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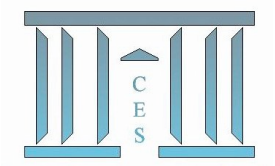
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# Measuring the Relative Domestic Production Scarcity of Time Spent in Domestic Activities for Turkey

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## Abstract

In this paper we specify and estimate the "domestic production scarcity of time use" as the time use demand elasticity of commodity use in domestic activity. We integrate domestic production technology as the good intensity of time use into scarcity in time use and monetary expenditure which enables us to better differentiate for which consumption groups households have a more complementary than substitutable nature with regards to domestic production. We match the Time Use Survey for 2006 with the Household Budget Survey for the years between 2007 and 2013(inclusive) by using a new matching method proposed by Rubin (1986).

Keywords: Household production technology, Matching statistics, Time use elasticity of substitution

JEL: J22, D12, D13

## 1. Introduction

The time counterparts to consumption activities in consumer choice became somewhat easier to ascertain in the way of the revolutionary works of Mincer (1963) and Becker (1965). However, their works opened up new problematic areas regarding the question of time within the traditional theory. Their efforts, which envisaged clarifying the blurred perception of time in economics, led the theories of time allocation, according to which, the role of time use at the level of individual decisions can be explored in many different ways.

Despite of these efforts, many issues regarding domestic production technology and the nature of combination of time with commodities still remain largely unsolved. Exploring the nature of the production process has been limited due to a lack of surveys able to report on household allocation of money and time together[1]. The absence of a single dataset recording household purchases of goods and services and the major information about how time use values for members of the same household create the problem of knowing the relative importance of goods and time in different household activities. Recent discussion in the literature shows that each commodity group would have non-identical time use combinations. Gronau and Hamermesh (2006) measure the combination of time and commodity in household production as the relative goods intensities of time spent in domestic production. They demonstrate that certain commodities such as health and travel are relatively goods-intensive to produce, while leisure activities are relatively time-intensive. But this raises a problem wherein the household production function indicates the relative difficulty of goods-time substitution in producing this commodity. Hamermesh (2008) examines the relationship

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[1] The applicability of Becker's home production specification is particularly criticized by Pollak and Watcher (1975)

between inputs to eating such as time spent in food purchasing, preparation, consumption and clean-up; and goods-purchased foods. He found that the elasticity of substitution between time and goods is quite low (i.e. lower than one) and that the substitution of goods for time is not simple in the case of eating activity. In other words, increasing the value of time (due to an increase in shadow prices) tends to increase the monetary expenditures relative to time spent on the domestic production of meals. The basic intuition underpinning this idea is that the necessary inputs for the production of meals are complementary rather than substitutionary. Chin (2008) found evidence that time intensive commodities are substituted for goods-intensive commodities for eating when wages increase. Further, Baral et al. (2011) suggest that the ‘‘food production’’ goods-time elasticity of substitution will be greater than the ‘‘eating’’ elasticity of substitution: they found that the ‘‘food production’’ goods-time elasticity of substitution is about 60% greater than the ‘‘eating’’ goods-time elasticity of substitution. The motivation for this differentiation is that there may be cases where the difference between a ‘‘pure production’’ and a ‘‘production plus consumption’’ elasticity of substitution between goods and time could be important. Later, Davis and You (2013) confirm that it is difficult to substitute money for time in home meal production. Canelas et al. (2014) generalized the method proposed by Hamermesh (2008) to estimate the elasticity of substitution for all types of commodities. They pointed out that substitutability exists between inputs of necessity goods, a higher elasticity of substitution for higher-educated households, and a higher elasticity is imposed on the opportunity cost of time rather than on the market wage.

In recent years, estimations using micro data on consumption and time use activities in order to better identify household member’s time and consumption allocation decisions have shown that domestic production technology may play an important role in consumption and labour force participation decision. Aktuna-Gunes et al. (2014) estimate a complete demand system equation including all commodity groups for different workers categories (such as wage workers and the self-employed). They conclude that including monetary time use values into monetary expenditures causes an significant, increase, approximately 22 percent points, in the estimated size of the informal economy in Turkey during the years from 2003 to 2006. Participation in the informal sector is closely related with labour market structure and the capacity for combining time with commodities for different household workers. Therefore, Aktuna-Gunes et al. (2016) later showed that including monetary time use and informal earnings into expenditure data allows for a better estimation of the demand elasticities. The idea is that different relative goods intensities and limits, in a combination of commodities with time, would cause an important change in income and price elasticities from those estimates where only monetary income elasticities are used. Their method is based on a Beckerian-type full price approach proposed by Gardes (2014, 2016)[2]. Gardes’ method allows us to better investigate the effect of relative good intensities on the demand elasticities of different subpopulations (young vs old, rich vs poor...), which is crucial for the micro-simulation of public policy, for measuring changes in welfare associated with price variations

[2] In that model, the full price is defined as the sum of the monetary price and the cost of time to produce one unit for the final good.

and for testing theoretical assumptions (such as the integratability of demand functions) (see e.g., Alpman and Gardes, 2016; Canelas et. al, 2013; Gardes and Starzec, 2009)

However, none of these works directly reports the degree of the capacity for combining households' commodity consumption and time use. A production technology measurement proposed by Gronau and Hamermesh (2006) indicates the commodity intensity in per time spent activity. This relationship indeed depends on two presuppositions: it is supposed that the main factor determining the relationship between consumption and time use is the existence of a shadow price for the time use activity. Indeed, the shadow price exists if and only if the individual knows the technology of combining consumption with corresponding time. Households substitute the time intensive goods with goods intensive ones since an increase in the shadow price of time immediately raises the relative price of time-intensive commodities. Therefore, the shadow price of time is modulated by time scarcity in each household time budget: if the labour supply is supposed to be endogenously determined under market conditions, then time scarcity (i.e. for the domestic production) depends totally on the relationship between income and non-labour time. The higher the labour supply and the lower the non-labour time, hence the greater the time scarcity and the shadow price of time (Gronau, 1986).

Therefore, in this paper we propose to measure the time use demand elasticity of commodities used in domestic production for each consumption group. We suppose that households may have less discretionary time uses in domestic production for certain activities. Thus, the time use demand elasticities of commodities used in domestic production can be interpreted as a sort of "Relative Domestic Production Scarcity". Relative Domestic Production Scarcities (RDPs) are determined through the Marginal Propensity of Time Uses (MPTu) for each expenditure group to be corrected by relative good intensity of time use in domestic production. Analyses of the results provide information on the nature of complementarity or substitutability in the combination of time use and commodity in the domestic production population for different subpopulations. To this end, we surmount the dataset problem by using statistical matching for the household budget survey with time use data based on Rubin's (1986) matching specification. We use the "concatenation" method as according to Rubin (1986, 1987) partial correlation between variable Y in survey A and variable Z in survey B can be used which enables us to display the uncertainty due to the use of fabricated data. We match Turkish Time Use Survey in 2006 with Household Budget Surveys between 2007 and 2013 inclusive.

The rest of the paper proceeds as follows: Section 2 represents household production technologies as the time use demand elasticity of commodity use. Descriptions of the household budget survey and time use survey data with statistical matching based on Rubin's' specification are given in Section 3. Section 4 represents and discusses the results for different subpopulations. Section 5 concludes the paper.

## 2. Relative Domestic Production Scarcity

Following the methodology proposed by Gardes (2016), let $\tau_{ih}$ be the time use necessary to produce one unit of that activity. Suppose that a Leontief technology allows the quantities of the two factors to be proportional to the activity *i* of households *h*:

$$\begin{aligned} x_{ih} &= \xi_{ih} z_{ih} \\ t_{ih} &= \theta_{ih} z_{ih} \end{aligned} \qquad \textit{so that } t_{ih} = \tau_{ih} x_{ih} \textit{ , yields } \tau_{ih} = \frac{\theta_{ih}}{\xi_{ih}}$$

This case corresponds to an assumption of complementarity between the two factors in the domestic technology[3].

Now, supposing that $t_{i,n}$ is the domestic time demand at time $n$ and $t_{i,n-1}$ is the available time as used in domestic production during the previous period $n$-1 for activity $i$, time scarcity can be simply denoted as the percentage change $t$ between two periods: $s_{i,t}=(t_{i,n} - t_{i,n-1})/ t_{i,n-1}$. If we suppose that a household requires the same amount of time spent at $t_{i,n}$ and $t_{i,n-1}$ for activity $i$, hence $s_{i,t}=0$ if $t_{i,n-1} = t_{i,n}$ , otherwise $s_{i,t}>0$ if $t_{i,n-1} < t_n$ and $s_{i,t}<0$ if $t_{i,n-1} > t_{i,n}$. Similarly $s_{i,x}= (x_{i,n} - x_{i,n-1})/ x_{i,n-1}$ gives the commodity scarcity in domestic activity, with $s_{i,x}=0$ if $x_{i,n-1} = x_{i,n}$ , otherwise $s_{i,x}>0$ if $x_{i,n-1} < x_{i,n}$ and $s_{i,x}<0$ if $x_{i,n-1} > x_{i,n}$[4]. It is clear that $s_{i,t}$ and $x_{i,t}$ depend on the supposition that the tastes, technology $\tau_{ih}$ used in domestic production and other external economic factors supposed to remain constant between the two periods.

We measure Relative Domestic Production Scarcity (*RDPs*) by the ratio of these two scarcities $s_{i,t}$ /$s_{i,x}$ which represents the time use demand elasticity of commodity use in domestic production for activity $i$.

$$RDPs_{t_i/x_i} = \frac{s_{t_i}}{s_{x_i}} = \frac{\left(t_{i,n} - t_{i,n-1}\right)}{\left(x_{i,n} - x_{i,n-1}\right)} \frac{x_{i,n-1}}{t_{i,n-1}} = \frac{\Delta t_i}{\Delta x_i} \frac{\xi_{ih}}{\theta_{ih}} = MPTu_{\partial x_i \to \partial t_i} (\tau_{ih})^{-1} \qquad (1)$$

*RDPs* in equation (1) equals to Marginal Propensity of Time Use (*MPTu*) with respect to commodity use in domestic production multiplied by $(\tau_{ih})^{-1}$ as the inverse of production technology for consumption activity $i$ of household $h$. The inverse production technology corresponds to the technology used by Gronau and Hamermesh (2006) as the commodity intensity of time use for activity $i$. *RDPs* in equation (1) can further be interpreted as the time use demand elasticity of commodity use as follows:

$$RDPs_{t_i/x_i} = \varepsilon_{t_i/x_i} = \frac{\partial \ln t_i}{\partial \ln x_i} \qquad (2)$$

Regarding the theory, the substitution between time use and commodity would result in negative values of elasticity ($\varepsilon_{t_i/x_i} < 0$) while positive ($\varepsilon_{t_i/x_i} > 0$) if complementary between time and commodity use exists[5].

## 3. Micro Data, Matching Statistics and Domestic Scarcity Analysis

We use two household surveys: the Time use survey (TUS) in 2006 and the Household budget surveys (HBS) for the years between 2007 and 2013 from the Turkish Statistical Institute (TURKSTAT). The HBS have been conducted on a total of monthly 720 and annually 8640

[3] An alternative hypothesis based on the substitutability between the two factors is discussed in Alpman and Gardes, 2016.

[4] $s_x$ can also be interpreted as the scarcity of commodity from year to another when needs change with respect to previous year. The simple reason is that an increase in income yields new needs (i.e. income elasticity of minimum income to satisfy basic needs takes the value between zero and one, see Gardes and Merigan, 2005).

[5] *RDP s* measures the goods-time elasticity of substitution (*i.e.* the elasticity of time use substitution between commodity use in domestic production). For the derivation of elasticity see "Elasticity of time use substitution" in the Appendix.

households for each year. Three basic groups of variables have been obtained from these surveys: Variables of the socio-economic status of the households such as the status of property of house, living in village or in rural areas, etc; variables related to individuals (age, gender, academic background). Consumption expenditures variables (food and non alcoholic beverages, alcoholic beverages with cigarette and tobacco, clothing, health, transportation, education services, etc.) In the TUS in 2006, approximately 390 households were selected each month giving a total of 5070 households during the whole year. Within these households 11 815 members aged 15 years and over were interviewed and were asked to complete two diaries – one for a weekday and one for a weekend day – by recording all of their daily activities during 24 hours at ten-minute-slots. This survey on Time use in 2006 is matched independently on the Family budget survey realizing monetary and time expenditure data. In this application we do not take into account the possible spatial autocorrelation within regions.

We combine the monetary and time expenditures into a unique consumption activity at the individual level. We proceed with the matching of these surveys by using similar exogenous characteristics in both datasets as age, size of household using OECD equivalence scales, proportion of children in the households, matrimonial situation, home ownership, number of household members, geographical location separately for head of household and wife. The selection equation concerns the households which have a positive time use of their activities More precisely, we estimate 8 types of time use in the TUS which are also compatible with the available data from HBS as follows:

1. Food Time (TUS) - Food Expenditures (HBS)
2. Personal Care and Health Time (TUS) - Personal Care and Health Expenditures (HBS)
3. Housing Time (TUS) - Dwelling Expenditures (HBS)
4. Clothing Time (TUS) – Clothing Expenditures (HBS)
5. Education Time (TUS) - Education Expenditures (HBS)
6. Transport Time (TUS) - Transport Expenditures (HBS)
7. Leisure Time (TUS) - Leisure Expenditures (HBS)
8. Other Time (TUS) - Other Expenditures (HBS)

Food Time includes household and family care as the administration of food. Personal Care Time consists of personal care, commercial-managerial-personal services, helping sick or old household person. Housing Time corresponds to household-family care as home care, gardening and pet animal care, replacement of house-constructional work, repairing and administration of the household. Clothing Time consists of washing clothes and ironing. Education Time includes study (education) and childcare. Transport Time consists of travel and unspecified time use. Leisure Time corresponds to voluntary work and meetings, social life and entertainment as social life, entertainment-culture, and resting-holiday, sport activity as physical practice, hunting, fishing etc., sport, hobbies and games as art and hobbies, mass media as reading, TV/Video, radio and music. Other Time includes employment and labor searching times.

### 3.1. Matching Procedure

Rubin's (1986) matching approach is considered to be distinct from almost all other work on this topic (Moriarity and Scheuren, 2003). In fact, when variables *Y* and *Z* are not jointly observed for any unit in survey *A* and in survey *B*, the missing values of *Y* are imputed most often according to *Y's* relationship with common variable X, and the missing values of *Z* are imputed according to the relationship *Z* has with common variables *X*. Obviously, when the partial correlation value between *Y* and *Z* for given common variables *X* is implicitly and wrongly assumed to be zero imputed values are likely to be inaccurate. As shown by Alpman (2016), in the most simple case, the same *Y* values, for example, would be imputed to units with different *Z* and identical *X* when in fact the imputed *Y* values should differ with *Z* for a given *X* , if the partial correlation between Y and Z given X is other than zero.

In this paper, we take into account the concatenation between imputed variables in the time dataset[6]. To summarise the concatenation methodology proposed by Rubin (1986, 1987), the variable *Y* in survey *A* is imputed in survey *B* and the variable *Z* in survey *B* is imputed in survey *A*. The software used for this matching was developed by Alpman (2016). The details of the matching procedure are as follows:

i. We consider three different kinds of variable sets: the first group of variables (*Y*) include the above-explained time use categories in the TUS. The second group (*Z*) represents the expenditure variables in the HBS corresponding to (*Y*) in the TUS. The third set is the common variables (*X*) such as sex, age, marital status, education level, geographic location, employment status, sector of work and type of firm in both surveys. The main hypothesis is that the partial correlation between *Y* and *Z* given *X* is supposed to be other than zero and is denoted thusly: $\rho_{Y,Z|X\neq 0}$.

ii. Thus, the partial variance of *Y* and *Z* given *X*, respectively $\rho_{Y|X}$ and $\rho_{Z|X}$, can be obtained by linear regressions of *Y* and *Z* on *X*. We begin with a linear regression model where *Y* and Z are successively regressed on *X*:

$$Y = a_0 + aX + \epsilon \quad (3)$$

$$Z = b_0 + bX + \mu \quad (4)$$

iii. The partial covariance of (*Y*, *Z*) given *X*, denoted $\sigma_{\mathrm{Y,Z|X}}$, can be deduced from $\rho_{Y,Z|X}\ (\rho_{Y|X} * \rho_{Z|X})^{1/2}$ .

iv. Supposing that $\alpha$ and $\beta$ are the column vectors of the regression coefficients of *Y* on (1,*X*) and *Z* on (1,*X*) respectively, *Y* and *Z* values may be generated for the dataset formed by *A* and *B* by using these regression coefficients. In this prediction, it is assumed that *Y* and *Z* values are conditionally independent for a given *X*. Rubin (1986) applies the sweep matrix operator: sweeping on *Y* gives the regression coefficients of *Z* on (1,*X*,*Y*) while sweeping on *Z* gives the regression coefficients of *Y* on (1,*X*,*Z*). The new regression coefficients are used to create new predicted *Y* and *Z* values for the dataset formed by *A* and *B*.

[6] We would like to thank A. Alpman for his help in the application of this matching procedure. See a discussion of matching procedure Alpman and Gardes (2016).

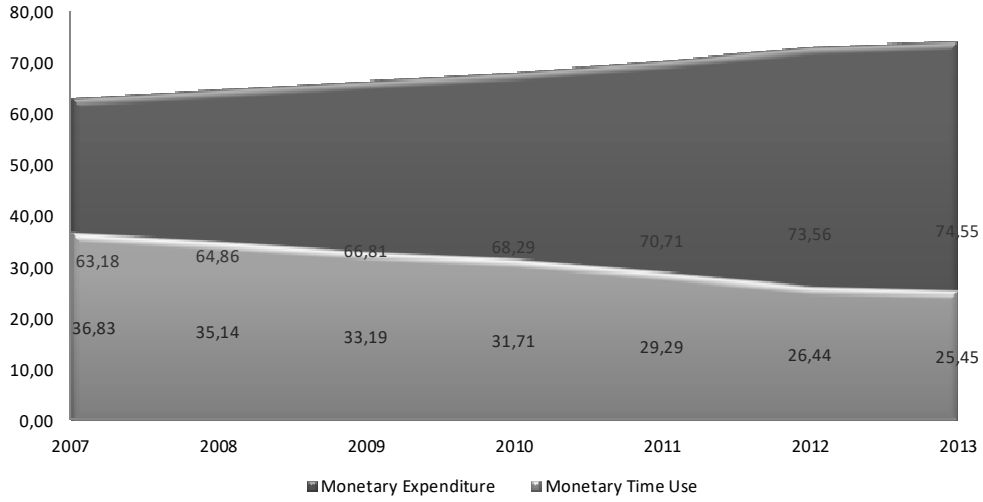
v. Thus, the predicted *Y* and *Z* are used in the prediction equation for *Y* given *X* and *Z* and in the prediction equation for *Z* given *X* and *Y*. These are the new prediction coefficients used to create new *Y* and *Z* values for the dataset formed by *A* and *B*: each missing unit of *Z* in *A* (and *Y* in *B*) is matched with the closest new predicted *Z* value in *B* (and *Y* in *A*), dependent on identical characteristics informed by *X*.

According to Rubin (1986), a multiple imputation is required to avoid erroneous conclusions. That is to say, Rubin (1986) suggestss repeating the steps from *ii* to *v* simply due to the fact that uncertainty exists regarding the arbitrary choice of $\rho_{Y,Z|X\neq 0}$.

### 3.2. Descriptive Analysis and Estimation Results

We reference the 2006 TUS and HBS for the years 2007 and 2013 inclusive, conducted by TURKSTAT[7]. In our analysis, we use the market wage rates for each year to derive monetary time use values. We compute the full expenditure budget shares in Graph 1 to give a picture of the changes in the shares of monetary time use and monetary expenditure between 2007 and 2013. Time budget shares decreased gradually between 36.8% in 2007 to 25.4% in 2013; while monetary expenditure budget shares increased from 63.1% in 2007 to 74.5% in 2013.

Graph 1: Full Budget Shares (from 2007 to 2013)



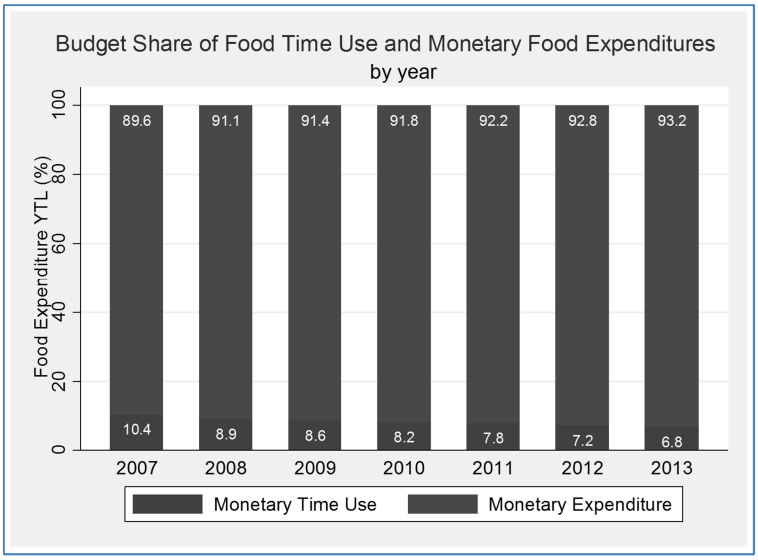

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

However, these findings can be misleading because of the fact that the combination of time use and commodity are indeed different for each consumption group. In order to clarify this, we decided to look separately at the full expenditure budget shares for each consumption group. As can be observed from the average food time use and monetary food expenditure in Graph 2, the share of time use of food continuously decreases from 10.4% in 2007 to 6.8% in 2013 where the part of food time use values in 2013 is 52ssd.9% lower than in 2007. The

[7] The summary statistics are given in the appendix.

most significant of these changes is between the years 2007 and 2008 where there is 1.5 point of difference. The average time use share over seven years is 8.27%[8].

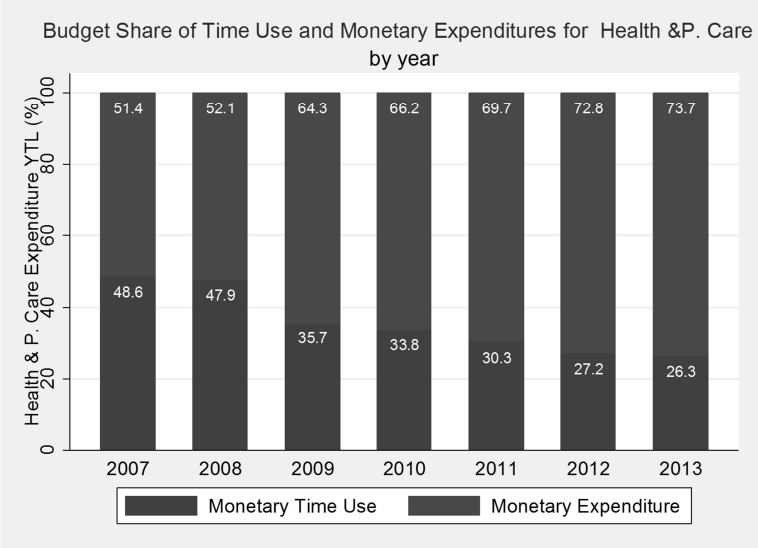
Graph 2:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

Again, in the health and personal care category, the time budget shares of health and personal care decreased at a constant rate across between the years of observation. According to Graph 3, the most intensive decrease for time use budget shares happened between 2008 and 2009 where it fell from 47.9% to 35.7%. In contrast, the commodity share rose to 73.7% in 2013, while it was 51.4% in 2007.

Graph 3:

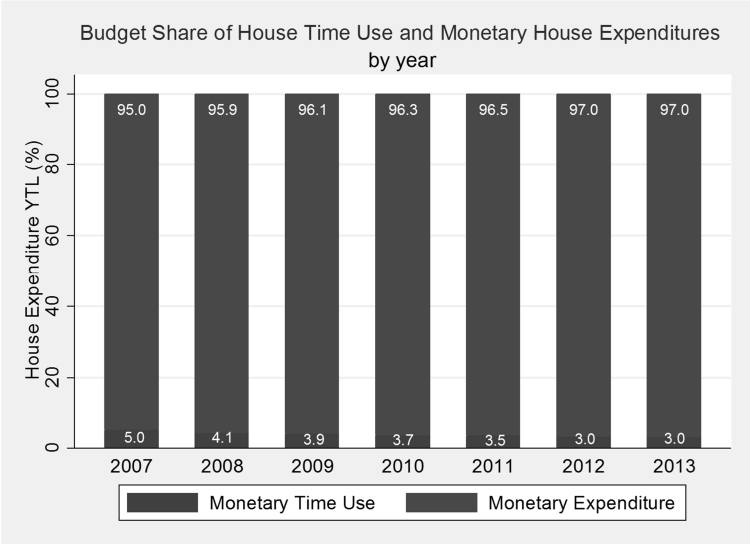



*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

[8] In general, the share of time use shares are expected to be higher than 8.27%. This is simply due to the fact that the time use in food category in TUS 2006 only includes the time spent for food preparation (washing food, cooking, preparing coffee, tea etc., setting table etc.), dish washing, removing waste from the refrigerator, clearing the table etc., doing/drain/ freeze canned, pickle, cheese, bologna, saltwater etc. but not include shopping and eating time.

The housing category has the highest monetary expenditure budget share group among other groups for the years of observation, can be seen in Graph 4. Its budget share reaches up to 97% compared to 3% for time budget shares in 2013. Time use in housing is scarce apparently more important than food for Turkey.

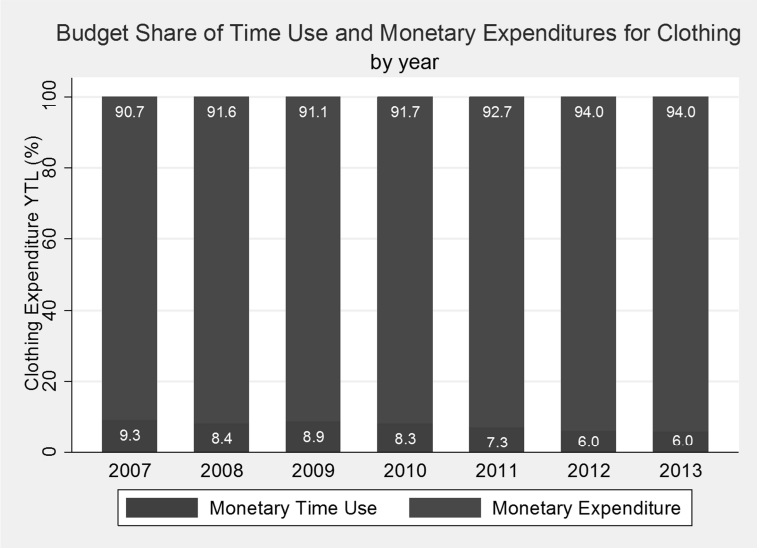
Graph 4:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

When we look at Graph 5, we can calculate that the clothing time use budget shares represents 7.74% of full expenditure in the average. The highest time use budget share was 9.3% in 2007 and the lowest years were 2012 and 2013 with 6%. There is also a decreasing trend between 2007and 2013, with the exception of 2009 with the share at 8.9%.

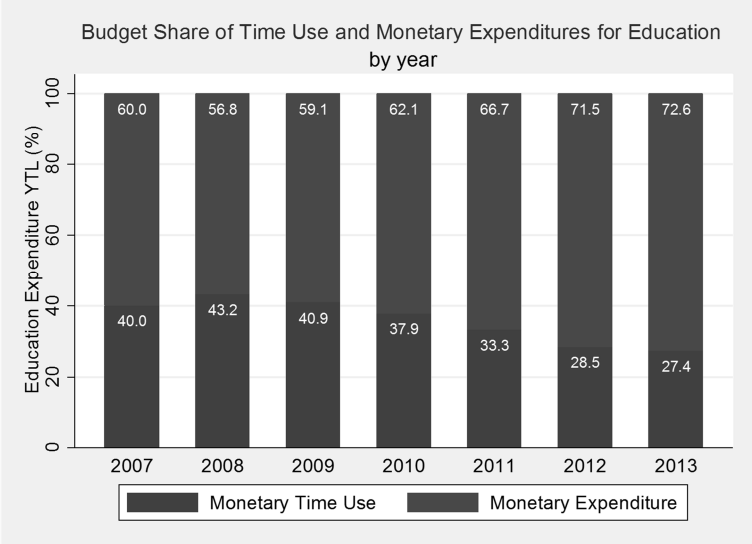
Graph 5:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

Education monetary expenditure takes three fifths of full expenditure in 2007. Graph 6 points out that this rate tends to increase due to lower time use budget shares for the years 2010, 2011, 2012 and 2013. The time use share only increased in 2008 and 2009 with rates of 43.2% and 40.9%, respectively.

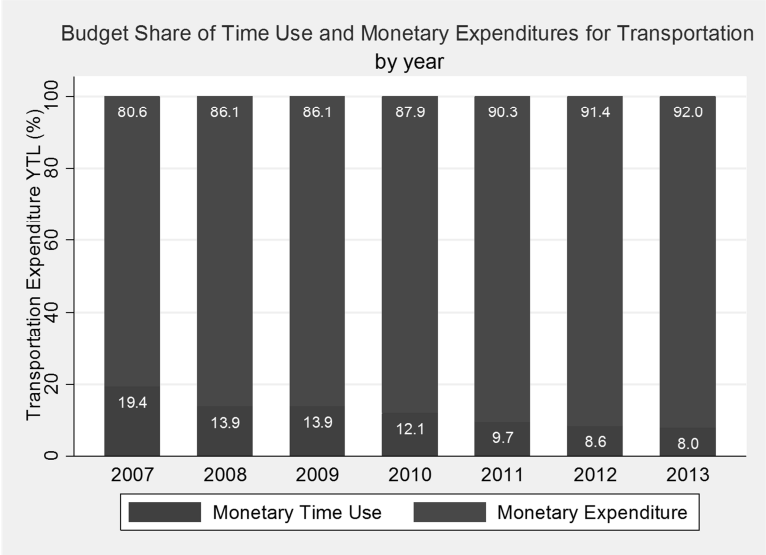
Graph 6:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

Graph 7 indicates a decreasing tendency for transport time use shares between these years. For the years 2008 and 2009, the time use and commodity shares remain constant. The highest time use share was in 2007 with a value of 19.4% and its lowest rate was 8% in 2013.

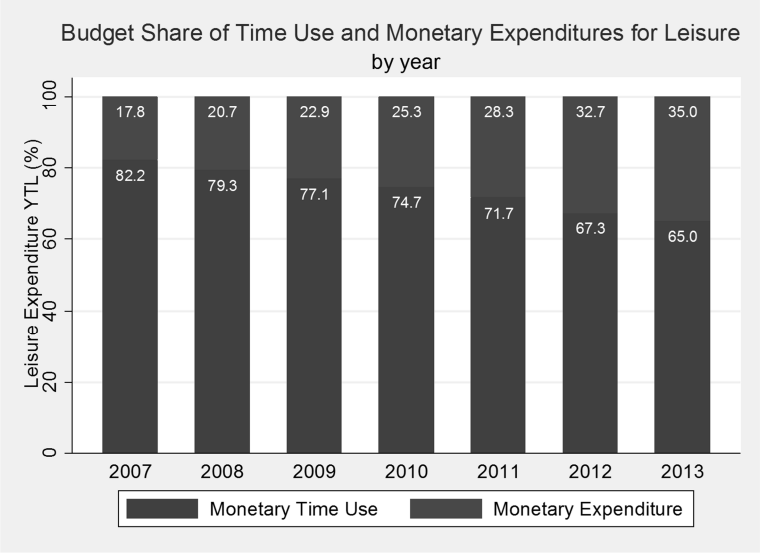
Graph 7:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

The greater part of leisure expenditures consists of time spent (see Graph 8). However, there is a marked decreasing trend of around 3% for each year. Thus, 82.2% was the highest share in 2007 and 65% in 2013 was the lowest share of time use share in full expenditure.

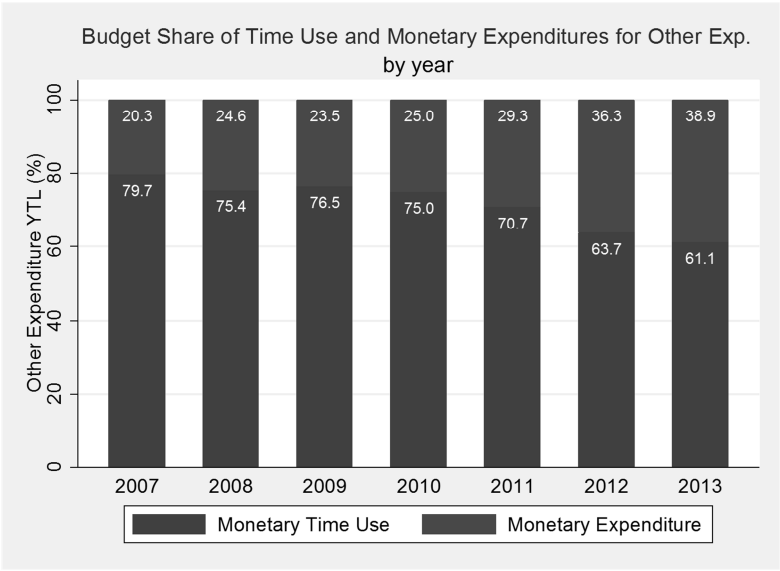
Graph 8:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

For the other expenditure groups in Graph 9 very high time use budget shares are apparent between 2007 and 2013. This rate remains quite steady until 2010 however, it decreases significantly from 2011 and took 61.1% in 2013.

Graph 9:




*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

We believe that the methodology proposed by Gronau and Hamermesh (2006) for the relative commodity intensity of time use as the ratio between commodity and time spent in domestic production for the subpopulation and for all years, allows us to better capture time use scarcity in domestic production. The Table 1 gives a summary of the production technology for Turkey.

Table 1: Evolution of Commodity per Time Spent between the Years 2007 and 2013

| Relatif Comodity Intensity of Time (Monetary Expenditures/Monetary Time Use Expenditures) | Food | Health & Personal Care | Housing | Clothing | Education | Transport | Leisure | Other |
|---|---|---|---|---|---|---|---|---|
| **Age (2007-2013)** | | | | | | | | |
| 15-24 | 9,83 | 0,79 | 13,42 | 3,63 | 0,50 | 3,56 | 0,25 | 0,20 |
| *Std. Dev.* | *20,11* | *8,65* | *26,09* | *7,96* | *4,60* | *18,33* | *3,69* | *0,90* |
| 25-34 | 7,90 | 0,68 | 15,76 | 3,39 | 0,39 | 4,05 | 0,23 | 0,08 |
| *Std. Dev.* | *16,46* | *4,15* | *29,59* | *8,53* | *2,44* | *22,74* | *3,22* | *0,57* |
| 35-44 | 7,77 | 0,56 | 15,41 | 2,58 | 1,16 | 3,99 | 0,21 | 0,08 |
| *Std. Dev.* | *16,65* | *1,70* | *29,10* | *6,64* | *9,89* | *20,76* | *1,90* | *0,41* |
| 45-54 | 10,34 | 0,65 | 13,15 | 2,67 | 0,92 | 4,26 | 0,22 | 0,09 |
| *Std. Dev.* | *22,05* | *3,69* | *24,43* | *8,53* | *5,46* | *20,98* | *8,84* | *0,36* |
| 55-64 | 8,97 | 0,59 | 11,58 | 2,67 | 0,43 | 3,94 | 0,10 | 0,09 |
| *Std. Dev.* | *18,62* | *4,88* | *22,19* | *7,02* | *2,29* | *29,76* | *1,19* | *0,73* |
| 65+ | 7,54 | 0,63 | 11,69 | 2,20 | 0,93 | 4,47 | 0,17 | 0,10 |
| *Std. Dev.* | *16,23* | *2,45* | *25,13* | *5,04* | *2,77* | *20,03* | *0,91* | *0,49* |
| **Geographique(2007-2013)** | | | | | | | | |
| Rural | 8,41 | 0,57 | 8,70 | 2,33 | 0,33 | 2,63 | 0,12 | 0,08 |
| *Std. Dev.* | *18,70* | *7,72* | *20,07* | *6,91* | *3,39* | *19,47* | *2,84* | *0,48* |
| Urban | 9,20 | 0,70 | 15,99 | 3,26 | 0,73 | 4,30 | 0,25 | 0,12 |
| *Std. Dev.* | *19,08* | *4,63* | *29,61* | *8,33* | *6,93* | *27,24* | *5,58* | *0,70* |
| **Household Type(2007-2013)** | | | | | | | | |
| Married without children | 7,14 | 0,49 | 11,63 | 1,85 | 0,17 | 3,25 | 0,11 | 0,07 |
| *Std. Dev.* | *14,86* | *4,51* | *27,14* | *5,91* | *2,76* | *29,94* | *0,75* | *0,69* |
| Married with children | 9,43 | 0,64 | 14,85 | 3,31 | 0,78 | 4,00 | 0,23 | 0,12 |
| *Std. Dev.* | *19,29* | *4,13* | *27,83* | *8,45* | *7,36* | *26,10* | *5,94* | *0,57* |
| Single persons without children | 2,57 | 0,42 | 8,24 | 1,58 | 0,41 | 1,89 | 0,12 | 0,04 |
| *Std. Dev.* | *6,63* | *1,77* | *20,47* | *5,20* | *2,46* | *16,18* | *0,99* | *0,15* |
| Single persons with children | 6,98 | 0,47 | 13,02 | 3,05 | 0,34 | 1,80 | 0,13 | 0,15 |
| *Std. Dev.* | *14,52* | *1,31* | *24,60* | *7,05* | *2,94* | *14,80* | *0,82* | *0,85* |
| Other family types | 9,84 | 0,83 | 12,51 | 3,01 | 0,42 | 3,86 | 0,21 | 0,10 |
| *Std. Dev.* | *21,16* | *9,07* | *26,12* | *8,02* | *3,62* | *21,56* | *3,63* | *0,73* |
| **Education (Male)(2007-2013)** | | | | | | | | |
| Pre-Primary Education | 6,33 | 0,69 | 11,21 | 2,87 | 0,69 | 4,50 | 0,21 | 0,13 |
| *Std. Dev.* | *15,47* | *5,32* | *23,58* | *7,63* | *6,14* | *22,05* | *2,67* | *0,67* |
| Primary Education | 10,01 | 0,31 | 6,60 | 0,84 | 0,23 | 1,07 | 0,04 | 0,03 |
| *Std. Dev.* | *20,10* | *2,45* | *16,40* | *2,58* | *1,25* | *8,24* | *0,39* | *0,15* |
| Secondary Education | 17,11 | 0,49 | 18,19 | 4,13 | 0,58 | 2,11 | 0,09 | 0,05 |
| *Std. Dev.* | *24,61* | *3,45* | *28,15* | *6,63* | *2,87* | *16,78* | *1,03* | *0,26* |
| Tertiary Education | 23,75 | 0,63 | 30,51 | 2,97 | 0,71 | 3,75 | 0,40 | 0,07 |
| *Std. Dev.* | *27,86* | *2,34* | *36,27* | *4,68* | *3,03* | *32,20* | *16,01* | *0,51* |
| Higher Education | 15,98 | 0,97 | 46,92 | 6,08 | 1,58 | 5,58 | 0,39 | 0,14 |
| *Std. Dev.* | *17,70* | *1,96* | *55,79* | *11,96* | *6,03* | *19,83* | *1,42* | *0,92* |
| **Education (Female)(2007-2013)** | | | | | | | | |
| Pre-Primary Education | 11,33 | 0,67 | 16,41 | 3,34 | 0,71 | 3,74 | 0,21 | 0,11 |
| *Std. Dev.* | *20,93* | *4,94* | *29,04* | *7,24* | *3,85* | *17,05* | *4,48* | *0,61* |
| Primary Education | 1,78 | 0,52 | 3,30 | 1,54 | 0,29 | 2,90 | 0,08 | 0,04 |
| *Std. Dev.* | *3,90* | *6,41* | *6,89* | *5,85* | *2,52* | *17,31* | *0,97* | *0,27* |
| Secondary Education | 1,71 | 0,54 | 4,87 | 1,92 | 0,49 | 4,39 | 0,13 | 0,07 |
| *Std. Dev.* | *3,28* | *3,29* | *10,65* | *5,99* | *3,17* | *24,89* | *1,88* | *0,49* |
| Tertiary Education | 1,88 | 0,78 | 8,07 | 3,77 | 1,47 | 8,51 | 0,28 | 0,12 |
| *Std. Dev.* | *3,63* | *5,62* | *18,23* | *11,40* | *21,60* | *67,29* | *3,35* | *0,54* |
| Higher Education | 2,71 | 1,25 | 18,13 | 6,70 | 2,00 | 13,59 | 0,74 | 0,19 |
| *Std. Dev.* | *6,87* | *1,91* | *40,08* | *14,76* | *10,74* | *40,89* | *2,22* | *0,84* |
| **(2007-2013)** | | | | | | | | |
| Total | 8,66 | 0,66 | 13,67 | 2,94 | 0,70 | 4,05 | 0,20 | 0,11 |
| *Std. Dev.* | *18,37* | *4,85* | *26,64* | *7,48* | *5,64* | *21,60* | *4,08* | *0,60* |
| **Years** | | | | | | | | |
| 2 007 | 9,78 | 0,59 | 14,13 | 3,29 | 0,89 | 3,14 | 0,19 | 0,10 |
| *Std. Dev.* | *20,44* | *4,79* | *28,51* | *8,15* | *11,46* | *18,61* | *3,45* | *0,73* |
| 2 008 | 9,64 | 0,45 | 14,42 | 3,19 | 0,57 | 4,03 | 0,17 | 0,12 |
| *Std. Dev.* | *19,98* | *2,27* | *27,40* | *7,97* | *2,82* | *20,64* | *1,54* | *0,62* |
| 2 009 | 8,87 | 0,64 | 13,22 | 2,61 | 0,60 | 3,35 | 0,20 | 0,10 |
| *Std. Dev.* | *18,70* | *4,14* | *26,62* | *6,49* | *3,34* | *15,39* | *4,01* | *0,54* |
| 2 010 | 8,34 | 0,61 | 13,05 | 2,64 | 0,61 | 3,66 | 0,17 | 0,09 |
| *Std. Dev.* | *17,21* | *2,30* | *25,30* | *6,53* | *3,50* | *18,03* | *1,43* | *0,42* |
| 2 011 | 8,25 | 0,74 | 12,95 | 2,78 | 0,65 | 4,48 | 0,19 | 0,11 |
| *Std. Dev.* | *17,08* | *4,93* | *25,08* | *6,75* | *3,86* | *26,50* | *1,64* | *0,70* |
| 2 012 | 7,99 | 0,82 | 14,34 | 3,15 | 0,77 | 4,70 | 0,23 | 0,12 |
| *Std. Dev.* | *17,96* | *8,62* | *27,32* | *8,69* | *4,68* | *20,40* | *3,53* | *0,57* |
| 2 013 | 7,86 | 0,72 | 13,53 | 2,90 | 0,79 | 4,84 | 0,26 | 0,12 |
| *Std. Dev.* | *16,90* | *3,40* | *25,98* | *7,33* | *4,73* | *27,90* | *8,04* | *0,60* |

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

In this table, production technology is calculated as the relative goods intensity of time use for each consumption group for different subpopulations[9]. Thus, the relative goods/time intensity is obtained by dividing the monetary values by the corresponding monthly time spent amounts. For each activity and subpopulation, we calculate the ratio of the goods to time inputs allocated to commodity production.

As observed previously, housing takes relatively large shares of total expenditure compared to the time inputs for home maintenance. By contrast, commodity amounts per time spent on transport, clothing, education, leisure and other expenditures take lower values relative to food. One of the interesting findings from this statistics summary is that good intensity of health with personal care time spending is very low. Even if average monthly time spent on health with personal care activities takes the second highest values (such as 239 hours) among other activities, the average monetary expenditure amount took very low values.

Table 2 reports $RDPs_{t_i/x_i}$ of time use over goods as the elasticity of substitution between time and commodity use in domestic production for the period from 2007 to 2013[10]. The estimation results shows that time use in domestic production is substituted with commodity use since they all take negative values for all groups. There isn't a unitary variation between time use and commodity use which means that a percentage changes in consumption causes relatively lower changes in time use. Elasticity results confirm that time use in two necessities, housing and food, is scarce in domestic production since households have a tendency to decrease in time spent relative to an increase in commodity use. The results are greater for food while smaller for housing for the years from 2007 to 2013. The last column in Table 2 reports the average elasticity values for these years. Finally, the estimation results report that clothing, health with personal cares, leisure, other expenditures, education and transport have higher discretionary time uses in domestic production as supposed by the theory.

Table 2: Time Use Demand Elasticity of Commodity Used in Domestic Production
(Whole population, from 2007 to 2013)

| Et/x | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Average |
|---|---|---|---|---|---|---|---|---|
| Food | -0.170*** | -0.195*** | -0.162*** | -0.141*** | -0.125*** | -0.111*** | -0.110*** | **-0,145** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | |
| Health and Perso. Care | -0.036*** | -0.037*** | -0.024*** | -0.040*** | -0.037*** | -0.031*** | -0.050*** | **-0,036** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Housing | -0.183*** | -0.244*** | -0.204*** | -0.184*** | -0.233*** | -0.255*** | -0.258*** | **-0,223** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | |
| Clothing | -0.020*** | -0.036*** | -0.029*** | -0.038*** | -0.054*** | -0.042*** | -0.042*** | **-0,037** |
| | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.00) | |
| Education | -0.072*** | -0.092*** | -0.101*** | -0.075*** | -0.090*** | -0.091*** | -0.092*** | **-0,088** |
| | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | |
| Transport | -0.073*** | -0.089*** | -0.086*** | -0.094*** | -0.080*** | -0.096*** | -0.100*** | **-0,088** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Leisure | -0.035*** | -0.050*** | -0.054*** | -0.048*** | -0.045*** | -0.041*** | -0.043*** | **-0,045** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Others | -0.061*** | -0.048*** | -0.068*** | -0.047*** | -0.050*** | -0.062*** | -0.053*** | **-0,056** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.01) | |

** p<0.05, ** p<0.01, *** p<0.001*

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

[9] Summary statistics on time use and monetary expenditures are given at the Appendix.

[10] The elasticity estimation results for all years are given at the Appendix from Table 15 to Table 21.

According to elasticity of time use commodities in domestic production by age reported in Table 3, the time use in education, transport and other activities are complementary for all ages. Therefore, the degree of complementarity increased for education and transport from 2007 to 2013. This result confirms the fact that any changes in consumption of education and transport for the younger population require more time spent on them than it would for the older population.

Table 3: Time Use Demand Elasticity of Commodities Used in Domestic Production (By age from 2007 to 2013)

| | Age between 15-24 | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Food | -0.216*** | -0.150*** | -0.116*** | -0.150*** | -0.402*** | -0.390*** | -0.375*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Health and Perso. Care | -0.094*** | -0.071*** | -0.072*** | -0.061*** | -0.088*** | -0.088*** | -0.087*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.391*** | -0.284*** | -0.276*** | -0.285*** | -0.472*** | -0.413*** | -0.447*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.176*** | -0.311*** | -0.265*** | -0.367*** | -0.275*** | -0.326*** | -0.333*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Education | 2.539*** | 2.525*** | 2.254*** | 2.436*** | 2.402*** | 2.481*** | 2.321*** |
| | (0.44) | (0.41) | (0.22) | (0.20) | (0.12) | (0.10) | (0.12) |
| Transport | 0.249*** | 0.390*** | 0.404*** | 0.395*** | 0.291*** | 0.309*** | 0.298*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.544*** | -0.585*** | -0.592*** | -0.589*** | -0.564*** | -0.527*** | -0.537*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 0.391*** | 0.239*** | 0.253*** | 0.240*** | 0.372*** | 1.415*** | 1.560*** |
| | (0.07) | (0.06) | (0.07) | (0.07) | (0.06) | (0.09) | (0.08) |
| | Age between 25-34 | | | | | | |
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Food | -0.175*** | -0.094** | -0.165*** | -0.150*** | -0.338*** | -0.323*** | -0.331*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) |
| Health and Perso. Care | -0.098*** | -0.070*** | -0.072*** | -0.064*** | -0.088*** | -0.092*** | -0.083*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.505*** | -0.450*** | -0.441*** | -0.473*** | -0.615*** | -0.613*** | -0.617*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.286*** | -0.368*** | -0.376*** | -0.385*** | -0.227*** | -0.101*** | -0.074** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) |
| Education | 1.949*** | 1.923*** | 1.725*** | 1.892*** | 1.839*** | 1.972*** | 1.852*** |
| | (0.44) | (0.41) | (0.22) | (0.20) | (0.12) | (0.10) | (0.12) |
| Transport | 0.260*** | 0.384*** | 0.411*** | 0.383*** | 0.261*** | 0.266*** | 0.264*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.578*** | -0.607*** | -0.584*** | -0.613*** | -0.589*** | -0.545*** | -0.550*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 1.008*** | 0.921*** | 0.871*** | 0.891*** | 1.028*** | 2.040*** | 2.151*** |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.05) | (0.08) | (0.08) |
| | Age between 35-44 | | | | | | |
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Food | -0.171*** | -0.081** | -0.107*** | -0.101*** | -0.313*** | -0.180*** | -0.176*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) |
| Health and Perso. Care | -0.086*** | -0.061*** | -0.060*** | -0.054*** | -0.077*** | -0.076*** | -0.069*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.467*** | -0.408*** | -0.385*** | -0.401*** | -0.551*** | -0.539*** | -0.509*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.070* | -0.202*** | -0.158*** | -0.194*** | -0.067* | -0.007 | 0.000 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Education | 1.388** | 1.350** | 1.131*** | 1.288*** | 1.223*** | 1.550*** | 1.408*** |
| | (0.44) | (0.41) | (0.22) | (0.20) | (0.12) | (0.10) | (0.12) |
| Transport | 0.209*** | 0.324*** | 0.362*** | 0.314*** | 0.226*** | 0.218*** | 0.204*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.482*** | -0.507*** | -0.493*** | -0.507*** | -0.495*** | -0.445*** | -0.448*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 1.054*** | 0.942*** | 0.849*** | 0.916*** | 1.022*** | 2.031*** | 2.120*** |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.05) | (0.08) | (0.08) |

| | Age between 45-54 | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Food | -0.168*** | -0.082** | -0.117*** | -0.101*** | -0.252*** | -0.217*** | -0.223*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) |
| Health and Perso. Care | -0.059*** | -0.038*** | -0.045*** | -0.041*** | -0.058*** | -0.053*** | -0.054*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.298*** | -0.269*** | -0.269*** | -0.260*** | -0.363*** | -0.312*** | -0.323*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.089** | -0.189*** | -0.178*** | -0.150*** | -0.129*** | -0.073** | -0.056* |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Education | 1.315** | 1.303** | 1.060*** | 1.281*** | 1.245*** | 1.211*** | 1.095*** |
| | (0.44) | (0.41) | (0.22) | (0.20) | (0.12) | (0.10) | (0.12) |
| Transport | 0.156*** | 0.291*** | 0.309*** | 0.275*** | 0.167*** | 0.157*** | 0.158*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.304*** | -0.324*** | -0.322*** | -0.325*** | -0.335*** | -0.286*** | -0.312*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 0.993*** | 0.877*** | 0.807*** | 0.894*** | 1.000*** | 1.978*** | 2.069*** |
| | (0.07) | (0.06) | (0.06) | (0.06) | (0.05) | (0.09) | (0.08) |
| | Age between 55-64 | | | | | | |
| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Food | -0.077** | -0.047 | -0.102*** | -0.077* | -0.075** | -0.140*** | -0.104*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) |
| Health and Perso. Care | -0.037*** | -0.003 | -0.009** | -0.010** | -0.024*** | -0.029*** | -0.024*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.136*** | -0.146*** | -0.148*** | -0.139*** | -0.161*** | -0.112*** | -0.101*** |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.212*** | -0.384*** | -0.380*** | -0.354*** | -0.195*** | -0.191*** | -0.174*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Education | 0.937* | 0.988* | 0.795*** | 1.018*** | 0.913*** | 0.820*** | 0.678*** |
| | (0.45) | (0.41) | (0.23) | (0.21) | (0.12) | (0.11) | (0.12) |
| Transport | 0.104*** | 0.231*** | 0.267*** | 0.202*** | 0.105*** | 0.107*** | 0.097*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.117*** | -0.135*** | -0.148*** | -0.140*** | -0.148*** | -0.113*** | -0.120*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 0.826*** | 0.827*** | 0.708*** | 0.749*** | 0.876*** | 1.919*** | 1.942*** |
| | (0.07) | (0.06) | (0.07) | (0.07) | (0.06) | (0.09) | (0.09) |

** p<0.05, ** p<0.01, *** p<0.001*

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

As can be seen in Table 4, there is a substitution between time and commodity use in domestic production relative to the education level of the male[11]. However, it is surprising to see that complementarity can only be observed in transport and other expenditure groups. Furthermore, the scarcity in time use for food increased by the number of years of education present in the male population. That is to say, the part of time use in food decreased as an increasing trend since there is a strong substitution between time use and commodity use in food. In other words, good intensive consumption increased relative to the education levels of males for each year. The substitution in clothing takes the largest values for secondary and tertiary education levels. These results indicate that time use for food and housing in a household's full budget becomes scarcer when commodity uses increase between these years. We can intuitively grasp the underlying logic by observing that complementarity in health and personal care, the increase in transportation and how the degree of substitution decreases for clothing expenditures.

[11] We chose to give only the years 2007, 2010 and 2013. The rest of the years see the Appendix.

Table 4: Time Use Demand Elasticity of Commodity Used in Domestic Production
(By education of male for 2007, 2010 and 2013)

| 2007(Male) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
|---|---|---|---|---|
| Food | -0.847*** | -1.268*** | -1.731*** | -1.662*** |
| | (0.04) | (0.02) | (0.04) | (0.07) |
| Health and Perso. Care | -0.016*** | 0.015*** | 0.052*** | 0.044*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.455*** | -0.678*** | -0.946*** | -1.053*** |
| | (0.02) | (0.02) | (0.02) | (0.04) |
| Clothing | -0.117* | -1.332*** | -1.553*** | -0.697*** |
| | (0.05) | (0.03) | (0.05) | (0.13) |
| Education | 0.011 | -0.486*** | -0.111 | -0.429*** |
| | (0.13) | (0.06) | (0.07) | (0.08) |
| Transport | 0.110*** | 0.298*** | 0.392*** | 0.440*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.073*** | -0.044*** | -0.026* | -0.081*** |
| | (0.02) | (0.01) | (0.01) | (0.01) |
| Others | 0.357*** | 0.220*** | 0.322*** | 0.393*** |
| | (0.07) | (0.04) | (0.04) | (0.05) |
| 2010(Male) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
| Food | -0.892*** | -1.280*** | -1.633*** | -1.376*** |
| | (0.04) | (0.03) | (0.04) | (0.06) |
| Health and Perso. Care | -0.015** | 0.015*** | 0.057*** | 0.046*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.403*** | -0.611*** | -0.773*** | -0.962*** |
| | (0.03) | (0.02) | (0.02) | (0.03) |
| Clothing | -0.164** | -1.469*** | -1.681*** | -0.628*** |
| | (0.05) | (0.03) | (0.05) | (0.09) |
| Education | -0.497*** | -0.609*** | -0.245*** | -0.450*** |
| | (0.11) | (0.04) | (0.04) | (0.05) |
| Transport | 0.114*** | 0.355*** | 0.428*** | 0.476*** |
| | (0.02) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.107*** | -0.076*** | -0.035** | -0.101*** |
| | (0.02) | (0.01) | (0.01) | (0.01) |
| Others | 0.292*** | 0.187*** | 0.282*** | 0.408*** |
| | (0.06) | (0.04) | (0.04) | (0.04) |
| 2013(Male) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
| Food | -0.979*** | -1.433*** | -1.794*** | -1.490*** |
| | (0.03) | (0.02) | (0.04) | (0.05) |
| Health and Perso. Care | -0.048*** | 0.013*** | 0.040*** | 0.060*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | -0.465*** | -0.713*** | -0.943*** | -1.209*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Clothing | -0.652*** | -1.525*** | -1.541*** | -0.835*** |
| | (0.05) | (0.03) | (0.05) | (0.06) |
| Education | -0.703*** | -0.534*** | -0.196*** | -0.231*** |
| | (0.08) | (0.03) | (0.03) | (0.03) |
| Transport | 0.092*** | 0.316*** | 0.390*** | 0.447*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.029* | -0.000 | 0.049*** | 0.031** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 0.427*** | 0.168*** | 0.286*** | 0.296*** |
| | (0.08) | (0.04) | (0.04) | (0.04) |

** p<0.05, ** p<0.01, *** p<0.001*

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

As expected the elasticity in food, housing maintenance, clothing and education have positive values for females relative to education level, meaning that there is an important complementarity between time use and commodity (see Table 5)[12]. The intensity of complementarity takes the largest elasticities for tertiary-level educated females. The degree of complementarity for food, housing and clothing is the lowest for those females who have higher level of education. Additionally, time use scarcity in leisure for higher-educated

[12] We chose to give only years 2007, 2010 and 2013. For the other years see the Appendix.

females is higher than for females with only a primary education. This is a likely explanation for why females who are educated to a higher level have less time for leisure activities due to the fact that they are taking part in the labour market; hence a more intensive rate of commodity consumption. It is interesting to observe for primary and secondary level-educated females that there is a substitution between time use and commodity combination for both health and personal care while there is complementarity for tertiary and higher educated females. Generally speaking, time use in transport and leisure decreases due to an increasing demand for food, health and personal care, housing, clothing, education and other expenditures with respect to the education level of females. In this respect, it can be concluded that females demand more time use in domestic activities than males since females have more complementary input use in domestic production than males.

Table 5: Time Use Demand Elasticity of Commodity Used in Domestic Production
(By education of female for 2007, 2010 and 2013)

| 2007(Female) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
|---|---|---|---|---|
| Food | 0.927*** | 0.952*** | 0.930*** | 0.782*** |
| | (0.03) | (0.02) | (0.04) | (0.05) |
| Health and Perso. Care | -0.043*** | -0.012*** | 0.031*** | 0.034*** |
| | (0.00) | (0.00) | (0.00) | (0.01) |
| Housing | 0.623*** | 0.752*** | 0.772*** | 0.455*** |
| | (0.02) | (0.02) | (0.03) | (0.04) |
| Clothing | 0.522*** | 0.522*** | 0.406*** | 0.198*** |
| | (0.03) | (0.02) | (0.03) | (0.05) |
| Education | 0.274*** | 0.429*** | 0.502*** | -0.090 |
| | (0.07) | (0.05) | (0.07) | (0.09) |
| Transport | -0.392*** | -0.316*** | -0.186*** | -0.147*** |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| Leisure | -0.054*** | 0.008 | 0.045*** | -0.253*** |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| Others | 0.008 | -0.051 | 0.170 | 0.296*** |
| | (0.06) | (0.05) | (0.09) | (0.08) |
| 2010(Female) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
| Food | 0.965*** | 0.999*** | 0.970*** | 0.821*** |
| | (0.03) | (0.03) | (0.04) | (0.05) |
| Health and Perso. Care | -0.047*** | -0.015*** | 0.027*** | 0.022*** |
| | (0.00) | (0.00) | (0.00) | (0.01) |
| Housing | 0.681*** | 0.818*** | 0.826*** | 0.506*** |
| | (0.02) | (0.02) | (0.03) | (0.03) |
| Clothing | 0.467*** | 0.473*** | 0.320*** | 0.156*** |
| | (0.03) | (0.03) | (0.03) | (0.04) |
| Education | 0.035 | 0.271*** | 0.471*** | -0.021 |
| | (0.05) | (0.04) | (0.05) | (0.06) |
| Transport | -0.357*** | -0.282*** | -0.149*** | -0.025 |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| Leisure | -0.130*** | -0.048*** | -0.001 | -0.295*** |
| | (0.01) | (0.01) | (0.01) | (0.02) |
| Others | 0.032 | -0.005 | 0.192** | 0.252*** |
| | (0.06) | (0.04) | (0.07) | (0.06) |
| 2013(Female) | Primary Education | Secondary Education | Tertiary Education | Higher Education |
| Food | 0.772*** | 0.853*** | 0.872*** | 0.751*** |
| | (0.03) | (0.02) | (0.03) | (0.04) |
| Health and Perso. Care | -0.061*** | -0.029*** | 0.021*** | 0.002 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Housing | 0.532*** | 0.692*** | 0.750*** | 0.595*** |
| | (0.02) | (0.02) | (0.02) | (0.03) |
| Clothing | 0.395*** | 0.374*** | 0.273*** | 0.073* |
| | (0.02) | (0.02) | (0.03) | (0.03) |
| Education | -0.046 | 0.221*** | 0.435*** | 0.087* |
| | (0.04) | (0.03) | (0.04) | (0.04) |
| Transport | -0.407*** | -0.316*** | -0.182*** | -0.113*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Leisure | -0.066*** | -0.006 | 0.059*** | -0.196*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Others | 0.221 | 0.140** | -0.181** | 0.131** |
| | (0.16) | (0.05) | (0.07) | (0.05) |

** p<0.05, ** p<0.01, *** p<0.001*

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

Finally, Table 6 shows a general picture of how time use scarcity may differ according to family types. Time use scarcity for food, housing, clothing tends to increase for married couples without children which implies the existence of substitution in these groups. However, couples without children have complementary-type household production for food, housing, clothing, education after having children, which in turn means that they sacrifice the largest part of their time resources for their children. They compensate for this time loss by lessening their time use in health and personal care activities, transportation and their leisure time activities, by way of favouring more commodity intensive household production. Conversely, single people show time use substitution with commodity for food while time use with commodity becomes complementary for the singles having children. Single people with children show increasing time use in health with personal care, housing and for clothing, in Turkey.

Table 6: Time Use Demand Elasticity of Commodity Use in Domestic Production (By family type for 2013)

| Age | Married without children | Married with children | Single persons without children | Single persons with children |
|---|---|---|---|---|
| Food | -0.077*** | 1.560*** | -0.173*** | 0.130*** |
| | (0.02) | (0.03) | (0.04) | (0.03) |
| Health and Perso. Care | 0.008** | -0.039*** | 0.005 | 0.007* |
| | (0.00) | (0.00) | (0.01) | (0.00) |
| Housing | -0.054*** | 0.873*** | -0.025 | 0.049** |
| | (0.01) | (0.02) | (0.03) | (0.02) |
| Clothing | -0.075*** | 1.311*** | -0.023 | 0.141*** |
| | (0.02) | (0.04) | (0.04) | (0.03) |
| Education | -0.064 | 0.369*** | -0.088 | -0.066 |
| | (0.03) | (0.05) | (0.05) | (0.04) |
| Transport | 0.020** | -0.433*** | -0.014 | -0.017 |
| | (0.01) | (0.01) | (0.02) | (0.01) |
| Leisure | 0.022** | -0.073*** | 0.007 | 0.002 |
| | (0.01) | (0.01) | (0.02) | (0.01) |
| Others | 0.068 | 0.079 | 0.215** | 0.068 |
| | (0.04) | (0.07) | (0.07) | (0.05) |

** p<0.05, ** p<0.01, *** p<0.001*

*Source: Authors calculation from TUS in 2006 and HBS for the years between 2007 and 2013 inclusive conducted by TURKSTAT*

## 4. Conclusion

In this paper we propose measuring relative domestic production scarcity of time use through the estimation of time use demand elasticity of commodity use in domestic activity. The method proposed here combines the methodology proposed by Gronau and Hamermesh (2006) and Hamermesh (2008). We integrate domestic production technology as the good intensity of time use into scarcity in time use and monetary expenditure which enables us to better differentiate for which consumption groups the combination of time use and commodity are complementary or substitutable in domestic production. To this end, we use two different datasets: the Time Use Survey for 2006 and the Household Budget Survey for the years 2007 to 2013 for Turkey. We match these datasets by using a new method proposed by Rubin's (1986) which gives reliable matching results between time use values and monetary expenditure values from both dataset. Our methodology enables us to understand the reason behind increasing time scarcity in households' domestic activities by identifying the level of substitution and complementarity between time use and market good use for all consumption groups in domestic production. We broke down the population into subpopulations according to age, education level, sex, living area etc. so as to better

understand time use tendencies for the households. The main results that can be gleaned from our analysis are as follows:

- The scarcity of the time use in two necessities such as housing and food increased over the years since households have a tendency to decrease time spent with respect to an increase in commodity use. We also observed that the elasticity results are greater for food while smaller for housing. The average elasticity values report that clothing, health with personal care, leisure, other expenditures, education and transport have higher discretionary time uses in domestic production than supposed by the theory.
- However, the substitution relationship does not hold when we broke down by age. The time use in education, transport and other activities became complementary when we measure for five different age group categories. Education and transportation take the largest values for the youth subpopulation ages 15 to 24 while the smallest values for these categories is present in from ages 55 to 64.
- Furthermore, we observe that there is also complementarity between transport and other groups when we consider males with respect to their education level. The elasticity values change according to education level. We can intuitively grasp the underlying logic by observing that the complementarity in health and personal care, transportation increase owing to decreasing time use demand for clothing expenditures for males with respect to their education level.
- On the other hand, the time use elasticity results indicate a complementary relationship between time use and market good use at food, housing maintenance, clothing and health with personal care for females relative to their education level. Generally speaking, time scarcity in transport and leisure increase due to growing time use demands for food, health and personal care, housing, clothing, education and other expenditures again, relative to the education level of females in question.
- In this respect, it can be concluded that females are more time scarce and more complementary in domestic activities than males due to simply the fact that they have more time use demanded nature in domestic activities. The daily tasks of females such as child care, house and family maintenance promote our findings. In fact, the elasticity results for different household types confirm our findings. The food is complementary for single parents or couples with children while it is substituable for those who do not have children. The same is also true for housing and clothing categories.

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**Appendix:**

*Elasticity of time use substitution:*

Following Becker and Michael (1973, p.383), the full expenditure can be written as

$$p_i^f z_i = m_i + \omega t_i \tag{1}$$

Let $m_i$ is monetary expenditure ($p_i x_i$) where $p$ denotes monetary prices. Where $\omega$ is the opportunity cost of time use activities, $p^f$ is the full price[13] which is the price index of final commodities ($z_i$). The equation measures the monetary value of domestic production ( $p_i^f z_i$ ) by adding the monetary costs ($m_i$) and monetary values of time spent ($\omega t_i$) for the activity $i$. The full price is the derivative of the full expenditure over $z_i$ as:

$$p_i^{f_s} = p_i \frac{\partial x_i}{\partial z_i} + \omega \frac{\partial t_i}{\partial z_i} \tag{2}$$

The index $s$ in $p_i^{f_s}$ is used to specify full price in terms of monetary value of marginal substitution between time use and commodity use when domestic production is changing ($\partial z_i$). There are two information that can be gleaned from equation (2): The left hand side of this equation is considered as full price since it is defined as a function of time use activities $t_i$. Besides this it enables us derive how the price of domestic production changes.

Using full price in (2) with the full expenditure equation (1) we can write the monetary expenditures as

$$m_i = \left( p_i \frac{\partial x_i}{\partial z_i} + \omega \frac{\partial t_i}{\partial z_i} \right) z_i - \omega t_i \tag{3}$$

By dividing both sides with $t_i$ we get

$$\frac{m_i}{t_i} = p_i \frac{\partial x_i}{\partial z_i} \frac{z_i}{t_i} + \omega \frac{\partial t_i}{\partial z_i} \frac{z_i}{t_i} - \omega \tag{4}$$

Multiplying the first operation at the right hand side in the equation (4) by ($x_i / x_i$) doesn't change the equation.

$$\frac{m_i}{t_i} = p_i \frac{\partial x_i}{\partial z_i} \frac{z_i}{t_i} \left( \frac{x_i}{x_i} \right) + \omega \frac{\partial t_i}{\partial z_i} \frac{z_i}{t_i} - \omega \tag{5}$$

The equation (5) can be further simplified as

$$\frac{m_i}{t_i} = \left( \frac{m_i}{t_i} \right) \varepsilon_{x_i / z_i} + \omega \left( \varepsilon_{t_i / z_i} - 1 \right) \tag{6}$$

[13] In fact, the price of final good $Z_i$ depends on the price of its input components. In the Beckerian theory, each final good is supposed to be homogeneous of degree 1. An invariant scale price index for each commodity can be constructed.

Where $\varepsilon_{x_i/z_i}$ and $\varepsilon_{t_i/z_i}$ measures the domestic production elasticity of commodity use and the domestic production elasticity of time use respectively. The equation (6) becomes

$$\begin{aligned} &\frac{m_i}{t_i}\left(1-\varepsilon_{x_i/z_i}\right)=\omega\left(\varepsilon_{t_i/z_i}-1\right) \\ &\Leftrightarrow \frac{m_i}{t_i}=\omega\frac{\left(\varepsilon_{t_i/z_i}-1\right)}{\left(1-\varepsilon_{x_i/z_i}\right)} \end{aligned} \tag{7}$$

Hypothesis: $\dfrac{\left(\varepsilon_{t_i/z_i}-1\right)}{\left(1-\varepsilon_{x_i/z_i}\right)}=\varepsilon_{t_i/x_i}$ if and only if the technology used in domestic production gives $\dfrac{\partial x_i}{\partial z_i}=\dfrac{\partial t_i}{\partial z_i}$

Proof: Supposing that a Leontief technology allows the quantities of the time and commodity factors to be proportional to the activity:

$$x_i=\xi_i z_i \quad ; \quad t_i=\theta_i z_i \text{ which yields } \tau_i=\frac{t_i}{x_i}=\frac{\theta_i}{\xi_i} \tag{8}$$

(i) We can get that $\varepsilon_{t_i/z_i}-\varepsilon_{x_i/z_i}=\left(\dfrac{\partial t_i}{t_i}-\dfrac{\partial x_i}{x_i}\right)\dfrac{\partial z_i}{z_i}$ which yields to two solutions:

$$\left.\begin{aligned} &1.\quad \left(\frac{\partial t_i}{t_i}\left(\frac{\partial x_i}{x_i}.\frac{x_i}{\partial x_i}\right)-\frac{\partial x_i}{x_i}\right)\frac{\partial z_i}{z_i}=\left(\varepsilon_{t_i/x_i}-1\right)\varepsilon_{x_i/z_i} \\ &2.\quad \left(\frac{\partial t_i}{t_i}-\frac{\partial x_i}{x_i}\left(\frac{\partial t_i}{t_i}.\frac{t_i}{\partial t_i}\right)\right)\frac{\partial z_i}{z_i}=\left(1-\varepsilon_{x_i/t_i}\right)\varepsilon_{t_i/z_i} \end{aligned}\right\}\left(\varepsilon_{t_i/x_i}-1\right)\varepsilon_{x_i/z_i}=\left(1-\varepsilon_{x_i/t_i}\right)\varepsilon_{t_i/z_i} \tag{9}$$

(ii) The equality $\left(\varepsilon_{t_i/x_i}-1\right)\varepsilon_{x_i/z_i}=\left(1-\varepsilon_{x_i/t_i}\right)\varepsilon_{t_i/z_i}$ in (9) implies that

$$\frac{\left(\varepsilon_{t_i/x_i}-1\right)}{\left(1-\varepsilon_{x_i/t_i}\right)}=\varepsilon_{t_i/x_i} \quad or \quad \varepsilon_{t_i/z_i}=\frac{\left(\varepsilon_{t_i/x_i}-1\right)}{\left(1-\varepsilon_{x_i/t_i}\right)}\varepsilon_{x_i/z_i} \tag{10}$$

By using the second equation (10) in (7) we get

$$\frac{m_i}{t_i}=\omega\frac{\left(\left[\dfrac{\left(\varepsilon_{t_i/x_i}-1\right)}{\left(1-\varepsilon_{x_i/t_i}\right)}\varepsilon_{x_i/z_i}\right]-1\right)}{\left(1-\varepsilon_{x_i/z_i}\right)}=\frac{\left(\varepsilon_{t_i/x_i}-1\right)\varepsilon_{x_i/z_i}-\left(1-\varepsilon_{x_i/t_i}\right)}{\left(1-\varepsilon_{x_i/t_i}\right)\left(1-\varepsilon_{x_i/z_i}\right)} \tag{11}$$

The optimum combination of inputs in the production of $z_i$ is determined by familiar condition that the marginal rate of substitution in production equals to $\dfrac{\partial z_i/\partial t_i}{\partial z_i/\partial x_i}=\dfrac{x_i}{t_i}$, (see

Gronau, 1986, p:276, equation (9)). Thus, we can get $\varepsilon_{t_i/x_i} = \varepsilon_{x_i/t_i}$. The equation (11) can also be written as

$$\frac{m_i}{t_i} = \omega \frac{\left(\varepsilon_{t_i/x_i} - 1\right)\left(\varepsilon_{x_i/z_i} - 1\right)}{\left(1 - \varepsilon_{x_i/t_i}\right)\left(\varepsilon_{x_i/z_i} - 1\right)} \tag{12}$$

further as

$$\frac{m_i}{t_i} = \omega \varepsilon_{t_i/x_i} \tag{13}$$

since $\left(\left(\varepsilon_{t_i/x_i} - 1\right) \Big/ \left(1 - \varepsilon_{x_i/t_i}\right)\right) = \varepsilon_{t_i/x_i}$ as given at the first equality in the equation (10).

The equations from (1) to (13) indicates that the time use elasticity of commodity use used by Hamermesh (2008), Baral et al. (2011), Davis and You (2013) and Canelas et al. (2014) is equals to.

$$\frac{\partial\left(\frac{m_i}{t_i}\right)}{\partial \omega} = \varepsilon_{t_i/x_i} \tag{14}$$

In this specification we used $\omega$ instead of market wage $w$ as fixed wage assumption made by those authors. As a matter of fact, difficulties determining a convenient opportunity cost would be expected to bias the measurement of time allocation decisions, especially for those in developing economies for two reasons: firstly, if consumers all pay the same market prices for consumption goods, variation in earnings across individuals results in cross-sectional variation in the shadow prices for consumption goods and, as a result, estimated Engel curves will, by omitting these shadow price effects, tend to underestimate the true income effects of earnings intensive goods[14]. Secondly, it is more convenient to assume that monetary expenditures are determined by domestic production technology and by time scarcity which in turn determines the shadow wage rates. If labor supply is supposed to be endogenously determined under market conditions, time scarcity (i.e. used for the domestic production) depends totally on the relationship between income and non-labor time. The higher the labor supply and the lower the non-labor time, hence the greater the shadow price of time[15] and good intensive consumption. However, it is still optimistic to believe that in the case of developing economies, that average time costs are equal to marginal time costs of different activities and that marginal costs are what determine behavior. In fact, constraints in elastic labor markets may increase the adjustment and transaction costs which would in turn likely render shadow wages lower than market wage rates. Thus, it becomes more reasonable to consider that shadow wages are expected to be different among activities and that households may try to compensate any loss due to market constraints or to inflation and decreasing incomes by replacing monetary expenditures with domestic production, which in turn depends on the capacity of combining time spent with market commodities. Be that as it may, for any given shadow wage rate, the welfare of households would depend on the complementary and substitutable nature of household domestic production

[14] See Chiappori and Lewbel (2015)
[15] See Gronau (1986).

Table 7: Summary Statistics on Time Spent (for 8 activities by categorical variables)

| 2006 TUS average for Time (hrs/month) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 94 | 201 | 61 | 29 | 125 | 102 | 430 | 170 | 1212 |
| *Std. Dev.* | 77 | 105 | 74 | 39 | 135 | 110 | 304 | 193 | 606 |
| 25-34 | 94 | 192 | 55 | 26 | 82 | 87 | 333 | 253 | 1123 |
| *Std. Dev.* | 44 | 89 | 48 | 34 | 72 | 56 | 186 | 152 | 343 |
| 35-44 | 108 | 236 | 72 | 33 | 82 | 109 | 453 | 268 | 1361 |
| *Std. Dev.* | 62 | 131 | 69 | 40 | 95 | 75 | 273 | 190 | 545 |
| 45-54 | 124 | 303 | 92 | 38 | 79 | 135 | 608 | 293 | 1672 |
| *Std. Dev.* | 71 | 154 | 86 | 49 | 112 | 96 | 315 | 273 | 704 |
| 55-64 | 120 | 287 | 92 | 36 | 49 | 119 | 599 | 223 | 1524 |
| *Std. Dev.* | 72 | 159 | 93 | 50 | 94 | 98 | 286 | 262 | 715 |
| 65 | 102 | 226 | 71 | 26 | 26 | 86 | 524 | 121 | 1181 |
| *Std. Dev.* | 60 | 162 | 72 | 41 | 59 | 81 | 289 | 244 | 717 |
| **Area** | | | | | | | | | |
| Rural | 121 | 247 | 96 | 37 | 60 | 109 | 511 | 243 | 1425 |
| *Std. Dev.* | 76 | 168 | 96 | 50 | 87 | 90 | 322 | 267 | 778 |
| Urban | 98 | 234 | 61 | 28 | 69 | 102 | 461 | 221 | 1273 |
| *Std. Dev.* | 58 | 139 | 60 | 39 | 96 | 83 | 290 | 211 | 625 |
| **Husband Education** | | | | | | | | | |
| Without Diplome | 120 | 257 | 86 | 35 | 50 | 102 | 549 | 192 | 1391 |
| *Std. Dev.* | 77 | 184 | 82 | 49 | 86 | 101 | 336 | 269 | 829 |
| Primary education | 115 | 260 | 82 | 35 | 65 | 113 | 513 | 257 | 1441 |
| *Std. Dev.* | 65 | 148 | 82 | 46 | 88 | 85 | 294 | 240 | 652 |
| Secondary education | 97 | 225 | 60 | 25 | 87 | 103 | 436 | 249 | 1282 |
| *Std. Dev.* | 52 | 108 | 54 | 31 | 112 | 72 | 266 | 200 | 521 |
| Superior education | 87 | 227 | 58 | 25 | 79 | 107 | 466 | 211 | 1260 |
| *Std. Dev.* | 48 | 110 | 53 | 32 | 99 | 73 | 234 | 166 | 421 |
| **Wife Education** | | | | | | | | | |
| Without Diplome | 140 | 304 | 106 | 42 | 65 | 125 | 645 | 253 | 1681 |
| *Std. Dev.* | 79 | 181 | 97 | 56 | 99 | 99 | 333 | 302 | 822 |
| Primary education | 112 | 252 | 77 | 33 | 74 | 113 | 488 | 259 | 1408 |
| *Std. Dev.* | 55 | 131 | 70 | 41 | 91 | 80 | 271 | 213 | 545 |
| Secondary education | 92 | 229 | 60 | 26 | 85 | 105 | 434 | 247 | 1278 |
| *Std. Dev.* | 45 | 97 | 58 | 33 | 96 | 71 | 248 | 184 | 414 |
| Superior education | 82 | 238 | 52 | 22 | 78 | 106 | 432 | 254 | 1264 |
| *Std. Dev.* | 41 | 110 | 36 | 23 | 90 | 67 | 206 | 187 | 333 |
| **TOTAL** | 106 | 239 | 74 | 31 | 66 | 104 | 479 | 228 | 1327 |
| **Std. Dev.** | 66 | 150 | 76 | 43 | 93 | 86 | 303 | 232 | 687 |

*Source: Authors' calculations from Time Use Survey data covering 2006*

Table 8: 2007 Summary Statistics on Expenditure

| 2007 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 361,666 | 88,505 | 433,199 | 92,531 | 46,391 | 152,789 | 33,505 | 23,528 | 123,935 |
| *Std. Dev.* | 209,028 | 252,921 | 338,553 | 157,023 | 443,749 | 328,596 | 115,722 | 71,729 | 259,403 |
| 25-34 | 331,785 | 101,926 | 447,954 | 87,270 | 16,673 | 170,748 | 36,972 | 14,247 | 475,201 |
| *Std. Dev.* | 215,663 | 252,527 | 355,135 | 141,028 | 88,194 | 420,261 | 155,181 | 68,885 | 807,634 |
| 35-44 | 338,346 | 80,777 | 441,729 | 89,058 | 51,856 | 158,893 | 38,163 | 23,704 | 598,521 |
| *Std. Dev.* | 188,829 | 179,099 | 334,178 | 155,878 | 421,819 | 354,555 | 114,751 | 77,955 | 889,073 |
| 45-54 | 360,830 | 100,567 | 491,493 | 91,129 | 41,332 | 187,470 | 36,191 | 24,109 | 658,605 |
| *Std. Dev.* | 209,560 | 300,508 | 382,899 | 163,664 | 258,549 | 396,789 | 126,205 | 80,356 | 1041,902 |
| 55-64 | 359,469 | 113,637 | 490,352 | 79,155 | 20,258 | 148,729 | 25,277 | 13,076 | 533,163 |
| *Std. Dev.* | 207,004 | 336,114 | 508,358 | 137,682 | 416,392 | 394,083 | 85,828 | 60,041 | 742,538 |
| 65 | 319,999 | 71,533 | 412,618 | 54,867 | 10,836 | 103,729 | 22,293 | 11,645 | 402,975 |
| *Std. Dev.* | 205,151 | 156,624 | 363,521 | 103,102 | 71,136 | 288,063 | 145,938 | 50,638 | 544,967 |
| **Area** | | | | | | | | | |
| Rural | 356,278 | 79,844 | 284,000 | 72,657 | 14,166 | 114,758 | 23,649 | 12,516 | 327,943 |
| *Std. Dev.* | 232,972 | 255,267 | 290,138 | 131,112 | 87,721 | 279,851 | 163,720 | 48,423 | 562,954 |
| Urban | 342,149 | 99,294 | 531,913 | 92,304 | 44,178 | 180,188 | 38,700 | 22,949 | 498,891 |
| *Std. Dev.* | 192,998 | 250,914 | 379,666 | 156,573 | 402,042 | 405,595 | 105,169 | 79,933 | 857,240 |
| **Family Status** | | | | | | | | | |
| Couple without children | 288,264 | 77,826 | 470,481 | 51,775 | 1,838 | 111,421 | 17,567 | 6,089 | 529,181 |
| *Std. Dev.* | 173,057 | 261,731 | 513,350 | 98,719 | 18,850 | 271,963 | 66,282 | 46,802 | 758,136 |
| Couple with children | 331,874 | 91,621 | 460,660 | 90,916 | 47,840 | 168,809 | 36,725 | 23,351 | 480,025 |
| *Std. Dev.* | 173,906 | 249,232 | 348,207 | 154,084 | 434,029 | 391,658 | 96,157 | 79,076 | 875,482 |
| Single | 177,810 | 56,477 | 453,037 | 43,517 | 10,341 | 67,590 | 23,105 | 6,320 | 688,989 |
| *Std. Dev.* | 117,206 | 113,324 | 409,228 | 87,640 | 106,030 | 257,218 | 81,206 | 53,553 | 561,062 |
| Monoparental family | 279,310 | 74,732 | 412,232 | 67,600 | 29,668 | 101,942 | 25,798 | 15,105 | 429,861 |
| *Std. Dev.* | 150,990 | 162,909 | 301,591 | 121,139 | 137,502 | 284,885 | 71,697 | 58,154 | 515,154 |
| Other family* | 411,882 | 104,596 | 431,385 | 91,245 | 19,846 | 165,797 | 34,715 | 17,507 | 331,305 |
| *Std. Dev.* | 261,352 | 268,482 | 367,041 | 155,709 | 95,956 | 366,732 | 189,011 | 62,766 | 570,975 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 286,450 | 50,255 | 280,259 | 50,637 | 4,730 | 56,620 | 11,403 | 8,490 | 477,422 |
| *Std. Dev.* | 182,011 | 127,756 | 263,740 | 88,266 | 28,295 | 183,974 | 44,133 | 38,943 | 402,113 |
| Primary education | 313,446 | 77,315 | 420,372 | 68,233 | 18,982 | 124,838 | 25,408 | 15,214 | 879,507 |
| *Std. Dev.* | 184,507 | 226,950 | 359,034 | 127,234 | 136,597 | 299,739 | 80,313 | 53,082 | 798,137 |
| Secondary education | 324,797 | 101,613 | 539,730 | 96,157 | 40,973 | 208,470 | 45,058 | 23,914 | 1289,422 |
| *Std. Dev.* | 170,673 | 211,051 | 379,071 | 151,699 | 199,346 | 468,179 | 131,296 | 92,909 | 1334,760 |
| Superior education | 377,348 | 172,872 | 707,886 | 162,265 | 129,067 | 314,855 | 75,829 | 36,882 | 1834,039 |
| *Std. Dev.* | 216,077 | 376,435 | 450,436 | 220,238 | 878,621 | 557,249 | 145,866 | 133,490 | 1510,540 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 336,747 | 68,843 | 336,445 | 63,507 | 8,839 | 95,014 | 15,372 | 12,072 | 27,233 |
| *Std. Dev.* | 193,271 | 241,302 | 387,870 | 113,572 | 65,038 | 256,041 | 50,666 | 55,365 | 106,146 |
| Primary education | 322,050 | 83,175 | 448,379 | 74,252 | 27,394 | 150,506 | 30,426 | 18,272 | 62,516 |
| *Std. Dev.* | 187,077 | 233,470 | 333,691 | 134,188 | 235,183 | 357,608 | 92,372 | 66,149 | 257,563 |
| Secondary education | 333,741 | 123,187 | 599,883 | 121,362 | 70,610 | 230,557 | 50,609 | 24,806 | 200,522 |
| *Std. Dev.* | 181,312 | 254,556 | 393,605 | 182,768 | 287,531 | 434,238 | 117,935 | 103,754 | 418,856 |
| Superior education | 394,553 | 214,112 | 825,316 | 204,930 | 165,269 | 431,712 | 107,733 | 37,409 | 907,277 |
| *Std. Dev.* | 204,923 | 350,864 | 498,535 | 237,914 | 1204,092 | 684,146 | 171,935 | 106,511 | 746,904 |
| TOTAL | 346,732 | 92,985 | 451,495 | 85,931 | 34,443 | 158,964 | 33,818 | 19,565 | 443,439 |
| *Std. Dev.* | 206,915 | 252,493 | 371,700 | 149,074 | 334,510 | 370,787 | 127,343 | 71,422 | 778,251 |

*Source: Authors' calculations from Household Budget Survey data covering 2007*

Table 9: 2008 Summary Statistics on Expenditure

| 2008 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transportation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 413,806 | 94,910 | 533,332 | 110,475 | 42,216 | 239,209 | 39,410 | 30,523 | 145,861 |
| *Std. Dev.* | 253,030 | 186,790 | 372,051 | 175,665 | 138,640 | 508,846 | 91,643 | 135,578 | 331,704 |
| 25-34 | 377,443 | 99,064 | 534,205 | 98,965 | 17,673 | 248,080 | 40,657 | 21,570 | 516,190 |
| *Std. Dev.* | 290,265 | 189,174 | 370,958 | 204,036 | 101,684 | 538,110 | 94,544 | 231,607 | 715,629 |
| 35-44 | 384,473 | 91,043 | 546,572 | 100,730 | 48,405 | 260,739 | 49,028 | 28,152 | 752,018 |
| *Std. Dev.* | 283,472 | 175,239 | 372,283 | 156,134 | 176,284 | 566,107 | 103,853 | 72,451 | 1257,395 |
| 45-54 | 406,047 | 106,584 | 579,749 | 105,407 | 41,165 | 270,820 | 42,464 | 28,258 | 802,315 |
| *Std. Dev.* | 231,620 | 227,179 | 394,288 | 221,445 | 148,580 | 583,454 | 98,773 | 86,693 | 1258,463 |
| 55-64 | 411,153 | 93,592 | 554,583 | 82,778 | 15,593 | 206,896 | 36,777 | 18,990 | 654,347 |
| *Std. Dev.* | 250,182 | 190,178 | 401,854 | 234,164 | 88,760 | 480,034 | 102,174 | 67,826 | 948,045 |
| 65 | 372,561 | 85,616 | 481,206 | 58,133 | 9,136 | 148,568 | 29,524 | 12,040 | 501,935 |
| *Std. Dev.* | 244,082 | 339,299 | 362,596 | 123,252 | 48,627 | 432,099 | 94,253 | 47,952 | 814,303 |
| **Area** | | | | | | | | | |
| Rural | 401.7533 | 76.52272 | 346.839 | 77.92331 | 12.06104 | 160.493 | 24.64397 | 13.17369 | 406.2253 |
| *Std. Dev.* | 274.1271 | 225.8883 | 298.9652 | 152.7302 | 50.1878 | 333.8275 | 70.44077 | 45.54644 | 698.4683 |
| Urban | 391.5616 | 104.7242 | 629.0425 | 106.2576 | 41.38076 | 274.2406 | 48.27761 | 30.11982 | 603.6165 |
| *Std. Dev.* | 258.7763 | 204.2739 | 378.2935 | 203.8458 | 155.7326 | 596.8776 | 106.6854 | 160.4729 | 1056.252 |
| **Family Status** | | | | | | | | | |
| Couple without children | 334.1279 | 92.92725 | 517.7789 | 51.84112 | 3.826229 | 161.6814 | 27.86999 | 10.26318 | 597.331 |
| *Std. Dev.* | 197.3352 | 342.0405 | 372.0705 | 97.64247 | 36.32323 | 401.2813 | 89.28103 | 59.25751 | 793.4539 |
| Couple with children | 378.2935 | 97.11482 | 559.5451 | 103.0597 | 44.94135 | 262.9507 | 45.54471 | 28.2007 | 588.8519 |
| *Std. Dev.* | 249.1814 | 190.6525 | 387.0886 | 209.6136 | 165.0588 | 579.0176 | 97.16017 | 78.39497 | 1099.173 |
| Single | 226.308 | 57.96433 | 437.705 | 48.53572 | 17.64633 | 70.59987 | 22.35822 | 11.42666 | 777.4085 |
| *Std. Dev.* | 156.1598 | 150.9409 | 330.3202 | 107.1865 | 114.8897 | 208.9827 | 54.37214 | 48.1316 | 689.3612 |
| Monoparental family | 265.6461 | 75.92429 | 477.4547 | 68.09393 | 37.28215 | 111.3964 | 26.89804 | 21.14667 | 285.563 |
| *Std. Dev.* | 151.3292 | 226.4025 | 305.2612 | 150.3604 | 173.6951 | 270.931 | 62.12617 | 67.969 | 476.981 |
| Other family* | 468.3588 | 99.01897 | 525.9795 | 108.3865 | 19.002 | 239.5897 | 38.82579 | 24.93459 | 417.8813 |
| *Std. Dev.* | 300.2584 | 192.7858 | 368.1167 | 178.3602 | 64.72575 | 497.5287 | 104.0661 | 222.4446 | 728.2334 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 313.4323 | 51.08523 | 315.4457 | 50.63092 | 4.614592 | 68.34836 | 19.14055 | 6.411653 | 534.3664 |
| *Std. Dev.* | 237.2895 | 132.9464 | 275.9476 | 108.3199 | 20.43084 | 182.5461 | 82.40169 | 28.54251 | 468.6597 |
| Primary education | 355.2458 | 76.65955 | 479.7969 | 73.42585 | 18.64168 | 182.0304 | 28.75617 | 18.41363 | 1034.105 |
| *Std. Dev.* | 212.5361 | 204.6719 | 308.2854 | 121.8519 | 80.0047 | 423.3254 | 74.44519 | 61.77831 | 1164.257 |
| Secondary education | 382.5837 | 116.2889 | 626.4621 | 110.5093 | 40.60212 | 282.4701 | 54.18266 | 27.10693 | 1409.968 |
| *Std. Dev.* | 370.5834 | 233.7704 | 360.8745 | 176.4344 | 116.3037 | 582.2817 | 98.97772 | 79.30842 | 1293.661 |
| Superior education | 428.4227 | 176.504 | 864.6368 | 159.1125 | 96.30801 | 496.6898 | 91.74464 | 48.90359 | 2082.116 |
| *Std. Dev.* | 229.0827 | 291.6883 | 510.5471 | 347.9791 | 309.0958 | 856.8024 | 146.8582 | 270.8786 | 1758.454 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 381.0616 | 64.16048 | 380.7492 | 71.9504 | 10.89997 | 130.4951 | 23.53653 | 12.92849 | 33.62173 |
| *Std. Dev.* | 241.6634 | 140.3668 | 304.8703 | 141.2851 | 75.04984 | 333.0943 | 88.02776 | 44.75333 | 126.9314 |
| Primary education | 372.2055 | 86.92672 | 522.1476 | 85.48496 | 24.17724 | 220.2858 | 35.25303 | 22.389 | 80.00122 |
| *Std. Dev.* | 282.78 | 223.3124 | 315.75 | 193.9577 | 82.39577 | 471.1587 | 82.67019 | 138.8306 | 252.0684 |
| Secondary education | 382.0063 | 142.173 | 731.1988 | 116.879 | 60.73236 | 393.5872 | 67.89642 | 37.28152 | 247.2815 |
| *Std. Dev.* | 192.3914 | 288.0655 | 420.4841 | 177.4468 | 176.9562 | 826.8522 | 111.3938 | 96.73216 | 432.8933 |
| Superior education | 426.8167 | 216.1085 | 982.0585 | 181.0146 | 130.7654 | 607.5488 | 122.9488 | 44.03502 | 1093.49 |
| *Std. Dev.* | 198.0774 | 273.9106 | 570.1874 | 219.3096 | 402.1575 | 862.0266 | 171.6503 | 115.3041 | 1038.103 |
| TOTAL | 394.7337 | 95.94671 | 541.2087 | 97.43875 | 32.2552 | 238.8375 | 40.92181 | 24.84545 | 542.1799 |
| *Std. Dev.* | 263.6865 | 211.6369 | 378.7516 | 189.8713 | 132.9363 | 531.8173 | 97.48381 | 135.8065 | 963.6343 |

*Source: Authors' calculations from Household Budget Survey data covering 2008*

Table 10: 2009 Summary Statistics on Expenditure

| 2009 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 416.398 | 147.1417 | 511.8631 | 97.18317 | 42.25607 | 221.5553 | 47.13736 | 27.78641 | 172.3893 |
| *Std. Dev.* | 272.7543 | 264.2596 | 359.7526 | 160.9724 | 130.5322 | 454.9523 | 133.5409 | 84.73817 | 369.8481 |
| 25-34 | 368.7017 | 175.3898 | 537.7389 | 90.79984 | 18.71828 | 253.9345 | 43.39319 | 18.5518 | 611.8637 |
| *Std. Dev.* | 245.64 | 540.8876 | 376.0568 | 164.2595 | 85.53373 | 539.3345 | 97.99861 | 63.76925 | 964.8225 |
| 35-44 | 379.2582 | 139.6492 | 530.8311 | 87.91457 | 49.61575 | 231.5221 | 49.12582 | 26.29723 | 768.5489 |
| *Std. Dev.* | 234.8843 | 220.9457 | 381.0539 | 148.2389 | 188.981 | 500.7055 | 118.4381 | 77.47152 | 1106.329 |
| 45-54 | 415.9668 | 157.1109 | 574.3198 | 95.01629 | 45.87034 | 257.6625 | 48.86749 | 28.51696 | 1052.371 |
| *Std. Dev.* | 285.3704 | 491.3739 | 427.2629 | 172.0973 | 160.5719 | 527.4095 | 127.5777 | 86.98161 | 14028.38 |
| 55-64 | 417.5357 | 140.9985 | 547.2669 | 77.64732 | 16.20172 | 202.9224 | 42.52335 | 17.74104 | 729.2666 |
| *Std. Dev.* | 297.8684 | 529.3656 | 468.274 | 171.0394 | 78.91505 | 437.4451 | 125.6551 | 62.1945 | 1492.463 |
| 65 | 376.0943 | 110.3847 | 462.4753 | 50.11914 | 9.47919 | 124.8382 | 26.36603 | 11.29938 | 519.5553 |
| *Std. Dev.* | 276.399 | 456.7756 | 513.7349 | 112.1214 | 62.29998 | 334.0914 | 88.747 | 53.90518 | 982.5381 |
| **Area** | | | | | | | | | |
| Rural | 413.9607 | 101.9843 | 325.0765 | 70.91211 | 14.13487 | 154.6203 | 27.50464 | 14.92129 | 507.5751 |
| *Std. Dev.* | 305.0933 | 228.39 | 299.4554 | 137.981 | 72.69303 | 321.0757 | 95.40493 | 56.80536 | 9904.915 |
| Urban | 385.0777 | 173.6539 | 634.8931 | 95.61638 | 43.27497 | 261.1615 | 52.9327 | 26.94663 | 677.3923 |
| *Std. Dev.* | 244.8923 | 495.9809 | 411.9135 | 167.4387 | 156.6295 | 544.1161 | 128.3933 | 80.49215 | 1226.128 |
| **Family Status** | | | | | | | | | |
| Couple without children | 333.6641 | 125.8643 | 536.7395 | 57.30319 | 8.504586 | 191.5958 | 33.26698 | 13.95971 | 732.1319 |
| *Std. Dev.* | 263.2644 | 468.0149 | 521.5673 | 127.6343 | 93.40129 | 448.9987 | 108.3656 | 58.95155 | 1178.939 |
| Couple with children | 379.8864 | 155.0467 | 551.3764 | 93.57415 | 45.60229 | 249.6376 | 49.10046 | 26.83141 | 618.641 |
| *Std. Dev.* | 226.7128 | 498.3427 | 387.3398 | 157.0856 | 163.5271 | 530.5915 | 124.0256 | 77.73565 | 1215.849 |
| Single | 216.7923 | 85.6909 | 422.0486 | 54.08802 | 14.47359 | 76.39125 | 33.7596 | 12.85186 | 959.8218 |
| *Std. Dev.* | 179.3797 | 164.8378 | 337.9364 | 119.9326 | 59.20483 | 189.0486 | 105.9463 | 49.30236 | 1404.732 |
| Monoparental family | 294.2781 | 79.10045 | 450.3136 | 79.46983 | 30.60772 | 93.48997 | 26.57155 | 25.15041 | 183.8086 |
| *Std. Dev.* | 178.7819 | 95.5714 | 268.6317 | 111.8747 | 83.31949 | 167.3682 | 65.75963 | 81.09406 | 298.1606 |
| Other family* | 468.5586 | 156.8922 | 500.3316 | 90.72352 | 22.67716 | 214.2227 | 41.38585 | 19.95954 | 559.9878 |
| *Std. Dev.* | 321.2051 | 263.118 | 393.6709 | 174.02 | 87.70323 | 427.0182 | 115.4721 | 72.00779 | 10542.39 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 322.2376 | 79.63115 | 324.3409 | 44.99038 | 6.954496 | 79.32565 | 19.01781 | 8.676598 | 533.8605 |
| *Std. Dev.* | 257.9479 | 379.6577 | 276.5893 | 106.8708 | 73.70599 | 219.4194 | 78.88356 | 45.44784 | 582.927 |
| Primary education | 358.6738 | 119.7553 | 474.1181 | 68.74287 | 18.40408 | 169.5336 | 31.00104 | 17.31327 | 1058.605 |
| *Std. Dev.* | 249.5491 | 244.0996 | 320.7205 | 133.4878 | 98.27112 | 346.1004 | 92.33855 | 62.48227 | 1245.903 |
| Secondary education | 361.0318 | 191.8583 | 650.7666 | 101.8485 | 46.03963 | 298.7461 | 64.45521 | 28.7232 | 2158.597 |
| *Std. Dev.* | 243.4728 | 687.0492 | 418.3869 | 152.6522 | 147.5749 | 649.4594 | 142.1258 | 80.20596 | 23281.59 |
| Superior education | 413.7521 | 253.7022 | 883.1315 | 156.0006 | 104.4011 | 468.7254 | 106.0858 | 44.69787 | 2399.034 |
| *Std. Dev.* | 248.0021 | 338.2467 | 674.8093 | 218.7776 | 268.2801 | 741.6611 | 157.2839 | 101.9638 | 2283.774 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 396.1282 | 104.1127 | 383.8708 | 65.41984 | 8.543487 | 125.8588 | 26.0109 | 13.35194 | 53.49579 |
| *Std. Dev.* | 269.5663 | 370.7475 | 301.3001 | 128.9624 | 43.74276 | 280.5824 | 103.0623 | 57.91335 | 174.9796 |
| Primary education | 367.2729 | 138.3478 | 522.2192 | 77.34412 | 26.37584 | 217.2974 | 37.96446 | 20.68556 | 110.5906 |
| *Std. Dev.* | 245.2956 | 449.7652 | 329.8874 | 145.8802 | 92.2768 | 454.5746 | 99.9759 | 67.96162 | 382.0981 |
| Secondary education | 367.4686 | 187.2072 | 744.6935 | 107.1501 | 70.9226 | 366.7199 | 70.1186 | 35.05479 | 337.9549 |
| *Std. Dev.* | 245.0741 | 222.2112 | 503.0044 | 161.9417 | 264.3817 | 718.7292 | 126.8205 | 90.63354 | 631.437 |
| Superior education | 437.938 | 322.9926 | 1005.986 | 193.5823 | 137.5112 | 621.2222 | 135.0773 | 60.26179 | 1270.595 |
| *Std. Dev.* | 264.9839 | 428.5675 | 813.94 | 230.5577 | 314.0561 | 950.0227 | 181.4147 | 129.4157 | 1173.432 |
| TOTAL | 395.1637 | 148.9263 | 530.0465 | 86.89488 | 33.23495 | 224.5365 | 44.45936 | 22.94183 | 618.0615 |
| *Std. Dev.* | 266.4866 | 420.9549 | 409.3007 | 158.7011 | 133.3881 | 484.6395 | 118.0591 | 74.85998 | 5701.972 |

*Source: Authors' calculations from Household Budget Survey data covering 2009*

Table 11: 2010 Summary Statistics on Expenditure

| 2010 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 423.3549 | 172.3523 | 551.3572 | 104.0198 | 45.10977 | 250.4196 | 49.92014 | 29.80841 | 186.83 |
| *Std. Dev.* | 267.0521 | 286.9866 | 430.5178 | 163.4575 | 140.4785 | 468.7317 | 110.9629 | 95.60065 | 377.7871 |
| 25-34 | 384.5433 | 178.6423 | 565.3106 | 95.85641 | 22.71091 | 301.4615 | 50.86006 | 21.69973 | 677.2432 |
| *Std. Dev.* | 269.4145 | 262.9042 | 393.1406 | 165.787 | 88.29082 | 644.8485 | 126.7221 | 78.05671 | 1050.958 |
| 35-44 | 402.5071 | 162.69 | 576.4205 | 102.3333 | 55.85769 | 286.8571 | 57.10353 | 30.24198 | 866.724 |
| *Std. Dev.* | 253.5117 | 223,000 | 464.1845 | 166.6363 | 210.2565 | 607.8745 | 128.7915 | 107.2771 | 1319.244 |
| 45-54 | 434.498 | 179.5349 | 611.9106 | 102.3661 | 51.36988 | 293.3995 | 53.62658 | 27.78763 | 917.8561 |
| *Std. Dev.* | 298.9617 | 371.2994 | 526.8103 | 175.2297 | 182.0769 | 554.2317 | 126.3376 | 88.66247 | 1531.652 |
| 55-64 | 425.1822 | 137.5429 | 572.3103 | 74.37428 | 17.49347 | 252.0789 | 46.98018 | 18.64065 | 812.6303 |
| *Std. Dev.* | 287.6194 | 260.424 | 427.2567 | 140.4738 | 89.23389 | 613.7959 | 137.5658 | 79.21386 | 1758.649 |
| 65 | 388.6923 | 121.6058 | 499.3558 | 57.02438 | 12.86425 | 154.5872 | 33.10848 | 15.65786 | 599.6293 |
| *Std. Dev.* | 340.0741 | 292.8778 | 400.9378 | 128.5882 | 79.32789 | 418.3563 | 119.1982 | 75.6029 | 891.9182 |
| **Area** | | | | | | | | | |
| Rural | 422.7616 | 113.4458 | 392.0109 | 80.76502 | 18.14273 | 203.6459 | 30.43286 | 18.25622 | 493.1907 |
| *Std. Dev.* | 301.218 | 195.7688 | 331.0958 | 149.379 | 86.6176 | 429.6159 | 80.13078 | 71.24404 | 1095.71 |
| Urban | 402.9366 | 186.2277 | 650.2687 | 100.4421 | 46.46173 | 294.6482 | 60.67047 | 28.89986 | 726.5451 |
| *Std. Dev.* | 273.4412 | 295.0287 | 470.1693 | 168.9314 | 162.7657 | 620.3537 | 142.9055 | 98.91611 | 1244.986 |
| **Family Status** | | | | | | | | | |
| Couple without children | 359.2354 | 121.6167 | 565.1878 | 55.0963 | 10.69248 | 234.4458 | 37.17284 | 11.99701 | 811.3958 |
| *Std. Dev.* | 264.0492 | 208.97 | 428.2312 | 108.2559 | 101.89 | 553.5067 | 115.749 | 51.68181 | 1406.178 |
| Couple with children | 402.7469 | 170.1558 | 591.1121 | 103.3993 | 50.58011 | 289.4893 | 58.91764 | 30.64728 | 685.6846 |
| *Std. Dev.* | 244.2521 | 238.1725 | 473.6623 | 159.5372 | 168.2705 | 610.7732 | 133.194 | 106.039 | 1211.85 |
| Single | 226.9221 | 80.80984 | 471.7799 | 52.6201 | 21.29535 | 77.54111 | 32.85397 | 12.65831 | 1038.996 |
| *Std. Dev.* | 161.8202 | 166.6234 | 437.7761 | 113.0726 | 147.6971 | 234.246 | 84.1327 | 52.29686 | 2278.127 |
| Monoparental family | 304.2876 | 99.17354 | 499.3965 | 94.69302 | 49.38981 | 103.8566 | 37.76125 | 24.25286 | 233.4184 |
| *Std. Dev.* | 158.0468 | 131.2968 | 469.0289 | 162.4557 | 187.4902 | 212.5743 | 77.91497 | 71.07382 | 504.5808 |
| Other family* | 470.5788 | 178.2621 | 536.0154 | 96.88485 | 23.82414 | 263.3595 | 43.92021 | 22.54276 | 493.6068 |
| *Std. Dev.* | 350.7781 | 346.6514 | 394.0058 | 188.3139 | 88.74783 | 520.9655 | 123.9881 | 74.68321 | 848.8921 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 319.582 | 81.35441 | 352.9793 | 50.44732 | 6.08703 | 94.73488 | 21.15108 | 9.232518 | 579.281 |
| *Std. Dev.* | 231.4579 | 265.4901 | 263.4182 | 105.9114 | 44.50211 | 279.4916 | 77.92186 | 46.28693 | 496.0408 |
| Primary education | 378.0596 | 135.9514 | 507.3565 | 74.21685 | 21.47515 | 206.5318 | 35.38836 | 19.24818 | 1159.656 |
| *Std. Dev.* | 270.9379 | 228.4127 | 336.0177 | 133.1259 | 88.35952 | 442.0881 | 99.18924 | 82.49927 | 1038.692 |
| Secondary education | 386.0174 | 187.8915 | 652.8028 | 101.8342 | 54.51107 | 324.3999 | 63.39546 | 26.8638 | 1635.959 |
| *Std. Dev.* | 257.4066 | 293.0771 | 510.4852 | 154.3574 | 164.9526 | 633.1407 | 121.1746 | 83.04549 | 1591.866 |
| Superior education | 437.8052 | 277.1395 | 933.9302 | 170.6067 | 106.8979 | 569.6294 | 125.3482 | 48.88469 | 2607.239 |
| *Std. Dev.* | 264.8536 | 353.3204 | 693.7396 | 245.8914 | 328.6411 | 1006.679 | 207.9846 | 123.5092 | 3357.457 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 396.1788 | 114.5174 | 426.5839 | 68.90926 | 9.841601 | 159.9724 | 29.53439 | 14.69208 | 70.84675 |
| *Std. Dev.* | 251.5049 | 271.306 | 314.5228 | 123.3497 | 38.48757 | 364.2685 | 104.1875 | 59.97763 | 226.3178 |
| Primary education | 392.4941 | 146.4983 | 544.6935 | 81.15694 | 30.67923 | 252.6693 | 41.63534 | 21.12842 | 122.7505 |
| *Std. Dev.* | 274.1546 | 229.8018 | 338.2306 | 143.7758 | 107.5077 | 504.608 | 99.90799 | 86.51105 | 297.9086 |
| Secondary education | 386.0463 | 221.1495 | 718.7075 | 121.2937 | 61.39696 | 415.1257 | 75.20822 | 33.45495 | 333.8259 |
| *Std. Dev.* | 226.3482 | 257.8562 | 441.0681 | 162.2727 | 180.4962 | 835.6162 | 132.741 | 96.89731 | 552.8201 |
| Superior education | 461.4089 | 353.5126 | 1102.303 | 190.8056 | 166.4247 | 726.1748 | 170.4044 | 64.44447 | 1532.274 |
| *Std. Dev.* | 257.7087 | 376.2868 | 966.3408 | 237.9469 | 437.5171 | 1111.241 | 245.9297 | 151.5069 | 1463.28 |
| TOTAL | 409.8796 | 164.2102 | 566.3999 | 93.82836 | 37.37428 | 265.9419 | 50.12726 | 25.24353 | 652.1451 |
| *Std. Dev.* | 281.586 | 286.1193 | 445.4465 | 161.8905 | 147.8792 | 564.2111 | 124.3862 | 90.09965 | 1215.667 |

*Source: Authors' calculations from Household Budget Survey data covering 2010*

Table 12: 2011 Summary Statistics on Expenditure

| 2011 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 473.9578 | 214.2755 | 621.6175 | 127.1564 | 58.97401 | 340.2835 | 59.58665 | 39.78266 | 237.9266 |
| *Std. Dev.* | 315.821 | 450.1583 | 475.2347 | 188.239 | 223.4055 | 708.3006 | 148.8 | 140.193 | 524.1755 |
| 25-34 | 412.9828 | 214.4157 | 621.3465 | 109.7278 | 23.49111 | 399.5979 | 62.74856 | 25.80889 | 790.6176 |
| *Std. Dev.* | 289.6925 | 362.3965 | 444.6222 | 173.9258 | 94.43348 | 887.7196 | 161.0635 | 124.8689 | 1158.01 |
| 35-44 | 441.1366 | 198.2107 | 654.132 | 116.8593 | 72.40652 | 382.2185 | 66.55262 | 34.22484 | 1026.053 |
| *Std. Dev.* | 291.7154 | 273.2113 | 513.8349 | 183.2241 | 231.8518 | 820.8631 | 140.6836 | 97.84444 | 1455.588 |
| 45-54 | 470.5311 | 211.3154 | 680.2803 | 114.8133 | 58.81906 | 380.2534 | 67.12285 | 39.09078 | 1060.629 |
| *Std. Dev.* | 327.8043 | 453.0344 | 535.6418 | 185.7206 | 225.2573 | 778.32 | 181.7743 | 146.7956 | 2130.107 |
| 55-64 | 470.2062 | 176.8962 | 654.3075 | 88.85025 | 23.1776 | 315.1471 | 50.3732 | 27.08501 | 915.1186 |
| *Std. Dev.* | 323.3758 | 437.3198 | 512.2004 | 156.4961 | 127.0886 | 1126.692 | 157.5635 | 136.3166 | 1394.995 |
| 65 | 433.816 | 136.0594 | 604.6827 | 65.98481 | 18.20648 | 195.6369 | 43.34478 | 20.16261 | 724.4504 |
| *Std. Dev.* | 319.6614 | 344.5818 | 555.2427 | 127.4452 | 138.0908 | 534.8204 | 144.672 | 97.48979 | 1240.348 |
| **Area** | | | | | | | | | |
| Rural | 464.3129 | 153.0962 | 440.5236 | 89.52107 | 23.14321 | 250.7566 | 37.29403 | 23.01906 | 579.9028 |
| *Std. Dev.* | 331.3502 | 519.6036 | 401.7118 | 152.0395 | 150.9625 | 515.9536 | 116.7536 | 132.8296 | 1240.813 |
| Urban | 443.4306 | 218.6533 | 730.0701 | 117.6699 | 58.08808 | 398.7926 | 71.73593 | 36.36728 | 860.2581 |
| *Std. Dev.* | 301.0251 | 316.148 | 499.0202 | 185.3955 | 207.9561 | 942.7252 | 174.2536 | 123.8351 | 1450.101 |
| **Family Status** | | | | | | | | | |
| Couple without children | 392.6355 | 139.4497 | 632.3599 | 67.91135 | 11.17723 | 276.3742 | 45.98745 | 19.88416 | 904.4839 |
| *Std. Dev.* | 290.6752 | 231.8223 | 508.6977 | 135.3697 | 92.7749 | 711.1467 | 145.102 | 94.03155 | 1348.554 |
| Couple with children | 441.654 | 197.6727 | 646.01 | 116.4066 | 62.35046 | 396.6389 | 65.1457 | 37.95222 | 793.4961 |
| *Std. Dev.* | 282.897 | 293.2264 | 476.8838 | 174.1565 | 218.4562 | 951.5548 | 156.0907 | 140.7574 | 1507.573 |
| Single | 278.0099 | 141.7775 | 588.696 | 74.75254 | 25.58355 | 179.3363 | 46.17063 | 15.84748 | 1205.154 |
| *Std. Dev.* | 214.0629 | 253.7502 | 508.9235 | 211.7856 | 130.3021 | 545.7898 | 125.7657 | 56.84595 | 1631.937 |
| Monoparental family | 368.0203 | 182.3807 | 609.2866 | 98.70395 | 37.24379 | 249.8144 | 63.16014 | 23.82018 | 567.1565 |
| *Std. Dev.* | 235.474 | 241.5543 | 464.5553 | 175.0472 | 156.6231 | 576.9369 | 137.6601 | 68.1643 | 1358.738 |
| Other family* | 540.9944 | 238.3792 | 630.8876 | 118.878 | 34.5136 | 331.654 | 60.44434 | 28.92931 | 594.9973 |
| *Std. Dev.* | 373.2374 | 621.4174 | 503.9067 | 186.0873 | 174.3887 | 648.7054 | 178.1499 | 122.6809 | 1033.899 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 362.5833 | 111.8651 | 419.1398 | 62.71077 | 6.863905 | 110.8082 | 22.41552 | 13.02557 | 709.0669 |
| *Std. Dev.* | 268.5032 | 427.895 | 307.4503 | 112.7926 | 39.02105 | 315.2503 | 67.71626 | 77.67365 | 838.3264 |
| Primary education | 406.9201 | 158.8691 | 556.9421 | 82.44828 | 23.30628 | 264.711 | 42.06769 | 21.95003 | 1368.381 |
| *Std. Dev.* | 286.4518 | 312.3066 | 356.2651 | 135.7752 | 99.0574 | 584.932 | 116.8376 | 86.03342 | 1723.556 |
| Secondary education | 411.5642 | 208.0317 | 733.1724 | 113.5333 | 46.3112 | 406.9498 | 67.15865 | 31.94842 | 1756.554 |
| *Std. Dev.* | 295.2149 | 238.263 | 500.8888 | 173.9354 | 133.8144 | 799.7239 | 138.4961 | 118.3242 | 1485.468 |
| Superior education | 482.5333 | 325.4869 | 1027.337 | 195.752 | 149.8943 | 723.4775 | 152.9629 | 66.49433 | 2790.897 |
| *Std. Dev.* | 311.8607 | 365.393 | 820.0847 | 299.8153 | 402.0468 | 1464.411 | 284.1981 | 202.2231 | 2867.074 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 441.7671 | 132.1265 | 473.9011 | 80.41569 | 12.14366 | 191.3753 | 34.13481 | 19.82579 | 67.66326 |
| *Std. Dev.* | 293.1036 | 357.2633 | 329.6424 | 142.6624 | 54.70682 | 484.7692 | 129.8584 | 82.79227 | 216.4635 |
| Primary education | 422.9241 | 169.5459 | 604.438 | 92.10736 | 30.92886 | 318.8823 | 48.29178 | 23.67641 | 138.8449 |
| *Std. Dev.* | 297.1269 | 280.4719 | 367.8361 | 139.1441 | 103.5144 | 677.5392 | 116.8137 | 86.52891 | 359.653 |
| Secondary education | 427.9159 | 244.0126 | 825.1583 | 136.5142 | 80.50053 | 544.2886 | 88.90256 | 40.85081 | 370.0251 |
| *Std. Dev.* | 274.8428 | 271.7204 | 615.3008 | 212.3546 | 237.3509 | 1409.546 | 159.9909 | 122.9923 | 657.216 |
| Superior education | 510.9786 | 400.6553 | 1145.891 | 221.6635 | 210.4734 | 908.8248 | 183.5384 | 97.99971 | 1538.933 |
| *Std. Dev.* | 320.3316 | 374.3514 | 941.2426 | 282.6481 | 477.3562 | 1362.725 | 300.9592 | 325.3118 | 1453.931 |
| TOTAL | 449.3092 | 198.4952 | 639.4893 | 108.8526 | 45.8806 | 350.1471 | 60.20337 | 32.17223 | 771.8049 |
| *Std. Dev.* | 309.9818 | 391.5078 | 500.5366 | 175.9051 | 188.6965 | 823.5805 | 156.6048 | 126.4696 | 1405.523 |

*Source: Authors' calculations from Household Budget Survey data covering 2011*

Table 13: 2012 Summary Statistics on Expenditure

| 2012 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 555.0402 | 264.1114 | 754.6929 | 163.4725 | 85.14159 | 412.9614 | 82.56767 | 44.6691 | 212.5308 |
| *Std. Dev.* | 421.3933 | 837.6312 | 580.5925 | 300.0948 | 302.582 | 802.3099 | 327.666 | 139.6198 | 539.2622 |
| 25-34 | 483.8164 | 278.4903 | 794.8186 | 145.2683 | 44.36711 | 517.0335 | 82.36388 | 32.6262 | 881.6238 |
| *Std. Dev.* | 352.8418 | 684.0588 | 650.5886 | 230.5723 | 203.9613 | 1028.541 | 193.7885 | 116.5325 | 1554.322 |
| 35-44 | 501.7667 | 236.3874 | 799.0105 | 145.3473 | 87.09318 | 473.7562 | 94.51344 | 45.61335 | 1102.741 |
| *Std. Dev.* | 344.2518 | 311.1017 | 592.1222 | 229.7155 | 278.4177 | 975.7139 | 230.871 | 150.9778 | 1467.082 |
| 45-54 | 533.1569 | 260.3449 | 845.7935 | 147.3417 | 89.18803 | 452.6792 | 85.91687 | 46.53008 | 1148.996 |
| *Std. Dev.* | 343.8604 | 610.5584 | 709.469 | 264.0628 | 316.4647 | 891.7415 | 322.5528 | 167.1992 | 1972.982 |
| 55-64 | 535.0128 | 201.5129 | 801.4962 | 119.9547 | 32.0432 | 341.129 | 69.53329 | 25.07567 | 1036.593 |
| *Std. Dev.* | 397.434 | 526.8935 | 826.3352 | 259.3894 | 180.579 | 728.2344 | 202.6866 | 84.33274 | 1875.731 |
| 65 | 484.2489 | 145.7964 | 682.7385 | 72.5908 | 14.37998 | 232.8006 | 50.86989 | 21.26061 | 775.3555 |
| *Std. Dev.* | 392.573 | 283.2429 | 759.3266 | 150.8768 | 74.59135 | 640.5721 | 246.1284 | 127.5202 | 1561.864 |
| **Area** | | | | | | | | | |
| Rural | 549.3199 | 194.491 | 566.0183 | 117.0609 | 26.85346 | 319.3116 | 42.80722 | 26.45098 | 619.3543 |
| *Std. Dev.* | 458.5373 | 934.9567 | 559.1316 | 274.7859 | 141.7453 | 671.6966 | 122.3984 | 111.0933 | 1209.805 |
| Urban | 500.8056 | 264.124 | 890.9776 | 149.5603 | 82.32374 | 477.3501 | 98.91209 | 43.52343 | 941.1253 |
| *Std. Dev.* | 327.0857 | 347.4338 | 697.2766 | 237.219 | 292.4984 | 967.9124 | 307.696 | 146.8732 | 1685.532 |
| **Family Status** | | | | | | | | | |
| Couple without children | 433.4402 | 170.0348 | 768.8939 | 84.68213 | 14.11066 | 320.7523 | 73.42538 | 23.06036 | 1023.758 |
| *Std. Dev.* | 292.3387 | 331.6484 | 905.1168 | 202.0721 | 117.6481 | 719.9159 | 274.1388 | 127.4715 | 1875.822 |
| Couple with children | 506.169 | 245.4534 | 807.547 | 149.4408 | 89.44838 | 468.7772 | 88.52575 | 44.96975 | 861.8819 |
| *Std. Dev.* | 332.6071 | 360.3105 | 630.1743 | 240.4786 | 306.3579 | 943.4059 | 287.1401 | 154.4947 | 1493.852 |
| Single | 316.1835 | 173.3497 | 688.6373 | 91.78462 | 29.59304 | 230.1853 | 61.8311 | 23.4108 | 1251.481 |
| *Std. Dev.* | 229.8156 | 310.1186 | 544.7904 | 232.1059 | 187.9381 | 653.6285 | 190.759 | 95.71944 | 1240.117 |
| Monoparental family | 411.4249 | 202.2028 | 754.8054 | 118.701 | 53.26046 | 300.3636 | 65.42707 | 28.57711 | 526.1635 |
| *Std. Dev.* | 247.1665 | 281.1354 | 511.1219 | 191.467 | 240.0185 | 842.3967 | 165.7267 | 98.19349 | 704.1913 |
| Other family* | 641.7833 | 289.7762 | 767.8447 | 157.0109 | 43.03144 | 443.2145 | 72.88147 | 34.50449 | 635.5366 |
| *Std. Dev.* | 490.6155 | 1067.635 | 663.445 | 298.2251 | 175.4119 | 871.7961 | 222.6043 | 105.2199 | 1616.68 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 410.7638 | 103.9329 | 498.1714 | 74.42034 | 9.723397 | 141.9819 | 23.45913 | 14.53331 | 788.3824 |
| *Std. Dev.* | 359.3854 | 197.3537 | 468.7259 | 190.0317 | 55.46144 | 466.2806 | 94.94333 | 59.30897 | 1166.78 |
| Primary education | 467.8944 | 185.949 | 677.5734 | 104.381 | 30.95366 | 313.0187 | 50.63862 | 28.74961 | 1378.438 |
| *Std. Dev.* | 342.2325 | 464.7755 | 451.9707 | 197.7941 | 153.7208 | 618.0172 | 136.0581 | 144.2902 | 1404.028 |
| Secondary education | 472.1313 | 262.16 | 899.0457 | 149.7093 | 74.88734 | 484.4852 | 98.13759 | 41.34142 | 1977.744 |
| *Std. Dev.* | 302.8154 | 334.7344 | 862.589 | 222.7774 | 248.7501 | 1002.521 | 219.3832 | 124.3974 | 2318.135 |
| Superior education | 529.0771 | 402.9603 | 1224.352 | 224.326 | 179.8457 | 870.3895 | 212.41 | 69.68557 | 3054.535 |
| *Std. Dev.* | 314.5446 | 474.7971 | 951.8013 | 330.2379 | 446.339 | 1420.587 | 495.338 | 161.7883 | 2706.052 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 518.9314 | 160.8944 | 580.8071 | 101.0875 | 17.77041 | 251.3543 | 37.14118 | 21.63089 | 74.61091 |
| *Std. Dev.* | 407.4183 | 672.5113 | 482.7144 | 224.6298 | 118.8243 | 651.5311 | 139.0492 | 127.9564 | 217.3984 |
| Primary education | 477.1413 | 194.3312 | 726.5103 | 114.1409 | 40.30585 | 364.1094 | 59.47234 | 32.48452 | 150.7145 |
| *Std. Dev.* | 311.5628 | 276.9206 | 459.1236 | 197.8294 | 143.1211 | 664.2176 | 138.8578 | 137.2894 | 347.3152 |
| Secondary education | 489.9832 | 306.7682 | 1015.175 | 168.1201 | 115.4402 | 632.1388 | 130.1088 | 47.24947 | 504.295 |
| *Std. Dev.* | 298.006 | 334.8585 | 796.2748 | 239.301 | 355.0136 | 1177.009 | 262.3431 | 135.0843 | 1497.322 |
| Superior education | 568.6751 | 493.1662 | 1419.294 | 265.6657 | 248.2676 | 1089.129 | 266.5185 | 94.06316 | 1756.066 |
| *Std. Dev.* | 339.7874 | 493.1902 | 1399.491 | 331.0173 | 537.332 | 1643.547 | 610.9532 | 200.4631 | 1579.232 |
| TOTAL | 516.6394 | 241.3976 | 784.9193 | 138.9533 | 64.21968 | 425.7704 | 80.60092 | 37.95143 | 836.1076 |
| *Std. Dev.* | 375.7673 | 606.3451 | 672.8674 | 250.5597 | 254.6854 | 885.3308 | 263.3569 | 136.4655 | 1553.759 |

*Source: Authors' calculations from Household Budget Survey data covering 2012*

Table 14: 2013 Summary Statistics on Expenditure

| 2013 HBS Expenditures (Mean) ( monthly TL) | Food | Health and Personal Care | Housing | Clothing | Education | Transpor-tation | Leisure | Other | Income (Mean) ( monthly TL) |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | |
| 15-24 | 590.1036 | 263.887 | 767.4849 | 160.042 | 86.46631 | 452.5988 | 89.11475 | 52.33841 | 234.6825 |
| *Std. Dev.* | 399.0521 | 361.4163 | 587.3884 | 259.6943 | 280.5012 | 899.1495 | 227.4003 | 134.2794 | 524.6675 |
| 25-34 | 508.5634 | 289.4351 | 808.8753 | 146.7636 | 41.76376 | 528.9165 | 96.60312 | 34.61517 | 946.6514 |
| *Std. Dev.* | 327.9669 | 349.6756 | 558.8136 | 223.648 | 165.8084 | 961.4837 | 237.7305 | 107.876 | 1146.056 |
| 35-44 | 544.489 | 260.7163 | 816.7249 | 157.3906 | 100.1468 | 514.1982 | 104.2462 | 49.88883 | 1213.739 |
| *Std. Dev.* | 363.169 | 311.8504 | 604.9792 | 239.9958 | 315.8737 | 1089.636 | 241.5733 | 136.353 | 1906.381 |
| 45-54 | 584.7356 | 273.5782 | 862.1449 | 155.9635 | 97.96923 | 495.3303 | 100.2814 | 52.30023 | 1254.219 |
| *Std. Dev.* | 380.1313 | 390.7642 | 667.4495 | 260.998 | 315.1768 | 917.78 | 318.6471 | 152.723 | 2151.015 |
| 55-64 | 570.8602 | 213.3184 | 819.7332 | 112.5199 | 29.41338 | 378.0011 | 72.49694 | 28.83715 | 1046.012 |
| *Std. Dev.* | 370.2171 | 327.6733 | 672.0852 | 206.6638 | 158.9126 | 792.609 | 202.4369 | 96.56533 | 1489.758 |
| 65 | 527.5785 | 177.6265 | 732.6722 | 87.62281 | 21.31846 | 272.2271 | 56.86415 | 33.72793 | 821.6721 |
| *Std. Dev.* | 418.8817 | 356.2214 | 774.0483 | 208.2714 | 151.4466 | 764.4736 | 203.4606 | 220.3412 | 1798.221 |
| **Area** | | | | | | | | | |
| Rural | 577.9547 | 183.828 | 554.1411 | 113.6054 | 26.502 | 344.2829 | 55.88371 | 33.85935 | 635.3764 |
| *Std. Dev.* | 428.1179 | 340.3142 | 601.6213 | 216.5844 | 134.7194 | 756.1915 | 192.9677 | 153.5658 | 1119.176 |
| Urban | 543.7219 | 288.1906 | 920.0215 | 156.7665 | 88.41315 | 513.6524 | 106.2276 | 48.15293 | 1021.606 |
| *Std. Dev.* | 347.6653 | 352.0602 | 612.0454 | 247.8106 | 292.6665 | 1005.077 | 264.1306 | 135.4514 | 1763.495 |
| **Family Status** | | | | | | | | | |
| Couple without children | 459.3845 | 193.4812 | 802.8647 | 92.69824 | 14.07884 | 393.908 | 67.1932 | 31.7794 | 1062.097 |
| *Std. Dev.* | 343.9285 | 341.139 | 785.4438 | 202.5156 | 101.1974 | 1001.608 | 209.6497 | 199.3162 | 1968.273 |
| Couple with children | 553.2386 | 275.2659 | 833.4764 | 158.9041 | 95.06896 | 508.4674 | 101.6501 | 48.23247 | 949.9843 |
| *Std. Dev.* | 349.5633 | 359.1643 | 644.9924 | 250.5628 | 300.3862 | 989.954 | 255.499 | 134.0804 | 1730.648 |
| Single | 339.4382 | 182.3017 | 687.4103 | 83.31098 | 27.01623 | 194.9881 | 66.60482 | 28.29056 | 1260.686 |
| *Std. Dev.* | 252.6546 | 302.4899 | 534.1204 | 155.7228 | 181.5637 | 533.3077 | 198.6908 | 127.9754 | 1280.127 |
| Monoparental family | 436.3281 | 211.9616 | 749.8066 | 109.2634 | 45.90344 | 224.6626 | 53.86729 | 44.54773 | 550.7762 |
| *Std. Dev.* | 287.0672 | 288.3228 | 516.8728 | 164.8352 | 210.2469 | 468.7094 | 117.8941 | 146.0534 | 666.5261 |
| Other family* | 672.9469 | 260.3971 | 765.4007 | 149.5793 | 48.73185 | 471.1641 | 82.97152 | 43.0155 | 663,000 |
| *Std. Dev.* | 440.1722 | 351.6045 | 535.1436 | 245.5126 | 203.9791 | 870.8348 | 248.7914 | 124.985 | 1090.168 |
| **Husband Education** | | | | | | | | | |
| Without Diplôme | 444.8698 | 125.5782 | 526.6765 | 78.03216 | 12.11722 | 125.2206 | 30.179 | 24.08088 | 792.8005 |
| *Std. Dev.* | 395.9636 | 270.7057 | 626.7763 | 186.2426 | 86.20571 | 306.736 | 116.3307 | 210.3897 | 578.4646 |
| Primary education | 499.7972 | 203.8918 | 694.4433 | 105.3143 | 35.63837 | 344.6737 | 62.42792 | 29.66546 | 1506.881 |
| *Std. Dev.* | 334.5091 | 303.1616 | 474.1289 | 183.3714 | 138.1027 | 708.6619 | 182.4737 | 104.0164 | 1530.963 |
| Secondary education | 516.97 | 288.1887 | 910.0879 | 162.7925 | 75.11922 | 553.7968 | 102.2951 | 47.18815 | 2060.065 |
| *Std. Dev.* | 350.4793 | 358.2148 | 625.6233 | 266.9511 | 280.4738 | 1116.646 | 300.8204 | 146.3072 | 1872.136 |
| Superior education | 578.8908 | 439.752 | 1286.202 | 243.9699 | 199.9127 | 934.4441 | 221.4782 | 87.06354 | 3483.922 |
| *Std. Dev.* | 374.9223 | 446.985 | 882.2693 | 296.0017 | 483.0678 | 1460.205 | 373.6291 | 193.6977 | 3705.116 |
| **Wife Education** | | | | | | | | | |
| Without Diplôme | 543.2104 | 164.813 | 592.3153 | 100.6301 | 18.99742 | 267.342 | 46.39468 | 21.93705 | 78.17965 |
| *Std. Dev.* | 402.6053 | 309.8711 | 577.146 | 206.451 | 105.1436 | 612.8934 | 170.1471 | 76.96274 | 220.4119 |
| Primary education | 526.9172 | 226.0497 | 762.5509 | 124.6181 | 47.74463 | 399.8866 | 73.9756 | 34.57145 | 167.6655 |
| *Std. Dev.* | 336.9384 | 304.314 | 509.8815 | 209.0204 | 162.9763 | 740.8648 | 234.8271 | 144.3788 | 390.1165 |
| Secondary education | 509.4149 | 332.4116 | 1043.22 | 170.74 | 107.8912 | 703.7671 | 124.3326 | 62.49274 | 458.5241 |
| *Std. Dev.* | 287.2064 | 429.295 | 816.5318 | 238.2048 | 283.9585 | 1441.07 | 235.6294 | 170.2276 | 1035.446 |
| Superior education | 613.4311 | 529.379 | 1408.767 | 293.1385 | 278.7222 | 1232.168 | 272.0062 | 114.2355 | 1783.835 |
| *Std. Dev.* | 423.2148 | 459.8255 | 883.7722 | 352.8403 | 610.9947 | 1653.953 | 413.8865 | 238.2007 | 1644.582 |
| TOTAL | 554.631 | 254.9331 | 803.4255 | 143.0123 | 68.68377 | 459.679 | 90.18437 | 43.59796 | 898.5307 |
| *Std. Dev.* | 375.5119 | 351.7318 | 632.156 | 239.1475 | 254.8974 | 936.3174 | 244.8421 | 141.6298 | 1596.988 |

*Source: Authors' calculations from Household Budget Survey data covering 2013*

Table 15: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2007)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.170*** | -0.036*** | -0.183*** | -0.020*** | -0.072*** | -0.073*** | -0.035*** | -0.061*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.037*** | -0.001 | -0.108*** | -0.076*** | -0.096*** | 0.021*** | -0.046*** | 0.078*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) | (0.02) |
| ln (OECD Equivalance Scale HH Size) | -0.211*** | -0.005 | -0.071*** | -0.107*** | -0.290*** | -0.020 | -0.026* | 0.125** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.05) |
| Rate Children (N. of children/N. of Adult) | 0.116** | 0.003 | 0.055* | -0.003 | 0.415*** | 0.059*** | 0.062*** | -0.023 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.08) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (15-24) | -0.216*** | -0.094*** | -0.391*** | -0.176*** | 2.539*** | 0.249*** | -0.544*** | 0.391*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.44) | (0.01) | (0.01) | (0.07) |
| Ln (Age) (25-34) | -0.175*** | -0.098*** | -0.505*** | -0.286*** | 1.949*** | 0.260*** | -0.578*** | 1.008*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.44) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (35-44) | -0.171*** | -0.086*** | -0.467*** | -0.070* | 1.388** | 0.209*** | -0.482*** | 1.054*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.44) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (45-54) | -0.168*** | -0.059*** | -0.298*** | -0.089** | 1.315** | 0.156*** | -0.304*** | 0.993*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.44) | (0.01) | (0.01) | (0.07) |
| Ln (Age) (55-64) | -0.077** | -0.037*** | -0.136*** | -0.212*** | 0.937* | 0.104*** | -0.117*** | 0.826*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.45) | (0.01) | (0.01) | (0.07) |
| Married without children | 0.122*** | 0.002 | 0.085*** | 0.137*** | 0.401** | -0.038*** | -0.003 | 0.074 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.15) | (0.01) | (0.01) | (0.06) |
| Married with children | 1.536*** | -0.035*** | 0.820*** | 1.055*** | 0.041 | -0.447*** | -0.167*** | 0.188 |
| | (0.06) | (0.01) | (0.04) | (0.06) | (0.29) | (0.02) | (0.03) | (0.16) |
| Single persons without children | 0.983*** | -0.018*** | 0.510*** | 0.699*** | 0.516** | -0.281*** | -0.075*** | 0.119 |
| | (0.04) | (0.01) | (0.03) | (0.04) | (0.16) | (0.02) | (0.02) | (0.08) |
| Single persons with children | 0.368*** | -0.001 | 0.222*** | 0.304*** | 0.479** | -0.096*** | -0.018 | 0.036 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.15) | (0.01) | (0.01) | (0.06) |
| Primary Education (Male) | -0.847*** | -0.016*** | -0.455*** | -0.117* | 0.011 | 0.110*** | -0.073*** | 0.357*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.13) | (0.01) | (0.02) | (0.07) |
| Secondary Education (Male) | -1.268*** | 0.015*** | -0.678*** | -1.332*** | -0.486*** | 0.298*** | -0.044*** | 0.220*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.731*** | 0.052*** | -0.946*** | -1.553*** | -0.111 | 0.392*** | -0.026* | 0.322*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.07) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.662*** | 0.044*** | -1.053*** | -0.697*** | -0.429*** | 0.440*** | -0.081*** | 0.393*** |
| | (0.07) | (0.00) | (0.04) | (0.13) | (0.08) | (0.01) | (0.01) | (0.05) |
| Primary Education (Female) | 0.927*** | -0.043*** | 0.623*** | 0.522*** | 0.274*** | -0.392*** | -0.054*** | 0.008 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.07) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Female) | 0.952*** | -0.012*** | 0.752*** | 0.522*** | 0.429*** | -0.316*** | 0.008 | -0.051 |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.05) | (0.01) | (0.01) | (0.05) |
| Tertiary Education (Female) | 0.930*** | 0.031*** | 0.772*** | 0.406*** | 0.502*** | -0.186*** | 0.045*** | 0.170 |
| | (0.04) | (0.00) | (0.03) | (0.03) | (0.07) | (0.01) | (0.01) | (0.09) |
| Higher Education (Female) | 0.782*** | 0.034*** | 0.455*** | 0.198*** | -0.090 | -0.147*** | -0.253*** | 0.296*** |
| | (0.05) | (0.01) | (0.04) | (0.05) | (0.09) | (0.02) | (0.02) | (0.08) |
| Area (Rural=1) | 0.004 | 0.013*** | 0.234*** | -0.004 | 0.171*** | 0.031*** | 0.065*** | -0.034 |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.03) | (0.00) | (0.01) | (0.02) |
| Constant | 5.785*** | 5.648*** | 5.914*** | 4.171*** | 2.948*** | 4.470*** | 6.847*** | 4.052*** |
| | (0.11) | (0.01) | (0.07) | (0.10) | (0.51) | (0.04) | (0.04) | (0.17) |
| R2 | 0.512 | 0.221 | 0.469 | 0.425 | 0.501 | 0.428 | 0.342 | 0.335 |
| DF | 20231.000 | 23247.000 | 22259.000 | 11823.000 | 3087.000 | 21696.000 | 14827.000 | 4185.000 |
| BIC | 51434.745 | -36326.080 | 42472.941 | 23815.506 | 6018.422 | 11801.574 | 2643.845 | 7476.432 |

*[a] The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2007 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 16: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2008)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.195*** | -0.037*** | -0.244*** | -0.036*** | -0.092*** | -0.089*** | -0.050*** | -0.048*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.031** | -0.006*** | -0.100*** | -0.047*** | -0.050*** | 0.030*** | -0.040*** | 0.069*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (OECD Equivalance Scale HH Size) | -0.035 | 0.004 | 0.013 | -0.022 | -0.135** | -0.008 | -0.042*** | 0.171*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.04) |
| Rate Children (N. of children/N. of Adult) | 0.046 | 0.009 | 0.077** | -0.022 | 0.154** | 0.069*** | 0.043** | -0.017 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.02) | (0.01) | (0.05) |
| Ln (Age) (15-24) | -0.150*** | -0.071*** | -0.284*** | -0.311*** | 2.525*** | 0.390*** | -0.585*** | 0.239*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.41) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (25-34) | -0.094** | -0.070*** | -0.450*** | -0.368*** | 1.923*** | 0.384*** | -0.607*** | 0.921*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.41) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (35-44) | -0.081** | -0.061*** | -0.408*** | -0.202*** | 1.350** | 0.324*** | -0.507*** | 0.942*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.41) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (45-54) | -0.082** | -0.038*** | -0.269*** | -0.189*** | 1.303** | 0.291*** | -0.324*** | 0.877*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.41) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (55-64) | -0.047 | -0.003 | -0.146*** | -0.384*** | 0.988* | 0.231*** | -0.135*** | 0.827*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.41) | (0.01) | (0.01) | (0.06) |
| Married without children | 0.005 | -0.007* | -0.029 | 0.062* | 0.153 | -0.057*** | -0.001 | 0.010 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.08) | (0.01) | (0.01) | (0.05) |
| Married with children | 2.123*** | -0.092*** | 1.133*** | 1.487*** | 0.688*** | -0.675*** | -0.040 | -0.021 |
| | (0.06) | (0.01) | (0.04) | (0.06) | (0.12) | (0.03) | (0.02) | (0.12) |
| Single persons without children | -0.097 | -0.038*** | -0.142** | 0.114 | 0.115 | -0.046 | -0.014 | 0.024 |
| | (0.07) | (0.01) | (0.05) | (0.08) | (0.11) | (0.03) | (0.03) | (0.11) |
| Single persons with children | 0.201*** | -0.019*** | 0.081*** | 0.247*** | 0.169* | -0.107*** | -0.028* | 0.039 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.08) | (0.01) | (0.01) | (0.06) |
| Primary Education (Male) | -1.240*** | -0.020*** | -0.568*** | -0.013 | -0.570*** | 0.205*** | -0.086*** | 0.368*** |
| | (0.04) | (0.01) | (0.03) | (0.06) | (0.12) | (0.02) | (0.02) | (0.07) |
| Secondary Education (Male) | -1.405*** | 0.013*** | -0.655*** | -1.549*** | -0.583*** | 0.361*** | -0.074*** | 0.271*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.875*** | 0.047*** | -0.814*** | -1.649*** | -0.261*** | 0.427*** | -0.067*** | 0.392*** |
| | (0.04) | (0.00) | (0.02) | (0.06) | (0.05) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.765*** | 0.050*** | -0.989*** | -0.770*** | -0.470*** | 0.475*** | -0.096*** | 0.500*** |
| | (0.06) | (0.00) | (0.03) | (0.11) | (0.05) | (0.01) | (0.01) | (0.05) |
| Primary Education (Female) | 0.889*** | -0.043*** | 0.655*** | 0.498*** | 0.126* | -0.357*** | -0.078*** | -0.034 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Female) | 0.924*** | -0.012*** | 0.807*** | 0.503*** | 0.320*** | -0.291*** | -0.001 | -0.052 |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.04) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Female) | 0.912*** | 0.029*** | 0.817*** | 0.370*** | 0.481*** | -0.178*** | 0.014 | 0.145* |
| | (0.03) | (0.00) | (0.03) | (0.03) | (0.05) | (0.01) | (0.01) | (0.07) |
| Higher Education (Female) | 0.760*** | 0.039*** | 0.537*** | 0.129** | 0.152* | -0.124*** | -0.269*** | 0.356*** |
| | (0.05) | (0.01) | (0.03) | (0.04) | (0.06) | (0.02) | (0.02) | (0.06) |
| Area (Rural=1) | -0.022 | 0.004* | 0.241*** | 0.103*** | 0.195*** | 0.056*** | 0.077*** | -0.019 |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.02) | (0.01) | (0.01) | (0.02) |
| Constant | 6.049*** | 5.875*** | 6.347*** | 4.077*** | 2.938*** | 4.467*** | 7.068*** | 4.353*** |
| | (0.10) | (0.01) | (0.07) | (0.10) | (0.44) | (0.04) | (0.04) | (0.15) |
| R2 | 0.566 | 0.217 | 0.495 | 0.445 | 0.542 | 0.437 | 0.368 | 0.358 |
| DF | 18524.000 | 22009.000 | 20497.000 | 10963.000 | 5265.000 | 20012.000 | 15445.000 | 5169.000 |
| BIC | 45942.679 | -34367.052 | 38420.796 | 21887.208 | 9400.015 | 13693.868 | 3430.843 | 9396.209 |

[a] *The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2008 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 17: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2009)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.162*** | -0.024*** | -0.204*** | -0.029*** | -0.101*** | -0.086*** | -0.054*** | -0.068*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.045*** | -0.003** | -0.108*** | -0.053*** | -0.080*** | 0.031*** | -0.027*** | 0.065*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (OECD Equivalance Scale HH Size) | -0.012 | 0.008* | 0.036 | -0.087** | -0.051 | -0.059*** | 0.001 | 0.095* |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Rate Children (N. of children/N. of Adult) | -0.105** | -0.009* | -0.055* | 0.026 | 0.080 | 0.098*** | -0.006 | -0.006 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.01) | (0.01) | (0.05) |
| Ln (Age) (15-24) | -0.116*** | -0.072*** | -0.276*** | -0.265*** | 2.254*** | 0.404*** | -0.592*** | 0.253*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.22) | (0.01) | (0.01) | (0.07) |
| Ln (Age) (25-34) | -0.165*** | -0.072*** | -0.441*** | -0.376*** | 1.725*** | 0.411*** | -0.584*** | 0.871*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.22) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (35-44) | -0.107*** | -0.060*** | -0.385*** | -0.158*** | 1.131*** | 0.362*** | -0.493*** | 0.849*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.22) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (45-54) | -0.117*** | -0.045*** | -0.269*** | -0.178*** | 1.060*** | 0.309*** | -0.322*** | 0.807*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.22) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (55-64) | -0.102*** | -0.009** | -0.148*** | -0.380*** | 0.795*** | 0.267*** | -0.148*** | 0.708*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.23) | (0.01) | (0.01) | (0.07) |
| Married without children | 0.046 | 0.002 | 0.044* | 0.091** | 0.049 | -0.032** | 0.016 | -0.021 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.04) |
| Married with children | 1.813*** | -0.089*** | 0.914*** | 1.152*** | 0.645*** | -0.556*** | -0.093*** | 0.024 |
| | (0.05) | (0.01) | (0.04) | (0.06) | (0.09) | (0.02) | (0.02) | (0.09) |
| Single persons without children | 0.093 | -0.002 | 0.118** | 0.036 | -0.059 | -0.071** | 0.009 | 0.048 |
| | (0.06) | (0.01) | (0.04) | (0.06) | (0.08) | (0.03) | (0.02) | (0.09) |
| Single persons with children | 0.238*** | -0.017*** | 0.143*** | 0.297*** | 0.020 | -0.071*** | -0.027* | -0.033 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.05) |
| Primary Education (Male) | -0.965*** | -0.015*** | -0.436*** | 0.067 | -0.520*** | 0.135*** | -0.053** | 0.313*** |
| | (0.04) | (0.00) | (0.03) | (0.05) | (0.09) | (0.02) | (0.02) | (0.07) |
| Secondary Education (Male) | -1.287*** | 0.012*** | -0.618*** | -1.429*** | -0.623*** | 0.340*** | -0.065*** | 0.234*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.687*** | 0.043*** | -0.800*** | -1.497*** | -0.206*** | 0.412*** | -0.061*** | 0.350*** |
| | (0.04) | (0.00) | (0.02) | (0.06) | (0.04) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.524*** | 0.051*** | -0.966*** | -0.644*** | -0.305*** | 0.430*** | -0.026* | 0.323*** |
| | (0.06) | (0.00) | (0.03) | (0.10) | (0.05) | (0.01) | (0.01) | (0.04) |
| Primary Education (Female) | 0.918*** | -0.046*** | 0.657*** | 0.544*** | 0.008 | -0.347*** | -0.112*** | -0.002 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Female) | 0.959*** | -0.019*** | 0.780*** | 0.517*** | 0.225*** | -0.306*** | -0.045*** | -0.080 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.03) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Female) | 0.930*** | 0.020*** | 0.747*** | 0.387*** | 0.409*** | -0.164*** | -0.013 | 0.043 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.01) | (0.01) | (0.07) |
| Higher Education (Female) | 0.833*** | 0.033*** | 0.524*** | 0.167*** | 0.209*** | -0.120*** | -0.124*** | -0.026 |
| | (0.05) | (0.01) | (0.04) | (0.05) | (0.06) | (0.02) | (0.02) | (0.06) |
| Area (Rural=1) | -0.015 | 0.011*** | 0.243*** | 0.100*** | 0.236*** | 0.056*** | 0.083*** | -0.066** |
| | (0.01) | (0.00) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) |
| Constant | 6.027*** | 5.883*** | 6.193*** | 4.166*** | 3.577*** | 4.530*** | 7.001*** | 4.749*** |
| | (0.10) | (0.01) | (0.07) | (0.11) | (0.26) | (0.04) | (0.04) | (0.16) |
| R2 | 0.516 | 0.184 | 0.458 | 0.408 | 0.536 | 0.426 | 0.313 | 0.282 |
| DF | 19077.000 | 22549.000 | 21135.000 | 11005.000 | 5680.000 | 20235.000 | 15204.000 | 4940.000 |
| BIC | 49218.145 | -41290.207 | 40735.618 | 23114.643 | 10200.184 | 13975.395 | 4672.463 | 9032.186 |

[a] *The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2009 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 18: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2010)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.141*** | -0.040*** | -0.184*** | -0.038*** | -0.075*** | -0.094*** | -0.048*** | -0.047*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.053*** | -0.007*** | -0.129*** | -0.081*** | -0.099*** | 0.032*** | -0.049*** | 0.068*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.02) |
| ln (OECD Equivalance Scale HH Size) | -0.026 | -0.003 | 0.105*** | -0.023 | -0.123** | -0.031** | 0.001 | 0.088* |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Rate Children (N. of children/N. of Adult) | -0.042 | 0.006 | -0.119*** | -0.071 | 0.102* | 0.123*** | 0.009 | -0.020 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.01) | (0.01) | (0.05) |
| Ln (Age) (15-24) | -0.150*** | -0.061*** | -0.285*** | -0.367*** | 2.436*** | 0.395*** | -0.589*** | 0.240*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.20) | (0.01) | (0.01) | (0.07) |
| Ln (Age) (25-34) | -0.150*** | -0.064*** | -0.473*** | -0.385*** | 1.892*** | 0.383*** | -0.613*** | 0.891*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.20) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (35-44) | -0.101*** | -0.054*** | -0.401*** | -0.194*** | 1.288*** | 0.314*** | -0.507*** | 0.916*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.20) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (45-54) | -0.101*** | -0.041*** | -0.260*** | -0.150*** | 1.281*** | 0.275*** | -0.325*** | 0.894*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.20) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (55-64) | -0.077* | -0.010** | -0.139*** | -0.354*** | 1.018*** | 0.202*** | -0.140*** | 0.749*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.21) | (0.01) | (0.01) | (0.07) |
| Married without children | 0.035 | -0.001 | 0.014 | 0.083** | 0.008 | -0.035*** | -0.001 | -0.015 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.04) |
| Married with children | 1.933*** | -0.118*** | 1.014*** | 1.354*** | 0.514*** | -0.564*** | -0.066*** | -0.014 |
| | (0.05) | (0.01) | (0.04) | (0.06) | (0.09) | (0.02) | (0.02) | (0.09) |
| Single persons without children | -0.044 | -0.012 | 0.080* | 0.074 | -0.061 | -0.092*** | 0.009 | -0.140 |
| | (0.06) | (0.01) | (0.04) | (0.06) | (0.08) | (0.02) | (0.02) | (0.08) |
| Single persons with children | 0.213*** | -0.016*** | 0.092*** | 0.306*** | 0.014 | -0.079*** | -0.034** | 0.039 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.05) |
| Primary Education (Male) | -0.892*** | -0.015** | -0.403*** | -0.164** | -0.497*** | 0.114*** | -0.107*** | 0.292*** |
| | (0.04) | (0.00) | (0.03) | (0.05) | (0.11) | (0.02) | (0.02) | (0.06) |
| Secondary Education (Male) | -1.280*** | 0.015*** | -0.611*** | -1.469*** | -0.609*** | 0.355*** | -0.076*** | 0.187*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.633*** | 0.057*** | -0.773*** | -1.681*** | -0.245*** | 0.428*** | -0.035** | 0.282*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.04) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.376*** | 0.046*** | -0.962*** | -0.628*** | -0.450*** | 0.476*** | -0.101*** | 0.408*** |
| | (0.06) | (0.00) | (0.03) | (0.09) | (0.05) | (0.01) | (0.01) | (0.04) |
| Primary Education (Female) | 0.965*** | -0.047*** | 0.681*** | 0.467*** | 0.035 | -0.357*** | -0.130*** | 0.032 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Female) | 0.999*** | -0.015*** | 0.818*** | 0.473*** | 0.271*** | -0.282*** | -0.048*** | -0.005 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Female) | 0.970*** | 0.027*** | 0.826*** | 0.320*** | 0.471*** | -0.149*** | -0.001 | 0.192** |
| | (0.04) | (0.00) | (0.03) | (0.03) | (0.05) | (0.01) | (0.01) | (0.07) |
| Higher Education (Female) | 0.821*** | 0.022*** | 0.506*** | 0.156*** | -0.021 | -0.025 | -0.295*** | 0.252*** |
| | (0.05) | (0.01) | (0.03) | (0.04) | (0.06) | (0.02) | (0.02) | (0.06) |
| Area (Rural=1) | -0.019 | 0.013*** | 0.180*** | 0.125*** | 0.221*** | 0.042*** | 0.052*** | 0.004 |
| | (0.01) | (0.00) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) |
| Constant | 6.051*** | 6.079*** | 6.463*** | 4.556*** | 3.698*** | 4.678*** | 7.371*** | 4.639*** |
| | (0.12) | (0.01) | (0.08) | (0.12) | (0.26) | (0.04) | (0.04) | (0.17) |
| R2 | 0.523 | 0.219 | 0.467 | 0.417 | 0.522 | 0.436 | 0.340 | 0.320 |
| DF | 18739.000 | 22630.000 | 20871.000 | 10931.000 | 5978.000 | 20130.000 | 15760.000 | 4981.000 |
| BIC | 48199.348 | -34763.243 | 40478.580 | 23010.704 | 11136.240 | 13409.380 | 5013.636 | 8915.321 |

*[a] The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2010 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 19: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2011)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.125*** | -0.037*** | -0.233*** | -0.054*** | -0.090*** | -0.080*** | -0.045*** | -0.050*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) |
| ln (Income) | -0.041*** | -0.009*** | -0.097*** | -0.036*** | -0.061*** | 0.021*** | -0.043*** | 0.068*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (OECD Equivalance Scale HH Size) | 0.024 | -0.010** | 0.033 | 0.008 | -0.011 | -0.052*** | 0.007 | 0.201*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.05) | (0.01) | (0.01) | (0.04) |
| Rate Children (N. of children/N. of Adult) | 0.168*** | -0.004 | 0.109*** | 0.039 | 0.032 | -0.009 | 0.004 | -0.156** |
| | (0.05) | (0.00) | (0.03) | (0.04) | (0.06) | (0.01) | (0.02) | (0.06) |
| Ln (Age) (15-24) | -0.402*** | -0.088*** | -0.472*** | -0.275*** | 2.402*** | 0.291*** | -0.564*** | 0.372*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (25-34) | -0.338*** | -0.088*** | -0.615*** | -0.227*** | 1.839*** | 0.261*** | -0.589*** | 1.028*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.05) |
| Ln (Age) (35-44) | -0.313*** | -0.077*** | -0.551*** | -0.067* | 1.223*** | 0.226*** | -0.495*** | 1.022*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.05) |
| Ln (Age) (45-54) | -0.252*** | -0.058*** | -0.363*** | -0.129*** | 1.245*** | 0.167*** | -0.335*** | 1.000*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.05) |
| Ln (Age) (55-64) | -0.075** | -0.024*** | -0.161*** | -0.195*** | 0.913*** | 0.105*** | -0.148*** | 0.876*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.06) |
| Married without children | -0.085*** | 0.013*** | -0.037* | -0.053* | -0.019 | 0.017 | 0.010 | 0.045 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.04) |
| Married with children | 1.717*** | -0.032*** | 0.963*** | 1.437*** | 0.434*** | -0.435*** | -0.057*** | 0.076 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.08) | (0.01) | (0.01) | (0.06) |
| Single persons without children | -0.183*** | 0.018*** | -0.053 | -0.041 | 0.024 | 0.040* | 0.034* | 0.107 |
| | (0.05) | (0.01) | (0.03) | (0.05) | (0.08) | (0.02) | (0.02) | (0.07) |
| Single persons with children | 0.123*** | 0.003 | 0.088*** | 0.140*** | 0.007 | -0.020* | -0.015 | -0.017 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.06) | (0.01) | (0.01) | (0.04) |
| Primary Education (Male) | -1.076*** | -0.025*** | -0.579*** | -0.605*** | -0.599*** | 0.121*** | -0.039** | 0.344*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.09) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Male) | -1.454*** | 0.007** | -0.761*** | -1.559*** | -0.548*** | 0.306*** | -0.016 | 0.217*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.03) |
| Tertiary Education (Male) | -1.876*** | 0.044*** | -0.928*** | -1.457*** | -0.191*** | 0.401*** | 0.027** | 0.285*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.04) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.489*** | 0.039*** | -1.010*** | -0.994*** | -0.380*** | 0.447*** | -0.064*** | 0.439*** |
| | (0.06) | (0.00) | (0.03) | (0.07) | (0.05) | (0.01) | (0.01) | (0.04) |
| Primary Education (Female) | 0.849*** | -0.052*** | 0.566*** | 0.450*** | 0.021 | -0.396*** | -0.077*** | 0.024 |
| | (0.03) | (0.00) | (0.02) | (0.02) | (0.05) | (0.01) | (0.01) | (0.06) |
| Secondary Education (Female) | 0.942*** | -0.023*** | 0.734*** | 0.464*** | 0.287*** | -0.330*** | 0.005 | 0.031 |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.03) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Female) | 0.950*** | 0.020*** | 0.747*** | 0.369*** | 0.518*** | -0.214*** | 0.052*** | 0.114 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.06) |
| Higher Education (Female) | 0.771*** | -0.002 | 0.517*** | 0.145*** | 0.045 | -0.113*** | -0.244*** | 0.343*** |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.01) | (0.01) | (0.05) |
| Area (Rural=1) | -0.030* | 0.025*** | 0.195*** | -0.014 | 0.218*** | 0.019*** | 0.057*** | 0.022 |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) | (0.02) |
| Constant | 6.192*** | 6.191*** | 6.801*** | 4.506*** | 3.468*** | 5.005*** | 7.323*** | 4.510*** |
| | (0.10) | (0.01) | (0.07) | (0.09) | (0.18) | (0.03) | (0.03) | (0.13) |
| R2 | 0.533 | 0.256 | 0.499 | 0.439 | 0.531 | 0.499 | 0.373 | 0.347 |
| DF | 19602.000 | 23229.000 | 21669.000 | 11349.000 | 5980.000 | 21023.000 | 16127.000 | 5215.000 |
| BIC | 49843.895 | -40679.185 | 40287.322 | 22109.606 | 10803.750 | 7605.381 | 3168.030 | 9009.839 |

*[a] The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2011 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 20: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2012)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.111*** | -0.031*** | -0.255*** | -0.042*** | -0.091*** | -0.096*** | -0.041*** | -0.062*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.019** | 0.002* | -0.031*** | -0.012 | -0.016* | 0.014*** | -0.000 | 0.036*** |
| | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) |
| ln (OECD Equivalance Scale HH Size) | 0.023 | -0.005** | 0.041*** | -0.030* | -0.003 | -0.047*** | 0.020*** | -0.029 |
| | (0.02) | (0.00) | (0.01) | (0.02) | (0.02) | (0.01) | (0.00) | (0.02) |
| Rate Children (N. of children/N. of Adult) | 0.077 | 0.002 | 0.025 | 0.014 | 0.100* | 0.115*** | -0.050*** | 0.145* |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.04) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (15-24) | -0.390*** | -0.088*** | -0.413*** | -0.326*** | 2.481*** | 0.309*** | -0.527*** | 1.415*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.10) | (0.01) | (0.01) | (0.09) |
| Ln (Age) (25-34) | -0.323*** | -0.092*** | -0.613*** | -0.101*** | 1.972*** | 0.266*** | -0.545*** | 2.040*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.10) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (35-44) | -0.180*** | -0.076*** | -0.539*** | -0.007 | 1.550*** | 0.218*** | -0.445*** | 2.031*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.10) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (45-54) | -0.217*** | -0.053*** | -0.312*** | -0.073** | 1.211*** | 0.157*** | -0.286*** | 1.978*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.10) | (0.01) | (0.01) | (0.09) |
| Ln (Age) (55-64) | -0.140*** | -0.029*** | -0.112*** | -0.191*** | 0.820*** | 0.107*** | -0.113*** | 1.919*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.11) | (0.01) | (0.01) | (0.09) |
| Married without children | -0.103*** | 0.009** | -0.055*** | -0.025 | -0.026 | 0.017* | 0.009 | 0.003 |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.04) | (0.01) | (0.01) | (0.04) |
| Married with children | 1.565*** | -0.035*** | 0.890*** | 1.391*** | 0.532*** | -0.436*** | -0.048*** | 0.023 |
| | (0.03) | (0.00) | (0.02) | (0.04) | (0.05) | (0.01) | (0.01) | (0.06) |
| Single persons without children | -0.077 | 0.007 | -0.051 | -0.014 | -0.028 | -0.018 | 0.010 | -0.133 |
| | (0.04) | (0.00) | (0.03) | (0.04) | (0.05) | (0.02) | (0.01) | (0.07) |
| Single persons with children | 0.088** | -0.001 | 0.047* | 0.171*** | 0.018 | -0.008 | -0.032** | 0.041 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.05) |
| Primary Education (Male) | -0.957*** | -0.029*** | -0.390*** | -0.630*** | -0.634*** | 0.105*** | -0.017 | 0.381*** |
| | (0.03) | (0.00) | (0.02) | (0.05) | (0.07) | (0.01) | (0.01) | (0.08) |
| Secondary Education (Male) | -1.444*** | 0.011*** | -0.699*** | -1.570*** | -0.493*** | 0.328*** | -0.007 | 0.144*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.03) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.899*** | 0.028*** | -0.941*** | -1.434*** | -0.171*** | 0.398*** | 0.032*** | 0.303*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.03) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.508*** | 0.038*** | -1.254*** | -1.028*** | -0.295*** | 0.456*** | -0.016 | 0.331*** |
| | (0.05) | (0.00) | (0.02) | (0.07) | (0.03) | (0.01) | (0.01) | (0.04) |
| Primary Education (Female) | 0.793*** | -0.055*** | 0.584*** | 0.442*** | 0.033 | -0.391*** | -0.059*** | 0.217 |
| | (0.03) | (0.00) | (0.02) | (0.02) | (0.04) | (0.01) | (0.01) | (0.15) |
| Secondary Education (Female) | 0.860*** | -0.033*** | 0.712*** | 0.400*** | 0.281*** | -0.312*** | -0.011 | 0.155** |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.03) | (0.01) | (0.01) | (0.05) |
| Tertiary Education (Female) | 0.855*** | 0.011** | 0.731*** | 0.246*** | 0.450*** | -0.178*** | -0.001 | -0.217*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.03) | (0.01) | (0.01) | (0.06) |
| Higher Education (Female) | 0.709*** | -0.005 | 0.559*** | 0.051 | 0.016 | -0.064*** | -0.222*** | 0.191*** |
| | (0.04) | (0.00) | (0.03) | (0.03) | (0.04) | (0.01) | (0.01) | (0.05) |
| Area (Rural=1) | -0.065*** | 0.018*** | 0.097*** | -0.013 | 0.107*** | 0.084*** | 0.009* | 0.392*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.02) |
| Constant | 6.098*** | 6.205*** | 6.538*** | 4.395*** | 3.270*** | 5.200*** | 7.066*** | 3.443*** |
| | (0.08) | (0.01) | (0.06) | (0.06) | (0.13) | (0.02) | (0.02) | (0.14) |
| R2 | 0.520 | 0.208 | 0.502 | 0.407 | 0.599 | 0.469 | 0.372 | 0.333 |
| DF | 21707.000 | 26059.000 | 24713.000 | 12645.000 | 7877.000 | 24336.000 | 18285.000 | 5340.000 |
| BIC | 54388.125 | -45036.054 | 47016.339 | 24670.435 | 11853.759 | 12894.212 | 915.744 | 10634.754 |

[a] *The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2012 Turkish Houshold Budget Survey by Turkish Statistical Institute*

Table 21: Time Use Demand Elasticity of Market Commodity Versus Time Used in Domestic Production (2013)

| | ln (Time Food) | ln (Time H&Pc) | ln (Time Housing) | ln (Time Clothing) | ln (Time Education) | ln (Time Transport) | ln (Time Leisure) | ln (Time Others) |
|---|---|---|---|---|---|---|---|---|
| ln (Monetary Expenditure)[a] | -0.110*** | -0.050*** | -0.258*** | -0.042*** | -0.092*** | -0.100*** | -0.043*** | -0.053*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) |
| ln (Income) | -0.072*** | -0.011*** | -0.110*** | -0.084*** | -0.088*** | 0.030*** | -0.043*** | 0.042** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.01) | (0.00) | (0.00) | (0.02) |
| ln (OECD Equivalance Scale HH Size) | 0.052 | -0.013** | 0.117*** | -0.015 | 0.037 | -0.111*** | 0.005 | 0.042 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.05) |
| Rate Children (N. of children/N. of Adult) | 0.048 | 0.020*** | 0.070** | 0.032 | 0.019 | 0.099*** | 0.025 | -0.017 |
| | (0.04) | (0.01) | (0.03) | (0.04) | (0.04) | (0.01) | (0.01) | (0.06) |
| Ln (Age) (15-24) | -0.375*** | -0.087*** | -0.447*** | -0.333*** | 2.321*** | 0.298*** | -0.537*** | 1.560*** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (25-34) | -0.331*** | -0.083*** | -0.617*** | -0.074** | 1.852*** | 0.264*** | -0.550*** | 2.151*** |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.12) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (35-44) | -0.176*** | -0.069*** | -0.509*** | 0.000 | 1.408*** | 0.204*** | -0.448*** | 2.120*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (45-54) | -0.223*** | -0.054*** | -0.323*** | -0.056* | 1.095*** | 0.158*** | -0.312*** | 2.069*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.08) |
| Ln (Age) (55-64) | -0.104*** | -0.024*** | -0.101*** | -0.174*** | 0.678*** | 0.097*** | -0.120*** | 1.942*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.12) | (0.01) | (0.01) | (0.09) |
| Married without children | -0.077*** | 0.008** | -0.054*** | -0.075*** | -0.064 | 0.020** | 0.022** | 0.068 |
| | (0.02) | (0.00) | (0.01) | (0.02) | (0.03) | (0.01) | (0.01) | (0.04) |
| Married with children | 1.560*** | -0.039*** | 0.873*** | 1.311*** | 0.369*** | -0.433*** | -0.073*** | 0.079 |
| | (0.03) | (0.00) | (0.02) | (0.04) | (0.05) | (0.01) | (0.01) | (0.07) |
| Single persons without children | -0.173*** | 0.005 | -0.025 | -0.023 | -0.088 | -0.014 | 0.007 | 0.215** |
| | (0.04) | (0.01) | (0.03) | (0.04) | (0.05) | (0.02) | (0.02) | (0.07) |
| Single persons with children | 0.130*** | 0.007* | 0.049** | 0.141*** | -0.066 | -0.017 | 0.002 | 0.068 |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.05) |
| Primary Education (Male) | -0.979*** | -0.048*** | -0.465*** | -0.652*** | -0.703*** | 0.092*** | -0.029* | 0.427*** |
| | (0.03) | (0.00) | (0.02) | (0.05) | (0.08) | (0.01) | (0.01) | (0.08) |
| Secondary Education (Male) | -1.433*** | 0.013*** | -0.713*** | -1.525*** | -0.534*** | 0.316*** | -0.000 | 0.168*** |
| | (0.02) | (0.00) | (0.02) | (0.03) | (0.03) | (0.01) | (0.01) | (0.04) |
| Tertiary Education (Male) | -1.794*** | 0.040*** | -0.943*** | -1.541*** | -0.196*** | 0.390*** | 0.049*** | 0.286*** |
| | (0.04) | (0.00) | (0.02) | (0.05) | (0.03) | (0.01) | (0.01) | (0.04) |
| Higher Education (Male) | -1.490*** | 0.060*** | -1.209*** | -0.835*** | -0.231*** | 0.447*** | 0.031** | 0.296*** |
| | (0.05) | (0.00) | (0.02) | (0.06) | (0.03) | (0.01) | (0.01) | (0.04) |
| Primary Education (Female) | 0.772*** | -0.061*** | 0.532*** | 0.395*** | -0.046 | -0.407*** | -0.066*** | 0.221 |
| | (0.03) | (0.00) | (0.02) | (0.02) | (0.04) | (0.01) | (0.01) | (0.16) |
| Secondary Education (Female) | 0.853*** | -0.029*** | 0.692*** | 0.374*** | 0.221*** | -0.316*** | -0.006 | 0.140** |
| | (0.02) | (0.00) | (0.02) | (0.02) | (0.03) | (0.01) | (0.01) | (0.05) |
| Tertiary Education (Female) | 0.872*** | 0.021*** | 0.750*** | 0.273*** | 0.435*** | -0.182*** | 0.059*** | -0.181** |
| | (0.03) | (0.00) | (0.02) | (0.03) | (0.04) | (0.01) | (0.01) | (0.07) |
| Higher Education (Female) | 0.751*** | 0.002 | 0.595*** | 0.073* | 0.087* | -0.113*** | -0.196*** | 0.131** |
| | (0.04) | (0.00) | (0.03) | (0.03) | (0.04) | (0.01) | (0.01) | (0.05) |
| Area (Rural=1) | -0.052*** | 0.035*** | 0.132*** | 0.007 | 0.103*** | 0.078*** | 0.009* | 0.418*** |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.02) | (0.00) | (0.00) | (0.02) |
| Constant | 6.739*** | 6.470*** | 7.462*** | 5.177*** | 4.310*** | 5.126*** | 7.602*** | 3.085*** |
| | (0.11) | (0.01) | (0.07) | (0.10) | (0.18) | (0.04) | (0.04) | (0.19) |
| R2 | 0.513 | 0.268 | 0.517 | 0.410 | 0.573 | 0.469 | 0.371 | 0.328 |
| DF | 21901.000 | 26548.000 | 24825.000 | 12771.000 | 7507.000 | 24771.000 | 18550.000 | 5632.000 |
| BIC | 55151.252 | -38881.908 | 45907.998 | 24638.337 | 12009.711 | 13459.638 | 2004.228 | 11253.397 |

*[a] The parameters are estimated separately for each time use and consumption group*

* p<0.05, ** p<0.01, *** p<0.001

*Source: 2006 Turkish Time Use Survey and 2013 Turkish Houshold Budget Survey by Turkish Statistical Institute*