



# Income taxation, labour supply and housework: A discrete choice model for French couples <sup>☆</sup>



Jan Kabátek <sup>a</sup>, Arthur van Soest <sup>a</sup>, Elena Stancanelli <sup>b,\*</sup>

<sup>a</sup> Netspar, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, The Netherlands

<sup>b</sup> CNRS, Paris School of Economics, 106-112 Boulevard de l'Hopital, 75013 Paris, France

## HIGHLIGHTS

- Joint taxation of spouses' incomes is likely to discourage female labour supply.
- Joint taxation is likely to reinforce female specialization in house work.
- We study how switching to independent taxation affects spouses' time allocation.
- We find that the husband's house work increases while the wife's housework drops.
- We conclude that the wife's labour supply increases while the husband's hours fall.

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## ABSTRACT

Earlier studies suggest that income taxation may affect not only labour supply but also domestic work. Here we investigate the impact of income taxation on partners' labour supply and housework, using data for France that taxes incomes of married couples jointly. We estimate a household utility model in which the marginal utilities of leisure and housework of both partners are modelled as random coefficients, depending on observed and unobserved characteristics. We conclude that both partners' market and housework hours are responsive to changes in the tax system. A policy simulation suggests that replacing joint taxation of married spouses' incomes with separate taxation would increase the husband's housework hours by 1.3% and reduce his labour supply by 0.8%. The wife's market hours would increase by 3.7%, and her housework hours would fall by 2.0%.

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## 1. Introduction

Theoretical studies of income taxation conclude that income taxes may affect not only individual labour supply but also the amount

of domestic work produced within the household. Income taxation is likely to affect labour supply and housework hours in opposite directions because downward changes in the individual rewards from work reduce the individual opportunity cost of housework and thus, housework becomes more attractive than market work. There is limited empirical evidence on this issue. This paper adds to the literature by estimating a discrete choice model of both partners' market and housework hours. Using these estimates, we simulate how a change from joint to separate taxation of married spouses' incomes affects spouses' hours of market and non-market work. This is especially interesting since France is one of the few OECD countries that still tax the incomes of married couples jointly.

Apps and Rees (1988, 1999, 2011) argue that although household production is not taxed (which is unavoidable since its output cannot be observed), the taxation of income is likely to affect not only labour supply but also housework hours of spouses. In particular, married women's labour supply is likely to increase when replacing

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\* Corresponding author. Tel.: +33 1 44 07 83 50.

E-mail address: [elena.stancanelli@univ-paris1.fr](mailto:elena.stancanelli@univ-paris1.fr) (E. Stancanelli).

joint taxation by separate income taxation while housework hours are expected to fall.<sup>1</sup> Leuthold (1983) estimated the tax elasticities of housework of husband and wife in one and two-earner US households, using a single equation framework, and found that (joint) income taxation increases housework hours of women and reduces housework hours of men. Gelber and Mitchell (2012), focusing on American single women, concluded that when the economic rewards for participating in the labour force increase, single women's market work increases and their housework decreases. Rogerson (2009) examined the effects of taxation on housework and labour supply in the US and Europe from a macroeconomic perspective, and found that when accounting for home production, the elasticity of substitution between consumption and leisure becomes almost irrelevant in determining the response of market hours to higher taxes.

In this paper we estimate a discrete choice model of both partners' market labour supply and housework hours. Partners' time allocation choices are modelled as the outcome of maximizing a household utility function which includes household net income among its arguments. The model accounts for corner solutions (non-participation) in the labour market as well as non-participation in housework. Fixed costs of paid work are also incorporated. To approximate continuous hour decisions, each household's choice set is discretized and has 2401 points. The use of a discrete choice specification enables us to incorporate non-linear taxes and welfare benefits.

The model is estimated on data drawn from the 1998–1999 French Time Use Survey. This survey has the advantage of covering a period during which the incomes of French married spouses were taxed jointly and the incomes of cohabiting partners' were taxed separately. Moreover, a time diary was collected for both partners in the household on the same day, which was chosen by the interviewer – in addition to a standard household questionnaire and an individual questionnaire. We observe both partners' market labour supply, housework hours, individual earnings, and household income, as well as the presence and age of children and other individual and household characteristics.

We find positive own net wage elasticities of market work (equal to 0.20 for the male partner and 0.55 for the female partner) and negative own wage elasticities of housework hours (equal to  $-0.34$  for the male partner and  $-0.36$  for the female partner). An increase in the partner's wage rate reduces own market hours and increases own housework hours. These cross effects are smaller though than the own-wage effects, as usually found for market work. Own and cross-wage effects are larger for the wife's market hours than for the husband's, as it is often found in empirical labour supply studies.

Finally, we simulate the effects of a shift from the current system of joint taxation of married spouses' incomes to separate income taxation.<sup>2</sup> Joint taxation of spouses' incomes is mandatory in France. Separate income taxation is applied in most OECD countries, though in some countries (for example, the US and Spain), married couples have the option to choose between separate or joint taxation of their incomes. In line with the theoretical expectations, we find that replacing joint taxation of married spouses' incomes with separate taxation would lead to opposite effects for the husband (often the main earner) and the wife (usually the secondary earner): her labour supply would increase while his would

fall; and her housework would fall while his would increase. We conclude that replacing joint taxation with separate taxation of married spouses' incomes would increase the wife's participation in paid work by 2.3%–points and her average market hours by 3.7%, while her housework hours would drop by 2.0%. The husband would partly compensate for the changes in the wife's time allocation by increasing his housework hours by 1.3% and reducing his market hours by 0.8%. These effects, though statistically significant, represent only a small step towards balancing market and non-market work of the husband and the wife.

The structure of the paper is as follows. The model is presented in Section 2. Section 3 provides an overview of the French income tax system. The data are described in Section 4. The estimation results and the simulations are discussed in Section 5. Section 6 concludes.

## 2. The discrete choice model

Our model is an extension of the unitary discrete choice model of household labour supply of van Soest (1995).<sup>3</sup> Here we allow individuals in a couple to choose between market work, housework, and leisure. Conventional models allow individuals to choose between market work and everything else, thus treating housework as “pure” leisure. In our model household utility depends on both partners' time allocation and on after-tax household income. This last varies with the allocation of hours of market work chosen by the partners and their gross wage rates, given the tax and benefits system. We also specify fixed costs of market work and allow for unobserved heterogeneity in partners' preferences. The choice set is discretized and includes an error term that is specific to each possible choice under a random utility framework.

### 2.1. Theoretical setup

Formally, let  $m$  denote the ‘husband’ and  $f$  the ‘wife’ (naming for the sake of simplicity, the female partner as the ‘wife’ and the male partner as the ‘husband’, regardless of the couple marital status), let  $t_m^l$  and  $t_f^l$  be the leisure hours of husband and wife,  $t_m^w$  and  $t_f^w$  their labour supplies, and  $t_m^h$  and  $t_f^h$  their housework hours. The utility maximized by the couple household is a function of partners' labour supply, housework, leisure and the ensuing after tax household income. Because the total time allocation is fixed (it cannot exceed 24 h a day), we can write utility as a function  $V$  of only five arguments, taking market work as the residual category (see time constraint below):

$$V = V(t_m^l, t_m^h, t_f^l, t_f^h, y). \quad (1)$$

The budget constraint (2) gives family income  $y$  after taxes and benefits as a function of gross earnings, total household non-labour income  $Y_0$ , and the amount of taxes and benefits  $T$ ,<sup>4</sup> which depends on the various income components and on household characteristics  $X$ :

$$y = w_m t_m^w + w_f t_f^w + Y_0 - T(Y_0, w_m t_m^w, w_f t_f^w, X) - \mathbf{1}\{t_m^w > 0\} FC_m - \mathbf{1}\{t_f^w > 0\} FC_f. \quad (2)$$

Partners' gross wage rates are denoted by  $w_m$  and  $w_f$ . The final two terms reflect the fixed costs of market work of each partner (where  $\mathbf{1}\{\cdot\}$  denotes the indicator function as standard). The household also

<sup>1</sup> See also Kleven et al. (2010) for a recent treatment of the optimal taxation of couples. Alesina et al. (2011) analyse how applying different income tax rates for secondary and primary earners (“selective” taxation) can affect the distribution of market work and housework within the household.

<sup>2</sup> This extends the work of, for example, Steiner and Wrohlich (2004) and Callan et al. (2009), who estimated the influence of a similar reform of income taxation for Germany and Ireland, respectively, but only looked at market work of the two partners. However, we leave the nature of the welfare system unchanged which is such that welfare payments are means-tested against total household income for both married and cohabiting couples and may, therefore, discourage labour supply of the secondary earner in the household (usually the female partner).

<sup>3</sup> A discrete choice model of labour supply has also been used by, for example, Aaberge et al. (1995, 1999), Hoynes (1996), and Keane and Moffitt (1998). See also Dagsvik (1994) on the theoretical foundation of the usual functional form assumptions in this type of model.

<sup>4</sup>  $T$  also captures welfare transfers (see Section 3), which can be seen as negative tax payments.

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