001]
# Members older than 65	0.000 [0.005]	-0.023** [0.009]	0.014*** [0.003]
# Employed people in HH	0.005*** [0.002]	-0.021*** [0.003]	0.002** [0.001]
Log of household income	0.065*** [0.004]	0.069*** [0.005]	0.015*** [0.002]
<b>Geographical Controls</b>			
Urban Areas	0.015*** [0.004]	0.038*** [0.006]	0.001 [0.002]
NUTS-1 Level Region (Baseline: Istanbul)			
West Marmara Region	0.049*** [0.007]	0.054*** [0.011]	0.003 [0.004]
Aegean Region	0.044*** [0.005]	0.030*** [0.009]	-0.007** [0.003]
East Marmara Region	0.041*** [0.007]	0.023** [0.010]	-0.008** [0.003]
West Anatolia Region	0.039*** [0.006]	0.049*** [0.008]	-0.008*** [0.003]
Mediterranean Region	0.061*** [0.006]	0.050*** [0.008]	-0.010*** [0.003]
Central Anatolia Region	0.029*** [0.007]	-0.008 [0.012]	-0.036*** [0.004]
West Black Sea Region	0.017** [0.007]	0.028** [0.012]	-0.034*** [0.004]
East Black Sea Region	0.025*** [0.009]	0.037** [0.015]	-0.026*** [0.005]
Northeast Anatolia Region	0.059*** [0.011]	-0.041 [0.028]	-0.035*** [0.007]
Central East Anatolia Region	0.033*** [0.009]	-0.007 [0.013]	-0.035*** [0.005]
Southeast Anatolia Region	0.028*** [0.007]	-0.042*** [0.013]	-0.015*** [0.004]

## Household Head Characteristics

Female	-0.001 [0.009]	0.014 [0.015]	0.002 [0.006]
<b>Type of Health Insurance (Baseline: Mandatory Insurance)</b>			
Optional Insurance	0.013 [0.019]	-0.027 [0.029]	0.009 [0.011]
Mandatory and Optional Insurance	-0.009 [0.013]	0.006 [0.022]	0.001 [0.007]
Green Card	-0.023** [0.009]	0.001 [0.019]	0.022*** [0.005]
No Insurance	-0.016*** [0.004]	-0.020*** [0.007]	0.011*** [0.002]
<b>Marital Status (Baseline: Never Married)</b>			
Married	0.042*** [0.015]	0.115*** [0.031]	0.031*** [0.009]
Cohabitation	0.125* [0.068]	-0.805 [0.000]	0.199** [0.092]
Widowed	0.042*** [0.016]	0.114*** [0.033]	0.027*** [0.009]
Divorced	0.048** [0.020]	0.132*** [0.039]	0.009 [0.011]
Separated	0.042 [0.038]	0.124** [0.050]	0.043** [0.019]
<b>Education (Baseline: Less than primary school)</b>			
Primary School	-0.006 [0.006]	0.012 [0.011]	-0.006* [0.003]
High School	0.002 [0.007]	0.037*** [0.012]	-0.011*** [0.004]
University	0.010 [0.008]	0.058*** [0.013]	-0.009** [0.005]
<b>Age (Baseline: 25-29)</b>			
30-34	-0.002 [0.007]	0.101*** [0.016]	-0.008* [0.004]
35-39	-0.010 [0.007]	0.108*** [0.015]	-0.011** [0.005]
40-44	-0.020*** [0.007]	0.128*** [0.015]	-0.015*** [0.005]
45-49	-0.019** [0.008]	0.121*** [0.016]	-0.013*** [0.005]
50-54	-0.024*** [0.008]	0.087*** [0.016]	-0.015*** [0.005]
55-59	-0.030*** [0.008]	0.047*** [0.017]	-0.012** [0.005]
60-64	-0.035*** [0.009]	0.047*** [0.018]	-0.009* [0.005]
65-69	-0.052*** [0.010]	0.036* [0.022]	-0.021*** [0.006]
70-74	-0.034*** [0.012]	0.013 [0.025]	-0.009 [0.007]
75+	-0.053*** [0.014]	-0.001 [0.028]	-0.014* [0.008]
<b>Observations</b>	25,377	25,377	25,377

## References

- AKÇİN, O. and ALPER, E. (1999), "Aggregate Consumption and Permanent Income: An Empirical Investigation for Turkey", *METU Studies in Development*, 26 (1-2), 1-23.
- AKTAS, A., GUNER, D., GURSEL, S. and UYSAL, G. (2012), "Structural Determinants of Household Savings in Turkey: 2003-2008", Working Papers 007, Bahcesehir University, Betam.
- ATTANASIO, O. P. (1994), "Personal saving in the United States". In James M. Poterba (Ed.), *International Comparisons of Household Saving* (pp57-123). The University of Chicago Press.
- ATTANASIO, O. P. and BROWNING, M. (1995), "Consumption over the Life Cycle and over the Business Cycle", *American Economic Review*, 85(4), 1118-1137.
- ATTANASIO, O. P. and WEBER, G. (1995), Is consumption growth consistent with intertemporal optimization? Evidence from the consumer expenditure survey. *Journal of Political Economy*, 103(6), 1121-1157.
- ATTANASIO, O. P. and SZÉKELY, M. (2000), "Household saving in developing countries – inequality, demographics and all that: How different are Latin America and South East Asia?". Inter-American Development Bank, Research Department, Working Paper No:427.
- BANKS, J. and BLUNDELL, R. (1994), "Household saving behavior in the United Kingdom." In James M. Poterba (Ed.), *International Comparisons of Household Saving* (pp. 169-206). The University of Chicago Press.
- BURBIDGE, J.B. and DAVIES, J.B., (1994), "Household data on saving behavior in Canada." In James M. Poterba (Ed.), *International Comparisons of Household Saving* (pp. 11-56). The University of Chicago Press.
- CARROLL, C. D. and SUMMERS, L. H. (1991), "Consumption Growth Parallels Income Growth: Some New Evidence". In B. D.Bernheim and J. B. Shoven (Ed.), *National Saving and Economic Performance*, (pp. 305-43). Chicago University Press for NBER.
- CERITOĞLU, E. (2013a), "Household Expectations and Household Consumption Expenditures: The Case of Turkey", Working Papers 1310, Research and Monetary Policy Department, Central Bank of the Republic of Turkey.
- CERITOĞLU, E. (2013b), "The impact of labour income risk on household saving decisions in Turkey", *Review of Economics of the Household*, 11(1), 109-129.
- CİLNASUN, S. M and KIRDAR, M. G. (2013), "Household Structure, and Household Income and Its Components over the Life-Cycle in Turkey", *İktisat İşletme ve Finans*, 28(318), 89-116.
- CORBO, V. and SCHMIDT-HEBBEL, K. (1991), "Public policies and saving in developing countries", *Journal of Development Economics*, Elsevier, 36(1), 89-115.
- DUYGAN, B. (2005), "Aggregate Shocks, Idiosyncratic Risk, and Durable Goods Purchases: Evidence from Turkey's 1994 Financial Crisis", EUI Finance and Consumption Program Working Paper.
- DUYGAN, B. (2006), "Welfare Cost of Financial Crises when Risk-Sharing is Imperfect: Evidence from Turkey" in EUI Finance and Consumption Program Working Paper.
- DUYGAN, B. and GÜNER, N. (2007), "Income and Consumption Inequality in Turkey: What Role does Education Play?". In S. Altuğ and A. Filiztekin (Ed.), *The Turkish Economy: The Real Economy, Corporate Governance and Reform and Stabilization Policy* (pp. 63-91). Routledge Studies in Middle Eastern Studies.
- FRIEDMAN, M. (1957), *A Theory of the Consumption Function*. Princeton, Princeton University Press.

- HALL, R. E. (1978), "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence", *Journal of Political Economy*, 86(6), 971-987.
- HALVORSEN, E. (2003), "A Cohort Analysis of Household Saving in Norway", Statistics Norway, Research Department, Discussion Paper, No; 354.
- HAQUE, N. and MONTIEL, P. (1989), "Consumption in Developing Countries", *The Review of Economics and Statistics*, 71, 408-15.
- LOAYZA, N., SCHMIDT-HEBBEL, K. and SERVEN, L. (2000), "Saving in Developing Countries: An overview", *The World Bank Economic Review*, 14(3), 393-414.
- MARKU, M. (2004), "A cohort analysis of consumption and earnings in Iran: 1984-2002". Paper presented at NEUDC Conference, Montreal, Canada.
- MODIGLIANI, F. and BRUMBERG, R. (1954), "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data". In Kenneth K. Kurihara (Ed.), *Post-Keynesian Economics* (pp. 388-436). New Brunswick, N. J. Rutgers University Press.
- ÖZMEN, E. and YAVAN, Z. A. (1999), "Aggregate Consumption in Turkey: An Empirical Investigation," METU ERC Working Paper No: 99/22.
- POTERBA (1994), *International Comparisons of Household Saving*. Chicago, Chicago University Press.
- VAN RIJCKEGHEM, C., and ÜÇER, M. (2008), "The evolution and determinants of the Turkish private saving rate: What lessons for policy?" Paper presented at ERF Conference, İstanbul, Turkey.
- VILLAVERDE, J. and KRUEGER, D. (2004), "Consumption over the Life Cycle: Facts from Consumer Expenditure Survey Data", *The Review of Economics and Statistics*, 89, 552-565.
- YÜKSELER, Z. and TÜRKAN, E. (2008), "Türkiye'de hanehalkı: İşgücü, gelir, harcama ve yokluk açısından analizi." TÜSİAD-T/2008-03/455.

## Özet

Türkiye'de dayanıklı, dayanıksız malların tüketiminin ve sağlık ve eğitim harcamalarının yaşam döngüsü analizleri

Bu çalışmanın amacı 2003 Hanehalkı Bütçe Anketini kullanarak Türkiye'de hanehalklarının tüketimlerinin ve tüketimin bileşenlerinin yaşam döngüsü profillerinin incelenmesidir. Çalışmanın temel bulguları şunlardır: Yaşam döngüsü modelinin savunduguun aksine Türkiye'de tüketim gelirle beraber hareket etmektedir, ancak eşdeğer hane büyülüğüne göre çizilen tüketim profilleri çok daha yataydır. Her ne kadar bu sonuç yaşam döngüsü modelini destekler nitelikteyse de halen bazı yaşam döngüsü dinamikleri gözlenmektedir. Diğer önemli sonuçlar ise şunlardır: i) Gelişmiş ülkelerdeki bulunan sonuçların aksine Türkiye'deki hanehalklarının dayanıklı mallara ilişkin tüketim profilleri çok daha geç yaşlarda en yüksek noktasına ulaşmaktadır. ii) Cepten sağlık harcamaları, büyük ihtimalle Türkiye'deki kapsamlı sosyal güvenlik sistemi sayesinde, yaşam döngüsü boyunca sabit bir seyir izlemektedir. iii) Hanehalkı reisinin eğitim seviyesine göre türetilen eğitim harcamaları profillerine bakıldığıda eğitim grupları arasında büyük farklılıklar gözlenmektedir. Bu da az eğitimli ailelerin çocukların düşük beseri sermaye tuzağında kalmalarına yol açabilmektedir.

*Anahtar kelimeler:* Hanehalkı tüketimi, tüketimin bileşenleri, yaşam döngüsü modeli, Türkiye

*JEL kodları:* C34, D12, I14, I24