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Labour and leisure costs of informal caregivers

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Abstract

In this work, we study whether labour and leisure costs reported by informal caregivers must be analysed separately, using two comparable Spanish samples, for the years 1994 and 2004. We do this since informal care introduces an additional time constraint on the individual, which complicates the usual trade-off between leisure and work. We find that labour and leisure costs cannot always be identified separately.

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1. Introduction

It is well-documented in the economic literature that, even in the short term, informal caregivers are potentially more exposed to labour market disadvantages, and to the apparent adverse effects that informal care activities produce in the form of foregone earnings. Existing studies of the supply of informal care mainly study the influence of informal care responsibilities on the labour supply of the caregivers, relative to non-caregivers (Carmichael and Charles 1998, 2003, Heitmueller 2007). However, they do not consider the importance of studying labour and leisure costs jointly, since informal care introduces an additional time constraint on the individual, which complicates the usual trade-off between leisure and work, or leisure and consumption. In this paper, we extend prior studies by distinguishing between labour and leisure costs.

This is relevant since, as Spillman and Pezzin (2000) explain, full-time workers have maintained or even increased their efforts as primary caregivers, and many informal caregivers combine both work and caring responsibilities. For a government concerned with bringing people back into the labour market, it is necessary to identify those factors that determine labour and leisure costs for the caregivers, rather than studying the differences between caregivers and non-caregivers. For example, if the caregiver does not report labour cost as a consequence of devoting time to care activities, the individual is unlikely to return to the labour market, or to increase the time he/she devotes to labour activities.

2. Data and Empirical Model

We use two comparable Spanish samples, *Encuesta de Apoyo Informal a los Mayores*, for the years 1994 and 2004. This comparison allows us to analyse changes in the factors that produce labour and leisure costs. The two surveys were developed by the IMSERSO (*Instituto de Mayores y Servicios Sociales*) of the Spanish Ministry of Employment and Social Services. The surveys contain information on individuals 18 years and older, residing in Spain, and devoting time to informal care activities. These surveys exclude formal caregivers who receive the equivalent of a salary, but leave open the possibility of informal caregivers receiving monetary compensation. They include any kind of assistance with activities that the care recipient can no longer perform unaided, excluding those tasks that were done for the care recipient by others prior to the current need for care. Informal care is measured at three levels, less than 2 hours, from 3 to 5 hours, and more than 5 hours, that the caregiver devotes, on average, per day.

A typical care recipient (in both years) is an 80-year-old woman, with a low level of education, receiving a pension and not married. In 2004, she

has more health problems than in 1994. We observe that a typical caregiver (again, in both years) is a middle-aged woman, married, with a low educational level. In 2004, the caregiver lives in a city of 10,000 to 100,000 inhabitants, works more than in 1994 and has fewer children. She is the primary caregiver and does these tasks each day. It is also observed that the number of workers who report devoting time to informal care has increased, and that the number of those working caregivers who report providing more hours also rose in 2004.

In the *Encuesta de Apoyo Informal a los Mayores*, informal caregivers indicated those situations that happened to them as a result of spending time caring for another individual. Using this information, we construct our variables of interest: the labour and leisure costs. The labour costs variable takes the value of "1" when the informal caregiver reports having to give up his/her job, having to reduce the time devoted to work activities, or having problems with his/her schedule, and "0" otherwise. With respect to the leisure costs variable, it is equal to "1" when the informal caregiver reports having to reduce the time devoted to leisure, and "0" otherwise. To analyse the determinants of labour and leisure costs, we estimate a two-equation probit model using the maximum likelihood estimation,

$$c_i^* = \mathbf{x}_{i1}^{'}\beta_{i1} + \mathbf{x}_{i2}^{'}\beta_{i2} + \varepsilon_i, c_i = 1 \; if \; c_i^* > 0, \; 0 \; otherwise, \tag{1}$$

$$E\left[\varepsilon_i \left| \mathbf{x}_{i1}^{'}, \mathbf{x}_{i2}^{'} \right.\right] = 0,$$
$$Var\left[\varepsilon_i \left| \mathbf{x}_{i1}^{'}, \mathbf{x}_{i2}^{'} \right.\right] = 1 \quad (i = h, l)$$
$$Cov\left[\varepsilon_h, \varepsilon_l \left| \mathbf{x}_{h1}^{'}, \mathbf{x}_{h2}^{'}, \mathbf{x}_{l1}^{'}, \mathbf{x}_{l2}^{'} \right.\right] = \rho$$

where c_h^* and c_l^* represent the labour and leisure costs for the informal caregiver, respectively, $\mathbf{x}_{i1}^{'}$ is a vector of demographic characteristics of both the caregiver and the recipient and $\mathbf{x}_{i2}^{'}$ is a vector that includes the variables to control for the decision process, as in Marcén and Molina (2011).

The variables indicating the demographic characteristics of the informal caregiver include her age, her gender, her educational level, her marital status, her number of children, her income (considered at the household level), and the size of her city of residence, and whether she receives monetary compensation for care activities. With respect to the recipient's characteristics, we observe her income and whether she receives a pension. We control for the caring-time, considering as reference the variable that indicates less than two hours spent on caring-time.[1] We include a variable to control whether the care recipient lives with her caregiver. We also include variables to control

[1] Respondents are only asked one of the two questions proposed by Heitmueller and Inglis (2007) "do carers choose to work fewer hours?" but not "do part time workers choose to provide informal care?" Therefore, we consider the provision of informal care as an exogenous factor in the labour and leisure cost equations.

for the frequency of care activities, and whether the care recipient receives family-member help or formal help, and whether this formal help is received from a domestic employee. We control for the care decision process by using the caregiver decision as the variable of reference, as in Marcén and Molina (2011).

We are interested in studying the endogenous nature of the leisure cost in the equation of labour cost. For the year 1994, we observe that ρ equals zero, so the model consists of independent probit equations, in which labour and leisure costs are identified separately (Greene 2003). However, in 2004, we cannot reject the hypothesis that ρ equals zero. Therefore, we estimate a recursive simultaneous-equations model in which

$$\Pr ob\left[c_h = 1, c_l = 1 \left| \mathbf{x}_{h1}^{'}, \mathbf{x}_{h2}^{'}, \mathbf{x}_{l1}^{'}, \mathbf{x}_{l2}^{'} \right.\right] =$$
$$= \Phi\left(\mathbf{x}_{h1}^{'}\beta_{h1} + \mathbf{x}_{h2}^{'}\beta_{h2} + \gamma c_l, \mathbf{x}_{l1}^{'}\beta_{l1} + \mathbf{x}_{l2}^{'}\beta_{l2}, \rho\right)$$

where $\Phi(.)$ is the cdf.

3. Discussion

Columns (1) and (2) in Table I show the marginal effects of the Probit estimation of labour and leisure costs in 1994.[2] Columns (3) and (4) show the total marginal effects of the recursive simultaneous-equations model in 2004.[3]

As expected, women report higher labour cost (with the probability of reporting labour cost being 25.9%, in 1994 and 23.3%, in 2004). Being married or cohabiting significantly decreases the probability of reporting leisure cost by 9% in 1994, but this variable is not significant in 2004. For those caregivers with a high level of income, the probability of reporting labour cost decreases by 14.2%. The size of the city of residence is clearly significant for those caregivers who live in cities with less than 10,000 inhabitants; living in such cities significantly increases the probability of reporting labour cost by 21.3 % in 2004. However, the probability of reporting leisure cost decreases significantly by 9 % in 1994. Co-residence has a consistent effect on the probability of reporting labour cost (increasing by 8.2 % in 1994 and by 11.5 % in 2004) but not on leisure cost, which is not significant, in both periods.

The probability of reporting labour cost decreases more for caregivers with a higher level of education, contrary to what is expected. We would expect that, for more highly educated caregivers, caregiving activities represent

[2] These results correspond to individuals of working age. Respondents who were not of working age were excluded, since their labour supply behaviour may not be comparable to individuals of working age. We have also repeated the analysis with the whole sample. Additionally, to control for cohort differences by education level, we have interacted carer age with the education levels. Results obtained are quite similar and are available upon request.

[3] We compute the total effects as in Rhine et al. (2006).

a higher level of foregone earnings. However, in both periods, we observe that caregivers who report having a University degree perceive less labour cost, but they report more leisure cost. This can be explained as follows: highly-educated caregivers are more likely to be married to a highly-educated person, with a high salary, and thus they do not face a costly trade-off between labour market participation and caregiving responsibilities.

For those with health problems, the probability of reporting labour and leisure cost increases, in both periods, with the probability of reporting leisure cost being greater.

Regarding other kinds of care that the care recipient receives, we find that when a family member helps, the probability of reporting leisure cost increases by 20 % in 2004, but this variable is not significant in 1994. This kind of care may be complementary to the caring-time offered by the respondent.

For the year 1994, we find that informal caring-time significantly increases the probability of reporting labour cost, but it is not significant in the case of leisure cost. This effect is maintained in 2004, although we observe that there is a level of informal care below which no significant effect is observed on the probability of reporting leisure cost. The probability of reporting leisure cost increases by about 15% when the informal caregivers devote more than five hours to care activities.

The impact of care activities on labour cost is greater after controlling for the decision process. In 1994, the family decision is positive and significantly correlated with the labour cost variable, increasing the probability of reporting labour cost by 10.2 % for those who are of working age. We find that these variables are not significant in 2004, indicating no difference in the impact of care arrangements on labour and leisure costs.

In 1994, labour and leisure costs were analysed separately. In contrast, results suggest that leisure cost played an important role in 2004, when this variable is treated as endogenous. The probability of reporting labour cost is 46.2 % greater if the informal caregiver also reports leisure costs. This finding contains an important message: labour and leisure costs cannot always be analysed separately.

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Table I: MARGINAL EFFECTS OF THE ESTIMATION OF LABOUR AND LEISURE COSTS 1994 AND 2004

	1994		2004	
	Labour Cost	Leisure Cost	Labour Cost	Leisure Cost
Leisure Cost	-	-	0.462*	-
	-	-	(0.273)	-
Caring-Time3-5	0.135**	-0.025	0.150**	0.066
	(0.063)	(0.057)	(0.062)	(0.055)
Caring-Time >5	0.276***	0.038	0.169***	0.142**
	(0.052)	(0.049)	(0.064)	(0.059)
Family Decision	0.102**	-0.037	0.048	0.052
	(0.046)	(0.041)	(0.044)	(0.039)
Recipient Decision	-0.044	0.122	0.078	-0.086
	(0.103)	(0.076)	(0.082)	(0.079)
Frequency	0.015	0.003	0.043	0.030
	(0.038)	(0.033)	(0.028)	(0.025)
Cohabitation	0.082*	-0.024	0.115**	-0.024
	(0.049)	(0.044)	(0.049)	(0.044)
Spouse	-0.004	-0.081	-0.083	-0.047
	(0.114)	(0.105)	(0.122)	(0.112)
Son/Daughter	0.068	0.036	0.057	0.012
	(0.047)	(0.042)	(0.048)	(0.044)
Relative Help	-0.064	0.024	0.049	0.200***
	(0.044)	(0.040)	(0.042)	(0.036)
Formal Help	0.140	-0.095	0.089	0.021
	(0.123)	(0.120)	(0.075)	(0.069)
Domestic Employee	-0.026	-0.162	-0.185	0.117
	(0.167)	(0.162)	(0.218)	(0.176)
Age	0.031*	0.018	0.027	0.001
	(0.016)	(0.014)	(0.019)	(0.017)
Age Square	-0.043**	-0.023	-0.032	0.000
	(0.018)	(0.015)	(0.021)	(0.018)
Low Education	-0.096*	0.048	-0.170**	0.112*
	(0.058)	(0.052)	(0.076)	(0.061)
Medium Education	-0.141	-0.005	-0.152*	0.065
	(0.088)	(0.082)	(0.079)	(0.065)
High Education	-0.178*	0.131	-0.328***	0.126*
	(0.108)	(0.084)	(0.088)	(0.073)
Female	0.258***	-0.019	0.233***	-0.060
	(0.061)	(0.060)	(0.063)	(0.055)
Marital Status	-0.003	-0.086*	-0.021	0.014
	(0.057)	(0.047)	(0.052)	(0.048)
Income Caregiver	-0.142***	0.034	-0.043	-0.041
	(0.054)	(0.049)	(0.053)	(0.046)
N Children	-0.001	0.012	0.023	-0.004
	(0.015)	(0.013)	(0.021)	(0.019)
<10,000 Inhabitants	-0.002	-0.099**	0.213***	-0.062
	(0.051)	(0.047)	(0.053)	(0.052)
10,000-100,000 Inhabitants	-0.023	-0.044	0.059	-0.057
	(0.052)	(0.048)	(0.044)	(0.042)
Health Status	0.094**	0.125***	0.135***	0.249***
	(0.044)	(0.040)	(0.042)	(0.037)
Money Transfer	-0.052	0.086**	0.022	0.038
	(0.044)	(0.039)	(0.043)	(0.039)
Pension	-0.052	0.011	0.158	0.037
	(0.095)	(0.084)	(0.127)	(0.113)
Income Recipient <300	0.121	0.051	0.140	0.075
	(0.088)	(0.078)	(0.123)	(0.105)
Income Recipient 300-600	0.026	0.052	-0.020	0.074*
	(0.095)	(0.077)	(0.053)	(0.043)
Observations	667		783	

Notes: [1] Standard errors in parenthesis [2] ***Significant at the 1% level **Significant at the 5% level *Significant at the 10 % level