

## Household Structure and Household Income and its Components over the Life-Cycle in Turkey\*

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### Abstract

In this study, using the 2003 Turkish Household Budget Survey, we investigate the life-cycle profiles of household income and its components by educational attainment, compare these profiles with those reported for various developed and developing countries, and interpret our findings within the life-cycle framework. A key aspect of our analysis is that we examine the link between household structure and household income over the life-cycle. The main finding of the study is that household income profiles conditional on educational attainment in Turkey are non-decreasing and quite flat over the life-cycle. This is in stark contrast to the hump-shaped household income profiles reported for developed countries. There are three main reasons for this fact in Turkey: i) multiple families live together in the same household, especially when the household head is very young or old, and many single adult children who are employed live in their parents' households. In other words, household formation helps to smooth income. ii) Many household heads are still employed at end of their life-cycle, especially among the less-educated. iii) Pension income levels, for those who are qualified for them, are relatively high compared to other components of income.

**Keywords:** Household Income, Life-Cycle Income, Household Structure, Income Distribution By Education.

**JEL Classification:** D31, I24, R20.

### Özet. Türkiye’de Hanehalkı Yapısı ve Hanehalkı Gelir ve Alt Kalemlerinin Yaşam Döngüsü Analizi

Bu çalışmada, 2003 Hanehalkı Bütçe Anketi (HBA) kullanılarak, hanehalkı gelirin ve gelirin alt kalemlerinin eğitim seviyelerine göre yaşam döngüsü profilleri incelenmiş ve sonuçlar çeşitli gelişmiş ve gelişmekte olan ülke sonuçlarıyla yaşam döngüsü modeli çerçevesinde tartışılarak karşılaştırılmıştır. Hanehalkı gelirin yaşam döngüsü içindeki değişimi yorumlanırken hanehalkı yapısı ile ilişkilendirilmiştir. Çalışmanın en ilginç sonucu, eğitime göre gelir profillerinin azalan olmaması ve yaşam döngüsü boyunca görece yatay seyretmesidir ki bu sonuç gelişmiş ülkeler için bulunmuş kambur şekilden oldukça farklıdır. Bu bulgunun sebepleri şunlardır: i) Özellikle yaşlı ve genç reislerin olduğu hanehalklarında birden fazla çekirdek ailenin beraber yaşamaktadır. Ayrıca, evlilik öncesi, bir çok çalışan çocuk geç yaşlarda dahi aileleri ile yaşamaya devam etmektedir. ii) Pek çok hanehalkı reisi yaşam döngüsünün sonunda bile çalışmaya devam etmektedir ki bu özellikle daha az eğitilmişler için geçerlidir. iii) Emeklilik geliri, alabileler için, diğer gelir kalemlerine görece yüksek değerler almaktadır.

**Anahtar Kelimeler:** Hanehalkı Geliri, Yaşam Döngüsü Geliri, Hanehalkı Yapısı, Eğitime Göre Gelir Dağılımı.

**JEL Sınıflaması:** D31, I24, R20.

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## 1. Introduction

Average household income is one of the fundamental indicators of the well-being of citizens. Unlike per-capita income as another such indicator, household income also accounts for household structure. Household structure changes in important ways over the life-cycle of the household head as a result of family formation and dissolution, births, children leaving the household, taking care of elderly parents, and so forth – all of which have important implications for the evolution of household income over the life-cycle of the household head.

This paper investigates the life-cycle profiles of household income and its components in Turkey, along with the evolution of household structure, over the life-cycle of the household head. A better knowledge of household income dynamics is important for understanding their response to unexpected economic events and to macroeconomic and social policies such as the retirement system and pension benefits, tax and transfer policies.

The analysis in this study is based on micro data from the 2003 wave of the Turkish Household Budget Surveys (HBS). We choose this particular year because the sample size is much larger in this year. The type of analysis is graphical. Age profiles of the median and mean levels of various components of household income are constructed. In addition, for the same components of household income, the proportion of households that have that type of income is examined over the life-cycle of the household head.<sup>1</sup>

This paper makes a number of contributions. First, despite the importance of the issue, no previous study examines household income and its components over the life-cycle in Turkey. Van Rijckeghem and Üçer (2008) and Cilasun and Kırdar (2009) derive the life-cycle profile of aggregate household income, but not of the components of household income. Second, by also examining the change in the household structure over the life-cycle, this study establishes important links between household structure and household income as well as its components. Third, the analysis is conducted by the education of the household head, which allows us to understand the level of inequality in different components of income by education, as well as the differences in labor market dynamics and household structure by education. Finally, this study contributes to the literature by providing a detailed analysis of household income over the life-cycle in a developing country context and by comparing the patterns to those in developed countries, as well as in other developing countries – where there have been few such studies.

The previous studies on this topic in Turkey have mainly focused on income distribution and poverty (Çakmak and Kot, 1995; Dağdemir, 1999; Şengül, 2003; Oğuş, 2005; Canbay and Selim, 2010). Yükseler (2004) reports

1 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.

the shares of labor income, real property income, and transfer income in total household income for 1994, 2002 and 2003 using the HBS; however, this study does not have a life-cycle perspective. A similar study conducted by Yükseler and Türkan (2008), using data from 2002 to 2005, reports that labor income has the highest share of household income in Turkey and that this share increased from 2002 to 2005.

The conceptual framework we use is the life-cycle model, Here, we are not thinking about a particular life-cycle model, such as one with liquidity constraints or precautionary savings, but a general framework where agents make sequential decisions to keep marginal utility constant over time.<sup>2</sup> In the life-cycle framework, agents aim to smooth income variations over the life-cycle through borrowing, saving, and dissaving. Another way to smooth income variations would be through household formation in the life-cycle framework.<sup>3</sup>

We find that household income over the life-cycle of the household head is much flatter in Turkey than those reported for several developed countries. An important reason for this is the way that household structure evolves over the life-cycle of the household head in Turkey. In particular, the facts that multiple generations of families live together in the same household and that several adult working children live in their parents' household prevent the drop in household income at the end of the life-cycle of the household head, which is observed in several developed countries. . These results are in line with a life-cycle model where household members smooth the variations in their income over the life-cycle by living together.

Another important reason for the flatter life-cycle household income profile is that several household heads – especially those who have low education – keep working even at very old ages. The fact that pension income, for those who are qualified for it, is relatively high compared to labor income also prevents a notable drop at the old age of the household head. Finally, we find that only a small share of the households are able to build up financial assets that bear interest income, whereas a much larger share have real property income. The absence of notable financial assets for many old household heads is also consistent – in a life-cycle model – with living with employed adult children, especially for those not eligible for pension income.

The rest of the study is organized as follows. Section 2 introduces the data and method. The life-cycle analyses of household income and its components are presented in Section 3. Section 4 concludes the paper.

2 See Browning and Crossley (2001) for a survey of the life-cycle model of consumption and saving.

3 Browning and Crossley (2001) draw attention to the importance of modeling several other aspects of household behavior – like fertility, retirement, and education choices – jointly with the consumption choice, within the life-cycle framework. In this sense, co-residence with parents/children would be another important choice variable, especially in the developing countries.

## 2. Data and Method

We use the 2003 Household Budget Survey (HBS) in our empirical analysis. This survey provides detailed information on household income and its composition, as well as on household composition and household's socioeconomic characteristics. Household Budget Surveys have been conducted annually by Turkish Statistical Institute (TUIK) since 2002. We use the 2003 version of HBS because of the larger sample size in this year. In order to construct a harmonized index of consumer prices (HICP), a much larger sample of households, 25,920, was drawn in the 2003 survey. HBS represents 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 every month. 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 order to build the survey, households are visited eight times during the interview month, and expenditure and income information are recorded by the interviewers. Non-respondents are replaced by households with similar characteristics.

The central pieces of information that are used in this study are income and its components. Income questions are directed to respondents at the end of the interview month, and they refer to the 12 months before the interview. Annual individual disposable income is calculated by adding up three components of income: 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).<sup>4</sup> In addition to individual-level disposable income, household-level disposable income is also available in the HBS. This variable is defined as the sum of disposable incomes of individuals' within a household 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. Since the questions on income refer to the 12 months before the interview, household disposable income is inflated to the survey month. Any annual income that is lower than 100 TL is recoded as missing. HBS also includes information on socioeconomic characteristics of households such as age, gender, education, occupation, family composition, and detailed information on the house and other assets owned.

4 Labor income is reported net of taxes and social security contributions. Capital and property income are reported net of taxes. Tax refunds are the amount of money that is paid by the government in return of the Value Added Tax (KDV).

Our methodology is based on graphical analysis of the life-cycle profiles of household income and its components. Ideally, one would need panel data that follow individuals for a long period of time in order to obtain pure life-cycle profiles. Since such data are not available in Turkey, we use cross-sectional data to investigate life-cycle profiles; however, this approach certainly has its 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, therefore, potentially face different lifetime profiles of income, education and so forth—due to the secular time trends in these variables. These secular time trends could certainly alter the shape and level of life-cycle profiles. For instance, with positive real wage growth, people born later would have higher lifetime earnings. This would make the cross-sectional income trajectories high among the young and low among the old household heads, resulting in a clockwise rotation of the “true” age profile.

As a partial remedy to this problem, we conduct our life-cycle analyses conditional on the educational attainment of household heads. By examining the life-cycle profiles conditional on educational attainment, we at least avoid the problems associated with comparing birth-cohorts with very different average educational attainment. Moreover, since educational attainment is a good indicator of permanent income, by conducting the analysis conditional on educational attainment, we are able to examine the life-cycle income profiles separately for subpopulations with different permanent income levels. For this purpose, the sample is divided into three groups based on the educational attainment of the household head: primary education or less, high school, and university.

In our graphical analysis by educational attainment, we group ages in 5-year intervals so that the number of observations in each cell can be high enough. Table 1 presents the number of observations in each cell by age and education. These numbers are quite high except for the oldest age-groups among the university graduates. In fact, they are at least 100, except for the 60- to 69-year-old university graduates.

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

Age group	Primary and below	High school	University	Total
25-29	780	783	215	1778
30-34	1489	1172	341	3002
35-39	2001	1209	380	3590
40-44	2177	1262	351	3790
45-49	1922	859	372	3153
50-54	1934	660	322	2916
55-59	1431	385	183	1999
60-64	1397	201	96	1694
65-69	1236	136	57	1429

In the analysis, both median income and mean income are used in the construction of life-cycle profiles. Our preferred measure is the median because it is robust to the presence of outliers. However, when the median value for a component of income is often zero over the life-cycle, we present the 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.

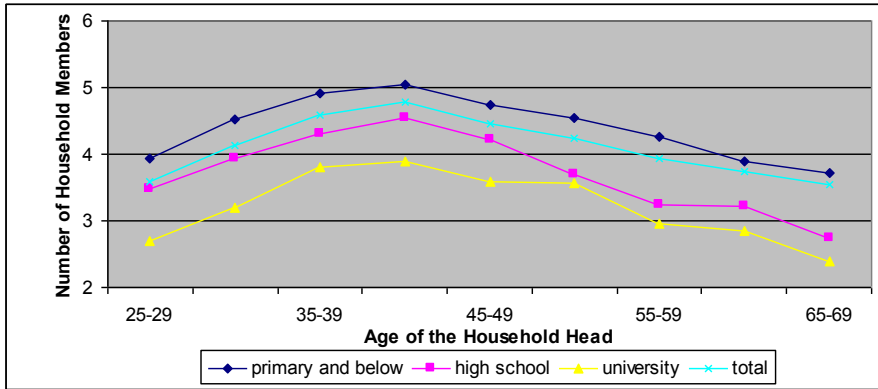
### 3. Results

We first present the composition of household structure over the life-cycle of the household head, and then examine household income and its components over the life-cycle.<sup>5</sup>

#### 3.1. Household Structure

Household income is obtained by adding up the income of individuals living in the same household. Therefore, analyzing the evolution of household size is critical for understanding the patterns in income profiles. Figure 1 presents household size against the age of the household head by educational attainment of the household head, as well as for the whole population.

<sup>5</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 earnings and consumption.



**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. It is also evident from Figure 1 that family size decreases with education. At all ages, household heads with the lowest education have the largest family. The larger family size of the less-educated households persists until late ages. In fact, the gap between the group with primary or lower education and the group with high school education widens toward the end of the life-cycle. As a result, the hump of the profile is least pronounced for the household heads with the lowest education. The reason for this fact will become clear when we illustrate certain other features of the household structure over the life-cycle of the household head below.

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>6</sup> The reason for this could be the higher probability of the event that multiple generations of families live together in the same household, which we examine in Figure 2.

<sup>6</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 households is higher compared to Thailand and Taiwan (Attanasio and Szekely, 2000) and lower compared to Iran (Marku 2004).

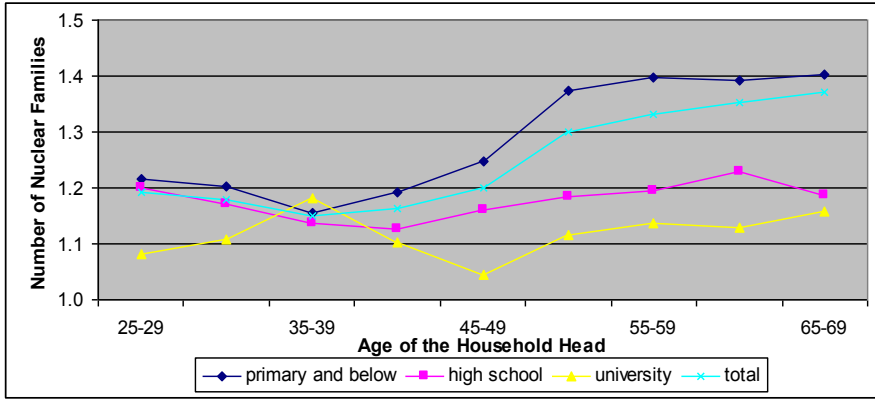


Figure 2: Number of Nuclear Families by Educational Attainment of the Household Head (2003)<sup>7</sup>

Figure 2 illustrates how the number of nuclear families living in the same household changes with the age of the household head. (The profile exhibits a somewhat declining trend until ages 35 to 39, except for university graduates, and increases sharply thereafter. Almost 20 percent of the household heads younger than 35 live with their parents, and more than 30 percent of the household heads older than 50 live either with their married children or parents<sup>8</sup>. Attanasio and Szekely (2000) report that many older individuals live in the household of their children in Thailand and Taiwan. This is also important in Turkey, as can be seen in Figure 2, but not as much as the opposite arrangement, where younger married individuals live in their parents' household.

Some other important features of Figure 2 are that the number of nuclear families living in the same household decreases with education, and the gap between those with primary or lower education and those with high school education significantly widens with age. This means that the event of multiple generations of families living together in the same household is more common for the least educated group. This also explains why the hump-shape in the profile for household size in Figure 1 is the weakest for the least educated group. In order to better understand the association between family structure and household income, we display the life-cycle profile for the number of household members with positive labor or pension income against the age of the household head in Figure 3. For the total population, the average number

7 A household consists of a single nuclear family when the members excluding the household head are either the spouse or the children of the household head. This implies that when grandparents (or a grandparent) live(s) with a nuclear family, there are two nuclear families in that household. Similarly, when the household head lives with a married son/daughter, there are also two nuclear families in the household.

8 One might think that this extended family structure results from the severe economic crisis in 2001. However, we see very similar patterns in family structure in 2005 and 2006, much later than the crisis year.



of positive labor- or pension-income earners is relatively stable at around 1.2 until age 40, when it starts increasing and reaches almost 1.8 at ages 50-54. There could be two different reasons for this rise. First, the probability that the household head lives with parents who have labor or pension income increases with age. Second, the children of the household head who live in the same household would be entering the labor force. It is a well-known phenomenon in Turkey – as in several other Mediterranean countries – that many adult children reside with their parents. In fact, about 74 percent of men aged 18-30 lived with their parents in Turkey in 2003.<sup>9</sup> This fraction for single men in the same age group was even higher, at 89 percent, in 2003. To understand the effect of adult children on household income, we plot the average number of children of the household head in the household with positive labor income in Figure 4.

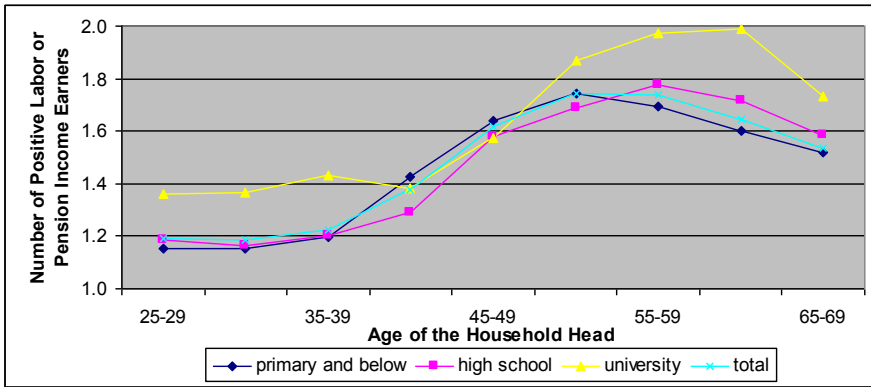


Figure 3: Average Number of Positive Labor or Pension Income Earners by Educational Attainment of the Household Head (2003)

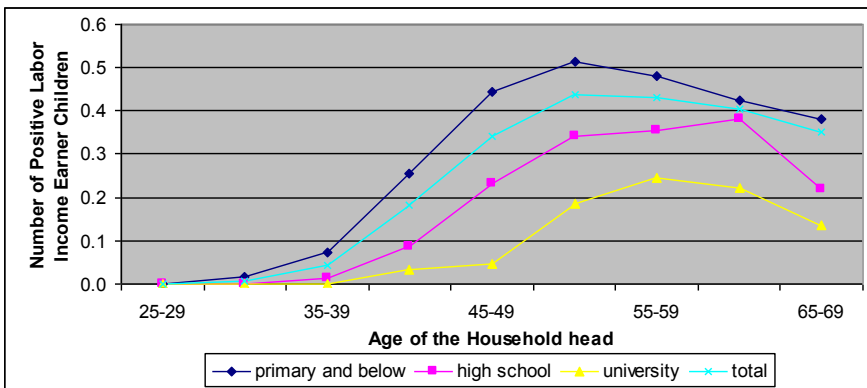


Figure 4: Average Number of Employed Children of the Household Head in the Household by Educational Attainment of the Household Head (2003)

<sup>9</sup> Manacorda and Moretti (2006) reports that the same percentage is 82 for Italy, 78 for Portugal and 65 for Spain, whereas it is 43 for US and lies between 45 and 54 for France, UK and Germany.

Figure 4 reveals that the phenomenon of children with labor income living with their parents is a very important contributor to the rise in the number of labor or pension income earners in the household after the household head reaches age 40. For the total population of household heads in their 50s, there are on average more than 0.4 children in the household with labor income. As can also be seen in Figure 4, the age of the household head at which children enter the labor force increases with the educational attainment of the household head. There are two main reasons for this fact: first, household heads with higher education have children at later ages<sup>10</sup>; second, their children, who are more likely to have higher educational attainment as well, enter the labor market later.<sup>11</sup> There is also substantial variation in the average of number of children with labor income in the household by household head's education: among the 50-54 year-old household heads, this average is more than 0.5 for household heads with the lowest educational attainment whereas it is just below 0.2 for household heads with the highest educational attainment. After the household head reaches age 55, the number of children in the household with labor income decreases slightly – as some children leave the household.

An important feature of the profile for the average number of positive labor or pension income earners by the age of the household head in Figure 3 is that it is at a higher level for household heads who are university graduates before age 40 and also after age 50. This is despite the facts that household heads who are university graduates are less likely to live in extended families (especially at later ages), as shown in Figure 2, and that they have fewer children in the household who are employed, as shown in Figure 4. A factor that explains this contradiction is the probability of the spouse having positive labor or pension income, which is displayed in Figure 5. This probability is much higher for university graduates; in fact, for household heads who are older than 45, it averages above 40 percent for university graduates whereas it is lower than 10 percent for those with primary or lower education. In addition, since the employment rate increases with educational attainment in Turkey (McIntosh, 2008; Tansel, 1994), household heads with university degrees are more likely to have labor income. Furthermore, since household heads with lower educational attainment are more likely to work in the informal sector, they are less likely to be eligible for pensions at old age.

10 According to the 2003 Turkish Demographic and Health Survey, the median age at first-birth for women varies substantially by education. For instance, for women aged 30-34, the median age at first-birth was 20.3 for those with less than primary school education, whereas it was 26.9 for those with high school or more education. Due to positive assortative mating in the marriage market, we would expect the more educated among the male household heads to have children at a later age as well.

11 Kirdar (2009) finds that parental education is an important determinant of children's school enrollment in grades 1 to 8; in particular, mother's literacy status is critical in children's school enrollment in grades 1 to 5, and father's years of schooling is important in enrollment in all grades from 1 to 8. Similarly, Dayioğlu et al. (2009) reports for children aged 8-15 that while the average years of father's schooling is 7.3 for children who are enrolled in school, it is only 4.1 for children who are not enrolled in school.

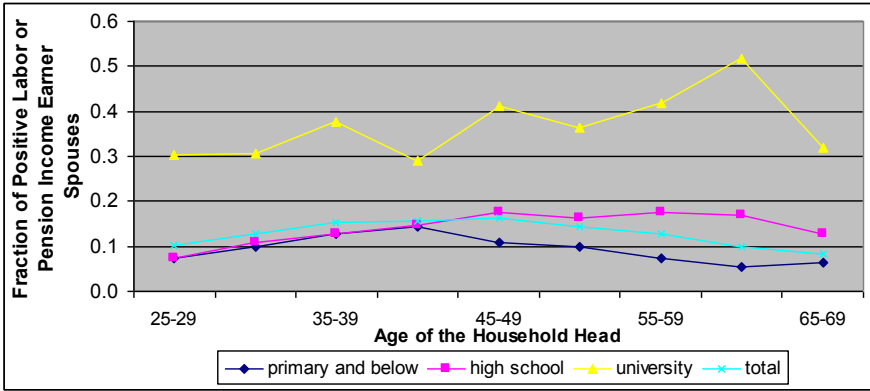


Figure 5: Fraction of Spouses with Positive Labor or Pension Income by Educational Attainment of Household Head (2003)

### 3.2. Aggregate Income

Figure 6 displays the median household income over the life-cycle of household heads by education groups and for the total sample. For the total sample, the median household disposable income profile is very slightly hump-shaped. It increases somewhat until the household head reaches mid-forties, stays flat until late fifties, and goes down slightly thereafter. As expected, aggregate household income increases in household head's education, and this increase is especially high for university graduates.

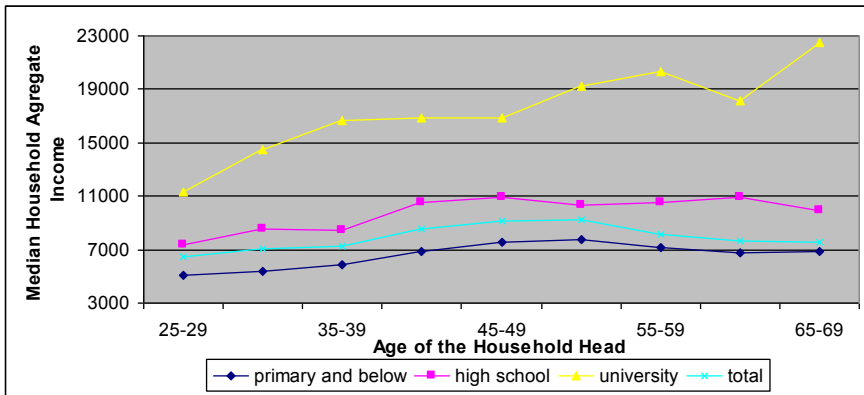


Figure 6: Median Household Aggregate Income by Educational Attainment of the Household Head (2003, TL)

For the two lower education groups, the median household income exhibits an increasing trend at first, and stays relatively constant afterwards. For university graduates, the median household income increases throughout the life-cycle of the household head. In other words, we do not observe the hump-

shaped median household income profile over the household head's life-cycle – which is reported for several other countries – when we condition on the educational attainment of the household head. Note that the household income profile for the total population in Figure 6 has more of a hump-shape than any of the household income profiles by education because of compositional effects. There is a lower fraction of university graduates, who have higher household income, among the older household heads. An examination of the mean household income over the life-cycle by the educational attainment of the household head, as can be seen in Figure A1 in the Appendix, reveals that all of the above facts on the median household income by education hold for the mean household income by education as well.

The shape of the household income profile we find for Turkey is very different from those reported for a number developed countries (see, for instance, Attanasio (1994) for the US, Japelli and Pagano (1994) for Italy, Banks and Blundell (1994) for the UK, Burbidge and Davies (1994) for Canada, and Takayama and Kitamura (1994) for Japan), where an obvious hump-shape is observed. For instance, the median household income at ages 50-54 in Japan (Takayama and Kitamura, 1994) is roughly twice as much as the median household income at ages 25-29, whereas the same ratio in Turkey is much less than 1.5. Similarly, while the median household income at ages 41-45 in the US is roughly twice as much as the median household income at ages 66-70 (Attanasio, 1994), they are quite similar in Turkey as can be seen in Figure 6. This relatively flat shape of the household income profile compared to those for developed countries arises from the peculiar features of the household structure over the life-cycle of household heads in Turkey.<sup>12</sup> The fact that different generations of families live in the same household, especially when the household head is old, smoothens the household income profile over the life-cycle by preventing significant drops in household income at the two ends of the life-cycle profile. In addition, the fact that many employed children reside with the household head increases the household income at the end of the household head's life-cycle. Besides, the higher life-time income of younger generations in Turkey, due to economic growth, would also tilt the household income of younger household-heads upwards.

On the other hand, the lack of a hump-shaped profile for the household income profiles conditional on educational attainment is not unique to Turkey. In fact, Attanasio and Szekely (2000) report that household income profiles conditional on education are very flat over the life-cycle also in Mexico and Peru. In Mexico, it has a very slight hump-shape for household heads with low educational attainment, whereas it increases by age for household heads with

<sup>12</sup> In fact, Deaton and Paxson (2000) find that household formation has an important bearing on the household income profiles in the developed countries as well. They report more apparent hump-shaped profiles for individuals than households.

higher educational attainment – which is very similar to the case for Turkey. Moreover, Attanasio and Szekely find that intergenerational co-residence is also common in these countries, especially for the less-educated individuals – which is also the case in Turkey.

The absence of a hump-shape in the life-cycle profile of household income is not necessarily inconsistent with the life-cycle model. A life-cycle model where individuals choose to live with their children/parents could certainly imply this outcome. In the life-cycle framework, young individuals borrow to smooth consumption over their life-cycle. However, in the Turkish context where efficient credit markets are absent, these young individuals could instead choose to live with their parents to smooth income. For the same reason, younger individuals who are less educated would be more likely to live with their parents than those who are better educated. The life-cycle framework also implies that older individuals rely on their accumulated savings at the end of their life-cycle. However, for those who could not accumulate sufficient savings, choosing to reside with their employed adult children would be an alternative in the life-cycle model. In fact, for older individuals with lower education – who would have lower accumulated savings – this alternative would be especially attractive.

The fact that co-residence is more likely when the education level of the household head is lower, as can be seen in Figure 2, is consistent with this life-cycle framework because parents with lower education would need co-residence with their employed adult children more and children of parents with lower education would also need co-residence with their parents more – as children of household heads with lower education on average have lower education.<sup>13</sup>

### 3.3. Labor Income

We first examine household labor income as a component of household total income. Figure 7 illustrates the fraction of households with positive labor income by age and education. The percentage of households with positive labor income is, as expected, very close to unity until age 45 but declines thereafter with retirement. Even though the decline in the profile starts early, around age 45, due to the very early retirement age for these birth cohorts, the speed of the decline is slow. On the other hand, Attanasio (1994) finds a sharp decline in the percentage of households with positive labor income after the retirement age in the US. In fact, among the 50- to 54-year-old household heads, while less than 80 percent have positive labor income in their households in Turkey, this percentage is close to 100 percent in the US

<sup>13</sup> A high correlation between parents' schooling and their children's schooling is reported in Turkey. (Kirdar, 2009; Dayioglu et al., 2009).

(Attanasio, 2000). On the other hand, among the 65- to 69-year-old household heads, while the fraction with positive labor income in their households is almost 60 percent in Turkey, this fraction is less than 50 percent in the US. This relatively slow decline in Turkey is in part due to the fact that several households in Turkey include adult children – single or married – who are in the labor force even when the household head is retired, as shown earlier. However, there could be another reason for this fact: it could be that some household heads keep working even at later ages. To examine this, we plot the fraction of household heads with positive labor income in Figure 8.

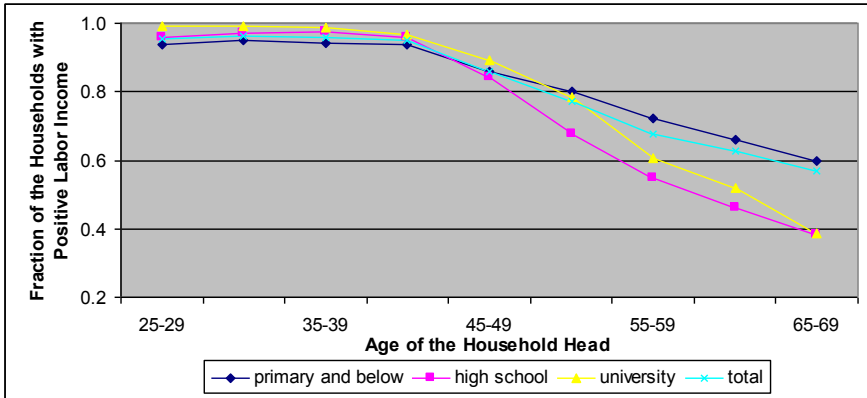


Figure 7: Fraction of Households with Positive Labor Income by Educational Attainment of Household Head (2003)

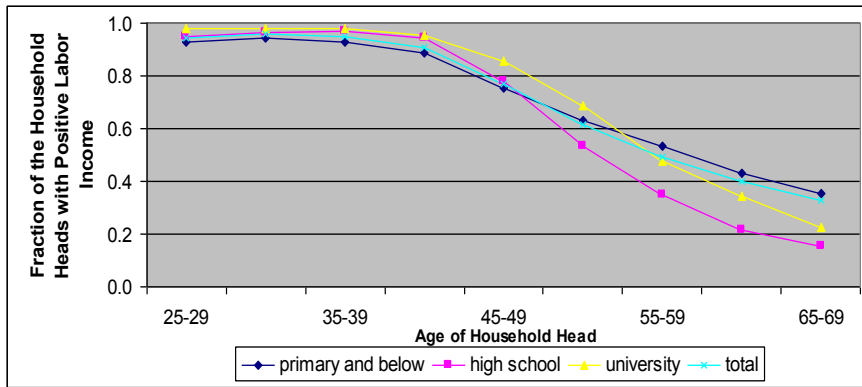


Figure 8: Fraction of Household Heads with Positive Labor Income by Educational Attainment of Household Head (2003)

A significant fraction of older household heads are in fact still employed despite the very early retirement age, as can be seen in Figure 8. Even though some Turkish household heads leave the labor force early (about 60 percent of the 50- to 54-year-old household heads have positive labor income), others

are very persistent in the labor market (around 35 percent of the 65-69 year-olds are still in the labor force). Combining the facts in Figures 7 and 8, we can claim that of the households with positive labor income whose household heads are aged 60 to 64, the source of labor income is the household heads themselves in roughly 2/3 of the households and is the other members of the family in the remaining 1/3 of the households. In essence, despite the extended family structure and the phenomenon of many employed adult children living in their parents' household for a long time, an important fraction of old household heads are still working.

Old-age employment is most common among the least-educated group. Since a high fraction of this education group is not eligible for pension benefits due to insufficient work experience in the formal sector, many of them keep working until late ages. For instance, while almost 40 percent of the 65-69 year-olds among the least educated group have positive labor income, this percentage is around 20 for the same age group of the other two education groups. Beyond age 50, it is the high school graduates who are the least likely to have positive labor income. Presumably, most of the members of this education group work in the formal sector as do university graduates, and the opportunity cost of retirement is not as high for them as university graduates due to lower salaries.

Figure 9 plots the median household labor income against the age of the household head by education groups and for the total sample. For the total sample, the profile is slightly increasing until around age 40-44 and declining thereafter. However, the decline at retirement age is not as sharp as those reported for other countries such as Iran (Marku, 2004), Taiwan (Deaton, 1997) or the US (Attanasio, 1994) due to the reasons discussed above. For instance, while the median household labor income for the 65-69 age group is zero in the US, it is positive in Turkey. Examining household labor income by the educational attainment of the household head, we see a positive relationship between education and household labor income when the household head is younger. However, at the end of the life-cycle, the least educated group has the highest household labor income – which is in accordance with the above finding that the least educated household heads are more likely to work at later ages.

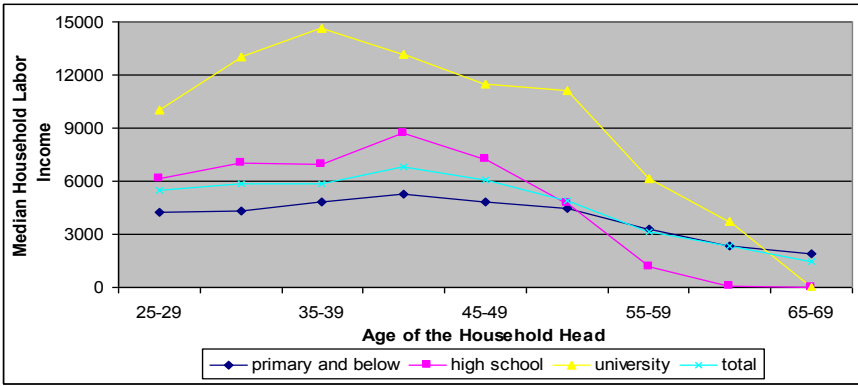


Figure 9: Median Household Labor Income by Educational Attainment of the Household Head (2003, TL)

### 3.4. Pension Income

Figure 10 presents the share of households with positive pension income. The fact that the fraction of households with positive pension income is above zero even for young household heads shows that some parents (with positive pension income) live with their children. The profile increases sharply after age 45, and becomes flat at around age 60. The start of the rise in the profile at around age 45 is much earlier than that in the US, which takes place after age 60 (Attanasio, 1994). The fraction of households with positive pension income remains at around 80 percent even for very old household heads. This shows that a significant fraction of households headed by older individuals—more than 20 percent—are not covered by any social security system. The profiles by educational attainment reveal that most of those who are not covered by any social security system belong to the least educated group.

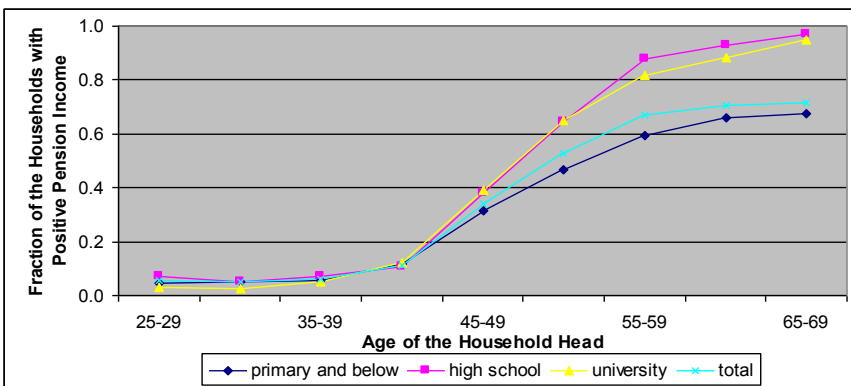


Figure 10: Fraction of Households with Positive Pension Income by Educational Attainment of the Household Head (2003)



The fact in Figure 10 that the fraction of older household heads who are not eligible for pension benefits is much higher for those with primary or lower education is consistent – within a life-cycle framework – with the fact in Figure 2 the average number of nuclear families living together is much higher among households with an older head who has primary or lower education.

The profile for mean pension income is presented in Figure 11. For the total sample, the mean household pension income averages above 3,000 TL (around \$2,142)<sup>14</sup> after age 55. For high school and university graduates, this amount is much higher. For instance, for high school graduates, the mean level of household pension income approaches 6,000 TL. This is a significant amount because, as can be seen in Figure A2 in the Appendix, the mean household labor income for this education group averages around 9,000 TL before age 50. In fact, Table A1 in the Appendix shows that pension income makes up almost 50 percent of total household income after age 65 for household heads who are high school graduates. This finding also implies that the absence of a hump-shape in the mean total income profile in part results from the relatively high pension income of the older household heads, especially for those with higher levels of education.

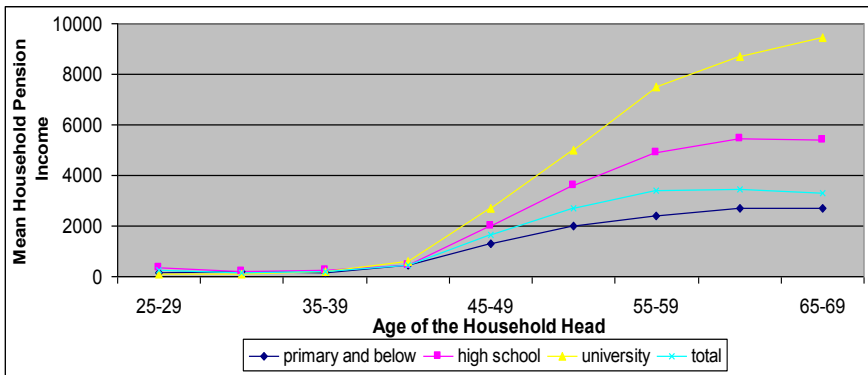


Figure 11: Mean Household Pension Income by Educational Attainment of the Household Head (2003, TL)

### 3.5. Interest Income

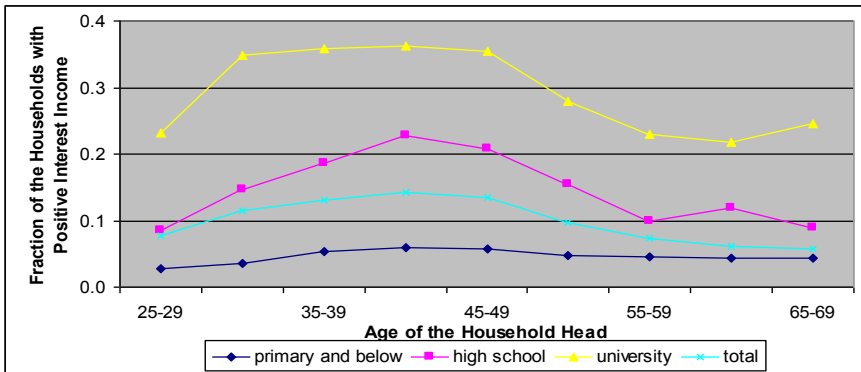
In this study, interest income includes both interest and dividends. Figure 12 displays the percentage of households with positive interest income by the age of the household head. For the total sample, the proportion of households receiving interest income increases until around age 45, then decreases until age 60, and is relatively flat thereafter. The proportion of households with positive interest income is low: it averages around 20 percent at its peak at age

<sup>14</sup> The average exchange rate in 2003 is \$1 = 1.4 TL.

40. The shape of this profile is very different from that reported for the US. Attanasio (1994) finds an increasing trend with age for the US households. When we compare the fraction of households with interest income in these two countries, we find that it is higher at all ages in the US and the gap is sharply increasing with age. While the proportion of the US households receiving interest income is above 60% at the end of the life-cycle, the proportion is just above 5% for Turkish households.

This fact has important implications on the behavior of older household heads. Since most have little or no financial wealth, they face a drop in their income after retirement – which would be a significant drop if they are not eligible for pension benefits. In that case, they could maintain their pre-retirement level of income only if they choose to live with their employed children after retirement. In fact, this is what we saw in Figures 2 to 4 when we examined household structure over the life-cycle of household heads.

One possible reason for the observed shape of the fraction of households with interest income could be the motivation for housing. It could be that households accumulate interest-bearing savings during the early part of the life-cycle to buy a house – in a country where a mortgage system did not exist until recently – and when they purchase the house, their interest income goes down. In fact, while 40 percent of the 25-29 year-olds are homeowners, 87 percent of the 55-59 year-olds are homeowners. Another potential explanation for the decreasing proportion of households with positive interest income at old ages is that older generations prefer to invest their savings on real property rather than interest bearing assets – an issue that we tackle in the next section.



**Figure 12: Fraction of Households with Positive Interest Income by Educational Attainment of the Household Head (2003)**

The profile for mean interest income is plotted in Figure 13 for the total sample, as well as by education groups. For the total sample, the magnitude of interest income is very small: even at its peak at ages 60-64, it averages

below 300 TL, which is 4% of the aggregate income for that age group. Only for university graduates do we find notable amounts of interest income. Moreover, for university graduates, we find a rising profile, which is similar to that reported for the US (Attanasio, 1994).

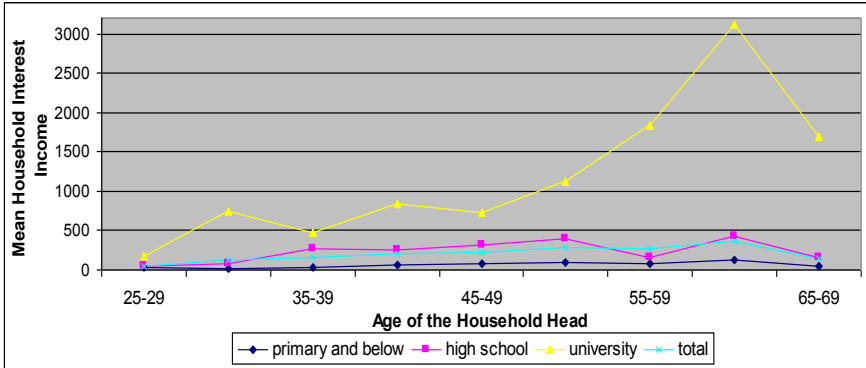


Figure 13: Mean Household Interest Income by Educational Attainment of the Household Head (2003, TL)

### 3.6. Real Property Income

Figure 14 displays the percentage of household heads with positive real property income, which includes imputed rent for those who live in their own dwelling, by the age of the household head. As expected, the proportion of households receiving real property income increases with age. At the beginning of the life-cycle, household heads with lower education are in fact more likely to have real property income. For instance, among the 25- to 29-year-old household heads, while almost 60 percent of those who belong to the lowest education group have real property income, less than 40 percent of the university graduates have. The higher proportion of university graduates living in urban areas, where home-ownership rate is lower, and the lower proportion of them living with their parents, as shown earlier in Figure 2, are the potential explanations for this phenomenon. Nonetheless, the fraction of university graduates with real property income rises faster, and after age 45, there remains little difference across education groups in property income ownership.

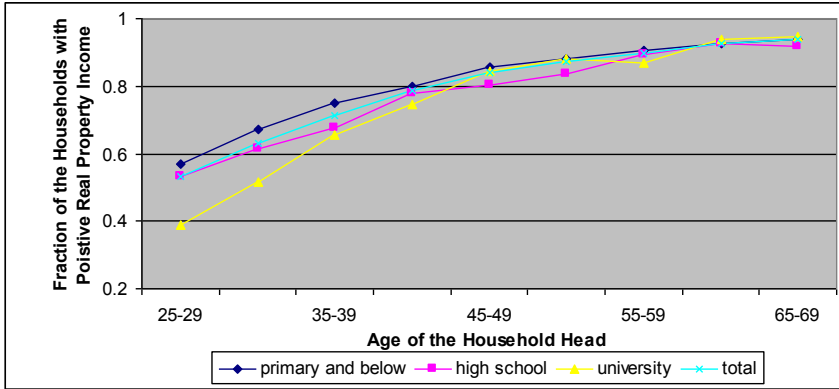


Figure 14: Fraction of Households with Real Property Income – Including Imputed Rent – by Educational Attainment of the Household Head (2003)

Figure 15 shows that the mean value of real property income exhibits an increasing trend over the life-cycle for all education groups, in particular for university graduates. In addition, as can be seen in Table A1 in the Appendix, real property income constitutes a much higher fraction of total household income than interest income. In fact, for university graduates, real property income makes up as large a share of household income as pension income, even when the household head is old. When the household head is older than 55, the total asset income (including interest and real property income) is higher than pension income for household heads with a university degree, whereas pension income is higher than the total asset income for household heads with lower educational attainment. However, it is important to note that the rise in total asset income at old age is also related to the retirement system in Turkey because retirement provides a lump-sum severance payment, in addition to pension benefits.

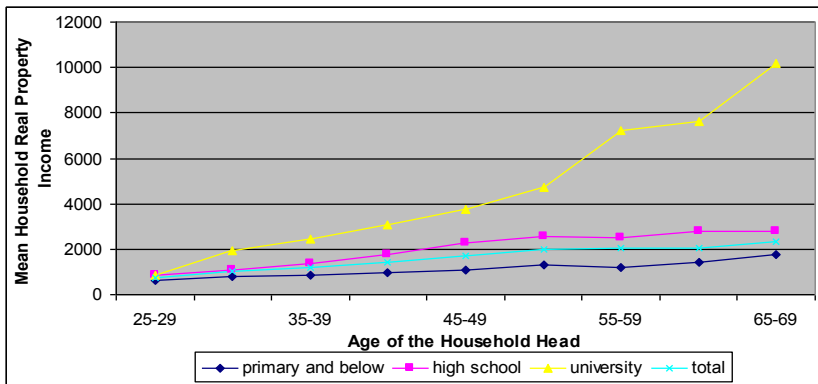
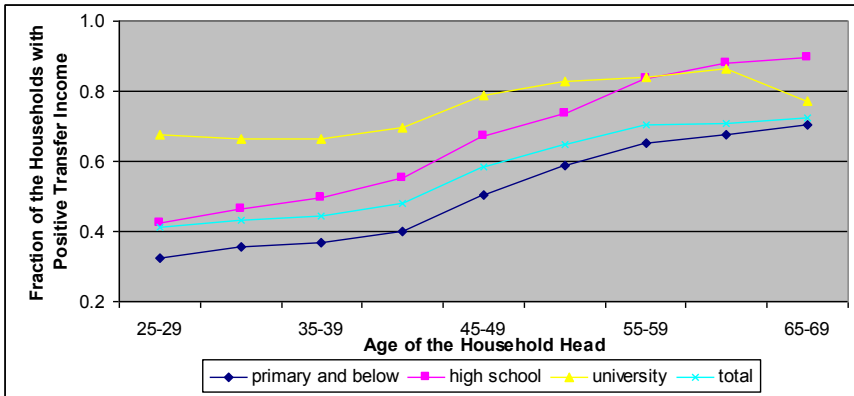


Figure 15: Mean Household Real Property Income – Including Imputed Rent – by Educational Attainment of the Household Head (2003, TL)

### 3.7. Transfer Income

Finally, we examine transfer income as a component of household income.<sup>15</sup> Figure 16 presents the percentage of the households with positive transfer income by education, as well as for the total population. While around 40 percent of the household heads receive transfer income in the early part of their life-cycle, this share increases to roughly 70 percent at older ages. An interesting feature of Figure 16 is that the fraction of households with positive transfer income is the highest among university graduates. This results from the definition of transfer income, which includes tax refunds.<sup>16</sup> Once we exclude tax refunds, the incidence of transfer income in fact decreases in the education level of the household head, as can be seen in Figure A3 in the Appendix. Also without tax refunds, the fraction of households receiving transfer income is quite stable over the life-cycle of the household head at around 20 percent for the total population, whereas this fraction declines by the age of the household head for high school and university graduates.



**Figure 16: Fraction of Households with Positive Transfer Income by Educational Attainment of the Household Head (2003)**

Even though the percentage of households receiving transfer income is high, its amount is limited. Figure 17 shows that the transfer income for the total sample averages just above 300 TL and is relatively constant over the life-cycle. For instance, for the 45-49 year-olds, it is equivalent to 3.5% of aggregate income. For all education groups, transfer income is in fact relatively constant over the life-cycle; however, the profile for university graduates is very volatile due to the low number of observations for them. In terms of the amount of transfer income, there is little difference among the two lower education groups whereas it is somewhat higher for university graduates.

<sup>15</sup> Our definition of transfer income excludes pension benefits, which are already examined separately in Section 3.4.

<sup>16</sup> Tax refund is the amount of money that is paid by the government in return of Value Added Tax (KDV).

A further investigation of transfer income to understand the patterns across educational groups shows that tax refunds are responsible for the higher transfer income profile of the university graduates.<sup>17</sup> Although tax refunds make significant contributions to transfer income for all education groups, university graduates have the highest ones. Welfare programs targeting the poor senior citizens have the highest contribution to transfer income for the least educated group and the second highest for the high-school group. Financial assistance from institutions and relatives is the other important component of transfer income for all education groups, particularly for the least educated.

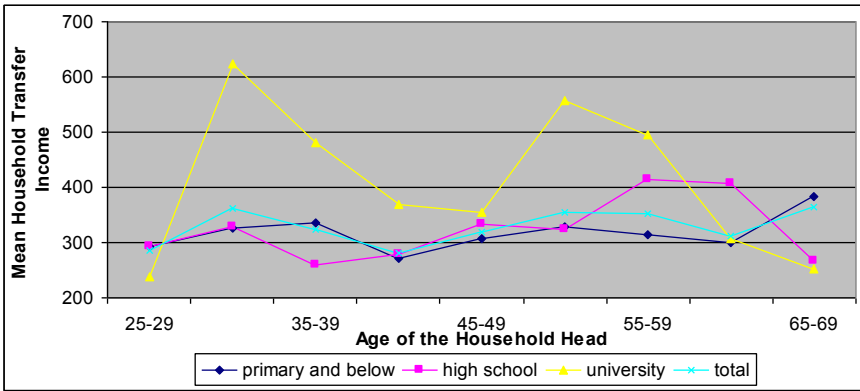


Figure 17: Mean Household Transfer Income by Educational Attainment of the Household Head (2003, TL)

#### 4. Conclusion

This study examines the life-cycle profiles of household income and its components by the educational attainment of the household head, using micro data obtained from the 2003 Turkish Household Budget Survey. Since household income and its evolution over the life-cycle are strongly associated with household structure, we also examine the composition of and the change in household structure over the life-cycle of household heads. A key finding of our analysis is that conditional on educational attainment, the household income profile over the life-cycle of the household head is quite flat. Even though household income rises in the early part of the life-cycle for all education groups, it does not fall at later ages. In fact, for household heads with university degrees, it keeps rising even at later ages. This is quite different from the hump-shaped life-cycle profiles of household income reported for several developed countries. Nonetheless, similar life-cycle

<sup>17</sup> In fact, when we exclude tax refunds, the amount of transfer income is higher for the least educated group, as can be seen in Figure A4 in the Appendix.

household income profiles are reported in some developing countries like Mexico and Peru.

Our analysis of household structure reveals several important clues about the evolution of household income over the life-cycle. First, in a notable number of households, different generations of families live together. This is particularly common in households where the household head is older. In fact, in 40 percent of the households where the head is old and has primary or lower education, there are multiple nuclear families living together. Second, in households with an older head, there are several unmarried adult children with labor earnings because most unmarried children reside with their parents even when they are well beyond their 20s. This is especially important in households where the household head has lower education because they have on average more children and their children enter the labor market earlier. Consequently, the average number of household members who have positive labor or pension income significantly increases with the age of the household head. Therefore, we do not see a notable drop in household income in the later part of the life-cycle of the household head.

Another feature peculiar to Turkey that contributes to the flatter household income profile is related to labor market dynamics. While many Turkish household heads can and do retire at a relatively early age – the transition to retirement starts at age 45 – many others choose to work until very late ages. In fact, almost 40 percent of the 65- to 69-year-old household heads still have labor income. This phenomenon is particularly prevalent among household heads with low levels of education because a significant fraction of them are not eligible for pension benefits due to insufficient work experience in the formal sector. Nonetheless, old-age employment is not limited to household heads with low education. Among the 65 to 69 year-olds who are high school or university graduates, 20 percent still have positive labor income. This persistence in the labor market at very late ages for household heads also prevents the drop in household income at the end of the life-cycle in Turkey.

Compared to other income components, pension income makes a significant contribution to the household budget. Although a significant share of old household heads among the least educated group have no pension income in their households, pension benefits constitute an important part of total household income when it is in fact part of household income. This is also part of the explanation for the non-decreasing household income conditional on education over the life-cycle.

Other notable findings from our analysis of the components of household income are that real property income is much larger than interest income, and that the gaps both in the holdings of real property income and interest income between households with a university-graduate household head and

the other households significantly widen with age. Although the percentage of households receiving transfer income excluding tax refunds is around 20 percent throughout the life-cycle, its share as a fraction of total household income is small.

Overall, several of these descriptive features of household income and its components over the life-cycle in Turkey are in line with the predictions of the life-cycle model. The key feature of the household income over the life-cycle in Turkey – a flat profile – is consistent with a life-cycle model where multiple generations of family members choose to live together in order to smooth income over the life-cycle. In addition, the fact that co-residence with children/parents is more likely in households where the head has primary or lower education – who, on average, is less likely to be eligible for pension benefits and has little or no financial wealth at retirement age – is also in line with the life-cycle model.

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APPENDIX

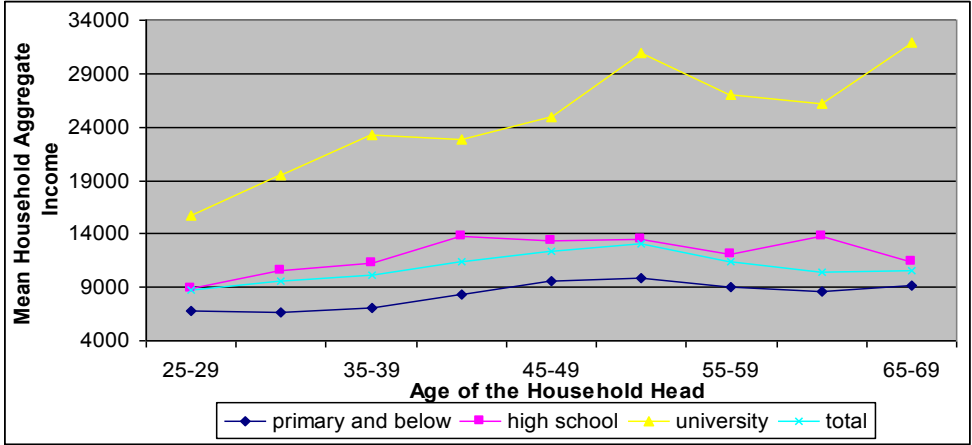


Figure A1: Mean Household Income by Educational Attainment of the Household Head (2003, TL)

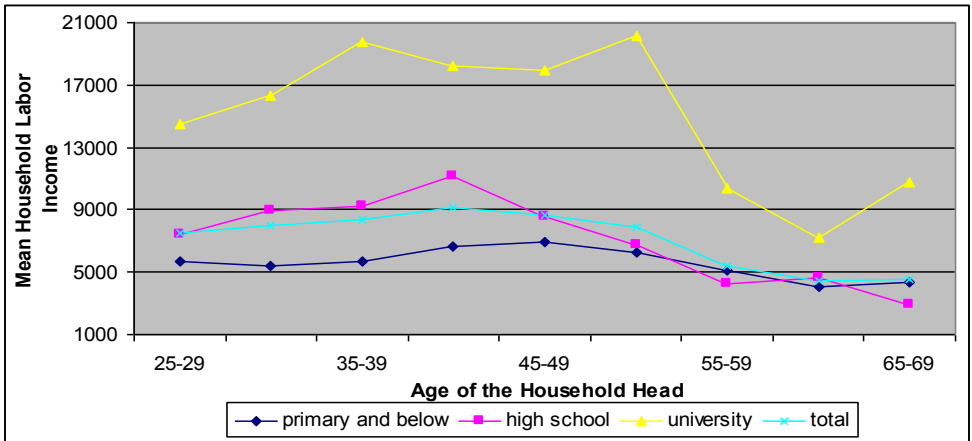


Figure A2: Mean Household Labor Income by Educational Attainment of the Household Head (2003, TL)

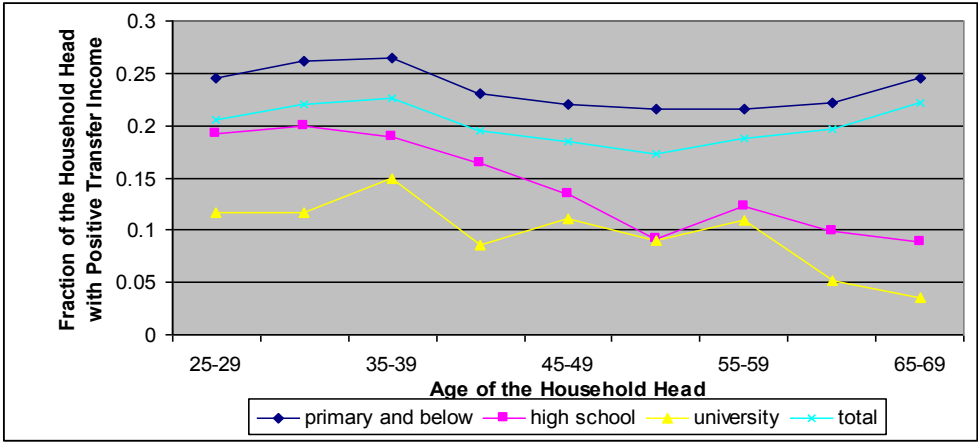


Figure A3: Fraction of Households with Positive Transfer Income – Tax Refunds Excluded – by Educational Attainment of the Household Head (2003)

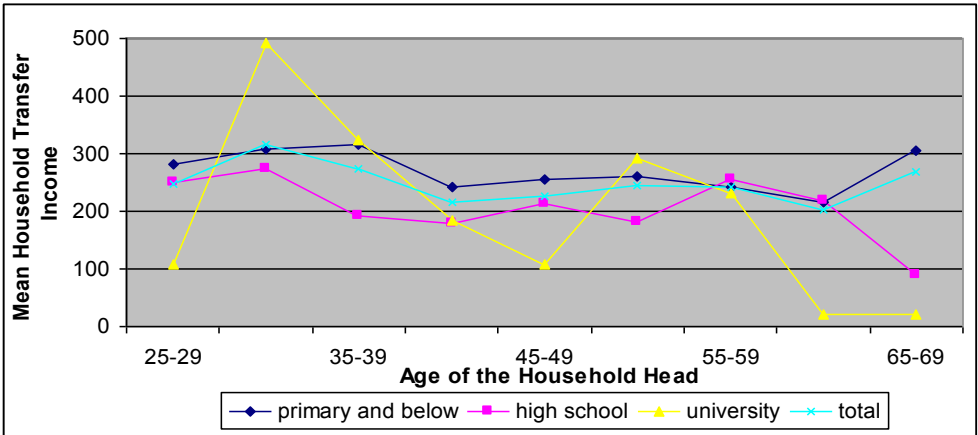


Figure A4: Mean Household Transfer Income – Tax Refunds Excluded – by Educational Attainment of the Household Head (2003, TL)

Table A1: Percentage of Various Income Components in Total Household Income by Age and Education of the Household Head (%)

A) Primary School or Less					
Age	Labor	Pension	Interest	Real Property	Transfer
25-29	83.9	2.4	0.4	9.0	4.3
30-34	80.1	2.8	0.3	11.9	4.9
35-39	80.5	2.4	0.6	11.8	4.8
40-44	79.0	5.3	0.8	11.7	3.2
45-49	71.1	13.5	0.9	11.3	3.2
50-54	62.5	19.8	1.0	13.3	3.3
55-59	55.8	26.4	0.9	13.4	3.5
60-64	47.6	31.1	1.4	16.5	3.5
65-69	46.8	29.0	0.6	19.4	4.2
B) High School Graduates					
Age	Labor	Pension	Interest	Real Property	Transfer
25-29	82.7	3.8	0.5	9.7	3.3
30-34	84.1	1.7	0.8	10.2	3.1
35-39	81.1	2.2	2.4	12.0	2.3
40-44	80.0	3.2	1.9	12.9	2.0
45-49	63.5	15.0	2.4	16.7	2.5
50-54	49.5	26.5	2.9	18.7	2.4
55-59	34.7	40.2	1.3	20.5	3.4
60-64	34.0	39.6	3.1	20.3	3.0
65-69	25.2	46.8	1.4	24.2	2.3
C) University Graduates					
Age	Labor	Pension	Interest	Real Property	Transfer
25-29	91.1	0.8	1.1	5.5	1.5
30-34	82.7	0.4	3.8	9.9	3.2
35-39	84.7	0.9	2.0	10.4	2.1
40-44	78.8	2.6	3.6	13.4	1.6
45-49	70.3	10.5	2.9	14.9	1.4
50-54	63.8	15.9	3.6	15.0	1.8
55-59	37.9	27.4	6.7	26.3	1.8
60-64	26.8	32.3	11.6	28.2	1.1
65-69	33.3	29.2	5.2	31.5	0.8