

# **Time-use, the Value of Non-Market Production and its Interactions with the Market Sector: The Case of Turkey**

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## **1.Introduction**

*Market* production, exchange and consumption establishes the primary focus of the discipline of economics, while production, exchange and consumption activities in the *non-market* sphere remain, for most part, outside of the realm of economic analysis. Nevertheless, non-market production including household as well as subsistence agriculture continues to form a non-negligible component of the goods and services consumed particularly in developing economies. Given the dominance of women in both forms of non-market production spheres, their negligence in economic analysis is also implicative of an inherent gender bias, as well as substantial variations by rural-urban location, gender and age groups. The non-market production and exchange relations do not only have a significant impact on indicators such as living standards, wages and inputs into production for the market, but also they underlie the inequalities in labor compensation by gender, rural-urban labor, as well as labor disaggregated by age and educations groups.

Turkey is a case in point. The country has one of the lowest female labor participation rates in the world; as of 2008, only 24.5 out of every 100 women participate in the labor force, while a majority of the non-participants define themselves as full-time home-makers, amounting to over 12 million women. Of the participant women, as high as 34 percent are in the category of unpaid family workers, mostly in subsistence agriculture, amounting to approximately two million women (Turkish Statistical Institute, 2009).

This study aims to calculate the market value of non-market production, in particular household production in Turkey using the various methods available in the literature for calculation of the so-called *household satellite accounts*. An important focus of the study is

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the exploration of time-use data to show the variations in contributions to non-market production along the dimensions of gender, rural-urban location, age and education categories. We also use the Extended Social Accounting Matrix (ESAM) framework to show the linkages between non-market and market production and consumption activities in a systematic scheme.

The study provides the first and only set of estimates for household satellite accounts for Turkey except for a preliminary study using the results of a *pilot* time use survey in 1996.<sup>2</sup> In our study we use the first and only time use data for Turkey, conducted by the Turkish Statistical Institute (TSI) in 2006 and aggregate data made available in 2008. The availability of the time use data enables not only estimates of household satellite accounts but also the formulation of the first ever ESAM for Turkey.

The following section provides a brief overview of the treatment of household production and its linkage to market production in the different theoretical strands in economics, and traces the concrete manifestations in the form of satellite accounts and times-use studies. Section 3 provides a detailed survey of the different methodological approaches to measurement in construction of household satellite accounts. Section 4 describes our data source, and Section 5 discusses the results of our analysis, namely the relative magnitudes of the household satellite accounts that emerge from use of different methods, the source of this production disaggregated by gender, age, education level and rural-urban location. In Section 6 we draw our conclusions.

## **2. Literature Review**

Household satellite accounts have their origins in the analysis of gender differences in the labor market. Labor force participation of women has been on an increasing trend in most countries around the world, especially in the USA and Northern Europe throughout the post World War II period, particularly from the 1960s onwards. Yet even the advanced economies of the North have labor markets that are characterized by gender differences such as the gender specific determinants of trends in labor force participation rates, the gender wage gap,

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<sup>2</sup> Kasnakoglu and Dayioglu (2002) “Measuring the Value of Home Production in Turkey” in *New Developments in National Accounts*, T. Bulutay (ed.), Ankara: SIS, 73-97.

occupational and international gender segregation. In recognition of the gender distinct characterization of labor markets, a number of strands of economics have aimed at exploring the sources of these gender-based differences, namely Marxian economics, household economics and feminist economics. The different strands of research inevitably point out the gender division of labor and women's responsibility for non-market, household production as the primary source of gender differences in the market sphere.

The gender division of labor and its impact on market has been a particular focus of the domestic labor debate that emerged from Marxist-feminist debates in the late 1960s and flourished in the 1970s. The historical materialist method of analysis is the common ground of Marxist feminism and initial point of this method was identification of specific modes of production under different economic circumstances. Marxist analysis ignores domestic labor and asserts that labor reproduces itself only via consumption of commodities which are bought by wages. Feminist economics points to a missing side of this analysis, namely the process of producing a cooked meal, clean clothes and the reproduction of the future generation of workers. According to Marxists, wage labor is the only type of exchange value producing labor in the capitalist production process. Domestic labor has no direct relations with this mode of production so it is not a part of the surplus exploitation process. The Marxist feminist analysis, however claim that women are the producing class and husbands are the ruling class. As such, women are exploited by men through their domestic labor. The surplus produced by household production is appropriated by the employers indirectly and causes lower wages (Himmelweit, 1999). Razavi (2007) asserts that "the key lesson to be drawn from this debate is the difficulty of fitting gender issues into Marxist analytical categories that frame men and women essentially as workers. ...there was little room within this analytical frame for caring as a distinct set of activities."

Parallel to the domestic labor debate, features of the household were analyzed also by mainstream economists. The neoclassical framework of new household economics treats the household as a joint utility-maximizing economic agent and investigates the rationale behind its economic decision-making process. Rational decision-making towards maximization of household income requires an efficient allocation of the combined resources of the household, i.e. the labor time of different members of the household between market and non-market production. Accordingly the male and female members of the household specialize in the

market and the non-market spheres of production respectively, given their comparative advantage (Becker, 1965).

The new household economics model has been critiqued by feminist economists from a number of different perspectives. An implicit assumption of the theory of allocation of household labor time is that “work at home involves same marginal utility as work in the market” (Gronau, 1977). Yet while household production creates direct utilities, market production provides the capacity for cash income-generation with purchasing power over utilities in the market. Hence specialization in the market versus the non-market sphere can not be treated as a power-neutral process, rather market specialization and the resulting access to and control over cash income provides the basis for hierarchical gender relations in the household. This brings into question another implicit assumption of the model regarding the household as a joint unit with a single welfare function, i.e. the unity of interests of household members, ignoring the potential for conflicting individual interests. Finally, another substantial critique is in regard to the treatment of the comparative advantage of men in the market sphere, and women in the non-market sphere as a given. Feminist analysis challenges this static treatment and points out to the patriarchal structures that impose a sexual division of labor based on traditional gender roles.

The sharp divides in these theoretical perspectives aside, a concrete outcome of these debates has been the increasing visibility of household production and domestic labor. On the one hand, feminists called for a recognition of the importance of the contribution of women’s domestic labor to the economy. On the other hand, a consensus has emerged regarding the gender based social division of labor as the source of the inferior market position of women. This has provided one of the major motivations for conduct of time use surveys by many countries to measure domestic labor and features of household production. The U.N. Beijing Conference on Women in 1995 recommended improvement of data collection on unpaid work which is currently outside national accounts, and also development of methods for valuing such work for presentation in satellite accounts, “with a view to recognizing the economic contribution of women and making visible the unequal contribution of remunerated and unremunerated work between women and men” (Himmelweit, 1999).

Availability of time use data opened up the possibility for systematic determination of the value of household production referred as “household satellite accounts.” In time, policy makers have shown relatively more interest in household production than in the past (Himmelweit, 1999). Moreover, economics of care became an important sub-discipline.

### **Household Satellite Accounts and Time-use Surveys**

Satellite accounts can do two things in general: Provide more detail on a given sector’s transactions (such as the transportation industry), or change the structure of accounts by expanding the production boundary and using alternative valuation methods. Household satellite accounts which are established to measure the value of non-market household production can do both. Firstly, it can provide more detail about marketed household production than the existing accounts. Secondly, it can enlarge the concept of production to include non-market household production (Landefeld and Mc Culla, 2000).

The first satellite account studies started in the 1970’s by the National Institute for Statistics and Economic Studies (INSEE) in France.<sup>3</sup> This institute started to organize some projects to develop a new accounting system, satellite accounts, to measure some characteristics of sectors such as education, health, tourism, environment, household production and other social areas (Lemaire, 1987). Satellite accounts were first conceptualized, however, by SNA in 1993, with the support of accumulated background of research on non-market areas and also as a result of critics of women’s and environmental movements (Latigo and Neijwa, 2005). According to the SNA, human activities can be analyzed into three groups: Non-economic activities (personal), productive non-market activities and productive market-oriented activities. Third group is known as market activities and has no problem by definition. However, difference between the first and the second group is not always clear. Thus, researchers developed a criterion named “third person criterion” that is used to decide whether an activity is productive or non-productive (boundary between first and second category). According to this criterion, “an activity is to be deemed productive if it may be delegated to a person other than the one benefiting from it.” (Goldschmidt - Clermont and Pagnossin - Aligisakis, 1995)

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<sup>3</sup> INSEE stands for Institut National de la Statistique et des Etudes Economiques.

It is not possible for a society to move towards an economy where all production activity takes place in the market sphere. Therefore, the only way of monitoring the entire economic production is establishing a framework to calculate both the Gross Domestic Product (GDP) and the Gross Household Product (GHP). The calculation of household satellite accounts as the basis of the GHP requires a complete database on how people spend their time. In this context time use studies are important in order to conduct a complete analysis of the economy (Latigo and Neijwa, 2005).

Time use surveys are established to answer two main questions: ‘what individuals in the reference population do with their time (the activities they engage in)’ and ‘how much time is spent doing each of these activities’. The reference age group for the sample in the time-use surveys is older than 10, or between 15 and 65. The data is generally disaggregated by age, sex, rural versus urban location, and other subgroups in respect of research interest (UN, 2005).

Typically time use surveys require that each surveyed individual fills a 24-hour diary to show all their activities with 15 minute intervals. Based on these diaries, activities are categorized and coded, the average and total hours are calculated. The results of time use surveys from different countries are comparable internationally because of the universal character of time unit. Many countries follow the Eurostat time-use survey structure. An important shortcoming, however, is that time use surveys do not measure human effort. It makes no difference between an hour working under harsh circumstances versus under more comfortable circumstances. Both are recorded as same time units (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1999).

Time use data based studies developed first in the early 1900s with social surveys to report the quality of working class families’ life. From then on it has been used in different countries for different purposes such as government and community planning (USSR, 1924 and 1934), to measure the effects of new farming technologies and to study social dynamics in communities (USA, 1939); analysis of commuting time (UK, 1946). The Multinational Comparative Time - Budget Research Project launched in 1964, in 12 countries including both market and centrally planned countries with the purpose of establishing an international

database on characteristics of daily life in different societies, was the first international time use study. In the 1970s, a number of developing countries started to conduct time use statistics as part of their development planning strategies, yet it was not until the late 1990s that they became widespread (UN, 2005). 20 European countries organized harmonized time use surveys between 1998 and 2003. More than 50 countries, including Guatemala, Mongolia, Morocco and Palestine also conducted official time use surveys after 1995. The world's first continuous time use data is started to be collected every month in the USA in 2003. Ironmonger (2006) points out to two sources of this increasing interest. Firstly, time as a basic resource can be as important as money in determining "individual and national success." Unlike money it is equally distributed, and time tends to act as the limiting constraint, rather than money. Secondly, time use statistics are the best way of determining the value of invisible household economy.

Of the different categories of activities measured in the time use surveys, "care work" has been established as a major category as it constitutes a substantial share in the daily routine of households. The definition of care work in the limited sense entails care of needy members of the household, primarily children, the elderly, the disabled and the sick. A more inclusive definition, however, would also entail household work geared towards the care of all household members. The variations amongst the different countries in terms of the allocation of care labor between the market versus the non-market sphere establishes one of the major dimensions of international differences in time use data and the relative magnitude of household satellite accounts. Parallel to the development of time-use studies, the economics of care has grown into an important topic of study. Linkages of unpaid and paid care labor to economic growth and crises, human capital formation, labor markets, poverty and social welfare have established the diverse foci of this line of research (Folbre 1994; Helburn, 1999; Bettio and Plantenga 2004; Himmelweit, 2007; Razavi, 2007).

### **3. Methodological Background**

A substantial amount of literature revolves around methodological issues with respect to measurement of non-market production in market terms. There are two major approaches to valuation of household production: the input-based approach and the output based approach. The input-based method uses the market value of inputs into the household production

process in order to estimate the monetary value of production. While some input-based studies consider the market value of the labor input only, others entail the market value of non-labor inputs as well. (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1999).

The output-based method, on the other hand, values household products at the price of equivalent market products. This enables compatibility with national accounts. There is also general consensus that the output based method is likely to estimate the most accurate market value of household production. However, the implementation of the output approach is subject to a number of practical limitations, such as gathering the proper data, variations between the quality of outputs, and differences of the capital inputs of production processes. Given these limitations, most of the monetary valuations of household production tend to be input based (Dulaney et.al, 1992; SNA, 1993; Goldschmidt - Clermont and Pagnossin - Aligisakis, 1995; Shivakumar, 2000; Kasnakoglu and Dayioglu 2002).

Household satellite accounts use primarily three different input based methods for calculation of the value of non-market production: namely, the opportunity cost approach, the polyvalent worker approach and the minimum wage approach. The main axis of the debate around these different methods lies in the various imputations of wages in determining the value of domestic labor. In the opportunity cost approach, the average time spent in household production is multiplied by the predicted market wage that the domestic worker would earn if s/he were to engage in the labor market instead of in non-market production in the household. As such the value of household production is defined on the basis of the opportunity cost of the labor time of the particular household member performing the productive task at home. The predicted market wages of the various types of household members involved in non-market production are calculated using labor market data and based on various wage determinant individual characteristics such as age, education, gender, rural/urban locations, and the like.

In the polyvalent worker approach, which is regarded as the less problematic approach to household satellite accounts, the actual average labor market wage rate for the workers who perform the various categories of household work such as child care, elderly care, disabled or sick care, cooking, cleaning, etc. are taken as the reference point. There are a number of



points that work in favor of this method of valuation. Working conditions of polyvalent workers are nearly same with those of the original household member; they both perform the same range household production activities in a simultaneous manner, and require similar human capital formation. Hence it is suggested that there is good reason to treat their productivity as similar. Also given that this method is based on imputing the wage of a substitute worker, it can be said to provide a coherent way of valuation of household production. Yet an important limitation here is that, not all of the tasks performed on an unpaid basis in a household, such as money management, or planning and co-ordinating activities, can be performed by a so-called generalist, substitute worker. To the extent that some household activities can not be transferred to such substitute workers, valuations using the polyvalent worker approach would represent an underestimation. (Varjonen and Niemi, 2000). Indeed, Shivakumar (2000) points out the downward bias in this approach. Given the low wages of domestic workers in most labor markets, the use of the polyvalent workers' wage as the reference category yields a low estimate of the value of household production.

Finally, in the minimum wage approach, the legal gross minimum wage is used as the base wage rate, independent of the education level, age or gender of the person performing the domestic labor and independent of the type of household production activity involved. It is clear that this method also has its problems with respect to comparability of the labor input into the production process. Minimum wage, represents the market value of labor with minimal qualifications, and also represents job descriptions with little accountability. As such it does not necessarily correspond the qualification and accountability requirements of a range of household production tasks, in particular with respect to child, elderly or disabled care, household budget management and coordination. Hence, the results of minimum wage approach could only be interpreted as the minimum level of the value of household production

Another debate which pertains to all three methods revolves around whether the wage imputed should be gross or net. Goldschmidt – Clermont (2000) asserts that net wage is more appropriate for the concept of satellite accounts because net wages have quite similar economic flows with household production. By contrast, Kasnakoğlu and Dayioğlu (2002) argue that it is necessary to use gross wage to compare the value of household production with the GDP because calculation method of GDP contains all taxes and social security

contributions. In a similar vein, Blades (2000) suggests that given the SNA rules, the answer to this question is clear and straightforward: “If the input approach is used to value non-market output, labour inputs are to be valued as compensation of employees, i.e., they are gross of income tax and other charges and include employers’ contributions to social security schemes.”

As each approach has its pluses as well as short-comings, and can yield substantially different estimates, the common practice in the studies in this field has been to use all three methods to the extent made possible by availability of data, and to provide suitable results for international comparison. Hence, in this study, we employ all three methods in calculation of the market value of the household production in Turkey and provide a range of different estimates for the purpose of international comparisons.

While this study provides the first estimation of a household satellite account for Turkey using the first and only official time-use statistics of Turkey from 2006, as mentioned above, it is worthwhile to take a note of a preliminary study by Kasnakoğlu and Dayioğlu (2002) using data from the 1996 time-use pilot survey by TSI. This study also uses the three different methods for estimation: minimum wage, specialist wage and polyvalent worker’s wage. The study reports an estimated value of women’s household work corresponding to 30.7 percent of monthly household income using the minimum wage approach, 40.2 percent with the polyvalent worker wage and 38.6 percent with the specialist wage approach. The value of men’s household work was found at 9.6 percent of monthly household income using the minimum wage approach, 12.8 percent with polyvalent worker approach and 18.0 with the specialist wage approach. In comparison with GDP, the value of household production was found as high as 34 percent of GDP in 1996 using the minimum wage approach, 44 percent with the polyvalent worker approach and 48 percent using the specialist wage approach.

#### **4. Data**

Two major data sources have been used for estimating the value of household production for Turkey; the Time Use Survey for 2006 (TUS) and the Household Labor Force Survey (HLFS) for 2006. Both surveys are conducted by the Turkish Statistical Institute (TSI). While the HLFS has been implemented on a continuous basis since 1988, the 2006 TUS provides the

first and only country-wide time use data in Turkey, except for a limited pilot study that was conducted in 1996 again by TSI.

The sample of 2006 TUS includes 11,815 people of age 15 and above from a total of 5,070 households. Four different types of question forms are filled to enable the collection of detailed and accurate information: the household question form, the individual question form, the daily diaries and the table of working time. All activities in a day are classified in the following 11 categories:

1. Eating and other personal care
2. Working at a job and/or seeking a job
3. Education
4. Household and house care
5. Voluntary work and meetings
6. Social life and entertainment
7. Sports
8. Hobbies and games
9. Mass media tools
10. Travel and unidentified time usage
11. Sleep

All activities but the one in category four, i.e. ‘household and house care’, could not be done by a hired person. ‘Household and house care’ has the unique characteristic in the above group of activities that it is the only activity which the household members could relegate to a third person such as a paid employee. This is the so-called “third person criterion”, accordingly only category 4 entitled is considered as economic and productive activity. As such the survey provides further information on this group of activities. Household and house care account includes a broad range of activities which are classified in nine groups, namely:

1. Food management
2. House care
3. Washing the clothes, ironing, etc.
4. Gardening and animal care
5. Construction and repair
6. Shopping and services
7. Household management

8. Child care
9. Elderly care

The time spent in these various categories of personal and household production activities can be disaggregated by gender, education level, age group, marital status, labor force participation status, household size, income level, income type and location of residence (rural or urban). As the raw individual data of the time use survey is not made available by TSI as of the writing of this paper, we used the aggregate averages accessible on the TSI web site, as well as a series of further disaggregated average labor hours provided by the Institute upon our written request.<sup>4</sup>

The HLFS 2006, on the other hand, covers 497,137 people of which 51 percent are women. The definition of economic activity here is confined strictly to production activities for the market. These production activities are grouped under nine industries, two of which include services, namely “financial institutions, insurance, real estate and subsidiary business services” and “community, social and individual services.” The latter service industry parallels the house and household care activities and as such establishes the reference point for the valuation exercise in the following analysis. In addition to this, the survey enables identification of labor force participation status, work status and the wage earnings disaggregated by gender, age, education, marital status, and rural versus urban location of residence. The number of people who earn labor income is 75,721 in the sample and 78 percent of these income earners is male.

## **5. Results**

### **The gendered division of labor in the household**

TUS 2006 shows that while women in Turkey on the average spend 5 hours and 17 minutes daily for ‘house and household care’, men spend only 51 minutes. As for the average daily minutes spent ‘working at a job and/or seeking a job’ are 4 hours 27 minutes for men versus only 1 hour 8 minutes for women. The relative average daily hours spent by women in

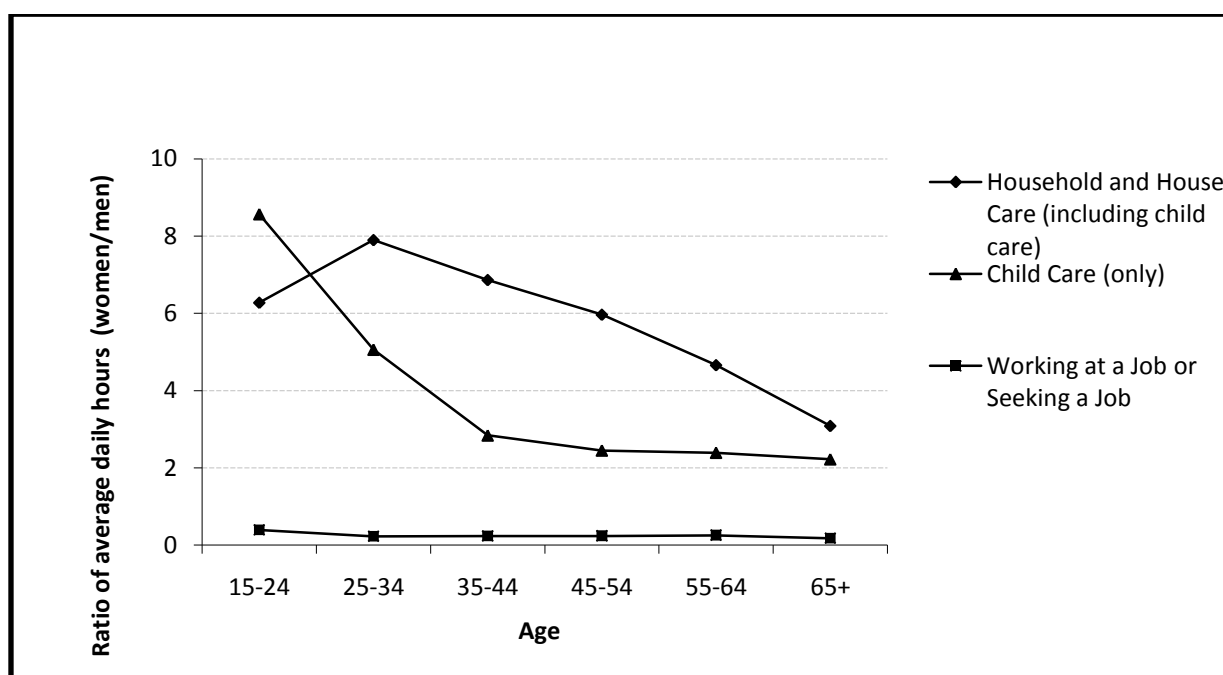
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<sup>4</sup> Disaggregated average labor hours provided by the Institute upon our written request pertained to ....

household production versus the labor market is testimony to the dominance of the traditional gender based social division of labor in Turkey. Men as the breadwinner, women as the full-time housewife is overwhelmingly the family structure. Comparing men and women's total number of working hours combined in household production plus in the labor market, women on the average have longer working hours (6 hours 25 minutes) than men (6 hours 18 minutes). It is striking that even when women participate in the labor market, there is only a slight reduction in their hours of household production; labor market participant women spend 4 hours and 3 minutes in household production, versus 6 hours and 43 minutes for non-participant women. This results in labor market participant women scoring the highest number of combined total working hours (8 hours 11 minutes) for participant urban women (versus 8 hours 30 minutes for participant urban men), and 8 hours 32 minutes for participant rural women (versus 6 hours 22 minutes for participant rural men).

While the above figures depict the general picture, *Figures 1* and *2* show that there is some variation in the gender based social division of labor in the family by age and education. In the younger age categories from 15 to 44, characterized by women's entry into marriage, pregnancy and childbearing, women spend approximately six to eight times more daily hours in household production activities than their male counterparts (*Figure 1*).

**Figure 1:** Gender ratio of time spent in household production by age group

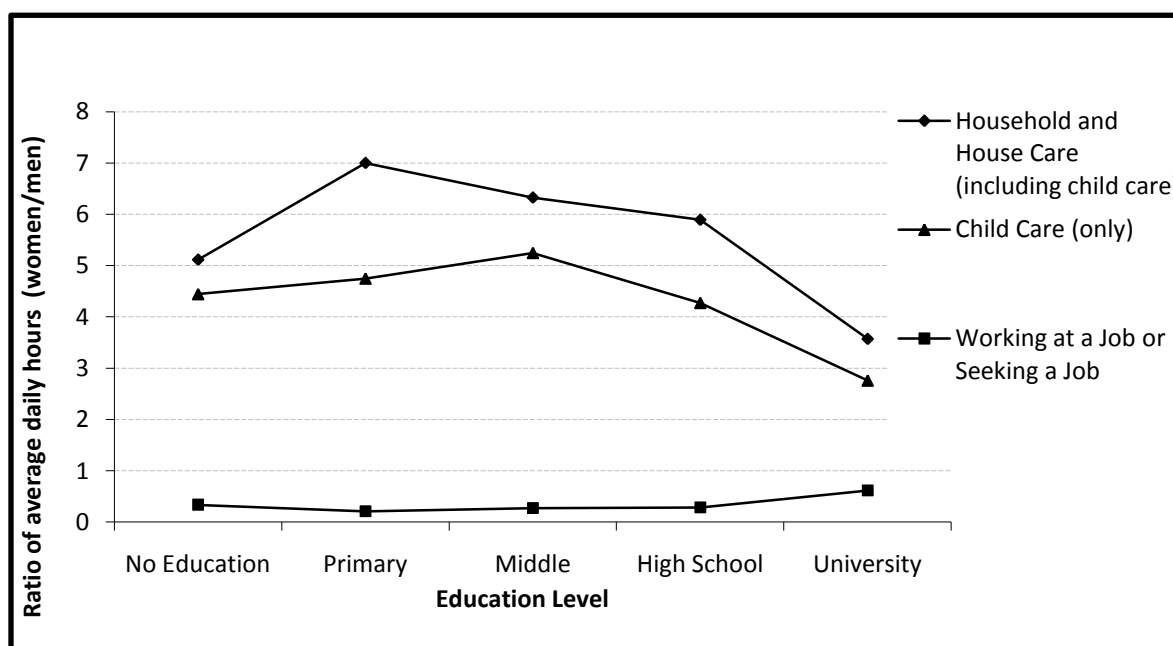


**Source:** Time Use Statistics for Turkey, 2006

From then onwards, there is a steady decline in the gender gap. Yet even in the oldest age category of 65+, women on the average continue to perform three times more daily hours of work on household and house care than men. The range of women's to men's ratio of time spent on household and house care varies from 3.08 at the minimum to 7.90 at the maximum. Similarly, the ratios on child care vary between 2.22 and 8.57.

Figure 2 depicts the variation in the gendered division of labor by education group. The largest gender gap for overall house and household care occurs at the primary education level, while for child care it is observed in the middle school group. This could possibly be a manifestation of the relatively higher income of the middle school education group and their ability to afford paid domestic servants for house care. Yet given the limited transferability of the work involved in child care, the burden falls on women.

**Figure 2:** Gender ratio of time spent in household production by education level



**Source:** Time Use Statistics for Turkey, 2006

The gender gap for both childcare and household and house care, is substantially lower than the other education levels. This is not surprising in view of the fact that university graduate women's labor force participation rates are much higher at around 70%, as compared to labor force participation rates of fewer than 30% for women in the lower education groups. Yet the closing gender gap is reflective more of the shift of household production to the market sphere

rather than men's improved participation. Women's higher rates of labor market activity are further supported with higher earnings in this education group enabling the hiring of domestic and care workers. Yet even then, university graduate women are observed to perform three times as much time in household production than their male counterparts.

### **Estimation of the market value of household production by different methods**

In order to calculate the market value of household production, we first need to estimate the total number of labor hours spent in the activity category of household and house care. The total number of hours is then to be multiplied by the hourly wage rate deemed appropriate in the particular method of calculation. In the opportunity cost approach, this is the wage rate that the household member of a particular gender, age, education, rural/urban location, etc. profile is likely to earn in the labor market. In the polyvalent worker approach, the wage rate that would have been paid for the same type of activity to a substitute domestic or care worker is used. Finally the legal minimum wage is used in the minimum wage approach. The total value thus found using the input method is simply the number of labor hours involved in the production process times some form of estimated market wage rate, i.e. the total labor costs involved in the production process. Hence, it can be appropriately deemed the total value added involved in household production, rather than the market value of household production. Use of the output method would have yielded a more accurate estimation of total market value; the use of the input approach, on the other hand, corresponds more appropriately to what is called "value added" in market terms.

The following steps are followed in the estimation of the total number of labor hours spent in the activity category of household and house care:

- Using the Time-use Survey in 2006 as our source, we list the average daily hours spent in household and house care ( $T_i^{hh}$ ) by different population groups  $i$ . Here  $i$  refers to different combinations of personal characteristics of gender, age, education level, rural/urban location of residence.
- The average daily hours are multiplied by 365 to find the average annual time spent in household production by the representative person in each category.
- Using the Household Labor Force Survey data for 2006, we find the total population of age 15 and above for each population category ( $Pop_i$ ).

- To find the total annual time, the average annual time spent in household production by the representative person in each category is multiplied by the total population in that category; and then summed up for the over all  $I$  population groups.

Hence total annual time spent in household and house care  $T_T^{hh}$  is

$$T_T^{hh} = \sum_{i=1}^I [(365 * T_i^{hh}) \text{Pop}_i]$$

- We then convert the number of labor hours involved in household and house care into an equivalent number of full-time jobs by dividing  $T_T^{hh}$  (or  $T_i^{hh}$ ) into the legal annual working hours per full-time job. The legal maximum limit on weekly working hours is set at 45 hours per week by the Turkish Labor Code. Private sector workers are entitled to an annual leave of two weeks by law. In addition, workers get time off for two religious holidays, New Year and two national holidays, which corresponds to approximately two additional weeks of paid leave time. This makes 48 total working weeks per year. Multiplying this with 45 working hours per week, we obtain a legal maximum of 2160 working hours per job per year.
- Total number of equivalent jobs in household production  $J_T^{hh}$  is then:

$$J_T^{hh} = T_T^{hh} / 2160$$

- And the number of equivalent jobs in household production by each population group  $J_i^{hh}$  would be:

$$J_i^{hh} = [(365 * T_i^{hh}) \text{Pop}_i] / 2160$$

- The total value added of household production ( $VA^{hh}$ ) is calculated by multiplying the number of equivalent jobs by the wage rate deemed appropriate in the approach used, such that
- $VA^{hh}$  in the opportunity cost approach will be

$$VA.OC^{hh} = \{ \sum_{i=1}^I [(365 * T_i^{hh}) \text{Pop}_i] \} W_i$$

where  $W_i$  = the hourly market wage rate of population category  $i$ .

- As the working hours data in the HLFS is problematic, however, we use an alternative which is based on the average monthly salary such that

$$VA.OC^{hh} = [ \sum_{i=1}^I (J_i^{hh} * MW_i * 12 \text{ months}) ]$$



where  $MW_i$  = the monthly market wage rate of population category  $i$ .

- $MW_i$  is calculated as an average of the actual monthly wage earnings of the employed workers in the HLFS belonging to population category  $i$ . The wage data available through the HLFS corresponds to the net wage, and this is what we use in the calculation of value added in the opportunity cost approach. As such it represents a downward bias.
- $VA^{hh}$  in the polyvalent worker approach will be

$$VAPW^{hh} = J_T^{hh} (MW_{dw} * 12 \text{ months})$$

where  $MW_{dw}$  = the average monthly wage of a domestic worker

- $MW_{dw}$  was calculated based on HLFS 2006, as the average monthly wage earnings of workers employed in the service sector, whose workplace was stated as “working at someone else’s house” and “needs no qualification for doing the job”. Once again net wages are used as in the opportunity cost approach.
- $VA^{hh}$  in the minimum wage approach will be

$$VAMW^{hh} = J_T^{hh} (MW_{mw} * 12 \text{ months})$$

where  $W_{mw}$  = the legal minimum gross hourly wage in 2006.<sup>5</sup>

Table 1 summarizes our estimates of the market value (value added) of household production in Turkey, using the various methods detailed above (please see Appendix A for details). The estimated value added of household production in 2006 ranges from a minimum of 25 percent of GDP in 2006 to a maximum of 45 percent.

Using the opportunity cost approach, we provide a number of different estimates depending on the parameters of categorization of workers. The disaggregated data on average daily household and house care hours was provided by TUS in the following aggregate population categories: by gender and education group; gender and age group; gender and rural/urban location of residence.

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<sup>5</sup> The legal minimum wage is announced as the monthly gross salary which was 531 New Turkish Liras / month in 2006.

**Table 1: Total Value added in household production by different approaches and categories**

Method	Categories	Total Value Added in Household Production (billion NTL)	Percent of GDP <sup>6</sup>	Percent of Total Value added in Household Production by Women
Opportunity Cost Approach	Education and Gender	145.62	25	79
	Age and Gender	257.29	45	86
	Rural/Urban and Gender	250.48	43	85
Polyvalent Worker Approach	Education and Gender	150.40	26	86
Minimum wage (gross) approach	Education and Gender	171.32	30	86

Accordingly, we have calculated the average market wages for each categorization and estimated the value of household production using these different wage rates. The ratio of the market value of household production to GDP in 2006, is found to be 25 percent using the categories of education level and gender for imputing the predicted market wage; 43 percent using the rural/urban location and gender categories; and as high as 45 using the age and gender categories.<sup>7</sup> Using the polyvalent worker approach, we estimate the value of household production at 26 percent of GDP, while using the minimum wage approach, the value is estimated at 30 percent of GDP.

The results of our opportunity cost and minimum wage approaches parallel the estimation by Dayioglu and Kasnakoglu (2002) where they reported the value of household production to be slightly higher using 1996 figures, at 48 percent of GDP using the opportunity cost approach

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<sup>6</sup> Turkish GDP in 2006 in current prices is 576.322.230.865 YTL.

<sup>7</sup> Unfortunately, the time use data is available only as broad aggregates based on variable pairs such as education-gender, age-gender, or rural/urban location-gender; hence our estimates were based on these two-dimensional categorizations.

and 34 percent using the minimum wage approach. Their estimation using the polyvalent worker approach yields a much higher value probably due to the choice of different reference category of substitute workers.

As can be seen in the last column of Table 1, women's contribution to total household production is as high as 79 percent to 86 percent of total value added. The bulk of this production originates from women's unpaid domestic labor. The share of women is found to be as high as 86 percent using the opportunity cost approach with age and gender categories. Similar ratios emerge from the polyvalent worker and minimum wage approaches.

It should be pointed out that while the above estimations amount to substantial magnitudes, at a minimum of one quarter of GDP to almost half of GDP, they represent underestimations for a number of reasons. First of all, use of net wages rather than gross wages in the opportunity cost and polyvalent worker cost methods is a source of undervaluation of the true market value of household production. Second, in the polyvalent worker approach, if we had been able to disaggregate the average daily hours spent in household and house care into its nine groups of activities entailed in this category, then we could have used separate specialized wages for domestic work and for care work for which the wage rate would be higher than that of the generalist domestic worker.

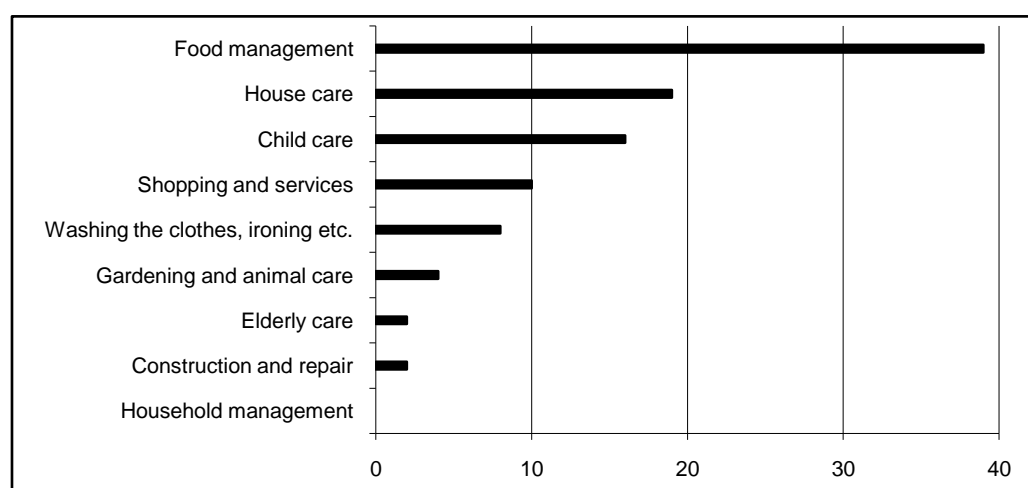
Moreover, both in the opportunity cost and polyvalent worker approach, there is an inherent gender bias in the calculation of the market wage. This bias is mainly due to the gender wage gap observed in the labor market. Given that women's contribution to total household production is found to be as high as 79 percent to 86 percent of total value added, the valuation depended primarily on observed female wages in the labor market. Studies on the gender wage gap find that even when education, age, industry and occupation are held constant, women's wages still remain below men's. Women's interrupted careers due to childbearing and the resulting lower years of experience and job tenure, lower returns on human capital and workplace characteristics are found to be the main sources of this gender

wage gap (Ilkcaracan and Selim, 2007). As a result of this bias, opportunity cost approach and polyvalent worker approach resulted with lower values than the actual level.<sup>8</sup>

Another source of underestimation, particularly from the perspective of international comparisons, is in regard to the number of working hours. The number of legal working hours in Turkey is much longer than that in the EU countries and as such the estimation of the number of jobs yields a lower number. Finally, HLFS reports individual declarations of wage, and to the extent that individuals tend to under declare their income, our wage estimations are biased downwards. Thus, data gathering bias directly decrease the value of household satellite accounts.

Figure 3 presents the relative shares of different activities falling under household and house care in the total value added of household production reported above. This is analyzed for the nine categories in ‘household and house care’ as reported in the TUS. 39 percent of total value added produced in household and house care consists of food management. This is followed by house care (19 percent) and childcare (16 percent). Total value of the labor involved in child care is 30.12 billion YTL which corresponds to 5.23 percent of the GDP. Women’s share in total value is again as high as 80 percent.

**Figure 3: Shares of household and house care activities in total VA (%)**



**Source:** TUS and own calculations

<sup>8</sup> We are grateful to Nilufer Cagatay of the University of Utah, who in the process of giving feedback on this paper, has pointed out to the inherent gender bias here.

Our estimations for Turkey seem consistent with the international literature. Landefeld, et.al. (2005) show that estimations of household production vary in a wide range of 12 percent at the minimum and 58 percent at the maximum for the USA. In addition to this, as seen in Table 2, there is a broad range between the results of studies done with the polyvalent worker approach. (Table 2).

**Table 2.** Value of labor inputs (percent of GDP)

	Net Wage	Gross Wage	Total Labor Cost
Australia (age:15+)			<b>72</b>
Denmark (age:16-74)	<b>21</b>		<b>37</b>
Finland (age:15+)			<b>45</b>
France (age:15+)		<b>33</b>	<b>36</b>
Germany (age:16+)	<b>31</b>	<b>45</b>	<b>54</b>
Norway (age:16-79)			<b>38</b>

Source: Goldschmidt-Clermont and Pagnossin-Aligisakis, 1999.

-The table was constituted with six studies.

-All values are calculated with polyvalent worker approach.

## 6. Conclusion

The above analysis, based on the one and only time use data of Turkey conducted in 2006, demonstrates that there is a substantial amount of unpaid labor, particularly unpaid female labor, involved in the household production in Turkey. While different methods yield varying estimations, the estimated market value of household production is a quarter of GDP at a minimum, and close to half of GDP (46 percent) at a maximum. This goes to underline women's invisible contribution to the economy.

Household production accounts provide crucial insights into the nature of interactions between the market and non-market production spheres of an economy and its implications for the labor market. Women's substantial engagement in production in the home is mirrored in the acutely gendered characteristic of the labor market in Turkey which is predominantly

male. With a low urban labor force participation rate of 20 percent, women remain for most part excluded from the labor market. Presumption of the full-time homemaker role for millions of women forms a justification for their exclusion from the labor market and confinement of their primary economic activity to the household. This is closely integrated with state policies towards the economics of care, where women's unpaid domestic labor provides the main mechanism for resolving the issue of the burden of child, elderly, disabled and sick care. The neoliberal policy agenda that Turkey has followed since the early 1980s, has further strengthened the privatization of care but in a different sense of the word. The privatization of care in Turkey does not shift production from the public to the private market sphere, but rather from the public to the non-market sphere, i.e. the household.

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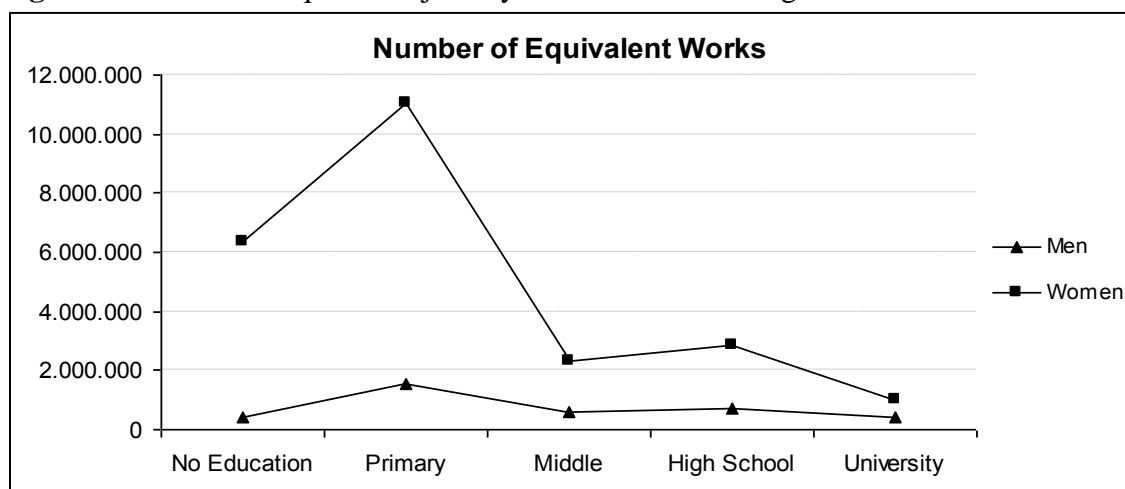
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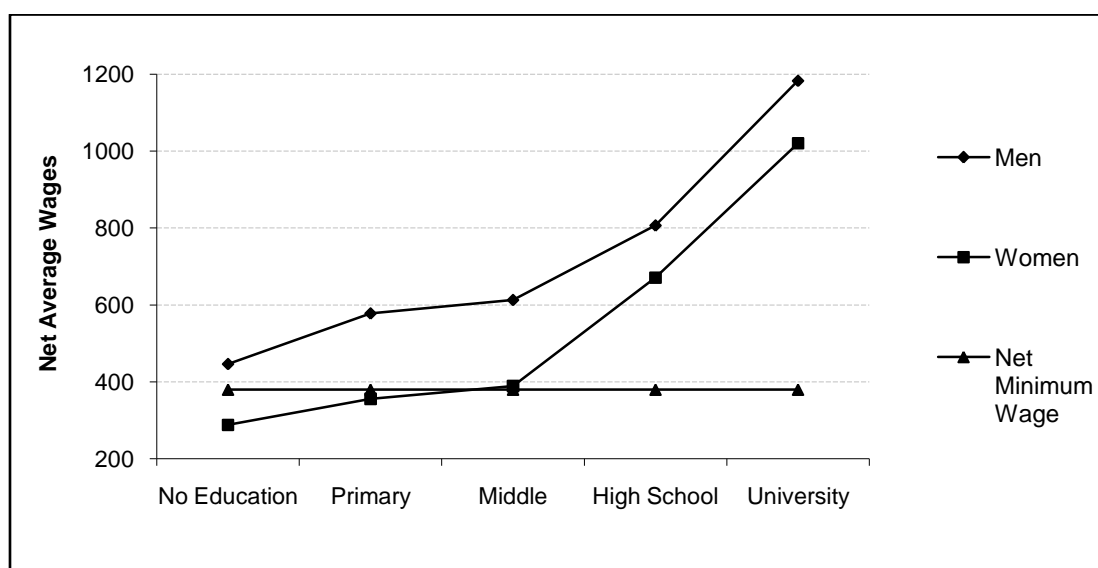
## Appendix A.

**Figure 4:** Number of equivalent jobs by education level and gender



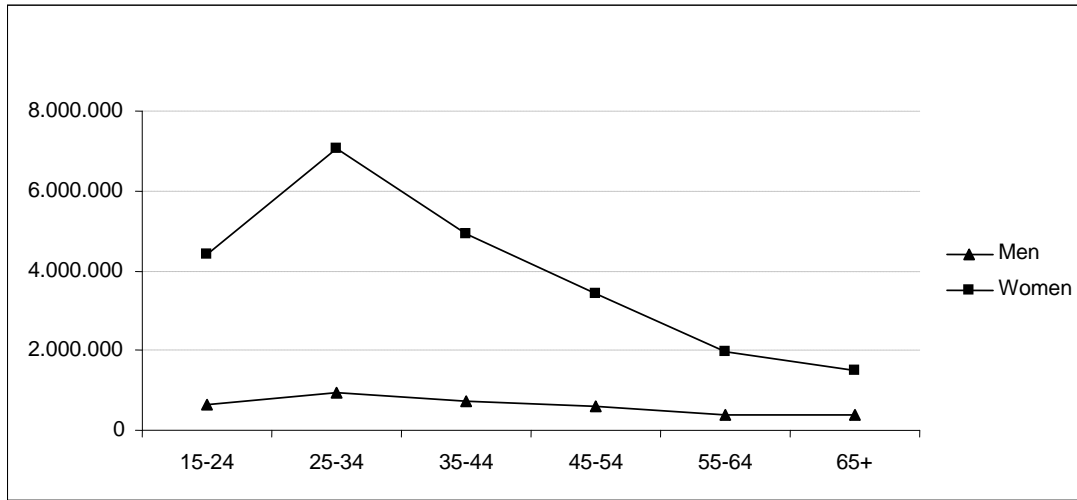
Source: TUS, LFS and own calculations

**Figure 5:** Net average wages (YTL/month) by education and gender



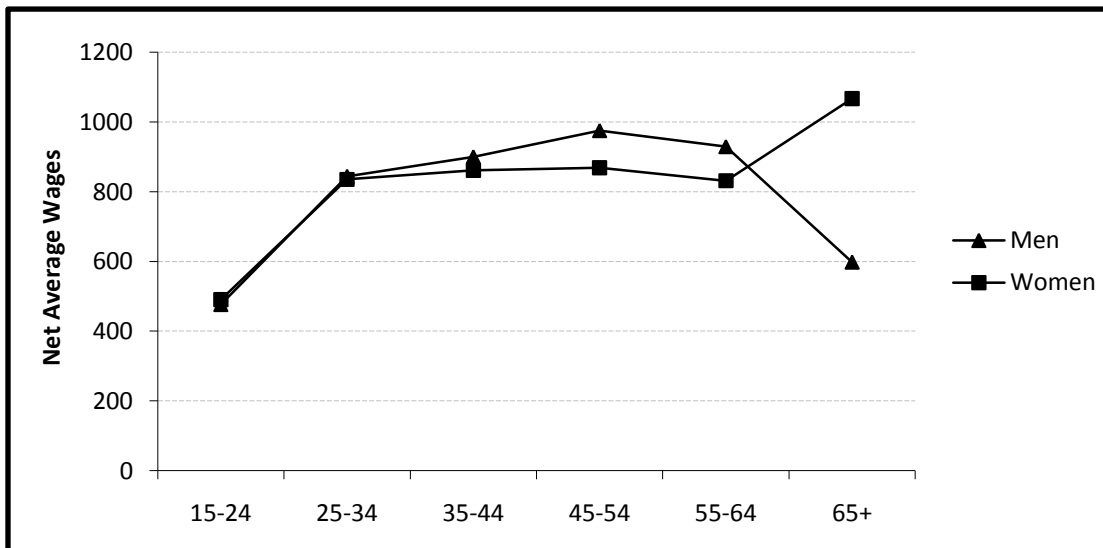
Source: Household Labor Force Survey for Turkey, 2006 and LFS

**Figure 6:** Number of equivalent jobs by age and gender.



Source: TUS, LFS and own calculations

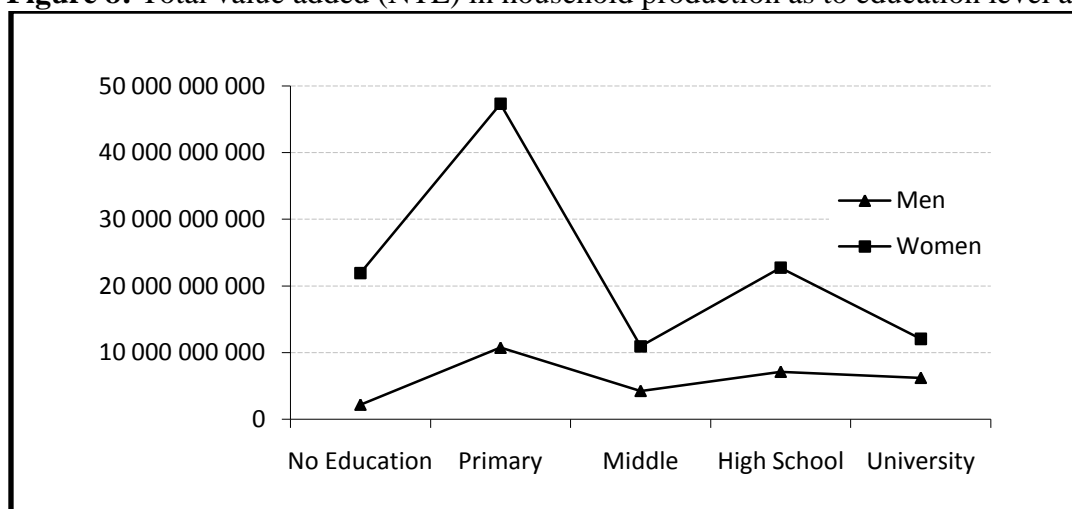
**Figure 7:** Net average wages (YTL/month) by age and gender.



Source: Household Labor Force Survey for Turkey, 2006

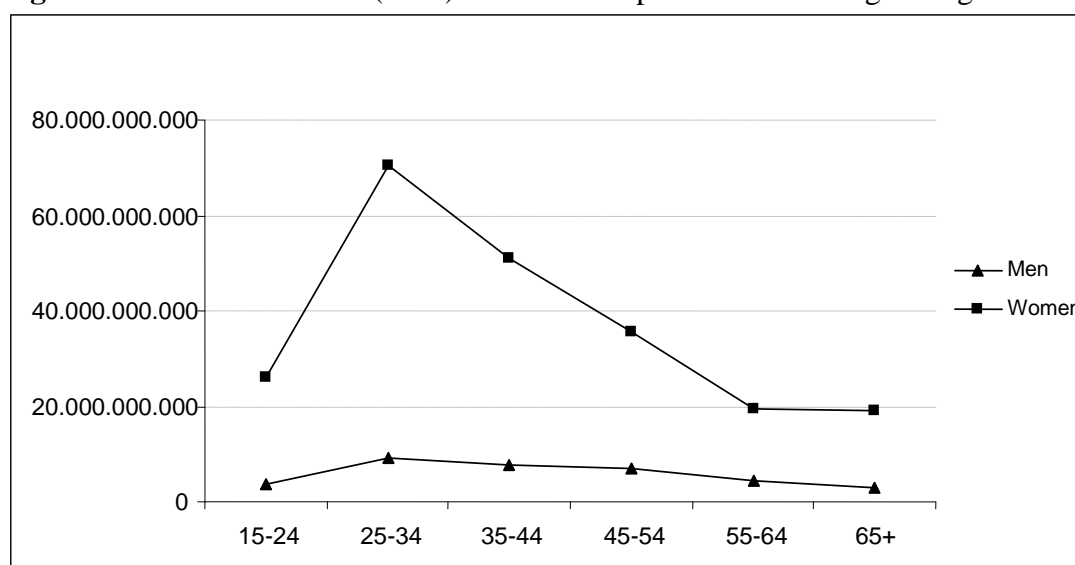
### Opportunity Cost Approach:

**Figure 8:** Total value added (NTL) in household production as to education level and gender.



Source: TUS, LFS, HLFS and own calculations

**Figure 9:** Total value added (NTL) in household production as to age and gender.



Source: TUS, LFS, HLFS and own calculations

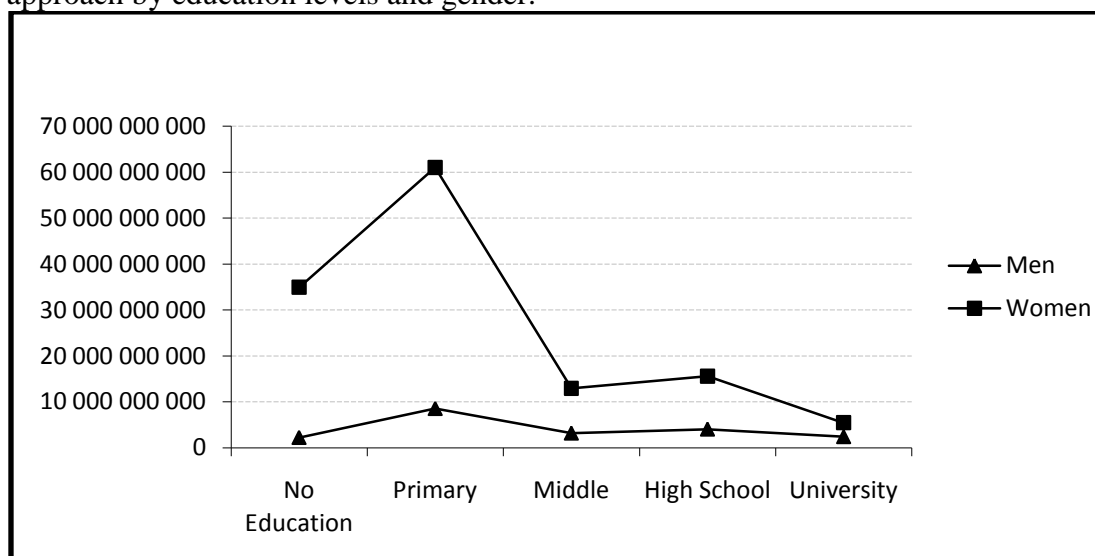
**Table 2:** Determinants of value added as to urban/rural dimensions

	Urban		Rural		Total
	Men	Women	Men	Women	
Household and House Care (Minute/Day)	48	307	56	333	-
Population	16.447.000	16.271.000	9.154.000	9.797.000	51.669.000
Number of Equivalent Jobs	2.223.391	14.068.263	1.443.733	9.188.089	26.923.476
Net Average Wages (Month/NTL)	896,17	794,03	733,45	723,89	-
Total Value Added (NTL/year)	23.910.413.218	134.048.054.974	12.706.786.488	79.813.868.620	250.479.123.299

**Source:** TUS, LFS, HLFS and own calculations

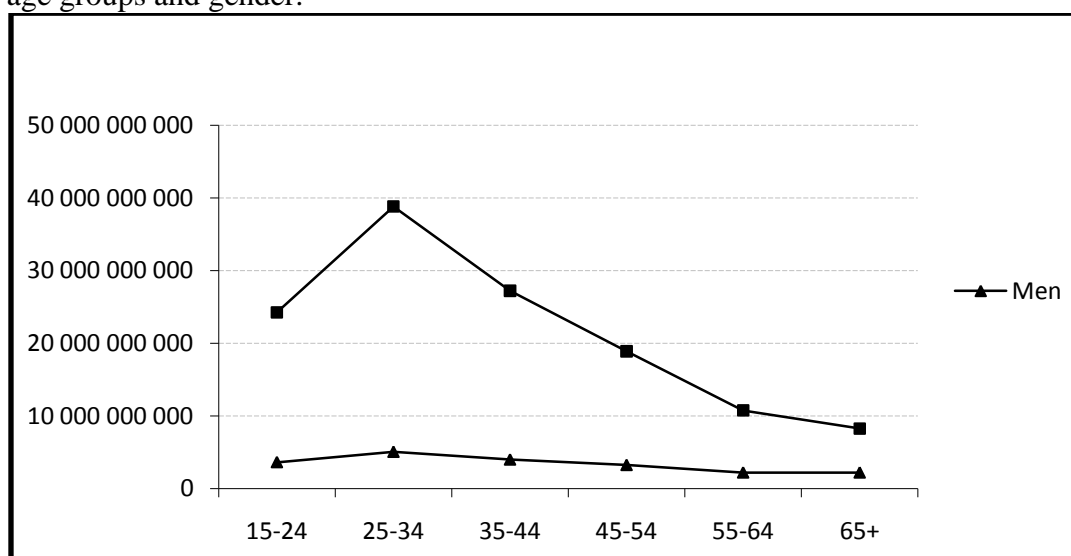
### Polyvalent worker approach:

**Figure 10:** Total value added (NTL) in household production with polyvalent worker approach by education levels and gender.



Source: TUS, LFS, HLFS and own calculations

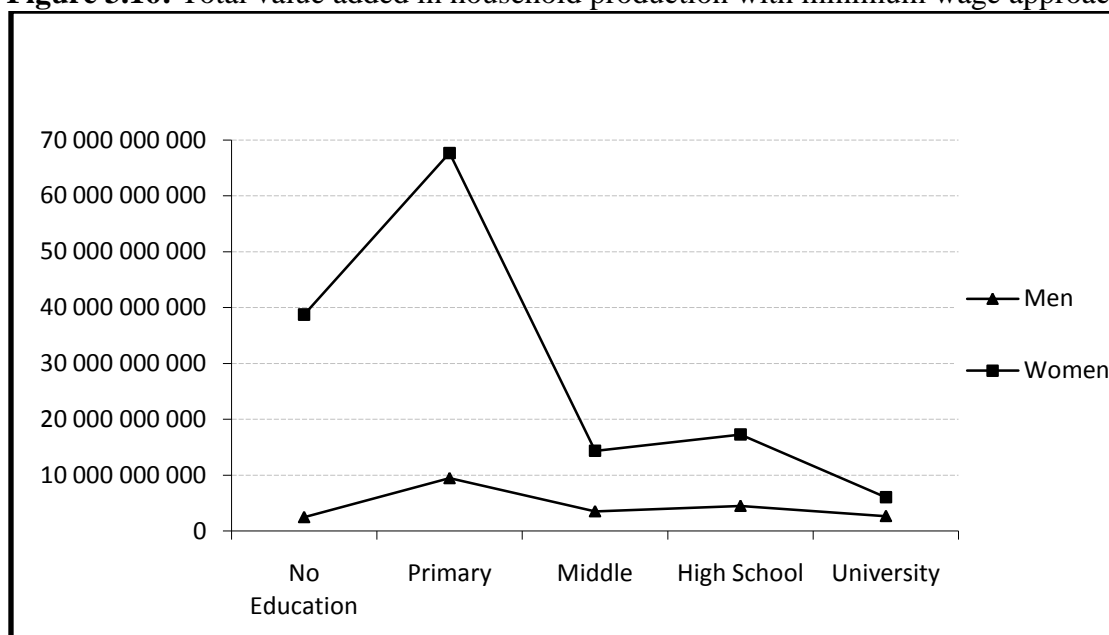
**Figure 3.15:** Total value added in household production with polyvalent worker approach by age groups and gender.



Source: TUS, LFS, HLFS and own calculations

### Minimum wage approach:

**Figure 3.16:** Total value added in household production with minimum wage approach



**Source:** TUS, LFS, HLFS, MLSS and own calculations