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ABSTRACT

Is the Household Demand for In-Home Services Sensitive to Tax Reductions? The French Case*

Our Paper is concerned with the impact of tax reductions on the demand for services in the home. For that purpose, we consider the particular case of the French legislation voted in 1991. This law allows households employing paid help in the home to deduct from their income tax 50% of the sums paid out, subject to an annual ceiling. Did the reduction in overall cost of jobs in the form of services to individuals stimulate the household demand for these services? To analyse this problem, we estimate a structural model of demand for in-home services by using household individual data collected by INSEE (Paris) in 1996. Our estimations show that the relative marginal effect of a price variation on the probability of a strictly positive demand for in-home services is negative; its absolute value decreases with the educational level and with the income level of the household. It is generally higher for households without children less than 6 years old. These results suggest that a differentiated tax reduction, varying with the household income level and with the presence of young children in the household, should have a higher effect on the demand for in-home services than a uniform tax credit, such as the one granted in France since 1991.

JEL Classification: D13 and J12

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NON-TECHNICAL SUMMARY

Since the early 1990s, the French authorities have introduced various measures aimed at encouraging the expansion of employment in the home by reducing its cost (tax reductions, exemption from social insurance contributions, specific benefits) and by easing the formalities connected with hiring. The jobs covered by legislation voted from 1991 on are service activities carried out in the employer's home: housework and other services, child care, educational support, care for an elderly or handicapped person. In particular, the 1991 law allows households employing paid help in the home to deduct from their income tax 50% of the sums paid out, subject to an annual ceiling. The net result of these arrangements in terms of jobs is nevertheless difficult to establish. French Labour Force Surveys make it possible to estimate the number of jobs in the home created since the introduction of the support arrangements in 1991. Numbers grew strongly between 1991 and 1997, when it was calculated that there were 470,000 people employed in the home, meaning an increase of around 120,000 (+33%) since 1991, in a period when total employment remained virtually unchanged (-0.4%). Thus, one important question, raised simultaneously in different European countries, is whether the surge in the number of wage-earners in the sector of in-home services since the introduction of the arrangements in support of home employment reveals the creation of new jobs that would not have existed in the absence of such measures. In other words, do the reduction in overall labour cost (including employees' and employers' social security contributions) of jobs in the sector of services to individuals, as a result of official subsidies and tax exemptions, stimulate the demand for the services by attracting new consumers, whose demand had not previously been effective? While the influence of income and of certain sociological factors on the decision to consume in-home services is clearly identified, that of the price is more difficult to analyse. That is why our Paper is concerned with the impact of this tax reduction on the demand for services in the home. To analyse this problem, we estimate a structural model of demand for in-home services by using household individual data collected by INSEE (Paris) in 1996. Our econometric model is derived from a simple static theoretical model in which we assume that the household is willing to pay for services in the home if and only if the market price of these services is lower than the household reservation price. The econometric model deduces the probability of a strictly positive demand for in-home services from a simultaneous two-equations model, the first equation specifying the hourly price of in-home services and the second specifying the form of the household preferences. Our estimations show that the relative marginal effect of a price variation on the probability of a strictly positive demand for in-home services is negative; its absolute value is generally higher for households without children less than 6 years old. It decreases with the educational level and with the income level of the household. Couples earning less than 115,000 francs a year in 1996 (26% of

the total) made practically no use of paid domestic service, less than 1% of them being employers. On the other hand, of the households earning more than 220,000 francs a year in 1996, 20% were employers. Recourse increases with income: almost 40% of couples earning more than 400,000 francs a year (4% of the total) paid a cleaning lady. However neither the number of children nor women's work seems to influence recourse to domestic services. To illustrate the effects of a price reduction, we consider the situation in which the households employing service-providers are completely exempted from paying employer and social security contributions. This would correspond approximately to a 30% cost reduction for the households. For a household with a monthly income equal to 40,000 French Francs, and whose members are both executives, the probability of using services at home increases by 31%. For a household in the reference group, with a monthly income equal to 6,000 Francs, this probability increases by 118%. These results suggest that a differentiated tax reduction, varying with the household income level and with the presence of young children in the household, should have a higher effect on the demand for in-home services than a uniform tax credit, such as the one granted in France since 1991.

1. Introduction

Since the early 1990s, the French authorities have introduced various measures aimed at encouraging the expansion of employment in the home by reducing its cost (tax reductions, exemption from social insurance contributions, specific benefits) and by easing the formalities connected with hiring. The jobs covered by legislation voted from 1991 on are service activities carried out in the employer's home: housework and other services, child care, educational support, care for an elderly or handicapped person. Three main measures may be distinguished.

1. Since 1991, households employing paid and reported help are granted an indirect subsidy in the form of a tax reduction for "home employment". They are allowed to deduct from their income tax 50% of the sums paid out, subject to an annual ceiling. This ceiling was set at 25,000 French Francs (FF) in 1992, subsequently raised to 26,000 FF in 1994 and later to 90,000 FF in 1995. In 1997 it was brought down to 45,000 FF.
2. When the household makes use of a home help for the purpose of looking after a child aged less than six in the home, it also receives an allowance called AGED,¹ corresponding to the exemption of the payment of all or part of the employees' and employers' social security contributions.
3. Since 1991, the employing household has had a choice of two methods for calculating employees' and employers' contributions: either on a flat-rate basis, or an actual basis. In the former case, the contributions are calculated on a flat-rate base equal to the hourly minimum wage multiplied by the number of hours worked. In the latter case, the calculation of contributions is based on the actual wage. The flat-rate calculation is less costly for the employer, but the cash benefits (retirement pension, unemployment or sickness benefit, etc.) received by the employee are lower than when the calculation is made on the remuneration actually received.

Moreover, the five-year law dated December 1993 instituted the "chèque-emploi-service".² The aim was to facilitate person-to-person relations by easing

¹AGED is the French acronym for "Allocation pour la Garde d'Enfant à Domicile" (namely, allowance for child care in the home).

²The so-called "chèque-emploi-service" is a voucher obtainable from e.g. banks and post offices usable on certain conditions to pay for domestic service bypassing the normal administrative procedures.

for both parties the complex administrative formalities associated with the reporting of the employment. It enables the employer to leave the task of calculating the amount of the social security contributions. In addition, Parliament has tried to improve and expand the supply of services obtained through the network of non-profit associations: the specific notion of authorised organisations for services to individuals was introduced on this occasion. This status is granted to non-profit associations whose activities include child care in the parents' home or assistance to the elderly and the handicapped. Lastly, laws have been passed introducing a statutory obligation for the financing of vocational training of employees at a rate of 0.15%, paid by the employer.

The net result of these arrangements in terms of jobs is nevertheless difficult to establish (see, for instance, Cealis and Zilberman, 1997, and Piketty, 1998). INSEE's Labor Force Surveys make it possible to estimate the number of jobs in the home created since the introduction of the support arrangements in 1991. Numbers grew strongly between 1991 and 1997, when it was calculated that there were 470,000 people employed in the home, meaning an increase of around 120,000 (+33%) since 1991, in a period when total employment remained virtually unchanged (-0.4%).

One important question, raised simultaneously in different European countries (see, for instance, European Commission, 1994, Antonnen and Spiliä, 1996, Sanchis-Llopis, 1999), is whether the surge in the number of wage-earners in the sector of in-home services since the introduction of the arrangements in support of home employment reveals the creation of new jobs that would not have existed in the absence of such measures.³ In other words, do the reduction in overall labor cost (including employees' and employers' social security contributions) of jobs in the sector of services to individuals, as a result of official subsidies and tax exemptions, stimulate the demand for the services by attracting new consumers, whose demand had not previously been effective? While the influence of income and of certain sociological factors on the decision to consume in-home services is clearly identified, that of the price is more difficult to analyse. And yet it is precisely on this point that the question arises as to the effectiveness of public arrangements aimed at reducing the cost of those services. If the use of family

³On this point, it is interesting to remark that the debate in Europe has focused on the effect of public policies (including tax reductions) on the creation of new jobs in the sector of in-home services, while the U.S. literature has mainly examined the effects of child care tax credits on female labor supply (see, for instance, recent contributions by Averett, Peters and Waldman, 1997, Kimmel, 1998, Blau and Hagy, 1998).

help is merely a question of tastes, there must be doubts concerning the necessity of these arrangements. On the other hand, if it turns out that such employment is price-sensitive, a policy of reducing the cost of the services will be effective.

The potential for expansion seems considerable, in fact. Households are expressing substantial unsatisfied needs. In 1996, more than 4 million households expressed the need for help in their daily lives (Flipo, 1996). Of these, more than half would have liked to have help with everyday domestic chores (housework, shopping, laundry, etc), 19% for services connected with improving their household environment (gardening, for example), and 9% for child care. The financial constraint probably explains part of the failure to consume such services: 66% of households declared having no budget available for the purpose. But prejudice can also hold back recourse to in-home services, with 18% of households regarding it as a luxury, 18% having difficulty in finding someone suitable, 12% saying they would be embarrassed to employ someone else. The transformation of these needs into actual employment therefore requires both a process of making demand effective and greater professionalism among the potential employees.

In France, the “family-jobs” sector is defined today in terms of two quite distinct professional branches: home-help services and services in the home (the so-called “domestic services”). Home helps are professionals in the social sector. They perform a public service either directly (local authorities) or through delegation (associations under contract). These employees are covered by one of the three collective agreements in force (“aide à domicile en milieu rural”, “travailleuses familiales”, “organismes d’aide à domicile”),⁴ or by the rules governing the local authority civil service. Wage-earners in the private sector of services in the home are, for their part, employed by private individuals on a personal basis or within the framework of services provided by an authorised organisation. Since 1980 they have been covered by the collective agreement for household employees. In parallel with the evolution of the legislation regarding family employment, the labor market has become considerably more complex, and more people and bodies have become involved: agency associations, intermediary associations, authorised associations for services to individuals, self-employed individuals. The complexity of the field covered by family employment, both on the demand side (characterized by highly heterogeneous requirements) and on the supply side (marked by the widely diverse status of the individuals and contractual relationships involved) makes overall diagnosis difficult.

⁴This means home help in rural areas, female family workers, and home-help organisations, respectively.

In this paper, examination of the influence of price on the use of in-home services will therefore relate only to domestic services consisting of help in everyday life: general housework, everyday cleaning and ironing, whether provided by a domestic servant or the employee of a commercial cleaning firm. This service can be carried out alongside child caring in the home. Our econometric model is estimated using a homogeneous population: single people and couples at least one of whom needs permanent care were excluded from the study.⁵ It is derived from a simple static theoretical model (see Section 2) in which we assume that the household is willing to pay for services in the home if and only if the market price of these services is lower than the household reservation price. The econometric model presented in Section 3 deduces the probability of a strictly positive demand for in-home services from a simultaneous two-equations model, the first equation specifying the hourly price of in-home services and the second specifying the form of the household preferences. Section 4 describes the data. The estimation results are commented in Section 5. Section 6 presents estimated price elasticities of the probability that the household employs an in-home service provider, and it concludes.

⁵We will not analyse nursing home care, supplied whether through public social help for families or by the private sector. For persons requiring permanent care, recourse to help in the home is tantamount to an imposed alternative to residence in a hospital or a retirement home, the quantity being determined as a function of assessed needs based on a scale of dependence and with the price set according to a means test carried out by the authorities. As a result, the problems involved in consumption of such services and those relating to the influence of the financial constraint are stated in quite different ways (see, for instance, the studies by Nyman and Bricker, 1989, and by Gertler and Waldman, 1992).

2. The theoretical model

Our model is a static model in which we assume that the household is willing to pay for services in the home if and only if the market price of these services is lower than the household reservation price. In such a context, it is clear that the public authorities should be interested in knowing the distribution of the household willingness to pay. This knowledge should allow them to predict the impact of public subsidies on the demand for this type of services.

So let us consider an economy without savings in which a represents the household demand (measured in hours) for services in the home. The unit price of these services is equal to P_a , and C represents the household consumption for other goods, whose price is equal to P_c . The household maximizes a utility function denoted $U(C, a)$; its budget constraint is

$$P_c C + P_a a \leq R$$

where R is the household disposable income. Let us denote $p_a = P_a/P_c$ the (constant) relative price of the services in the home. The budget constraint becomes

$$C + p_a a \leq W$$

with $W = R/P_c$. Then W corresponds to the household income expressed in terms of the price of the other goods. Because a is generally low relatively to C , R is very close to $P_c C$. Thus it is possible to normalize the price of C and to set it equal to 1. The program that the household has to solve is then

$$\max_{C, a} U(C, a)$$

subject to

$$C + p_a a \leq R$$

The marginal rate of substitution, which is defined as

$$r(C, a) = U'_a(C, a) / U'_c(C, a), \tag{1}$$

may be viewed as the reservation price for services in the home. In other terms, this is the price that the household is ready to pay for an additional hour of services. In equation (1), the first-order derivative of U with respect to x , denoted U'_x , is the marginal utility of x . The household is willing to consume services in the home if its reservation price for these services, which is evaluated at the level

$a = 0$ (namely when the household does not consume any service in the home, or when $C = R$), is higher or equal to their market price, i.e.

$$a > 0 \Leftrightarrow r(R, 0) \geq p_a \quad (2)$$

If $a > 0$, then a is determined by the following condition, which is derived from the budget constraint:

$$r(C, a) = p_a \quad (3)$$

Now let us assume that the utility function is separable and has the Box-Cox following form

$$U(C, a) = B \frac{(\lambda + a)^\alpha}{\alpha} + \frac{C^\beta}{\beta} \quad \text{with } \alpha < 1 \text{ and } \beta < 1. \quad (4)$$

In this expression, U is defined up to some monotonically increasing function B which characterizes the household preferences. This utility function is strictly concave with respect to C and a . This function is preferred to a CES utility function, because it does not constraint the elasticity of substitution with respect to the relative price p_a to be constant. In particular it may depend on the level of the consumption for services in the home and on the household income. Anyway let us recall that the CES utility function may be obtained as a special case of the function (4) by setting $\alpha = \beta$ and by using the increasing function $F(x) = x^{1/\alpha}$. If the utility function is specified by equation (4), the reservation price is defined by

$$r(C, a) = B (\lambda + a)^{\alpha-1} C^{1-\beta} \quad (5)$$

or equivalently by

$$\ln r(C, a) = \ln B + (\alpha - 1) \ln(\lambda + a) + (1 - \beta) \ln C \quad (6)$$

According to condition (2) and to equation (6), the household consumes a positive quantity of services in the home if and only if

$$\ln B + (\alpha - 1) \ln \lambda + (1 - \beta) \ln R \geq \ln p_a \quad (7)$$

Thus the demand for services in the home is

$$a = \begin{cases} a^* & \text{if condition (7) is verified,} \\ 0 & \text{otherwise,} \end{cases}$$

where $a^* > 0$ is the solution of the equation

$$\ln B + (\alpha - 1) \ln(\lambda + a^*) + (1 - \beta) \ln(R - p_a a^*) - \ln p_a = 0 \quad (8)$$

3. Specification of the econometric model

We assume that the household preferences B depend on some socio-demographic variables Z through the log-linear specification

$$\ln B = Z\gamma + \varepsilon_2 \quad (9)$$

The unit price for services in the home is also assumed to be a log-linear function of the explanatory variables X

$$\ln p_a = X\delta + \varepsilon_1 \quad (10)$$

Some explanatory variables may belong to Z and X . To be more precise, we set

$$X = (X_0, X_1), \delta = (\delta_0, \delta_1)', Z = (X_0, Z_1) \text{ and } \gamma = (\gamma_0, \gamma_1)',$$

where X_0 is the subvector of regressors which are simultaneously included in X and Z , δ_0 (respectively, γ_0) is the subvector of parameters which are associated with X_0 in equation (10) (respectively, in equation (9)), X_1 (respectively, Z_1) is the subvector of regressors specific to X (respectively, to Z), and δ_1 (respectively, γ_1) are the parameters associated with X_1 in equation (10) (respectively, with Z_1 in equation (9)). We assume moreover that

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \sim \mathcal{N} \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{bmatrix} \sigma_1^2 & \sigma_{12} \\ \sigma_{12} & \sigma_2^2 \end{bmatrix} \right) \quad (11)$$

The preceding assumptions and the condition (7) imply that the probability for a household with characteristics (X, Z) and with income R to have a positive demand a for services in the home is

$$\Pr(a > 0) = \Pr[\varepsilon_2 - \varepsilon_1 \geq -Z\gamma - (\alpha - 1) \ln \lambda - (1 - \beta) \ln R + X\delta]$$

This equation shows that the parameters α and λ cannot be separately identified from the constant term in $Z\gamma$. Thus, for identifiability reasons, λ is set equal to 1. This implies that

$$\Pr(a > 0) = \Phi \left[Z \frac{\gamma}{\sigma} + \frac{1 - \beta}{\sigma} \ln R - X \frac{\delta}{\sigma} \right] \quad (12)$$

where Φ is the c.d.f. of the standard normal distribution $\mathcal{N}(0, 1)$ and

$$\sigma = \sqrt{\sigma_1^2 + \sigma_2^2 - 2\sigma_{12}}$$

By setting $b = \left(\frac{\delta}{\sigma}, \frac{1-\beta}{\sigma}, \frac{\gamma}{\sigma} \right)'$ and $T = (-X, \ln R, Z)$, we get

$$\Pr(a > 0) = \Phi(Tb) \text{ and } \Pr(a = 0) = 1 - \Phi(Tb)$$

For the households which do not consume services in the home, we observe the price p_a they pay to the service-provider. For these households, the theoretical model predicts that

$$\ln p_a \leq \ln B + (1 - \beta) \ln R$$

$$\Leftrightarrow \varepsilon_2 \geq \ln p_a - Z\gamma - (1 - \beta) \ln R$$

Let us denote $\Lambda = \ln p_a - Z\gamma - (1 - \beta) \ln R$ and y the dichotomous variable taking the value 1 if the household consumes services in the home, 0 otherwise. Using the standard result stating that

$$\varepsilon_2 \mid \varepsilon_1 \sim \mathcal{N} \left(\frac{\sigma_{12}}{\sigma_1^2} \varepsilon_1, \sigma_2^2 - \frac{\sigma_{12}^2}{\sigma_1^2} \right)$$

we may easily derive the form of the sample likelihood function, which is

$$\mathcal{L} = \prod_{i=1}^N \left[\frac{1}{\sigma_1} \varphi \left(\frac{\ln p_{ai} - X_i \delta}{\sigma_1} \right) [1 - \Phi(W_i)] \right]^{y_i} \times [1 - \Phi(T_i b)]^{1-y_i} \quad (13)$$

with

$$W_i = \frac{\Lambda_i - \frac{\sigma_{12}}{\sigma_1^2} (\ln p_{ai} - X_i \delta)}{\sqrt{\sigma_2^2 - \frac{\sigma_{12}^2}{\sigma_1^2}}},$$

Φ and φ being respectively the c.d.f. and the density function of the standard normal distribution.

4. The data

This model has been estimated using data coming from the "Neighbourhood Services" Survey (Enquête sur les Services de Proximité) conducted by INSEE (Institut National de la Statistique et des Etudes Economiques, Paris) in June 1996. Households gave information on the domestic help they received regularly on the date of the survey, the identity of the service-provider (family member, neighbour, friend, domestic employee, firms, family workers, etc.), the type of service provided (housework, ironing, etc.), the time involved and the net sums paid to the service-provider before tax reductions.⁶ The household was also asked about receipt of tax reductions induced by the employment of family helpers in the home. On the other hand, no information was obtained as to whether social security contributions were paid on a flat-rate or actual basis. However, when the household is the direct employer, it is the flat-rate basis that is most frequently applied.

For reasons set out earlier, the study covers only the $N = 2,913$ couples in which the reference individual (most frequently the man) is aged between 25 and 64. Households including at least one dependent person were excluded from the analysis.⁷ The data coming from the "Neighbourhood Services" Survey make it possible to reconstitute:

- the net hourly price paid for the service, which is denoted \tilde{p}_a ; it is the net hourly wage paid to the household personnel before tax reduction in a person-to-person relationship, whether within the regulatory framework or otherwise; it can also correspond to the price paid to a service company;⁸
- the gross price of the service declared, including social security contributions paid out when the service-provider is reported by the employer to the tax

⁶INSEE's survey on "Neighbourhood Services" accordingly identifies paid recourse to a domestic help for everyday chores (housework, ironing, gardening, etc.). In 1996, 1.8 million households spent more than 20 billion French francs on these services, representing the equivalent of 250,000 full-time jobs (this amount does not include the wages paid by households to social workers who care at home about old dependent persons or children less than 11).

⁷See note 5.

⁸For each household, the survey gives the monthly net wage paid to the service-provider (denoted W_a) and the corresponding number of hours (denoted a). The net hourly wage is thus defined as

$$\tilde{p}_a = W_a / a$$

administration; in this case, contributions are calculated on a flat-rate basis⁹ and this price is equal to $p_a^g = \tilde{p}_a + 26.05$;

- the price of the service effectively borne by the household, denoted p_a , which takes into account where appropriate the tax reduction granted to households employing family workers.

For calculating p_a , we have created a variable denoted *reduc* which takes the value 1 if the household declares that it benefits from this tax reduction, 0 otherwise.¹⁰ In the absence of information on the taxes paid by the households, it is assumed that those who state that they benefit from the tax reduction do so to the maximum extent (half the gross outlay, i.e. the wages and contributions paid). It turns out in practice that the gross outlay of these households, taking account of the average duration of the recourse to family workers, does not exceed the tax-reduction ceiling. Households are assumed to be perfectly rational and informed regarding the measure. A household which states that it does not benefit from the tax reduction has no interest in paying the social security contributions and it is assumed that it obtains the service "unofficially". Consequently, we calculate the value of the effective price of the service as follows:

$$p_a = \begin{cases} 0.5 \tilde{p}_a & \text{if the household benefits from the tax reduction} \\ & (\textit{reduc} = 1) \text{ and if it receives the allowance for} \\ & \text{child care in the home (see note 1),} \\ 0.5 p_a^g & \text{if the household benefits from the tax reduction} \\ & (\textit{reduc} = 1) \text{ and if it does not receive this allowance,} \\ \tilde{p}_a & \text{in other cases.} \end{cases} \quad (14)$$

The duration of recourse to domestic service is highly variable. 80% of households having recourse to domestic service report a duration falling within a range from 1 to 8 hours a week (see Table 1). The average duration of recourse is twice

⁹The model has also been estimated with social contributions calculated on a real basis. Results are essentially the same than the ones which are obtained when calculations are made on a flat-rate basis.

¹⁰Our econometric model provides only an incomplete description of the actual behaviour regarding use of in-home services. A more complete model would have taken into account the potential relationship between the decision to use these services and the choice to report them to the tax administration and to benefit from the tax reduction.

as long when there is a child aged under 6 in the household. In that case, the housework service may be provided in combination with child caring in the home. The duration of working time that the household requires of the service-provider influences the level of the net hourly wage paid to the latter.

Table 1

Number of hours worked in the home by the employee paid by the household, according to the presence of children less than 6

Number of hours per week	All the sample	Households with at least one kid less than 6	Households without kids less than 6
Mean	7	12	5
Median	4	5	4
1st quartile	3	3	3
3rd quartile	8	17	6
Interdecile ratio	8	17	5

Sample: Couples whose head has between 25 and 64 years old (N=2,913).

Source: « Services de proximité » Survey, INSEE (1996).

The longer the hours, the lower the net hourly wage (Figure 4.1). The extreme points in Figure 1 reflect the wide diversity of situations regarding recourse to everyday domestic service. The household that consumes 300 hours per month is a couple consisting of two working people, executives in a private firm, with two young children, living in Paris, and paying 6,000 francs a month to their domestic employee. Given the very long working hours which these executives sometimes have to work (Fermanian and Baessa, 1997), as well as the often wearing travel from and to work in Paris, the parents may actually be absent from the home for close to 70 hours a week, especially if this absence is defined to include possible outings at the weekend or in the evening. The situations encountered at the other end of the scale are typically those of independent workers or professional people approaching the age of 60, no longer having children in the home, paying 150 francs for an hour of housework.

(Figure 1 must be inserted around here)

Such wide differences in hourly wages probably reflect differences in the characteristics of the service-providers or services that are not observed in this survey:

when the person employed has long years of service or provides an additional service (looking after a shop, office or surgery, answering the telephone, for example), the employer may choose to pay more by maintaining an earlier monthly wage for a reduced number of hours or demand greater responsibility. The number of hours reported may also be smaller than the reality in order to reduce the cost of social security contributions for a given unchanged net wage.

There is also wide variation in the net hourly wages paid out. The average net hourly wage is 46 francs, but for one quarter of households it is below 37 francs and for another quarter above 50 francs. Even when the first and last deciles of the distribution are excluded, the interdecile ratio is still 2 to 1 (see Table 2). In so far as it corresponds to a wage paid out, the hourly price of domestic service should depend on the traditional determinants of wages. Among the influential variables the professional experience of the employee generally plays a decisive role. The number of months of service declared for the employee in the survey provides a proxy for this. But there is little variation in the replies to this question and no relationship could be discerned between this criterion and the observed price. The wage paid out could also vary according to the characteristics of the employer. However, neither the income of the employing household, nor its socio-professional category, nor its level of education provides an explanation for the price of domestic services observed in the survey. The place of residence of the employer plays an important role: the Parisian market stands out for the higher prices paid (see Table 2). The price paid out to the service-provider is generally lower if the household benefits from the family helpers in the home tax reduction, as is the case for one employing household in two. Half the households benefiting from the tax reduction pay a net wage of less than 40 francs, whereas half of those that do not benefit from the reduction pay less than 50 francs an hour (see Table 2). In return for the social security coverage offered to the employee, the employer has perhaps a tendency to negotiate a smaller net wage. Perhaps also, this difference in wage incorporates certain implicitly-induced costs resulting from the constraint to report the wage-earning employment (as regards termination, for example). The explanatory variables introduced in the econometric model are described in Table 3.

Table 2
The hourly net wage, in francs

	Hourly net wage (\tilde{p}_a)					Percentage using services in the home
	Mean	Median	1st quartile	3rd quartile	Interdecile ratio	
The household knew the person before	47	46	38	50	1.57	19
Through relationship	45	40	37	50	2	60
Through an association or public services	48	45	37	53	2	12
Others	54	45	38	55	4.2	9
Paris	52	50	47	54	1.6	30
Provinces	44	40	36	47	2	70
The wife is working	48	42	38	50	2	78
The wife is not working	42	40	36	50	2.15	22
Tax reduction	43	40	36	47	2.15	46
No tax reduction	49	50	40	53	1.71	54
At least one kid less than 6	39	39	31	50	2.16	30
No kids less than 6	50	47	39	50	1.74	70
Overall	46	42	37	50	2	100

Sample: Couples whose head has between 25 and 64 years old (N=2,913).

Source: « Services de proximité » Survey, INSEE (1996).

Table 3
 Definitions and abbreviations of regressors

	Symbol	Abbreviation	Definition	Sample mean
Price equation (N=174)	X_0	paris	The household lives in Paris	0.30
	X_1	kid6	Presence of a child less than 6	0.30
Income	$\ln R$	$\ln R$	Logarithm of the household total disposable income	9.47
Equation of preferences (N=2,913)	X_0	paris	The household lives in Paris	0.19
	Z_1	mhigh	Man's educational level is above high school	0.20
		whigh	Woman's educational level is above high school	0.20
		agem3	Man between 35 and 45 years old	0.29
		agem4	Man between 45 and 55 years old	0.29
		agem5	Man between 55 and 65 years old	0.20
		wact	The woman is working	0.63
		wexec	The woman is an executive or a professional	0.08
		wcombi	The woman is a craftsman, a firm owner, a tradesman, a mid-level worker or a farmer	0.26
		mexec	The man is an executive or a professional	0.18
		mcombi	The man is a craftsman, a farmer, a firm owner or a tradesman	0.13
	more4r	More than 4 rooms in the house	0.44	

Sample: Couples whose head has between 25 and 64 years old (N=2,913).
 Source: « Services de proximité » Survey, INSEE (1996).

5. Results

The parameter estimates of our econometric model are given in Table 4. Table 4 shows that the probability of recourse to domestic services is strongly influenced by income. The higher the couple's income, the greater this probability: such recourse represented a net outlay of 900 francs a month on average in 1996. Couples earning less than 115,000 francs a year in 1996 (26% of the total) made practically no use of paid domestic service, less than 1% of them being employers. On the other hand, of the households earning more than 220,000 francs a year in 1996, 20% were employers. Recourse increases with income: almost 40% of couples earning more than 400,000 francs a year (4% of the total) paid a cleaning lady.

Couples headed by an executive constitute 54% of employing households, although accounting for only 18% of couples. At the other extreme, only one couple in a hundred where the head is a blue-collar worker has recourse to this type of service. It is also couples where the wife is an executive or practices a profession that have most recourse to a cleaning lady, one in three being employers. For identical income, couples who are executives are three times as likely to have a domestic employee as couples in general (the proportions being 18% and 6%, respectively). Moreover, for identical income and other characteristics, the probability that a couple will have recourse to domestic services is much higher when one of the two partners is an executive (see Table 4).

On top of the professional status effect comes that of the educational level: *ceteris paribus*, those with a higher education level resort more willingly than the others to the employment of a domestic servant (see Table 4). In more than half the employing couples, the wife's educational level is above high school. Executives and people with higher education levels generally receive relatively high hourly wages; in other words, their working time carries a high price. Someone who attributes a higher price to his or her own time than the hourly cost of a domestic employee has an interest in delegating household tasks. On the other hand, someone whose hourly wage is below the hourly cost of the domestic employee has an interest in carrying out household tasks, even at the cost of working less.¹¹ In terms of opportunity costs, the individuals having recourse to such domestic help are those with a high productivity on the labor market, at least equal to that

¹¹This is an application of Becker's classical argument on the allocation of time (see Becker, 1965, 1991).

prevailing in the sector of domestic services.¹²

Sociological studies have reached the conclusion that in low social classes, social norms induce the woman to play her role of housewife and to do all the domestic work herself (see, among many others, Goffman, 1977, Berk, 1985, Brines, 1994, and Kaufmann, 1997). Other explanations could be invoked to explain why executives and people with higher qualifications resort more often to a cleaning lady's services. Apart from the fact that they are more accustomed to delegate work, their trade-off between consumption and leisure is more often in favour of domestic services because their working time (journeys included) is longer (see Fermanian and Baessa, 1997) and because they try to free more time for leisure (excluding domestic activity).

Neither the number of children nor women's work seems to influence recourse to domestic services. When the domestic work represents a heavy burden or when the time that can be devoted to it is scarce, recourse to domestic services could be expected to become more prevalent. Logically, lack of available time for domestic activities ought to incite couples both of whose members work to delegate their domestic tasks more often. Couples in which the wife has a job do indeed have recourse to a cleaning lady 2.5 times as often as those in which the wife is not employed: 6.6% compared with 2.7% (see Flipo and Hourriez, 1996). However, the fact that labor market participation of both members of the couple is more often accompanied by recourse to a cleaning lady is mainly because the wife's work brings in additional income and because a qualified woman has a greater chance of being in work than one with few qualifications. At a given standard of living and social level, the labor market participation of the woman – and the resulting reduction in free time – raises only slightly the probability of recourse to a domestic employee. In fact, what leads to recourse to domestic services is above all the fact that the woman is – or has been in the past – an executive and much less the fact that she is actually working. One woman executive in three employs a domestic employee whether she works or not, whereas a white-collar woman virtually never does, even when she is working. *Ceteris paribus*, the apparent effect of female working fades into insignificance compared with the much stronger effects of income and professional qualification.

¹²For a more general theoretical analysis of this point, see Blanchet (1994).

Table 4

Maximum likelihood estimates of the parameters

	Variable	Parameter estimate	Standard error
Price equation	constant	3.672	(0.088)
	paris	0.224	(0.062)
	kid6	-0.302	(0.062)
Income	$\ln R$	0.882	(0.463)
Equation of preferences	constant	-7.444	(5.620)
	paris	0.128	(0.136)
	mhigh	0.295	(0.187)
	whigh	0.230	(0.166)
	agem3	0.258	(0.174)
	agem4	0.326	(0.173)
	agem6	0.455	(0.217)
	wact	0.144	(0.123)
	wexec	0.593	(0.333)
	wcombi	0.213	(0.159)
	mexec	0.142	(0.137)
	mcombi	0.353	(0.217)
	more4r	0.218	(0.147)
Covariance matrix	σ_1	0.367	(0.020)
	σ_2	1.034	(0.454)
	σ_{12}	0.134	(0.052)
Mean log-likelihood		-0.1844	
Sample size		2,913	

Sample: Couples whose head has between 25 and 64 years old.

Source: « Services de proximité » Survey, INSEE (1996).

6. Conclusions: implications for tax policy

The relative marginal effect of a price variation on the probability of recourse (denoted by RME) can be expressed as a function of the price and all the other explanatory variables contained in the model:

$$RME = \frac{\partial \ln \Pr(a > 0)}{\partial \ln p_a} = \frac{\partial \Pr(a > 0)}{\partial \ln p_a} \times \frac{1}{\Pr(a > 0)} \quad (15)$$

Equation (12) implies that the RME is estimated as

$$\widehat{RME} = \frac{1}{\hat{\sigma}} \times \frac{\varphi\left(\frac{Z\hat{\gamma} + (1 - \hat{\beta}) \ln R - X\hat{\delta}}{\hat{\sigma}}\right)}{\Phi\left(\frac{Z\hat{\gamma} + (1 - \hat{\beta}) \ln R - X\hat{\delta}}{\hat{\sigma}}\right)} \quad (16)$$

The probability of recourse is a decreasing function of price: the lower the price, the larger the number of households that will consume domestic services. But the impact of a fall in the price of domestic services on recourse is by no means uniform. The price elasticity of the probability of recourse is not constant and depends on all the variables contained in the model. Figure 2 depicts the value, calculated with parameter estimates of our model, of the relative marginal effect of a price variation on the probability that the household uses services in the home. This value is calculated for different income levels and for various types of households. The reference group consists of households living outside Paris with the following characteristics: they have no kids less than 6 years old, both spouses have less than high school education, they are between 25 and 35 years, they both are manual workers (or office employees), and they live in a housing unit with less than four rooms. For other groups, differences with respect to the reference group are as follows:

- in group 2, the households live in Paris;
- in group 3, the couples have at least one child less than 6 and their house has more than four rooms;
- in group 4, both members of the couple are mid-level workers and their educational level is above high-school;

- group 5 is identical to group 4, but couples have at least one child less than 6;
- in group 6, the man is an executive, the woman is a mid-level worker, but their educational level is above high-school;
- in group 7, both are executives, their educational level is above high-school, and they live in Paris;
- group 8 is identical to group 7, but the couples have at least one child less than 6.

The household income for each group varies between a lower bound (the 2nd decile) and an upper bound (the 9th decile) chosen from the observed income distribution of the group.

(Figure 2 must be inserted around here)

Our calculations show that the relative marginal effect of a price variation on the probability of recourse is negative; its absolute value decreases with the educational level and with the income level of the household. It is generally higher for households without kids less than 6 years old. To illustrate the effects of a price reduction, we consider the situation in which the households employing service-providers are completely exempted from paying employer and social security contributions. This would correspond approximately to a 30% cost reduction for the households. For a household with a monthly income equal to 40,000 French Francs, and whose members are both executives, the probability of using services at home increases by 31%. For a household in the reference group, with a monthly income equal to 6,000 Francs, this probability increases by 118%.

Consequently, our results suggest that a differentiated tax reduction, varying with the household income level and with the presence of young children in the household, should have a higher effect on the demand for in-home services than a uniform tax credit, such as the one that is offered in France since 1991. However a complete description of the effects of a differentiated tax credit cannot be achieved in this paper. Previously more empirical work needs to be done. In particular, a further study should take into account the endogeneity of the decision to report the employment of a service-provider to the tax administration in order to benefit from the tax credit. It should also incorporate the distinction between public and private supply of in-home services, and the different types of services

provided. However such an extension would require a much larger sample and more burdensome techniques¹³ than the ones we have used in this first study.

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¹³For example, simulated maximum likelihood procedures, such as the ones implemented by Keane and Moffitt (1998).

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Figure 1: Hourly wage paid to the employee vs. hours of work



