

HOUSEHOLD EXPENDITURE PATTERNS: EVIDENCE FROM WORKING- COUPLE HOUSEHOLDS IN TURKEY*

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Abstract

This paper attempts to test the implications of household production model and income pooling hypothesis utilizing data on working-couple households drawn from the 2003 Household Budget Survey compiled by Statistics Institute of Turkey. For this purpose, four distinct household expenditures- Food Away from Home (FAFH), Processed Food, Personal Care and Recreation-and-Culture- are analyzed by employing Tobit model as the estimation method. The results of the study of two-earner households indicate that wage rates of wife and husband have no statistically different effects on the FAFH, processed food and recreation-and-culture expenditures while the wage rates of the spouses have diverging effects on the personal care expenditures, holding a set of demographic variables constant. Therefore, the Turkish data reveals that the unitary household decision making is valid in the case of goods that are likely to be consumed collectively by household members whereas the non-unitary household decision making framework is supported in the case of goods that are likely to be consumed separately by family members. In relation to household production model, our estimation results depict that when hours of work of spouses increase FAFH and Processed Food expenditures increase on average, controlled for a set of demographic variables. However, this increase cannot be solely attributed to the gender roles of spouses but expenditures are likely to increase because both spouses are time constrained.

Keywords: Household expenditures, non-unitary models, bargaining power in marriage, household production model.

JEL Classification: D12, D13, J1

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I. INTRODUCTION

Gender roles in household consumption patterns have been studied in the literature in relation to two models of household behavior; household production model and the unitary versus non-unitary models of the family decision making. The implications of the first model relate to the changes in household expenditure patterns as a result of the withdrawal of wives from the traditional gender responsibilities at home due to their involvement in paid-labor activities. The studies testing the unitary model of the family behavior, on the other hand, concentrate on changes in expenditure patterns resulting from the diverging preferences of wives together with their increasing bargaining power as their control over household resources increases.

Unitary model assumes that distribution of income among household members does not affect expenditure preferences of family. Therefore, households maximize a single utility function subject to a joint income constraint. However, increasing evidence suggests that distribution of resources changes bargaining power of spouses and thus, affect expenditure patterns (Ward-Batts (2008); Phipps and Burton (1998). Earned income is an important source of resource redistribution and shift in bargaining power within households. Therefore, working couple households allow us to test whether who controls resources has any effect on household expenditure preferences breaking down the unified budget constraint into husband and wife income shares.

Increasing control of wives on household resources due to their involvement in labor market is likely to have a strong effect on household demand. In addition, increasing role of women in household decision making also affects household production, allocation of labor across various activities such as household chores, leisure and paid work. Therefore, in this paper our aim is to test the effects of resource distribution between husband and wife with regard to specific expenditure categories that are most likely to reflect distinct preferences and substitution effect between market goods and home produced goods[§].

Studies examining working couple households with respect to income pooling and household production model from developing countries are limited. Examples include Heng et al. (2007) for Malaysia, Haddinott and Haddad (1997) for Ivory Coast, Song (2008) for China and Cinar and Anbarci (2001) for Turkey. To the best of our knowledge, Cinar and Anbarci (2001) is the only study examining the influence of women within the framework of household decision making utilizing a survey conducted for only Izmir, a city in Turkey. They report that status of

[§] It is often argued that women have a stronger tendency to spend on items that increase the welfare of children and household as a whole than men. We wanted to test this including expenditures on health, education, children and women clothing but we were unable to obtain statistically significant results for any of these items.

woman within the household and society increases parallel to her control over economic resources. Turkey is an interesting case in this respect with relatively low level of labor market participation rate of women. Labor force participation rate of women in Turkey was around 23 percent from 2000 to 2003. In 2004 it dropped to 25 percent and remained around this value until 2008. It increased slightly in 2009 to 28 percent and this increase continued until 2014 reaching 33 percent (OECD Stats). Turkey has the lowest female labor force participation rate among OECD countries and also among many developing countries. In 2014, OECD average was 63 percent. Therefore, we believe that this study will contribute to the understanding of influence of working women on household expenditure preferences in a country where female labor force participation rate is fairly low and traditional role of women is still strongly encouraged and regarded as main responsibility of women.

For this purpose, we examine four distinct household expenditure categories, namely “Food Away From Home (FAFH)”, “Processed Food”, “Personal Care” and “Recreation-and-Culture” expenditures^{**}. We employ tobit model to estimate the specified expenditure categories as our monthly expenditure data contains zero expenditures as well as positive expenditures. We think that non-consumption generates zero expenditures rather than infrequency of purchases. Our reasoning is as follows. All four expenditure categories consist of wide range of goods (see Appendix for a detailed definition of good categories), at least for some of which, a month is a period long enough to need to purchase some of these goods.

These expenditures are chosen on the basis of presenting a possible bias in case that married women participates in paid work^{††}. Analyzing FAFH and processed food expenditures, we are able to explain whether the market involvement of women shifts household expenditures toward time saving goods available at a cost in the market, the substitution effect. Personal Care and Recreation-and-Culture expenditures are chosen to characterize the divergent preferences of women. Personal care expenditures reflect the changing role of women from being a homemaker to a socially active employee in work environment and social environment in a wider sense. Recreation-and-culture expenditures include items reflecting the traditional concerns of women on children, education and health expenditures, e.g. taking children to theaters, zoos, museums etc. buying toys and books and

^{**} Detailed definitions of goods in each category are given in Appendix.

^{††} Some studies examined FAFH and recreation-and-culture expenditures in relation to some socioeconomic and demographic factors using Turkish data but these studies did not particularly concentrate on working couples. See Uraz (2008), Gul et al. (2007) and Bozoglu et al. (2013).

stationery implements for them etc. (See Appendix for the details of recreation and culture expenditures).

Our estimation results depict that when hours of work of spouses increase FAFH and Processed Food expenditures increase on average. However, this increase cannot be solely attributed to the gender roles of spouses, i.e. households consume these goods because the wife has less time for meal preparation. These expenditures are likely to increase because both spouses are time constrained^{††}. Similarly, both spouses' wage rates have significant effects on expenditures. Processed food, personal care and recreation-and-culture expenditures increase when the wage rates of spouses increase. However, the tests of parameter equality indicate that the expenditures in the processed food and recreation categories do not depend on individual wage rates but on their sum. Therefore, income pooling hypothesis is not rejected for these categories. On the other hand, in the personal care category, expenditure patterns depend on individual wage rates of spouses reflecting distinct individual preferences. That is for example an increase in the wife's wage rate will shift the household expenditures toward personal care expenditures because her bargaining power is increased. An increase in the hours of work of the wife also increases personal care expenditures at a greater proportion.

As a result, Turkish data provides evidence on the income pooling hypothesis in the case of goods which are more likely to be consumed by the family as a whole, the processed food and recreation-and-culture expenditures, while we found evidence in support of non-unitary models of household decision making with regard to the goods which are more likely to be consumed individually rather than collectively, goods in the personal care expenditures category.

The remaining part of the paper is organized as follows. Section II provides background. Sections III and IV explain theoretical and econometric models that the study is based on. Sections V and VI give the empirical content of the model. Descriptive statistics and estimation results are explained in sections VII and VIII. Section IX is the conclusion.

II. BACKGROUND

Household expenditures are expected to be affected when women earn labor income in two ways. First, households will tend to substitute home-produced goods with market goods since wives have now less time to spend in household production as predicted by household production theory (Becker, 1965). Second, expenditure patterns of the household will differ independently of the

^{††} This can also be interpreted as one of the costs of working. Some workers may have little choice but eat lunch out during the day.

productive use of time in domestic production by women but simply because of different preferences of wives. Both effects relate to decision to work. The first effect drives from the initial allocation of time between market work and domestic work, which is made on the basis of relative productivities in two activities. The second effect relates to the use of time between market work and leisure which is only enjoyable when consuming market goods. This use of time, leisure, is also defined as household production by Becker; for example lying down and watching TV requires a couch to lie on and a TV set; both consumption goods are combined with leisure and transformed into home production, watching TV (or consumption as used synonymously by Becker). Here, however, the decision to work and how many hours is not made on the basis of relative productivities, productivity in paid work and productivity in leisure. Rather, the decision is contingent upon the preferences between leisure and work. The extent to which work (money income) is substituted for leisure (time to spend it) hinges on wage rate defined as both a reward for labor market time and a cost in terms of leisure (Ehrenberg & Smith, 2009).

Thus, in a tripartite setting, each spouse has to choose how to allocate his or her time among market work, domestic work and leisure and in turn, has to choose how to divide his resources, non-labor and labor income, between private consumption and expenditures on goods used as inputs into household production (Pollak, 2005). Such a setting requires specification of a household decision making process based on principles of utility maximization.

Classical theory assumes unitary decision making. Becker (1981) assumes that one of the spouses is an altruistic dictator and his preferences are represented in the utility function of household. Samuelson (1956) proposes that there is consensus between husband and wife and thus, both have the same preference function. Therefore, a single utility function is maximized subject to a pooled budget constraint. Non-unitary models of household decision making, on the other hand, allow the preferences of spouses to be represented either in a “weighted welfare function” of the family (collective model) or in a “Nash Product Function” (cooperative bargaining models) formulated to account for both spouses’ utilities from cooperation and non-cooperation (Manser and Brown (1980), McElroy and Horney (1981), Chiappori (1988, 1992) and Lundberg and Pollak (1993)). Utility from non-cooperation is defined as divorce-threat point utility in Manser and Brown (1980) and McElroy and Horney (1981). It is defined as within-the-marriage-disagreement threat point utility by Lundberg and Pollak (1993).

Researchers attempt to explain the gender bias in intra household allocation of resources examining household expenditures on various goods within the framework of one of the models

developed in the bargaining power or collective models literature. Examples are Bourguignon et al (1993), Hoddinott and Haddad (1995), Phipps and Burton (1998), Browning and Chiappori (1998), Koolwal and Ray (2002), Rangel (2003), Song (2008). The critical component of these models is the non-pooled budget constraint as the individual consumptions of family members can hardly be observed and are hardly available in real data sets.

The studies based on the household production model concentrate on the substitution of time saving goods for household produced goods. Therefore, most researchers are interested in the relationship between hours worked by men and women and the particular expenditures, mostly Food Away From Home (FAFH). Examples include Soberon-Ferrer and Dardis (1991), Strober and Weinberg (1977), Redman (1980), Yen (1993), Nayga (1996), Bryant (1988), Manrique and Jensen (1998), Bellante and Foster (1984), Kinsey (1983), Weagley and Norum (1989).

Study of expenditure patterns in relation to household production model requires inclusion of hours of work, wage rate, non-labor income and some demographic factors as determinants of expenditures. Pollak (2005: 4) argues that non-labor income, wage rate (not earnings as they may be high or low depending on hours of work supplied by each spouse given a fixed wage rate) and productivity in household production are the determinants of bargaining power.

In this respect, this paper examines the gender bias in household expenditures due to both household production model and simply differing preferences of women when they work.

III. THEORITICAL MODEL

In general, a consumer worker's utility function is described in terms of his leisure and his consumption goods, as both gives satisfaction, and his/her observed and unobserved characteristics. In this case his/her consumption is constrained by his non-labor and labor income. That is s/he maximizes her/his utility subject to the classical budget constraint.

$$U_i = U_i(x_i, l_i; z_i, \varepsilon_i) \quad (1)$$

$$px_i = w_i e_i + y_i = I_i \quad (2)$$

Where x is a vector of consumption goods, l is leisure, z and ε represent observed and unobserved characteristics of individual, w is wage rate, e is hours of work, y is non-labor income and i stands for the individual. For the family, husband and wife are two adults and thus, two separate decision makers who might have separate utility functions, then $i = h, w$ for husband and wife. Unitary model assumes that family behaves as one individual collapsing the separate utility

functions of family members into one utility function and pooling the budget constraint in which case i represents the family instead of individual, $i = h + w$. Application of standard first order conditions gives the demand functions:

$$x_i = x_i(p, I_i, z_i \varepsilon_i) \quad (3)$$

Non-unitary models take account of separate utility functions for husband and wife and formulate them to represent the household utility function either considering a cooperative bargaining process or a Pareto efficient agreement (Collective Model). Household utility function in cooperative bargaining models takes the form:

$$W = \{U_h(x_h, l_h; z_h, \varepsilon_h) - V_h(\varphi)\} * \{U_w(x_w, l_w; z_w, \varepsilon_w) - V_w(\varphi)\} \quad (4)$$

Which is simply a ‘‘Nash product’’. $V_i(\varphi)$ represents the threat-point utility of each spouse. Threat-point utility is originally defined by Manser and Brown (1980) and McElroy and Horney (1981) as utility from divorce and later on by Lundberg and Pollak (1993) as utility from non-cooperation within the marriage which takes account of the fact that any quarrel over simple issues will not result in marriage dissolution but in the long run may result in a game in which each spouse bargains over his or her classical gender roles in the provision of household public goods. φ includes a number of variables from the earnings of spouses in the case of divorce, divorce laws, religious and cultural parameters which may have any effect on divorce or non-cooperation-within-the-marriage outcome (Rode, 2011).

The Collective Model’s utility function is simply a weighted sum of individual utilities:

$$W = \theta U_h(x_h, l_h; z_h, \varepsilon_h) + (1 - \theta) U_w(x_w, l_w; z_w, \varepsilon_w) \quad (5)$$

θ is known as the Pareto weight and reflects the relative power of spouses in the aggregated utility function. Pareto weights are assumed to be a function of relative incomes of spouses and environmental parameters, similar those included in φ (Browning, Chiappori and Lechene (2004)).

The disintegrated budget constraint applied to these utility functions can be written as:

$$px = w_h * e_h + w_w * e_w + V_h + V_w \quad (6)$$

The reduced form demand functions for the both model^{§§} then take the form:

$$x = x(p, w_h, w_w, y_h, y_w, ; z_i \varepsilon_i) \tag{7}$$

For the purpose of this study, we need to integrate household production model into the above framework. Becker (1965) argues that market goods do not bring satisfaction to the consumer directly but need to be transformed into a form that gives direct satisfaction to the consumer. Therefore, market goods (x) can be defined as inputs into household production, together with time (t) necessary to make the production, which produces domestic goods (Z) with a given technology(E), which directly enters into the utility function. Formally, production function is:

$$Z = Z(x, t; E) \tag{8}$$

Here since the individual allocates his or her time between market production (work) and household production (either leisure or a productive activity as meal preparation) he or she has time constraint. It is formally given by:

$$T = e + t \tag{9}$$

Substituting Z into utility functions above and the time constraint into the budget constraint above ($e = T - t$) one can derive the demand functions as:

$$x = x(p, y_h, y_w, e_h, e_w, ; z_i, \varepsilon_i) \tag{10}$$

IV. TOBIT MODEL

Let Y be the expenditures of a household on a particular good. Suppose that households make purchases if the utility drawn from the good is above zero and do not make purchases if the utility is zero and below. Define Y^* as an unobserved index variable representing the utility ordering (Tobin^{***} (1958); Johnston and Dinardo, (1997): 436).

Formally;

$$Y^* = X\beta + \varepsilon \quad \varepsilon \sim N(0, \sigma^2) \tag{11}$$

$$Y = Y^* \text{ if } y^* > 0 \tag{12}$$

^{§§} Both model produces the same demand functions given that, “under symmetric information, the collective model is a generalized version of the cooperative bargaining models.” (Rangel, 2003:9).

^{***} The model is first introduced by James Tobin to study the expenditures on consumer durables.

$$Y = 0 \text{ if } Y^* \leq 0 \quad (13)$$

The observed dependent variable y (expenditures) is equal to Y^* when Y^* is greater than zero and Y is censored at 0 when Y^* is at or below zero. Therefore, this model is also called as censored regression model. It should be noted that explanatory variables are observed for both uncensored and censored values of the dependent variable. Given that the error terms are normally and identically distributed the model can be estimated by Maximum Likelihood method^{†††}.

V. EMPIRICAL SPECIFICATION

Household demand functions derived from the utility maximization framework above include prices, labor and non-labor incomes of husband and wife, hours of work of husband and wife (they will be referred as labor market variables), a vector of demographic factors and a vector of unobserved characteristics. In the case of cross-section data, assuming prices are fixed across individual units, expenditure functions can be estimated specifying labor market and demographic variables as explanatory variables and relegating the unobserved characteristics to the error term. The logarithmic functional form is chosen for the estimated equations as heteroscedasticity is a frequently encountered problem in cross-section data. A low income family is likely to limit expenditures in all four categories to necessity level while a high income family may choose to spend large sums on these categories, e.g hair dresser, restaurants, concerts, prepared meals etc. Therefore, we expect larger variations in expenditures for high income families that lead to the problem of heteroscedasticity. Log transformation reduces such large variations and thus, heteroscedasticity. Another advantage of log transformation is that we can interpret the parameter estimates on the labor market variables as elasticities representing the percentage change in the mean expenditures for a given one percent change in the explanatory variables. Since the log of zero expenditures is undefined we assign a value of one for the zero expenditures.

$$\ln E_i = a_0 + a_w \ln y_w + a_h \ln y_h + a_w \ln w_w + a_h \ln w_h + a_w \ln e_w + a_h \ln e_h + \sum_i a_i z_i + \varepsilon_i \quad (14)$$

Where E is expenditure and z_i , $i = 1 \dots$, represent 10 wife and household characteristics plus 12 location dummies.

The equation is estimated using the tobit model since the expenditures are left-censored at zero. The percentages of zero expenditure are reported in the first rows of Tables 1- 4.

^{†††} We do not explain here the expected values and marginal effects relating to the observed sample and positive observations, usually included when the tobit model is considered. Here we are mainly interested in the significance levels and signs of the parameter estimates. The marginal effects are available from the authors.

VI. DATA AND VARIABLES

Household Budget Surveys (HBS) compiled by State Institute of Statistics are conducted over a whole year and collect information from households on a monthly basis. Three large sets of variables are extracted from the survey results; 1. Household socio-economic position variables (attributes of the dwelling, ownership status of the residence, region etc.) 2. Variables relating to individual attributes (age, gender, level of education), employment and income variables such as occupation and employment status and monthly incomes. 3. Expenditure variables. Tobit model is used as all households will not make spending on these particular items within a given month and thus, the data set will include zero expenditure for some households.

For this study, we utilize 2003 HBS constructed interviewing 25764 households and 107614 individuals, the largest HBS after 1994 HBS. We restricted our data set to only working couple households employed in non-agricultural sector between ages 18 and 55. We further eliminated households with relatives and non-relative individuals other than the children of the couples. Households with income earner children are also excluded from the data set. We excluded spouses who reported less than 20 hours of work and more than 85 hours of work for a week and no income. Thus, we end up with 926 part time or full time working couple households with no children or non-income-earner children. Approximately 8 percent of the husbands and 20 percent of the wives are part time employees (working less than 35 hours in a week) in our data set.

Monthly earnings and weekly hours of work are reported. Therefore, monthly earnings are divided by 4.3 to compute weekly earnings and then, wage rate is calculated dividing weekly earnings by weekly hours of work. All four expenditures, non-labor earnings and wage rates are deflated using the price index with base year 1994. Four dummies are defined for the wife's level of education; primary, middle school, high school, and university level dummies, non-graduate is the reference group. Approximately 10 percent of the wives are reported as household heads in our data set and thus, another dummy variable is created to take account of female headed households. Two categorical variables are defined to account for the effect of age cohort of women on expenditures. Women between 18 and 30 ages constituted the first age category and the women between 31 and 45 ages constituted the second age cohort where the above 45 age cohort is taken as the base. Household size and the number of children younger than 7 are included as continuous variables. 12 location dummies are defined; one for controlling the differences in the expenditures of urban households relative to rural households and 11 regional dummies with the base category North-East-Anatolia region.

VII. DESCRIPTIVE STATISTICS

Means and standard deviations of the variables for both zero and positive expenditure subsamples for FAFH, processed food, personal care and recreation and culture expenditures are reported in Tables 1- 4. Descriptive statistics depict that the means of labor market variables for the zero expenditure subsamples are smaller than those for the positive subsamples of the four expenditures in general.

Table I: Mean and Standart Deviations of Variables for FAFH Expenditures

Explanatory Variables	Zero FAFH Expenditures: 114 Percentage:12.31		Positive FAFH Expenditures: 812	
	Mean	Std. Dev.	Mean	Std. Dev.
Ln Real FAFH Expenditures	0.00	0.00	12.97	1.37
Ln Real Unearned Income-Wife	0.34	2.06	1.09	3.77
Ln Real Unearned Income-Husband	1.90	4.76	3.56	6.19
Ln Real Hourly Wage Rate-Wife	10.03	0.81	10.33	0.83
Ln Real Hourly Wage Rate-Husband	10.20	0.71	10.51	0.71
Ln Monthly Work Hours-Wife	3.63	0.33	3.72	0.28
Ln Monthly Work Hours-Husband	3.85	0.26	3.88	0.26
Primary School-Wife	0.32	0.47	0.22	0.42
Middle School-Wife	0.04	0.21	0.05	0.22
High School-Wife	0.22	0.42	0.26	0.44
University-Wife	0.29	0.46	0.44	0.50
Wife Household Head	0.01	0.09	0.01	0.10
Wife Age between 18 and30	0.30	0.46	0.33	0.47
Wife Age Between 31 and 45	0.68	0.47	0.62	0.49
Household Size	3.88	1.24	3.45	0.94
Number of Kids under age 7	0.46	0.58	0.43	0.61
Urban	0.90	0.30	0.92	0.28

Hours of work of both husband and wife, however, remain relatively stable between the zero and positive expenditure subsamples across the expenditure types. Percentages of primary school graduates are higher in the zero expenditure subsamples compared to the non-zero expenditure subsamples while the percentages of middle school and high school graduates remain approximately the same between the zero and positive subsamples for the four data sets.

Table II: Mean and Standart Deviations of Variables for Processed Food Expenditures

Explanatory Variables	Zero Processed Food Expenditures: 369 Percentage:39.85		Positive Processed Food Expenditures: 557	
	Mean	Std. Dev.	Mean	Std. Dev.
Ln Real Processed Food Expenditures	0.00	0.00	11.00	1.13
Ln Real Unearned Income-Wife	0.68	3.03	1.20	3.93
Ln Real Unearned Income-Husband	3.32	6.00	3.38	6.09
Ln Real Hourly Wage Rate-Wife	10.06	0.87	10.44	0.77
Ln Real Hourly Wage Rate-Husband	10.29	0.68	10.59	0.72
Ln Monthly Work Hours-Wife	3.72	0.30	3.71	0.28
Ln Monthly Work Hours-Husband	3.88	0.26	3.88	0.26
Primary School-Wife	0.31	0.46	0.18	0.39
Middle School-Wife	0.05	0.22	0.05	0.22
High School-Wife	0.25	0.43	0.25	0.44
University-Wife	0.33	0.47	0.49	0.50
Wife Household Head	0.01	0.09	0.01	0.10
Wife Age between 18 and30	0.28	0.45	0.36	0.48
Wife Age Between 31 and 45	0.68	0.47	0.59	0.49
Household Size	3.64	1.07	3.41	0.93
Number of Kids under age 7	0.40	0.60	0.46	0.61
Urban	0.89	0.31	0.93	0.26

However, the percentages of university graduates are considerably high in the non-zero subsamples compared to the zero subsamples across the four expenditure types, especially in the cases of personal care and recreation-and-culture expenditures, the figures are 19 and 17 percents for the zero expenditure and 45 and 48 percents for the positive expenditure subsamples respectively. Younger age cohort of the wives is represented with approximately equal percentages between the two subsamples across the expenditure types while the older age cohort is represented with relatively higher percentages in the zero subsamples of personal care and recreation-and-culture expenditures and with slightly lower percentages in the zero subsamples for the FAFH and processed food expenditures. Interestingly, the percentages of female headed households in the zero subsamples are slightly above those in the positive subsamples for the FAFH and processed food expenditures while they are nearly equally distributed between the two subsamples for personal care and recreation and culture expenditures. We observe that household size and number of children younger than 7 slightly vary between the zero and non-zero subsamples. They are smaller in the

zero subsample on average compared to the positive sample for the personal care and recreation and culture expenditures.

Table III: Means and Standard Deviations of The Variables for Personal Care Expenditures

Explanatory Variables	Zero Personal Care Expenditures: 96 Percentage: 10.37		Positive Personal Care Expenditures: 830	
	Mean	Std. Dev.	Mean	Std. Dev.
Ln Real Personal Care Expenditures	0.00	0.00	12.13	1.22
Ln Real Unearned Income-Wife	0.13	1.27	1.10	3.78
Ln Real Unearned Income-Husband	2.21	5.01	3.49	6.15
Ln Real Hourly Wage Rate-Wife	9.83	0.89	10.34	0.81
Ln Real Hourly Wage Rate-Husband	10.01	0.66	10.52	0.71
Ln Monthly Work Hours-Wife	3.65	0.33	3.72	0.28
Ln Monthly Work Hours-Husband	3.92	0.25	3.88	0.26
Primary School-Wife	0.40	0.49	0.21	0.41
Middle School-Wife	0.06	0.24	0.05	0.22
High School-Wife	0.24	0.43	0.25	0.43
University-Wife	0.19	0.39	0.45	0.50
Wife Household Head	0.01	0.10	0.01	0.10
Wife Age between 18 and30	0.38	0.49	0.32	0.47
Wife Age Between 31 and 45	0.60	0.49	0.63	0.48
Household Size	3.72	1.12	3.48	0.98
Number of Kids under age 7	0.35	0.63	0.45	0.60
Urban	0.93	0.26	0.91	0.28

Finally the percentage of urban households is nearly the same in the two subsamples across the expenditure groups. In general we can conclude that positive expenditures are associated with higher means of labor market variables and higher levels of education of women. For the brevity of presentation regional dummies are not included in the tables.

Table IV: Means And Standard Deviations of The Variables for Recreation and Culture Expenditures

Explanatory Variables	Zero Recreation and Culture Expenditures:167 Percentage:18.03		Positive Recreation and Culture Expenditures:759	
	Mean	Std. Dev.	Mean	Std. Dev.
Ln Real Personal Care Expenditures	0.00	0.00	12.08	1.54
Ln Real Unearned Income-Wife	0.55	2.65	1.09	3.78
Ln Real Unearned Income-Husband	2.30	5.18	3.59	6.21
Ln Real Hourly Wage Rate-Wife	9.87	0.78	10.38	0.82
Ln Real Hourly Wage Rate-Husband	10.13	0.67	10.55	0.71
Ln Monthly Work Hours-Wife	3.73	0.29	3.71	0.28
Ln Monthly Work Hours-Husband	3.90	0.26	3.88	0.26
Primary School-Wife	0.40	0.49	0.20	0.40
Middle School-Wife	0.06	0.24	0.05	0.22
High School-Wife	0.27	0.45	0.25	0.43
University-Wife	0.17	0.37	0.48	0.50
Wife Household Head	0.01	0.08	0.01	0.10
Wife Age between 18 and30	0.37	0.48	0.32	0.47
Wife Age Between 31 and 45	0.60	0.49	0.63	0.48
Household Size	3.49	1.06	3.50	0.98
Number of Kids under age 7	0.36	0.60	0.45	0.60
Urban	0.90	0.30	0.92	0.27

VIII. ESTIMATION RESULTS

Tobit MLE estimates^{†††} for the four expenditure categories are presented in Table 5. First, we note that the p values of likelihood ratio chi-squares for the four expenditure equations are all zero indicating that each model fits better than an empty model with only a constant term (a model with no predictors). Next, of the four expenditure functions, the processed food expenditure function has the poorest significance levels of the parameter estimates. The effects of demographic variables^{§§§} on the expenditures vary by the expenditure category. While the wife's age cohorts have no statistically significant effect on the expenditures, FAFH, personal care and recreation-and-culture expenditures increase by the level of education of the wife. This finding is in support of the conjecture that the higher the level of education of women the more influence they have in decision making within the family. In a study examining the household resource allocation for

^{†††} Only the parameter estimates for the primary index equation are reported. Parameter estimates (marginal effects) relating to the expected value of observed sample of zero and non-zero cases and the expected value of expenditures where they are conditioned to be greater than zero are not reported as we are primarily interested in the sign and significance of parameter estimates.

^{§§§} The parameter estimates on the regional dummies have generally statistically significant effects on the four expenditure categories at 1 percent level indicating that households in these regions are likely to spend more on average on the four categories compared to the households in the base region. Results are available on request.

rural China, Song (2008) also found that an increase in education level of women increases their ability to influence household resource allocation in favor of children and household welfare in general. However, since our primary interest is on the testing of income pooling hypothesis, the impact of demographic variables are of secondary importance. The focus is on the effects of the labor market variables pertaining to the wife and husband. Their effects vary by the type of expenditure. The log of real unearned income of the wife has no effect on expenditures. In our data set approximately only one fourth of the wives has unearned income and its value is one third of the husbands' unearned income on average. The Log of real unearned income of husband has a significant effect on log real expenditures in two cases; its parameter estimate is significant at one percent level of significance in the FAFH case while it is only significant at 10 percent level of significance in the recreation-and-culture expenditure case. Log of real hourly wage of wife has a statistically significant effect on the log of real expenditures in three categories. The parameter estimate on the wife's log real wage rate has a positive sign and is statistically significant at 1 percent level of significance in the case of processed food expenditure while wife's wage rate has no significant effect on FAFH expenditures. Gul et al. (2007) found, on the other hand, that employment of women is a significant determinant of FAFH expenditures in their study examining only FAFH expenditures in relation to a set of demographic and economic factors using a survey conducted for the city of Adana in Turkey in 2001. Similarly, Bozoglu et al. (2013) examined FAFH expenditures for Turkey using 2009 Household Expenditure Survey and reported that labor force participation of women affected FAFH expenditures positively. In her study of expenditures for FAFH and prepared foods for the United States Redman (1980) also found that while FAFH was independent of work status of women, prepared food expenditures were positively affected when women worked. The parameter estimates on the same variable are statistically significant at 5 percent level in the cases of personal care and recreation expenditures with positive signs. Similarly, Soberon-Ferrer and Dardis (1991) found a positive and significant effect of wife's wage rate on personal care expenditures for the United States and Jacobs et al. (1989) reported that households with a wife working is more likely to spend on personal care items than those with non-working wives. Recreation-and-culture category is likely to reflect the women's concerns on child-related expenditures as it includes items such as museums, sports, books, writing and reading implements, toys etc. Studies by Phipps and Burton (1988) for Canada, Haddinot and Haddad (1995) for Ivory Coast, and Song (2008) for China reported that wife's share of income has a positive effect on child-related expenses. The coefficient estimates on the husband's real wage rate are all statistically significant at 1 percent level of significance with positive signs for the four expenditure types. Note that both the wife's and the husband's wage rates statistically significantly and positively affect the processed food, personal care and recreation expenditures. Further, considering the magnitudes of the parameter estimates which are elasticities suggest that the expenditures in the three categories are more sensitive (twice as much in the cases of personal care and recreation-and-culture expenditures) to the husband's wage rate compared to the wife's wage rate. The wage elasticity of expenditures with respect to husband (wife) suggests that a one percent increase in the male (female) wage rate would result in nearly 2.1 (1.8) percent increase in the processed food expenditures, 1.2 (0.6)

percent increase in the personal care expenditures and 1.2 (0.5) percent increase in recreation expenditures. Male wage elasticities are greater than one implying that the expenditures would increase in greater proportion when the wage rate increases.

Table V: Tobit Maximum Likelihood Results for The Four Expenditure Categories

Explanatory Variables	FAFH	Processed Food	Personal Care	Recreation and Culture
Ln Real Unearned Income-Wife	0.038 (-0.85)	0.114 (-1.39)	0.054 (-1.42)	0.016 (-0.32)
Ln Real Unearned Income –Husband	0.073** (-2.75)	-0.059 (-1.18)	0.036 (-1.55)	0.052+ (-1.7)
Ln Real Hourly Wage-Wife	0.295 (-1.11)	1.747** (-3.48)	0.487* (-2.13)	0.618* (-2.01)
Ln Real Hourly Wage Rate-Husband	1.077** (-3.62)	2.133** (-3.89)	1.209** (-4.74)	1.196** (-3.49)
Ln Weekly Work Hours-Wife	2.083** (-3.62)	0.336 (-0.31)	1.350** (-2.75)	0.014 (-0.02)
Ln Weekly Work Hours-Husband	1.969** (-3.03)	2.374* (-1.97)	0.621 (-1.12)	1.368+ (-1.83)
Primary School-Wife	1.984* (-2.27)	1.159 (-0.68)	1.027 (-1.39)	2.500* (-2.44)
Middle School-Wife	2.796** (-2.62)	2.594 (-1.27)	1.472 (-1.62)	3.880** (-3.12)
High School-Wife	2.366* (-2.54)	1.645 (-0.92)	1.618* (-2.05)	4.464** (-4.08)
University _wife	2.550** (-2.63)	1.486 (-0.8)	2.001* (-2.44)	5.595** (-4.94)
Wife Household Head	-0.781 (-0.5)	0.299 (-0.1)	-0.392 (-0.29)	0.996 (-0.55)
Wife Age between 18 and 30	-0.736 (-0.91)	2.049 (-1.37)	-1.216+ (-1.76)	-0.6 (-0.65)
Wife Age between 31 and 45	-0.876 (-1.15)	0.497 (-0.35)	-0.787 (-1.21)	-0.498 (-0.57)
Household Size	-0.461* (-2.33)	-0.209 (-0.56)	-0.239 (-1.42)	0.619** (-2.71)
Number of Kids younger than 7	0.093 (0.32)	0.239 (-0.44)	0.759** (-3.03)	0.083 (-0.25)
Urban	0.9 (-1.64)	1.908+ (-1.84)	-0.064 (-0.14)	0.716 (-1.13)
Constant	24.925** (-4.61)	54.726** (-5.35)	15.919** (-3.44)	25.424** (-4.06)
Log likelihood	-2538.5588	-2254.1749	-2448.0697	-2535.2388
LR chi2(27)	189.88	127.38	179.22	192.26
Prob > chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0361	0.0275	0.0353	0.0365
Observation Summary N =926	114: 0 ; 812: >0	369:0; 567:0>	96:0; 830:0>	167:0; 7590>

Absolute value of t statistics in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Although the separate coefficients on the wife's and husband's wage rates are statistically significant in three out of four cases and their magnitudes are informative as elasticities, the test of the differences in the coefficients of male and female wage rates is of critical importance in terms of income pooling hypothesis. The tests of parameter equality are reported in Table 6. The likelihood ratio tests indicate that in the cases of processed food and recreation-and-culture expenditures the coefficients on the wife's wage rate and the husband's wage rate are not statistically different. In the case of these expenditures who earns the income does not matter. Families pool their incomes and expenditure patterns do not change according to the earner of the income. The income pooling hypothesis cannot be rejected. Turkish families act as one decision making unit with respect to these expenditures. On the other hand, in the FAFH and personnel care expenditure cases, the restriction that the coefficients on the husband's and the wife's wage rates are the same is rejected. Since the parameter estimate on the wife's wage rate is statistically insignificant in the FAFH expenditure function, this equation is not emphasized^{****}. However, for the personal care expenditure function, the wife's wage affects this expenditure differently from the husband's wage. Expenditures on personal care products differ according to the earner of the income. Unlike the other three goods, the personal care products are individual specific. Outside food, processed food and the recreation-and-culture goods are likely to be consumed by the whole family and their consumption is difficult to separate. On the other hand, the personal care products (creams, fragrances, hair cut services etc.) can be consumed individually and thus separable. Therefore, the expenditures on these and similar items are affected by the individual's tastes and choices. The wage elasticity of personal care expenditures for the wives is 0.5 and the same elasticity for the husbands is about 1.2 implying that this good is a necessity for women while it is a luxury good for the men. This result is in line with the conjecture that women are more found of personal care products as they are mostly consumed for personal hygiene and physical care and thus, spend on these goods more or less stably regardless of the level of income^{††††}. That is these products are viewed as necessities by women while they may contain more luxury good content in the eyes of men. Therefore, when women earn income, their preferences for these items are reflected in the expenditure patterns. These goods fall traditionally in women's realm (Phipps and Burton, 1998) and thus, for this expenditure category the income pooling hypothesis is rejected.

^{****} Redman (1980) also found that while family income is a significant determinant of FAFH expenditures, work status of women has no particular relevance for this category using a large data set for the United States.

^{††††} When log-linear form is selected as the functional form the elasticities are constant meaning that the elasticity remains the same no matter the level of income. Therefore, our argument here applies more at an intuitive level rather than at an econometric level.

Table VI: Likelihood Ratio Tests for The Restriction: $a_w = a_h$

Expenditure Categories	Likelihood Ratio Test
FAFH Expenditures Equation	3.02 (0.08)
Processed Food Expenditures Equation	0.21 (0.64)
Personal Care Expenditures Equation	3.50 (0.06)
Recreation and Culture Expenditures Equation	1.25 (0.26)

P values are in the parentheses.

The effect of hours of work is not directly relevant to the query of income pooling hypothesis but it is informative on the question of the substitution effect between market goods and home produced goods (household production theory). The parameter estimates on the wife's log hours of work are significant at 1 percent level with positive signs in the FAFH and personal care expenditures functions as expected. Yen (1993) and Bellante and Foster (1984) found similar results on the effect of wife's work hours on FAFH and a positive effect of work hours of wife on personal care is also reported by Soberon-Ferrer and Dardis (1991). But the impact of the wife's hours of work on the log of processed food expenditures is statistically insignificant contradicting the primary intuition. Husband's log hours of work have a significant impact on the log of FAFH expenditures at 1 percent level and on the processed food expenditures at 5 percent level and on the recreation expenditures at only 10 percent level of significance. The elasticities of FAFH expenditures with respect to weekly hours of work of the wife and the husband are 2.1 and 2 respectively, suggesting that if hours of work of wife (husband) increase by 1 percent, on average, FAFH expenditures increase by 2 percent. Thus, FAFH expenditures are highly responsive to the changes in both the wife's and the husband's hours of work. This result, on the other hand, does not lend support to the hypothesis that working wives will substitute restaurant food for home made meals as their hours of work increase. Rather, these expenditures will increase not because of gender roles but simply because the family became time constrained when both spouses work. The coefficient on the same variable in the case of personal care expenditures is about 1.4 suggesting that the personal care expenditures are also very responsive to the changes in the wife's hours of work. Parallel to the results on the wage coefficient, we can infer that working women consume more personal care products as the time spent in labor market goes up.

IX. CONCLUSION

Study of household expenditure patterns considering distinct preferences of couples allows us to understand the consumption tendencies of husbands and wives separately. Different set of

preferences on different set of goods is likely to bring about different effects on welfare of family members; men, women and children. In this paper, we attempt to investigate whether the expenditure patterns of household depend on labor and non-labor incomes of spouses, hours of work of spouses as well as a set of demographic variables. The underlying assumption is that non-labor income, wage rate and productivity in household production are important determinants of bargaining power (Pollak, 2005) and thus, their impact on expenditure patterns of households is fairly informative on the preferences of spouses. Wage rate and non-labor income accruing to each spouse directly enter into their respective utility functions at the threat point as explained in Pollak (2005) and enhance their bargaining powers to the extent that they are high enough to maintain their well beings in case of a disagreement which may result in a divorce or in a non-cooperation within the marriage. In either case, the higher the wage rate and non-labor income share are, the more bargaining power each spouse has and thus, he or she is able to direct the household expenditures toward the goods of his or her own individual choices.

In this respect, we look at the effects of these variables on the FAFH, processed food, personal care and recreation and culture expenditures. In the case of FAFH and processed food expenditures, the expectation is that families will tend to consume these goods because the wife has to ease off meal preparation at home (a type of household production traditionally assigned to wives) as she becomes time constrained when she works. Our results indicate that although FAFH expenditures tend to increase when the hours of work of the wife increase the same is true for the husband. Thus, our results do not lend support to the hypothesis that market goods are substituted for the domestic goods traditionally produced by women but it supports household production theory without referring to the gender roles; that is families tend to consume more restaurant food because both spouses are time constrained due to their market involvements. In the case of processed food, interestingly, only the husband's hours of work has an effect on the expenditures.

Our findings indicate that both spouses' wage rates significantly affect processed food, personal care and recreation-and-culture expenditures. On the other hand, the tests of parameter equality indicated that the expenditures in the processed food and recreation categories do not depend on individual wage rates but on their sum. Therefore, shifting an incremental increase in the wage rate of a spouse to the other spouse will not cause a change in these expenditures. On the other hand, in the personal care category expenditure patterns depend on individual wage rates of spouses reflecting divergent individual preferences. That is for example an increase in the wife's wage rate will shift the household expenditures toward personal care expenditures because her bargaining

power is increased. However, personal care expenditures will increase at a higher rate for a given incremental increase in the husband's wage rate on average.

Therefore, Turkish data does not support non-unitary models of intra household allocation of resources in the cases of the processed food and recreation expenditures while we found evidence in support of non-unitary models of household decision making with regard to personal care expenditures.

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APPENDIX

Table I: Definitions of Goods Included in Four Expenditure Categories

1. Food Away From Home
Restaurants
Cafeteria and Bars
Other outside food services
Canteens
2. Personal Care
Hair dresser saloons and personal care (wellness)centers
Electric personal care appliances
Personal care equipments and products
3. Recreation and Culture
Recording devices
TV sets, DVD and CD players
Photographic and cinematographic equipments
Optic devices
Data processing equipments
Picture and audio recording storing devices
Visual, audio and photographic equipment maintenance
Music Instruments
Other home-recreation durables
Maintenance of other home-recreation durables
Games, toys and hobbies
Sports, camping and other outdoor activity equipments
Gardening, plants and flowers
Pets and pet-related products
Pets and pet-related services
Fun and sport services
Movies, theaters, concerts
Museums, zoos, parks etc.
TV and radio taxes and hiring
Other services
Lottery games
Books
Newspapers and magazines
Various printed materials
Writing and drawing implements
Package tours
4. Processed Food
Cake, pizza etc. Mixes
Various desserts ready to eat
Frozen food such as pizza, lasagna etc.
Frozen meat
Ready-to-eat meat products
frozen meat products ready to eat
Frozen seafood such as fish, shrimps etc.
Frozen fruits
Frozen vegetables
Various dried soap mixes, dried dessert mixes,. Puddings, souses etc.
Various cafe mixes