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**Children and Intrahousehold Distribution of Resources:
An Estimate of the Sharing Rule of Italian Households**

by

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Children and Intrahousehold Distribution of Resources: An Estimate of the Sharing Rule of Italian Households¹

di A. Caiumi e F. Perali

1. Introduction

The question of how income is distributed within the household is relevant under many points of view. It is an interesting behavioral question to ask how household endowments of both goods and time are allocated within the household according to the gender and age of the recipient. It is also a relevant welfare issue, since the measurement of poverty and inequality, based on the assumption of equal treatment of family members, may be grossly underestimated. Within the context of the design of household policies, the knowledge of how resources are shared within the household may be relevant, for example, to devise eligibility rules of benefits schemes targeted to a specific household member or to rank households also in terms of the equality of the intrahousehold distribution process.

In this paper we are mainly concerned with the behavioral question. We are interested to learn how the economic variables influence the distribution process by estimating the sharing rule (Chiappori 1988). Traditional models describing household decisions in a unitary fashion are inadequate to properly describe the intra-household decision process. On the other hand, the collective representation of family behavior (Chiappori 1992), where each family member is characterized by an utility function and decisions are assumed to be Pareto efficient outcomes, is appropriate since it makes the intra-household decision process endogenous.

Due to the lack of information on the consumption of exclusive or assignable goods by household members, one method of estimating the inequality within the household is based on labour supply data since leisure is an obvious assignable good. Chiappori (1988, 1992) shows under which conditions it is possible to recover a sharing rule (up to some constant) and a pair of individual

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preferences from a pair of labor supply functions satisfying them. The inclusion of exogenous information about the distribution process in the standard collective model is useful to improve the model identification (Chiappori, Fortin and Lacroix 1998). Recent studies (Apps and Rees 1996) emphasize the importance to include also household production in the labor supply models in order to describe more exhaustively the intra-household resource allocation process and to obtain a more precise estimate of the individuals' responses to policies.

Chiappori (1997) suggests that when collective models are extended to include household production and belong to the marketable case that assumes that the price of the domestic good is exogenously determined in an outside market, then the sharing rule can be identified up to an additive constant and individual consumption can be recovered up to an additive constant. Note that the domestic production can be assumed marketable not only when it is oriented to the market as in the case of agricultural households or household-enterprises, but also when it can be substituted with goods and services bought on outside market at a given price. For example, meals can be taken at home or at a restaurant, a maid can be hired to clean the house, and so on. In that case, the market price of the equivalent service determines the trade off between internal production and outside trade. It follows that the domestic production can be evaluated at that price which is exogenous to the household (Perali 1998a and b). On the other hand, endogeneity of the household product price is critical for identification. Functionally different parametric structural models may be consistent with the same reduced form, thus revealing a fundamental identification problem giving rise to sharing rules identifiable only up to an additive function of wages.

The empirical studies on labor supplies incorporating these recent developments are still limited. This work provides estimates of the sharing rule when household production is incorporated in a model of labor supply using household information from the 1995 Bank of Italy income survey matched with the ISTAT 1989 multi-scope time budget survey. Specifically, the empirical specification of the collective household model incorporates the sharing rule equation in structural form. Individual utility functions are defined over three goods - leisure, a domestic good, and a composite market good - and

maximised over an individual budget constraint which account for the income distribution between couple members. This allocation process depends on relative wages, non labor incomes and other variables that reflect the bargaining power of individuals within the family. We expect that the presence of children affects both preferences and the distribution process.

We consider married couples where both members work at least 30 *hours* a week and one-earner families where the female is engaged in domestic work. We assume that the bargaining process over the share of income is influenced by market wage even if an individual is non employed in the market. This assumption is consistent with the collective setting. It implies that the threat point depends on the wage the housewife would receive if she chose to work. In particular, the housewife wage has been approximated by estimating the potential wage.

Based on this framework, we compute the “full” cost of a child including also the endogenous valuation of time given our knowledge of the household technology. Traditionally, equivalence scales are conditional on household composition and are based only on consumption information of market goods. While we maintain the first assumption, in this exercise we relax the latter widening the class of goods on which interpersonal comparisons are based. Actually, the purpose here is not to perform interpersonal comparisons for which traditional equivalence scales are most indicated, but to derive an integrated measure of monetary and non monetary cost of rearing a child (Cigno 1996). We warn that this is a delicate exercise. This study represents an effort in line with Phipps’ exhortation (1997) to reconcile the literature on decision making within families and the literature on the estimation of equivalence scales. We also determine the relative contribution of each parent to the cost of a child.

The next section presents the collective model within the context of a household enterprise. The third section is devoted to the specification of the empirical model. The methodology used to describe how total household costs are shared withing the couple as family size expands is presented in section 4. The results are summarized in section 5. The last section presents the conclusions.

2. The Collective Model of a Household Enterprise

Each household can be seen as an household-enterprise producing domestic public goods by transforming factors which are in part non market goods. The “family/firm” model presented in this section is general since it describes the household as involved both in production, in a family owned business, and in consumption. It embraces both urban and rural households in relation to the location of both the household and the entrepreneurial activity. When family owned business activities are not undertaken, then the household sells labor either to the job market or to the household. In this case, the general model of a “family/firm” reduces to a “family” engaged in household production. The “family/firm” model is a miniature general equilibrium model where the household enterprise fully reproduces the characteristics of a macro society at the micro level.

Whether the domestic goods are marketable has important implications on the structure of the model. If markets are complete, the domestic production can be sold on the market, or, the same goods and services can be bought on the market at a given price. Since households are price takers for every commodity including labor, production decisions are taken independently from consumption and labor supply decisions. If markets are incomplete, the price of the domestic goods are endogenous to household behavior and the separation property between production and consumption decisions does not longer hold. In both cases, the value of labor not employed outside the family is implicit. However, only in the complete market case the value of labor is objectively deducible from the value of marginal product, while in the case of missing markets the value of labor may be imputed at the opportunity cost (Jenkins and O’Leary 1994, 1995, 1996).

The model presented in this section is general also in the sense that the household is represented as a collection of individuals (Chiappori 1988, 1992, 1997). Differently from the traditional micro-economic approach that considers the household as the basic decision unit with a joint preference structure, collective models describe the household as a group of individuals each of whom characterized by specific preferences interacting within a collective decision process explaining the rules of intrahousehold allocation of individual consumption and welfare. The latter sharing rules are not directly

observable and must be deduced from the available information on assignable goods. The collective approach makes no assumption about the decision process. It only requires that the outcome of the decision process is Pareto efficient. Therefore, the process is cooperative. Decisions take place as if it were a two-stage budgeting process. Supposing that the workers of the household pool their incomes, total household income is then allocated to single members according to a predetermined sharing rule defining the intra-household income distribution. It follows that each member, while choosing the most preferred utility maximizing bundle of goods and leisure, faces an individual budget constraint. This approach permits recovering both private consumption and individual welfare functions.

Keeping the context of a household enterprise in mind, let us assume that a household obtains utility from leisure consumption l and from a set of goods $x^* = \{x_z, z_x(x_{zz})\}$ formed by a subset of N purchased goods consumed directly x_z and an aggregate good z_x produced *at home* using a household production technology $z_x(x_{zz}, h; \beta): \mathfrak{R}_+^N \rightarrow \mathfrak{R}$, where x_{zz} is the set of V goods purchased in the market as inputs to the household production function, h is time spent in household production activities, and β is a set of parameters defining the production relationship. The set of market goods is given by $x = \{x_z, x_{zz}\} = (x^1 + x^2) = \{x_z^1, x_{zz}^1\} + \{x_z^2, x_{zz}^2\}$, where the superscript 1 and 2 refer to husband and wife, respectively. Assume further that each member of the household maximizes egoistic preferences, assumed as regular, as shown by the following program:

$$(1) \quad \begin{aligned} & \text{Max} \left\{ U^1(x_z^1, z_x, l^1; d, \gamma) \mid U^2(x_z^2, z_x, l^2; d, \gamma) \geq u_2 \right\} \quad \text{or} \\ & \text{Max} \left\{ \mu U^1(x_z^1, z_x, l^1; d, \gamma) + (1 - \mu) U^2(x_z^2, z_x, l^2; d, \gamma) \right\} \end{aligned}$$

subject to the following additional constraints:

$$\sum_{i,j=1}^{1,2} \sum_{z=1}^N p_z x_{zj}^i + \sum_{i,k=1}^{1,2} \sum_{z=1}^V p_{zz} x_{zzk}^i \leq \sum_{i=1}^{1,2} w_i o_i + \sum_{i=1}^{1,2} \rho_i \pi_f(p,r) + \sum_{i=1}^{1,2} y_i = Y, \quad \text{budget constraint}$$

$$l_i = \bar{T} - o_i - h_i - f_i, \quad i = 1,2 \quad \text{time constraint}$$

$$z_x = g(x_{zz}^i, h_i; d_h) \quad i = 1,2 \quad \text{household technology constraint}$$

$$q = \phi(F, f_i; d_f) \quad i = 1,2 \quad \text{family enterprise technology constraint}$$

$$x_{zj}^i \leq x; x_{zzk}^i \leq x; x \geq 0; o_i \geq 0; l_i \geq 0; f_i \geq 0; h_i \geq 0; z_x \geq 0; y_i \geq 0; Y \geq 0; \quad \text{capacity and non-negativity constraints}$$

where u_2 is the level of utility of member 2 before decisions are made by member 1 that must be maintained to ensure Pareto efficiency; $d = \{d_h, d_f\}$ is the set of exogenous characteristics pertaining to the household d_h and to the family/firm d_f ; γ is the shifting parameter of the household welfare function representing the intra-household environmental parameter (IEP)³-- those factors affecting the decision process but not preferences; -- p_{xz} is the price of market goods x_z , p_{xzz} is the price of purchased goods used as inputs of the household technology x_{zz} , p_z is the shadow price of the domestically produced good, w_i is the exogenous market wage differentiated by gender; o_i is labor supply (in hours) differentiated by gender; $\pi(p,r)$ is the family enterprise gross profit including also the remuneration for the household labor employed in the family enterprise, obtained at the price p for the joint single output and prices r for the F vector of J inputs indexed by $j=1, \dots, J$; y is non labor income; $g(\cdot)$ is the household production technology, h_i is the time spent in household production activities; $\phi(\cdot)$ is the production technology of the family enterprise producing aggregate output q at price p_q using F , the J vector of $j=1, \dots, J$ production inputs, and f_i , corresponding to the hours of time devoted to the family enterprise activities by the household members; $\bar{T} = T - \bar{I}$ where \bar{I}_i is time devoted to rest specific to each household member, and T is total time. The parameter μ is the Lagrange multiplier associated to the Pareto constraint included in the first maximand. Here, the multiplier can be interpreted as the implicit weight of each member

³We term our set of information affecting the decision process alone as 'intra-household environmental parameter set' to emphasize those factors that are known with certainty by the decision makers such as the information whether the labor allocation decision is made jointly by the household labor force or independently. Often extra-household environmental parameters (McElroy and Horney 1981) such as marriage rates, male/female ratios, or divorce laws are either known with uncertainty or taken into account subjectively by the decision makers.

egoistic utility in the collective decision process (Chiappori 1992).

Note that if there is no family enterprise production $q(\cdot)$, then $\pi(\cdot)=0$ and $f_1=0$ and the general equilibrium model reduces to one where the household economy is described only by the consumption side. Individual full income Y_i is given by the sum of income obtained from labor supplied outside the household, non wage income y_i specific for each agent and family enterprise profits assigned to each member according to the amount of labor provided: $\rho_1=f_1/(f_1+f_2)$ and $\rho_2=(1-\rho_1)$. This assumption implies that the marginal product of labor is equal for husband and wife. In our set up we assume that all household production is sold in the home market at an implicit price.

Chiappori (1992) shows that the program in (1) is equivalent to the following sharing rule interpretation representing the maximization problem of a single household member facing the own budget constraint:

$$(2) \quad \begin{aligned} & \text{Max} \left\{ U^i(x_z^i, z_x^i, l^i; d, \gamma) \right\} \\ & \sum_{j=1}^N p_{x_z} x_{z_j}^i + \sum_{k=1}^V p_{x_{zz_k}} x_{zz_k}^i \leq w_i^o o_i + \varphi_i(w_1, w_2, y_1, y_2) \\ & \text{s.t.} \quad \text{set of time and technology constraints in (1) ,} \end{aligned}$$

where $\varphi_i(\cdot)$ is the sharing rule in reduced form and as such it is a function only of exogenous variables. This result is a direct consequence of the Second Welfare Theorem. As pointed out by Chiappori (1992), the sharing function $\varphi_i(\cdot)$ may be negative or greater than total full income Y when one member demands more than available in the shared income so that transfers from other components of the full income have to occur.

The solution of (1) or (2) yields the following reduced form system:

Production Side

$$q = \Phi_f(F, f_i; d_h, d_f)$$

Consumption Side

$$x_i = \tilde{x}_i(P, \varphi_i(w_1, w_2, y_1, y_2; d_h, d_f, \gamma), d)$$

$$F_j = \tilde{F}_j(p, r, w_i; d_h, d_f) \quad z_{x_i} = \tilde{z}_{x_i}(P_i, \varphi_i(w_1, w_2, y_1, y_2; d_h, d_f, \gamma), d)$$

$$f_i = \tilde{f}_i(p, r, w_i; d_h, d_f) \quad l_{x_i} = \tilde{l}_{x_i}(P_i, \varphi_i(w_1, w_2, y_1, y_2; d_h, d_f, \gamma), d)$$

$$o_i = \tilde{o}_i(p, r, w_i; d_h, d_f)$$

$$h_i = \bar{T} - o_i(\cdot) - l_i(\cdot) - f_i(\cdot)$$

where $P_i = (p_x, p_z, w_i)$. The production and consumption sides of the household economy illustrate the general equilibrium structure of the model. The exogenous characteristics of both the household and the family enterprise affect both sides of the micro economy. Within the theory of the household enterprise this is an interesting feature since it permits testing the separability hypothesis between consumption and production decisions (Benjamin 1992, Udry 1996). The present study estimates the sharing rule using information from the consumption and the production side of the household economy.

3. Structural Specification of the Demand for Leisure and the Sharing Rule

This section introduces a novel approach borrowed from the literature on estimation of equivalence scales (Perali 1999) to estimate the sharing rule from a structural estimation. This approach, when practicable, is simpler and has better statistical properties than a reduced form approach, such as the one carried out by Chiappori, Fortin and Lacroix (1998), that needs to be carried out in two stages. The latter approach can be very useful when the source of an identification problem of the parameters is lack of sufficient information in the data. We show that the information used in this econometric exercise is sufficient to identify all the exogenous parameters specified in the sharing function.

The individual utility functions are defined over three composite goods: a market consumption good, a domestically produced good, and pure leisure. The chosen structure of preferences is linear in individual full income Y_i which is assumed to take the Gorman polar form. Therefore, the indirect utility

functions for individual $i=1,2$ demographically transformed using the translating technique (Pollak and Wales 1971) are:

$$V^i(P_k^i, Y^i; d^i) = \frac{\ln \left(\phi_i(Y_i(w_1, y_1), w_2, y_2, \gamma) - \sum_k t_k(d_i) \ln P_k^i \right) - \ln A(P_k^i)}{B(P_k^i)} \quad (3)$$

where $P_k^i = \{p_x, p_z, w_i\}$ is the set of prices for the market composite goods x , the domestic composite good z , and leisure l differentiated by gender i which is indexed by $k=x, z, l$. The function $\phi(w_1, w_2, y_1, y_2, \gamma)$ is the sharing rule. The price indexes $A(P_k)$ and $B(P_k)$ take the *translog* and *Cobb-Douglas* form respectively:

$$\ln A(p_x, p_y, w_z^i) = \ln A(P_k^i) = \alpha_0 + \sum_k \alpha_k \ln P_k + 0.5 \sum_r \sum_k v_{rk} \ln P_r^i \ln P_k^i \quad (4)$$

$$B(p_x, p_y, w_z^i) = B(P_k^i) = \beta_0 \prod_k P_k^{\beta_k} \quad (5)$$

and $t_k(d^i)$ is the k -th translating demographic function specified for empirical convenience as $t_k(d^i) = \sum_n \tau_{kn} \ln(d_n^i)$ for the set of demographic characteristics for each individual $d^i = (d_1^i, \dots, d_N^i)$. Roy's identity yields the following system of share equations:

$$s_k^i = \alpha_k + t_k(d^i) + \sum_k v_{rk} \ln P_k + \beta^i \ln \left(\frac{\phi_i^*(Y^i(w_1, y_1), w_2, y_2, \gamma)}{A(P_k^i)} \right) \quad (6)$$

where $s_k^i = P_k^i k^i / Y^i$ and $\phi_i^* = \phi_i - \sum_k t_k(d^i) \ln(P_k^i)$. For the sharing rule we assume the following form:

$$\Phi_1(w_1, w_2, y_1, y_2) = Y_1(w_1, y_1) m(w_1, w_2, y_1, y_2, \gamma) = Y_1(w_1, y_1) \left(w_1^{\theta_1} w_2^{\theta_2} y_1^{\eta_1} y_2^{\eta_2} \gamma^\lambda \right) \quad (7)$$

$$\Phi_2(w_1, w_2, y_1, y_2) = Y - \Phi_1(w_1, w_2, y_1, y_2)$$

where the function $m(w_1, w_2, y_1, y_2, \gamma)$ has as arguments information about the own and other agent's wages

and non labor income along with the distributional factor γ . Note that the m function acts as a scaling function of personal full income capturing the size of the intra-household transfers. The sharing rule for the other agent is given by $\phi_2 = Y - \phi_1 = Y_1 + Y_2 - Y_1 m(\cdot) = Y_1(1 - m(\cdot)) + Y_2$. Therefore, the sum shared between individuals 1 and 2 amounts to $Y_1(1 - m(\cdot))$.

Part of the heterogeneity across households is captured by the variables describing the number of children by age class (0-2, 3-5 and 6-17 years) and the squared total number of children. We suppose that children affect the intra-household allocation process although they affect also preferences, so in this paper the distribution factor is defined as the number of children.

The shadow price of the domestic good can be determined from the production side of the household-enterprise model. Assuming that the household production function is characterized by constant return to scale and linear homogeneous imply that *a*) returns equal costs, $p_z z = \sum w_i h_i$, and *b*) the cost function is homothetic $C(w_1, w_2, z) = C(w_1, w_2)z$. It follows that the price of the domestic good equals the unit cost function $p_z = C(w_1, w_2)$ and depends only on wages.

We assume that the household cost function takes the *translog* functional form. The unit cost function can be recovered from the estimates of the share equations of the cost of time allocated to household production by each member of the couple as follows

$$\frac{w_i h_i}{\sum_i w_i h_i} = a_i(d_h) + \sum_j a_{ij} \ln w_j \quad i, j = 1, 2. \quad (8)$$

The price of the domestic good can then be computed as the exponent of the unit cost function

$$p_z = c = \exp \left(a_0 + \sum_i a_i(d_h) \ln w_i + 0.5 \sum_i \sum_j a_{ij} \ln w_i \ln w_j \right). \quad (9)$$

It is crucial to note that the model presented above requires a priori assumptions about the consumption repartition of the market and domestic goods between the members of the couple. This

implies that estimates of both preferences and the sharing rule depend in turn on a priori assumptions. Specifically, we assume that both goods are equally distributed between the members of the couple. It follows that inference on intra-household inequality relies only on observations of the distribution of leisure. Nonetheless, to our judgement this exercise is worthwhile in order to verify the information content of the database described in section 5, and to investigate the possibility to recover a rational behavior underlying the data.

The stochastic disturbances added to each equation are assumed to be jointly and normally distributed across equation. Therefore, the parameters of the gender specific sub-system of equations in (6) were estimated jointly using a generalized least square estimator which correspond to the iterative version of the SUR estimator⁴. In this study, the omitted equations are the consumption equations for both genders. The iterative SUR estimator guarantees that the results are invariant to the deleted equation. The restrictions across gender specific sub-systems of equations, of which the sharing rule is an example, explain the relation across the error components of each equation in the system. Given the cross-section nature of the data and the structure of the model, the error terms are heteroskedastic and likely correlated within households and across households. This feature has been corrected computing a White consistent error variance-covariance matrix.

4. Children and Intrahousehold Distribution of Resources

Given the structure of preferences depicted above, welfare comparisons among households can be made using equivalence scales based on the full costs faced by the household, that is the total expenses required to acquire market, nonmarket goods and leisure. The implied cost of living index can be described as follows:

$$m(d^f, d^r; u, p) = \frac{C^f(u, p, \Phi_1(\cdot); d^f) + C_2(u, p, \Phi_2(\cdot); d^f)}{C^r(u, p, \Phi_1(\cdot); d^r) + C_2(u, p, \Phi_2(\cdot); d^r)} \quad (10)$$

⁴ Since wages and full incomes are endogenous to the system, an instrumental variable estimator (IV) is required (Perali 1998b). This task is presently left for future work.

This index is analogous to the one that can be derived from the unitary model with the difference that it includes the evaluation of time and information about the sharing rule and the intra-household allocation of resources. It should be emphasized that the construction of such an index is a delicate exercise. Above all, in our gender specific cost structure, the leisure share is 62 and 46 percent of the budget of the husband and the wife respectively (Table 1). The share of market goods, which is traditionally used to construct equivalence scales, accounts for 23 and 34 percent for the husband and the wife respectively. It follows that this estimate is very sensitive to the quality of the time use data adopted in the analysis, and the methodology used in evaluating both the time invested in household production and the time devoted to leisure. As an example, depending on whether unpaid time is evaluated at its opportunity cost or at the marginal value of the household product, the index cost of the characteristic ‘presence of a child’ can be either greater or lower than unity. Furthermore, from our estimates, leisure is clearly a luxury good for both the husband and the wife at all levels of income (Table 2). This property may justify the exclusion from the basket of goods on which the estimation of equivalence scales to be used for interpersonal comparison are made. In fact, consumption based equivalence scales usually do not include those goods not playing an important role in determining material well-being (Phipps 1997). On the other hand, the use and value of time is a crucial information if one is interested in explaining fertility decisions and, certainly, is a commodity very frequently exchanged within the household.

For these reasons, our main interest is to construct gender specific indexes in order to describe *a)* how the relative component of each parent to the full household costs changes for household types differing in household size⁵:

$$\frac{C_1(u, p, \phi_1(\cdot); d^j)}{C_1(u, p, \phi_1(\cdot); d^j) + C_2(u, p, \phi_2(\cdot); d^j)} \quad (11)$$

⁵ Naturally, this is a positive, not a welfare, index.

b) the relative contribution of each parent to the full cost of children which is defined as the cost of the difference in household characteristics, instead of a ratio of costs as in (10)

$$D(d^f, d^r; u, p) = C^f(C_1(u, p, \phi_1(\cdot); d^f) + C_2(u, p, \phi_2(\cdot); d^f)) - C^r(C_1(u, p, \phi_1(\cdot); d^r) + C_2(u, p, \phi_2(\cdot); d^r)) \quad (12)$$

where f denote a family with a child and r is the childless couple. Following the consumer's surplus analogy $D(d^f, d^r; u, p)$ corresponds to the amount of money necessary to restore the welfare level of the childless couple. Since the household cost function is additive in individual cost functions by rearranging terms in (12), $D(d^f, d^r; u, p)$ can be expressed in terms of the gender component of the cost the characteristic as follows:

$$D(d^f, d^r; u, p) = (C_1(u, p, \phi_1(\cdot); d^f) - C_1(u, p, \phi_1(\cdot); d^r)) + (C_2(u, p, \phi_2(\cdot); d^f) - C_2(u, p, \phi_2(\cdot); d^r)) \quad (13)$$

5. Data and Empirical Results

The empirical analysis is based on a sub-sample of the 1995 Bank of Italy Survey on Household Income and Wealth. The survey reports data on hours of market work, earnings, non-labor incomes, demographic characteristics, and consumption. Information on hours spent on domestic production is drawn from the 1989 ISTAT time budget survey. Information on time use has been matched with the Bank of Italy income survey using regression analysis. Domestic work consists of hours spent during each day in housework, family care, shopping and house administration. The methodology applied to merge the data sets is presented in Addabbo and Caiumi (1998).

The sample is restricted to married couples aged from 19 to 64. It is split into two subsamples: the subsample of 'traditional' families where the female partner is a housewife, and the subsample of 'non-traditional' families where both members are employed at least 30 hours a week. This selection criterion leaves a sample of 1311 observations representing the traditional households, and 767 observations for the non traditional ones. The descriptive statistics of the variables used in the econometric analysis are reported in table 1. Wage rates for female in the traditional model are predicted

from a wage equation estimated by applying the Heckman procedure (Addabbo and Caiumi 1998). The price of the market good is normalized to one. Full incomes are set equal to the total expenses required to acquire the three goods. Unearned incomes, on the other hand, do not include returns from capital accumulation in order to avoid endogeneity problems with past and current labor supply (Lunberg, Pollak and Wales 1997). Note that even in non traditional families time work and earnings are not evenly distributed inside the household. Women work off family almost as many hours as men do. However, the domestic working time is ten times higher. On the other hand, both female wages and non-labor income are much lower than male ones.

The empirical specification of the system of equations (6) implies the knowledge of the household unit cost function estimated as in (9). The estimates of the share equations of the cost of time allocated to household production by gender (8), which are omitted here, satisfy the integrability conditions. At the present stage of the econometric experiment, these estimates have to be considered preliminary since the system of equations has been specified in terms of the individual opportunity cost of time. Future research will be addressed to improve the structure of the data by distinguishing different types of domestic work and evaluating each one to the corresponding price of market specialists. This will improve the quality of the information set on which the estimates of the sharing rule are based.

The collective model of consumption-leisure choice (6) has been applied to the traditional and non traditional samples and to subsequent sub-samples in order to evaluate differences in behavior that can be associated to the presence of children and to cohort effects as approximated by household types at different stages of the life cycle and children with different age profile. More in detail, we have selected families without children, families with children under six, and families without children under six and husbands older than 40. The estimation has been carried out with the homogeneity and symmetry restrictions imposed. We compute the compensated price elasticities in order to verify the curvature property of the individual cost function. As table 2 shows, in general the signs of the diagonal elements of the gender specific compensated price elasticities are negative for non traditional families. The Slutsky

requirements are not respected for the older cohort suggesting that the underlying cost function does not behave globally well. On the other hand, the behavior of traditional families is less coherent with the theory requirements, probably because of the more involvement of female member in nonmarket activities. As far as non traditional households are concerned, when we compare the household type with and without children, we note that leisure consumption is not significantly affected by the presence of a child for both husband and wife. The magnitude of the impact of the value of household production reduces significantly for the mother from -1.42 without a child to -.4 with a young child. Also, the impact of an increase in the price of the market good, which is the same for both couple members, is much higher for the mother of a young child with respect to the impact on a female member of a couple while the difference is not significant in the case of the male. These results may indicate that, when a child comes, women sell to the home market both more time and more market goods, while the husband's allocation remain almost unchanged.

The estimated parameters of the sharing rule associated to each sub-sample are reported in tab. 3. For non traditional families the parameters are significant in almost all cases, except for the coefficients of the male non-labor income variable. The signs of the coefficients indicate that an increase in each member labor income is not shared with the spouse, while an increase in non-labor income raises transfers to the other member, even if this latter effect is weak for both members, or non significant, due to the fact that non-labor income records a high percentage of zero values. The presence of children seems to motivate transfers from the husband to the wife. The egoistic behavior predominates at the aggregate level, but is evident also for families without children and young families with children under six. Families with husbands older than 40 show an altruistic behavior. An increase in the husband wage rate increases his transfers to the wife (the sign of the coefficient is negative). The same effect holds for the wife (the female wage coefficient has positive sign).

In the case of traditional families the parameters of the sharing rule turn out to be not precisely estimated than the corresponding ones from the non traditional households. Nonetheless, the comparisons of the estimated behavior with the ones of non traditional households is an interesting exercise. The

estimates show the presence of an altruistic behavior, with the exception of families with children under 6. The bargaining power of the housewife appears weaker than the husband's one since the estimated marginal transfer to the latter is higher than the transfer received. In the case of families with young children, an increase in husband's wage rate tends to reduce his transfer to the wife denoting a stronger bargaining power of the husband due possibly to a greater dependence of the non working female. This result is confirmed by the sign of the coefficient of the distribution factor. This suggests that the husband reduces his transfer to the wife in presence of children.

Based on our estimates, in the non traditional families the share of husband full income decreases from 0.59 to 0.56 taking into account the correction implied by the sharing rule equation (tab. 4) based on equation (11). The transfer of resources from the husband to the wife reaches a minimum in the case of families without children, while in families with children under six the wife receives an amount of additional resources from her husband equal to 10 percent of her full income. Traditional families are characterized by non significant reallocation of resources from the husband to the wife.

Table 4 shows the cost of a child by age profile and the relative contribution of each parent to the cost (equation (13) in relative terms). The results show a very low cost of a child due to the particular expenditure pattern considered in our extended budget that includes the evaluation of time. As discussed earlier, the actual insufficient familiarity with both data and results, considering the early stages of our research project, suggests caution in the interpretation and use of the presented figures.

6. Conclusions

This study represents an effort to reconcile the literature on decision making within families and the literature on the estimation of equivalence scales. We estimate, within the context of a collective model of a household enterprise, gender-specific demand systems incorporating the rule adopted by the Italian households to share resources within the households. The results show that, in non traditional households with children, women sell to the home market both more time and more market goods, while the husband's allocations remain almost unchanged. In general, the presence of children induce a flow

of transfers from the husband to the wife in non traditional households. The opposite holds for traditional households. Regarding the estimation of equivalence scales, we stress that the cost of the child based on the full costs and the measurement of the contribution of each parent to the cost of a child can be a delicate exercise at our level of knowledge.

Tab. 1 Descriptive Statistics
a) Non traditional families

	<i>All families</i>		<i>Families w/o children</i>		<i>Families with children <6</i>		<i>Families w/o children & Husband >40</i>	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
<i>Husband</i>								
H.rs of market work / week	42.93	7.17	42.98	7.11	42.87	7.25	42.47	6.80
H.rs of domestic work / week	3.40	1.69	3.21	1.49	4.91	2.04	3.12	1.43
Hourly wage/1000	14.10	10.85	13.15	8.52	14.24	12.38	14.97	12.94
Non-labor income/ year	590.74	4872.12	854.15	4997.50	178.05	926.18	1033.90	6810.00
Age	41.80	8.39	43.48	10.55	34.68	5.05	48.53	4.92
Education (years)	10.60	3.88	9.98	3.86	11.51	3.39	9.83	4.18
Share - leisure	0.62	0.10	0.62	0.11	0.62	0.11	0.62	0.10
Share - domestic product	0.15	0.07	0.14	0.07	0.16	0.05	0.14	0.06
Share - market goods	0.23	0.08	0.24	0.09	0.22	0.08	0.24	0.09
Full income / month (000£)	5773.02	3282.67	5536.46	3049.36	5666.89	3147.94	6094.67	3788.90
<i>Wife</i>								
H.rs of market work / week	40.23	5.72	40.98	6.09	40.65	6.19	40.12	5.72
H.rs of domestic work / week	31.20	6.22	29.50	6.19	33.21	5.65	31.31	6.22
Hourly wage/1000	11.73	17.95	12.66	28.16	11.15	4.27	10.95	6.24
Non-labor income / year	76.47	676.99	132.18	930.77	71.08	724.96	56.08	532.47
Age	38.64	8.02	40.66	10.23	31.64	4.05	44.79	5.46
Education (years)	10.73	3.77	10.07	3.93	12.11	3.19	9.75	4.06
Share - leisure	0.46	0.11	0.46	0.12	0.45	0.10	0.44	0.11
Share - domestic product	0.20	0.06	0.19	0.05	0.24	0.06	0.20	0.06
Share - market goods	0.34	0.12	0.35	0.13	0.32	0.10	0.36	0.12
Full income / month (000£)	3986.70	3869.74	4177.70	5959.09	3745.89	1223.09	3921.81	1743.28
Price - domestic good (000£)	12.30	23.63	13.50	37.43	11.52	4.16	11.42	6.53
No. Children	1.38	0.88	0.00	0.00	1.15	0.38	1.52	0.79
No. Children <6	0.26	0.49	0.00	0.00	1.15	0.38	0.00	0.00
Nord-Ovest	0.29	0.45	0.33	0.47	0.26	0.44	0.28	0.45
Nord-Est	0.26	0.44	0.31	0.46	0.28	0.45	0.25	0.44
Centro	0.22	0.41	0.22	0.41	0.15	0.36	0.24	0.43
Sud	0.23	0.42	0.14	0.35	0.31	0.46	0.22	0.00
Number of records	767		270		107		285	

b) Traditional families

	<i>All families</i>		<i>Families w/o children</i>		<i>Families with children <6</i>		<i>Families w/o children & Husband >40</i>	
	Mean	Std.Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
<i>Husband</i>								
H.rs of market work / week	43.57	7.84	43.44	7.80	44.14	7.60	43.33	7.63
H.rs of domestic work / week	2.11	1.18	2.04	0.91	3.52	1.84	1.71	0.74
Hourly wage/1000	13.59	13.68	14.40	17.23	12.55	11.48	13.36	6.83
Non-labor income/ year	794.38	4186.25	1335.61	5995.18	407.92	1437.21	560.24	3098.19
Age	45.05	9.24	50.68	9.36	33.54	4.63	47.22	4.70
Education (years)	8.84	3.68	8.73	4.01	9.93	3.54	8.54	3.65
Share - leisure	0.64	0.10	0.64	0.11	0.63	0.11	0.64	0.10
Share - domestic product	0.18	0.07	0.17	0.06	0.20	0.07	0.17	0.06
Share - market goods	0.19	0.06	0.19	0.07	0.17	0.06	0.19	0.07
Full income / month (000£)	5441.16	3896.55	5715.50	4825.53	4911.36	3282.69	5452.47	2224.60
<i>Wife</i>								
H.rs of market work / week	0.23	2.71	0.38	3.64	0.27	3.12	0.12	1.62
H.rs of domestic work / week	55.51	7.12	52.23	6.00	57.12	7.15	56.77	6.24
Hourly wage/1000	7.34	3.94	7.71	5.41	7.14	2.26	7.25	2.33
Non-labor income / year	67.28	904.33	68.50	673.27	46.10	410.26	65.30	1040.78
Age	41.34	9.44	47.29	9.62	29.37	4.85	43.09	5.14
Education (years)	7.79	3.47	7.17	3.55	9.83	3.13	7.41	3.28
Share - leisure	0.47	0.08	0.49	0.07	0.48	0.07	0.46	0.07
Share - domestic product	0.25	0.05	0.23	0.04	0.28	0.05	0.25	0.04
Share - market goods	0.27	0.08	0.28	0.08	0.24	0.07	0.29	0.08
Full income / month (000£)	3474.94	1406.03	3695.21	1797.46	3253.59	1072.05	3468.59	1092.27
Price - domestic good (000£)	7.59	4.05	7.98	5.51	7.49	2.49	7.46	2.42
No. Children	1.84	0.92	0.00	0.00	1.46	0.60	2.31	0.86
No. Children <6	0.25	0.51	0.00	0.00	1.46	0.60	0.00	0.00
Nord-Ovest	0.17	0.37	0.19	0.39	0.20	0.40	0.16	0.36
Nord-Est	0.14	0.35	0.16	0.37	0.14	0.35	0.14	0.35
Centro	0.20	0.40	0.23	0.42	0.17	0.38	0.19	0.39
Sud	0.49	0.50	0.42	0.49	0.49	0.50	0.51	0.50
Number of records	1311		503		133		388	

Note: 'Non traditional families' are selected as those in which both members work more than 30 hours a week. 'Traditional families' denotes families where the female partner is a housewife.

Tab. 2 Compensated Price Elasticities by Gender and Family Type

	<i>Husband</i>				<i>Wife</i>				<i>Shares</i>	
	e_1	e_2	e_3	e_y	e_1	e_2	e_3	e_y	<i>H</i>	<i>W</i>
<i>Non traditional families</i>										
1	0.00	0.15	0.34	1.53	-0.79	1.46	0.80	2.20	0.62	0.46
2	-0.12	-0.21	0.10	0.22	0.15	-1.09	-0.05	0.04	0.15	0.20
3	-0.11	0.14	-0.28	0.33	-0.35	0.15	-0.35	0.42	0.23	0.34
<i>- w/o children</i>										
1	-0.12	0.36	0.40	1.46	-0.92	1.93	0.92	2.08	0.62	0.46
2	-0.16	-0.34	0.07	0.03	0.17	-1.42	-0.15	-0.19	0.14	0.19
3	-0.09	0.21	-0.33	0.26	-0.31	0.12	-0.35	0.34	0.24	0.35
<i>- with 0-5 children</i>										
1	-0.09	0.54	0.73	1.71	-0.99	1.36	1.05	2.57	0.62	0.45
2	-0.39	-0.27	0.15	-0.23	-0.31	-0.40	-0.33	-0.21	0.16	0.24
3	-0.54	0.15	-0.28	-0.36	-0.23	-0.16	-0.60	0.09	0.22	0.32
<i>- w/o 0-5 children & Husband > 40</i>										
1	0.02	-0.21	-0.23	1.18	0.87	-0.15	0.62	1.90	0.62	0.44
2	0.01	0.16	-0.47	0.60	-1.12	0.10	0.04	-0.29	0.14	0.20
3	0.86	-0.09	-0.04	1.54	-0.44	0.84	-0.23	0.97	0.24	0.36
<i>Traditional families</i>										
1	0.07	0.28	0.47	1.67	0.50	-0.01	-0.18	1.79	0.64	0.47
2	-0.38	0.05	-0.02	-0.02	-1.26	0.17	0.19	-0.77	0.17	0.25
3	-0.32	-0.03	-0.11	-0.03	0.04	1.17	-0.47	1.22	0.19	0.27
<i>- w/o children</i>										
1	0.03	0.23	0.45	1.58	0.31	0.28	0.07	1.78	0.64	0.49
2	-0.51	0.37	-0.15	-0.30	-0.99	-0.43	0.40	-0.70	0.17	0.23
3	-0.39	-0.11	0.09	-0.19	-0.10	1.32	-0.58	0.93	0.19	0.28
<i>- with 0-5 children</i>										
1	-0.01	0.41	0.74	1.75	-0.45	1.50	0.36	1.71	0.63	0.48
2	-0.84	0.19	-0.76	-0.13	-0.41	-0.75	-0.29	-0.62	0.20	0.28
3	-0.13	1.13	-0.73	0.08	0.06	0.41	-0.18	0.82	0.17	0.24
<i>- w/o 0-5 children & Husband > 40</i>										
1	0.02	0.50	0.30	1.62	0.62	-0.35	-0.35	1.65	0.64	0.46
2	-0.49	-0.02	-0.16	-0.28	-1.72	0.64	-0.23	-1.71	0.17	0.25
3	-0.21	0.05	0.00	0.13	0.16	1.80	-0.47	1.58	0.19	0.29

Note: 1. Leisure, 2. Domestic good, 3. Market good. 'Non traditional families' are selected as those in which both members work more than 30 hours a week. 'Traditional families' denotes families where the female partner is a housewife.

Tab. 3 Estimates of the Sharing Rule: traditional and non traditional families

Parameters	<i>Non traditional families</i>				<i>Traditional families</i>			
	<i>all</i>	<i>without children</i>	<i>with 0-5 children</i>	<i>w/o 0-5 children Husband >40</i>	<i>all</i>	<i>without children</i>	<i>with 0-5 children</i>	<i>w/o 0-5 children Husband >40</i>
$\theta (w_1)$	0.107 <i>0.045</i>	0.160 <i>0.044</i>	0.077 <i>0.031</i>	-0.197 <i>0.022</i>	-0.005 <i>0.009</i>	-0.006 <i>0.017</i>	0.068 <i>0.011</i>	-0.005 <i>0.005</i>
$\theta (w_2)$	-0.173 <i>0.042</i>	-0.221 <i>0.046</i>	-0.259 <i>0.030</i>	0.595 <i>0.101</i>	0.167 <i>0.038</i>	0.217 <i>0.038</i>	-0.025 <i>0.044</i>	0.179 <i>0.019</i>
$\eta^1 (y_1)$	-0.001 <i>0.001</i>	-0.001 <i>0.001</i>	0.000 <i>0.001</i>	0.000 <i>0.000</i>	0.000 <i>0.000</i>	0.000 <i>0.000</i>	-0.001 <i>0.001</i>	0.000 <i>0.000</i>
$\eta^2 (y_2)$	0.004 <i>0.001</i>	0.005 <i>0.001</i>	0.020 <i>0.003</i>	0.001 <i>0.001</i>	0.000 <i>0.000</i>	0.000 <i>0.000</i>	0.001 <i>0.001</i>	0.000 <i>0.001</i>
$\lambda (\gamma)$	-0.068 <i>0.030</i>	- -	-0.043 <i>0.044</i>	-0.162 <i>0.072</i>	-0.002 <i>0.020</i>	- -	0.136 <i>0.048</i>	0.069 <i>0.034</i>

Notes: Heteroskedasticity-consistent standard errors in italics.

Tab. 4 Intra-household allocation of resources by gender
(Male share)

	<i>Non traditional families</i>		<i>Traditional families</i>	
	<i>Actual</i>	<i>Estimated</i>	<i>Actual</i>	<i>Estimated</i>
<i>All</i>	0.59	0.56	0.60	0.59
<i>- w/o children</i>	0.60	0.59	0.59	0.58
<i>- with 0-5 children</i>	0.60	0.56	0.59	0.58
<i>- w/o 0-5 children H. age>40</i>	0.61	0.58	0.60	0.60

Tab. 5 Contribution of Each Parent to the Cost of a Child*a) Non traditional families*

	<i>Household equivalence scale</i>	<i>Contribution by parents</i>	
		<i>Father</i>	<i>Mother</i>
<i>Child 0-2</i>	0.98	0.13	-1.14
<i>Child 3-5</i>	1.03	0.96	0.04
<i>Child 6-17</i>	1.03	1.23	-0.23

b) Traditional families

	<i>Household equivalence scale</i>	<i>Contribution by parents</i>	
		<i>Father</i>	<i>Mother</i>
<i>Child 0-2</i>	1.003	0.00	1.00
<i>Child 3-5</i>	1.044	0.57	0.43
<i>Child 6-17</i>	1.022	0.73	0.27

References

- Addabbo, T. and A. Caiumi (1998): "Extended Income and Inequality by Gender in Italy", paper presented at the International Association for Research in Income and Wealth, Cambridge, England 23-29 August 1998.
- Apps, P.F. and R. Rees, (1988): "Taxation and the Household", *Journal of Public Economics*, 35, 155-168.
- Apps, P.F. and R. Rees, (1996): "Labor Supply, Household Production and Intra-family Welfare Distribution", *Journal of Public Economics*, 60, 199-219.
- Apps, P.F. and R. Rees, (1997): "Collective Labor Supply and Household Production", *Journal of Political Economy*, 105, 178-190.
- Apps, P.F. and E. Savage, (1989): "Labour Supply, Welfare Rankings and the Measurement of Inequality," *Journal of Public Economics*, 39:335-364.
- Becker, G.S. (1981): "*A Treatise on the Family*", Cambridge, Mass.:Harvard Univ. Press.
- Benjamin, D. (1992): "Household Composition, Labor Markets, and Labor Demand: Testing for Separation in Agricultural Household Models," *Econometrica*, 60: 287-322.
- Blundell, R., P.A. Chiappori, T. Magnac and C. Meghir (1998): "Discrete Choice and Collective Labor Supply", Mimeo, University College, London.
- Blundell, R. and I. Walker (1986): "A Life-Cycle Consistent Empirical Model of Family Labor Supply Using Cross-Section data", *Review of Economic Studies*, 175, 539-558.
- Bourguignon, F., M. Browning and P.A. Chiappori, (1995): "The Collective Approach to Household Behavior", *Working Paper 95-04*, Paris: DELTA.
- Bourguignon, F., M. Browning, P.A. Chiappori and V. Lechene (1993): "Intra-Household Allocation of Consumption: a Model and some Evidence from French Data", *Annales d'Economie et de Statistique*, 29, 137-156.
- Bourguignon, F. and P.A. Chiappori, (1992): "Collective Models of Household Behavior: an Introduction", *European Economic Review*, 36, 355-364.
- Browning, M. and P.A. Chiappori (1998): "Efficient Intrahousehold Allocations: A General Characterization and Empirical Tests", *Econometrica*, 66:1241-1278.
- Browning, M., F. Bourguignon, A. Chiappori and V. Lechene (1994): "Incomes and Outcomes: a Structural Model of Intra household Allocation", *Journal of Political Economy*, Vol.102, No. 6: 1067-1096.
- Caiumi A. and F. Perali, (1997): "Female Labor Force Participation A Comparison between Urban and Rural Households in Italy", *American Journal of Agricultural Economics*, 79, 595-601.
- Chiappori, P.A. (1988): "Rational Household Labor Supply", *Econometrica*, 56 (1): 63-90.

- Chiappori, P.A. (1992): "Collective Labor Supply and Welfare", *Journal of Political Economy*, Vol.100, No. 3: 437-467.
- Chiappori, P.A. (1997): "Introducing Household Production in Collective Models of Labor Supply", *Journal of Political Economy*, 105, 191-209.
- Chiappori, P.A., B. Fortin and G. Lacroix (1998): "Household Labor Supply, Sharing Rule and the Marriage Market", Manuscript, 1-30.
- Chiuri, M. C. (1998): "A Model for the Household Labor Supply: An Empirical Test On a sample of Italian Household with Pre-School Children", *Quaderni dell'Istituto di Economia e Finanza*, 20, 1-29.
- Cigno, A. (1996): "Cost of Children, Parental Decisions, and Family Policy", *Labor* 10(3), 461-74.
- Del Boca, D. (1997): "Intrahousehold Distribution of Resources and Labor Market Participation Decisions", *The Economics of the Family*, Routledge.
- Fortin, B. and G. Lacroix (1997): "A Test of the Unitary and Collective Models of Household Labor Supply", *Economic Journal*, 107, 933-955.
- Hausman, J. (1981): "Labor Supply", in H. J. Aaron and J. A. Pechman (Eds.), *How Taxes Affect Economic Behavior*, Brookings Institution, Washington, D.C.
- Horney, M.J. and M.B. McElroy, (1988): "The Household Allocation Problem: Empirical Results from a Bargaining Model", *Population Economics*, 6: 15-38.
- Jenkins, S.P. and N.C. O'Leary (1994): "Household Income plus Household Production: the Distribution of Extended Income in the U.K.", Economics Discussion Paper 94-14, University of Wales, Swansea.
- _____ and _____ (1995): "Modelling Domestic Work Time", *Journal of Population Economics*, 8, 265-279.
- _____ and _____ (1996): "Household Income plus Household Production: the Distribution of Extended Income in the U.K.", *Review of Income and Wealth*, 42(4), 401-419.
- Kawaguchi, A. (1994): "Testing Neoclassical and Non-neoclassical Models of Household Labor Supply", *Applied Economics*, 29, 9-19.
- Kooreman, P. and A. Kapteyn (1986): "Estimation of Rationed and Unrationed Household Labor Supply", *Economic Journal*, 96, 398-412.
- ISTAT (1993): *Indagine Multiscopo sulle Famiglie. Anni 1987-1991. L'Uso del Tempo in Italia*. Vol. 4, Roma.
- Lundberg, S. (1988): "Labor Supply of Husbands and Wives: A Simultaneous Equations Approach", *The Review of Economics and Statistics*, 70, 224-235.
- Lundberg, S. and R.A. Pollak (1993): "Separate Spheres Bargaining and the Marriage Market", *Journal of Political Economy*, 101, 988-1011.

- Lundberg, S. and R.A. Pollak (1994): "Non-cooperative Bargaining Models of Marriage", *American Economic Review Papers and Proceedings*, 84, 132-137.
- Lundberg, S. and R.A. Pollak (1996): "Bargaining and the Distribution in Marriage", *Journal of Economic Perspectives*, 10, 139-158.
- Lundberg, S., R.A. Pollak and T.J. Wales (1997): "Do Husbands and Wives Pool their Resources? Evidence from U.K. Child Benefit", *Journal of Human Resources*, 22, 463-480.
- Manser, M. and M. Brown (1980): "Marriage and Household Decision Making: a Bargaining Analysis", *International Economic Review*, 21, 31-44.
- McElroy, M.B. and M.J. Horney, (1981): "Nash Bargained Household Decisions: (Toward a Generalization of the Theory of Demand)", *International Economic Review*, 22, 333-349.
- Nash, J. (1953): "Two-Person Cooperative Games", *Econometrica*, 21: 128-140.
- Perali, F. (1998a): "Full Income of Italian Farm-Households", Dipartimento di Scienze Economiche, Università degli Studi di Verona, Working Paper No.8.
- Perali, F. (1998b): "An Econometric Comparison of Household Models: full income, gender and labor issues of a sample of Italian farm-households", paper presented at the International Association for Research in Income and Wealth, Cambridge, England 23-29 August 1998.
- Perali, F. (1999): "The Behavioral and Welfare Analysis of Consumption," Springer-Verlag, forthcoming.
- Phipps, S.H. (1997): "What is the Income "Cost of a Child"? Exact Equivalence Scales for Canadian Two-Parent Families", *The Review of Economics and Statistics*, 157-164.
- Pollak, R.A. and T.J. Wales (1981): "Demographic Variables in Demand Analysis," *Econometrica*, 49, 6, 1533-1551.
- Schultz, T. P. (1990): "Testing the Neoclassical Model of Family Labor Supply and Fertility", *Journal of Human Resources*, 25, 599-634.
- Stern, N. (1986): "On the Specification of Labor Supply Functions", in Blundell R. and I. Walker (eds.), *Unemployment, Search and Labor Supply*, Cambridge: Cambridge University Press.
- Thomas, D. (1990): "Intra-Household Resource Allocation: An Inferential Approach", *Journal of Human Resources*, 25, 635-664.
- Udry, C. (1996): "Gender, Agricultural Production, and the Theory of Household", *Journal of Political Economy*, 1010-1046.

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