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José Ignacio Giménez
Miriam Marcén
José Alberto Molina

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José Ignacio Giménez
University of Zaragoza

Miriam Marcén
University of Zaragoza

José Alberto Molina
University of Zaragoza
and IZA

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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ABSTRACT

How Does the Presence of Children Affect Dependent Care? A Psycho-Economic Approach

This paper adopts a psycho-economic approach, based on the "Demonstration Effect" hypothesis, to analyze the effects that the presence of children has on the time devoted to elder care. We combine the approach of the Social Cognitive Theory and a three-generation altruism model. Using the 2003 Spanish Time Use Survey (STUS), we confirm the "Demonstration Effect", i.e, the presence of children, while parents are engaged in elder care activities, increases by 11.63% the time devoted to these activities. Additionally, we find that time devoted to child care as primary activity increases by 11.19 minutes per day when children are present during adult care activities.

JEL Classification: D13, D64, J13, J14

Keywords: children, dependent care, psycho-economic approach, demonstration effect

Corresponding author:

José Alberto Molina
Department of Economics Analysis
University of Zaragoza
Gran Vía 2
50005 Zaragoza
Spain
E-mail: jamolina@unizar.es

1 Introduction

In the last thirty years, the rate of growth of the elderly population in Europe has dramatically increased. The EU countries face the challenge of an ageing population, with the average elderly dependency ratio forecast to rise to 53% across the EU by 2050 (Eurostat, 2000). Who will take care of us when we are old?

The number of people requiring care will increase dramatically because elderly people are more likely to experience chronic and disabling health conditions. This will generate increased need for care and social services. There are different traditions in the provision of care for the elderly, informal and formal care, and differences in the implementation of public policies dealing with this issue. Policies set by legislators are designed to cater to the needs of this expanding population, and their families, who have until now been largely unsupported. However, politicians do not take into account that these policies can affect the decisions taken by the care providers, which according to the theory of the "Demonstration Effect" may affect future intergenerational time transfers (Wolff, 2001).

The organization of families, the multiplicity of generational compositions, the variety of preferences and shifting economic roles, make family relationships more complex. Family members' relationships respond to an interaction between different generations, even though family mobility has increased, as has geographical distance and lower fertility rates. The geographical distance appears to influence the opportunity for frequency of contact between different generations.

In this context, this paper adopts a psycho-economic approach in order to study the effect that children have on their parents' time transfers. In particular, our purpose is to analyse the effects that the presence of children have on the time devoted to elder care, and to validate the "Demonstration Effect" hypothesis as an explanation of intergenerational time transfers (Cox and Stark, 1996, 2005).

To do that, we first develop a theoretical model in which we suppose a family consisting of three generations, and we analyze how the presence of children affects eldercare. We consider the possibility that the child's behaviour is conditioned by parental conduct. The parents' example in caring for their own parents, when children are present to observe them, leads to important changes that may affect the nature and quality of child development, and may influence the children's future behaviour. This "Demonstration Effect" theory is related to the evidence that habits are important in our behaviour, so repeated activities such as elder care can condition the behaviour of children when they, in turn

become adults, implanting a habit.[1]

This theoretical framework will be empirically developed by, first, specifying a Tobit model to analyze the time the parents spend on adult care activities, taking into account both the "Substitution Effect" and the "Demonstration Effect". Second, we estimate Seemingly Unrelated Regression on adult care and child care, to see how the number of children in the household, and the presence of children during the adult care activities, influences the time devoted to adult and child care activities. We consider sample selection problems and we estimate with different sub-samples, obtaining robust results.

Why do people behave in the way that they do? In psychology, behaviourists represent human behaviour as a direct and unidirectional link between stimulus and response. How people interpret the results of their own behavior informs and alters subsequent behavior. Behaviour can be affected by learning processes, so we must take into account the different ways in which learning takes place.[2] From the behaviourism perspective, learning would be laborious, if people had to rely solely on the effects of their own actions to know how to behave.[3] There is an extensive psychological literature concerning the factors between stimulus and response which determine our behaviour, expanding the relationship between the person and the situation. How are these mediating factors defined? Miller and Dollard (1941) proposed a theory of social learning and imitation that rejected behaviorist notions.[4] The Social Learning Theory incorporates the beginnings of an internal mediating variable, human cognition rather than reactive organisms shaped by environmental changes.[5] The Social Cognitive Theory (SCT), which is a learning theory, is based on the notion of modelling and vicarious experiences.[6] An important aspect of this perspective is that people learn by watching what others do, and that human thought processes are central to under-

[1] See Becker (1992).

[2] Learning is an internal process that may or may not change behaviour. Gunkelman and Johnstone (2005) explain that the brain changes structurally when it learns.

[3] For Bandura (1986), "a theory that denies that thoughts can regulate actions does not lend itself readily to the explanation of complex human behavior" .

[4] Learning theories have had a profound influence on psychological thinking and theorizing during the last two decades of the twentieth century and into the new millennium.

[5] The Social Learning Theory (SLT) incorporates the following principles of learning: reinforcement, punishment, extinction, and imitation of models. Reinforcement and punishment have unpredictable and indirect effects on both behaviour and learning.

[6] Bandura (1986) introduced the Social Cognitive Theory (SCT) with his book "Social Foundations of Thought and Action: A Social Cognitive Theory" which is a general theory of human behaviour.

standing personality, which affects our ability to make decisions. This helps to explain why people's behaviours are sometimes disconnected from their actual skills, when individuals have little prior experience of caring for the elderly. Our theoretical approach is based on the SCT.

We apply our psycho-economic framework to Spain, with this being one of the countries with a growing percentage of older residents.[7] In 1970, Spain's elderly constituted 9.7% of the population, a total of 3,300,000 people. In 2000, 6,600,000 individuals were over the age of 65, constituting 16.6% of the population.[8] This process will continue because we know that the demographic distribution of the elderly population will considerably increase by the year 2020, when baby boomers will start to retire.

We use time-diary data from the 2002-03 Spanish Time Use Survey (STUS), with this data set offering three main advantages. First, the relatively large size of the survey allows a consistent study of 20,000 families. Second, the time-diary nature of the data offers distinct advantages over more narrowly-structured data, which usually rely on memory and recall. Third, the diaries record all the primary activities in which people are engaged, and the presence of others during these activities. Thus, we are able to identify time spent on adult care activities, and the presence of children while parents are engaged in these activities.[9]

Our results argue in favour of the "Demonstration Effect" in Spain, with these being consistent with the results obtained by Cox and Stark (1996), and Cox and Stark (2005) with data from the NSFH (National Survey of Families and Households), and Wolff (2001), with evidence from France. That is to say, according to the STUS, the presence of grandchildren while their parents are engaged in caring activities is positively related to adult care activities, with this result validating the "Demonstration Effect" hypothesis.

The paper is organized as follows. Section 2 briefly reviews the literature regarding the psychological approach, the intergenerational transfer models and time use studies. Section 3 develops an intergenerational model for the care of adults, incorporating the Substitution and Demonstration Effects. Section 4 describes the data used, Section 5 describes the econometric techniques used in the estimation process, Section 6 de-

[7]Increases in longevity are a primary cause of population ageing. The Spanish have among the longest life expectancies in Europe. Disproportionately, this older population is female. A significant factor is that fertility is below replacement level in all European countries.

[8]Libro Blanco de la Dependencia en España (2005).

[9]We focus on time transfers because in Spain, financial gifts made to the elderly are not important. This may be explained by the fact that elders receive pensions during their old age.

scribes the results obtained and Section 7 sets out our main conclusions.

2 Literature

2.1 Psychological Approach

Behaviour is largely regulated through cognitive processes. To understand and explain how the decisions taken by individuals, that is, their behaviour, are influenced by the presence of others, we analyse the Social Cognitive Theory which has its roots in the Social Learning Theory.

According to the SCT, human functioning is determined by a continuous reciprocal interaction of personal factors in the form of cognition, affect, and biological events;[10] behavioural patterns, and environmental influences. This three-fold reciprocal causation is described as reciprocal determination.[11] Each can impact on, and be impacted by, the other. From this perspective, an individual's behaviour is both influenced, and has an influence. Individuals are viewed both as products and as producers of their environments and of their social systems, since human lives are not lived in isolation (Bandura, 1977a;1986;1989).

One of the most important tenets of social cognitive theory is that to learn, one must first observe. People learn by watching what others do. Learning by observing others is called "Vicarious Learning" which refers to the human ability to learn not only from direct experience, but also from the observation of others, which depends on close contact and on reinforcement.[12]

People do not absorb all the standards of behaviour to which they are exposed. Observational learning is governed by the processes of attention,[13] retention, motor reproduction,[14] and motivation (expectancies), [15] all of which may increase the likelihood that they adopt the behavior

[10]The SCT accounts for biological personal factors, such as genetic predisposition, sex, and temperament and the influences they have on human development. This theory rejects the type of evolutionism that views social behaviour as the product of evolved biology.

[11]The SCT recognizes that this reciprocal interaction does not imply that all sources of influence are of equal strength and that they do not all occur simultaneously.

[12]In addition, cognitions change over time as a function of maturation, experience and social and moral standards.

[13]The observer is most likely to selectively attend to, and model, behaviours of people who are most like themselves.

[14]For Bandura (1986), symbolizing consists of coded information, which enables people to retain a symbolic representation of the observed behaviour in their memory, and which can be used as a guide for future actions.

[15]Expectancies refer to a person's evaluation of the anticipated outcome. The capacity to regulate one's behavior is based on expectations, and expectancies provide

and repeat it in the future. This helps us to understand why individuals imitate specific behaviours (Bandura, 1977;1986;1989;1991).[16]

There are many divergent opinions as to how important is the role of parental example in a child's development.[17] Many psychologists and other behavioral scientists feel that, what determines the core of who we are as children and adults, has little to do with the behaviour of our parents. There is evidence to support the idea that our personalities are determined by a mixture of our genetic traits and of the roles that parental examples play in a child's development.[18] Parental example is not the only way to influence children's future behaviour. Nevertheless, children are probably most affected by the example set by those who raise them.

In our work, we focus on how the presence of children can influence the decision taken by their parents. We concentrate on young children because studies such as Sears et al. (1965), have explained that observational learning occurs early in life, and there can be a significant temporal variation in the time elapsed between cause and effect. Parents are producers, in the sense that they may influence the behaviour and development of their children, to guide future behaviours, and that, in turn, affects the decisions taken by parents. Parents observe the effect they have on their own children. However, we must take into consideration that parents were influenced by their own parents. They learned vicariously from the observation of their own parents; in this way they are products.

The SCT explains that effective reinforcement[19] and close contact[20] are necessary to affect children's behaviour. We analyse such effective reinforcement through the analysis of the STUS.

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the mechanism for future- oriented behavior.

[16]The construction of one's reality is a key element in human change. People take decisions on the basis of values and expectations, and impose structure on their own actions.

[17]Webley and Nyhus (2006) study the role of parents in the formation of children's economic behaviour, particularly in saving decisions. They find that personality traits lead children to similar attitudes to saving, and the future, as their parents. Chan and McNeal (2006) study the effects of Chinese parents on their children's consumer socialization.

[18]Pauli-Pott et al. 2003 show that in most cases, parental perceptions preceded the observed temperament characteristic of their children, but they cannot eliminate the effect of a genetic component.

[19]The more interaction between the socializing agents and the individuals, the more likely the increase in the response rate. Routine daily events are means of reinforcement.

[20]Individuals are most likely to model their behaviour an that of significant others.

2.2 Economic Approach

Inter-vivo intergenerational transfers take place in the form of space, time, money (financial assistance), education and wealth transmission. The study of transfers between members of the family has given rise to an abundant literature, reflected in the so-called intergenerational transfer models.

What motivates individuals to care for their parents or parents-in-law? Motivations are mixed in the population. Different motives, such as altruism,[21] exchange, reciprocity, demonstration effect, social norms, loan transfer[22] and other considerations,[23] are present throughout the life-cycle and among different households. It is difficult to identify a single motive. The bulk of the literature focuses on two hypotheses: altruism[24] and exchange.[25;26]

In our study, we focus on the analysis of elder care as a kind of time transfer from the young to the old. We concentrate on the demonstration effect thesis proposed by Cox and Stark (1996). They used a model with three generations and studied the possibility that the youngest generation will replicate the conduct of their own parents. Cox and Stark (1996;2005) suggest a reason why parents would want to subsidize the production of grandchildren: they study the demonstration effect and try to show if early transfer experience will elicit future transfer behaviour.

Wolff (2001) studies motivation for intergenerational relationships from adult children to their middle-aged ascendants. He uses a cross-sectional survey from 1992, the French Trois Générations survey. He finds that the presence of children increases the number of visits to the middle-aged parents, which supports the Demonstration Effect.

In the literature of the allocation of time, eldercare depends negatively on the number of children, since children's demands on the parent's time reduce the time the parent can spend on eldercare, due to the reallocation of time which results from having children. Considering the demonstration effect, we can predict that as this negative impact diminishes, the presence of children positively affects eldercare. The bulk of the literature concentrates on the effects that children have on parents'

[21] Gary S. Becker (1991) uses the term altruism and Robert A. Pollak (2003) uses the term deferential preferences.

[22] Children borrow from their parents, Cox (1990).

[23] Such as the strategic bequest motive, Bernheim et al. (1985).

[24] Each person's utility depends on his or her own consumption as well as on the utilities of others. Becker (1991).

[25] Money transfers are means to pay for services provided by children (Cox, 1987).

[26] See Laitner (1997) and Lafèrrere (1999).

work time, but few attempts have been made to explore the impact of the children on the upward intergenerational transfers. We provide an overview of these strands of thought.

A number of studies have relied on responses to survey questions intended to collect information on the "typical" frequency and duration of particular activities. Burda et al. (2006) study how "iso-work" and leisure have evolved in recent years in Germany, Italy, the Netherlands and the United States. They define "iso-work" as the time devoted to market (work) and non-market (home production) activities, and they conclude that the amount of leisure has decreased in recent years in the four countries, though "iso-work" has hardly changed over the period.

Other papers have studied the nature of time stress. Fontainha (2006) studied the effects of family environment on individual stress using Portuguese Time Use Survey data. The author finds that parents never, or rarely, had time to do whatever they wanted to do, and that stress affects mothers more than fathers, and affects employed mothers more than non-employed mothers. As can be seen in Fontainha (2006), children are one of the most important time stressors. Children are time-intensive commodities in the family.

The primary conceptual framework that is used to analyze the time parents spend on adult and child care activities is Becker's (1965) time allocation, or household production, model. In this model, people derive utility or satisfaction from household produced goods, such as their children's health, development and well-being. The production and enjoyment of these outcomes require purchases of goods and services and contributions of time. Parents face a technological constraint, similar to the constraint faced by firms, on how inputs of goods and time can be combined to generate the desired outcomes. Parents also have constraints on their financial resources and time. The model assumes that parents rationally choose the amounts of time they spend in different activities, including child and adult care, and the amount of goods they purchase in order to maximize utility, subject to the constraints they face (Kalenkoski et al. 2006).

Kalenkoski et al. (2006) consider that the analysis of the time devoted to child and adult care requires that such time be measured. Other studies (Burda et al. 2006; Bitmann and Wajcman, 2000; Aguiar and Hurst, 2007) have used time use surveys to analyse the allocation of time, especially the allocation of market and non-market work ("iso-work") and leisure. In this sense, the time devoted to child and adult care is included in the non-market (home production) activities. For this reason, we consider that time-use data is crucial to an analysis of the effect of children on the time devoted to adult care activities, and

the "demonstration effect". One major advantage of time diary-based evidence is that time spent on different sorts of activities can be added together to sum exactly the 1440 minutes of the day (Fisher et al., 2006). Time-use information is preferably obtained from diaries, as this method is considered more reliable than information from questionnaires (Bonke, 2005).

Some studies have examined the time devoted to childcare activities. Aguiar and Hurst (2007) analysed the trends in the allocation of time devoted to childcare activities, finding that in the last forty years in the United States there has been an increase in the time devoted to these activities. Fisher et al. (2006), using the American Heritage Time Use Study, covering the period 1965-2003, conclude that there has been a surprising increase in the time devoted to childcare activities. Bianchi et al. (2005) come to the same conclusion.

Joesch and Spiess (2006) describe and compare how many hours per week mothers reported looking after children, in nine European countries, in 1996.[27] Additionally, they explore to what extent cross-country differences in socio-demographics characteristics and parental employment contribute to differences in maternal time spent in looking after children. They find cross-country differences in the mean number of hours reported looking after children, and only a small portion of those differences is explained by variation in socio-demographic characteristics and employment status.

Kalenkoski et al. (2006), using time-diary data, study the impact of own and partner's wages on parent's provision of child care and market work, on weekdays, and on weekends and holidays. They find that increases in partner's wages increase women's primary care, and decrease their market work on weekdays. However, men's own time is only responsive to their own wage on weekend days, when they reduce their market time and increase their primary child care time in response to higher wages. Kalenkoski et al. (2006), using time-diary data, estimate the effects of family structure on the time mothers and fathers spend on primary and passive child care and market work, comparing the results for the United Kingdom and the United States. Single parents in both countries spend more time on child care than married or cohabiting parents. There are also differences in market work, with single parents in the United States working more than other parents, and single parents in the United Kingdom working less.

Kooreman and Kapteyn (1987) use time-use data on married couples for the United States to estimate models of time spent in child care and

[27] The data come from the 1996 wave of the European Community Household Panel.

other activities. Other studies of the time devoted to childcare activities on married couples are Nock and Kingston (1988), Bryant and Zick (1996), Hallberg and Klevmarken (2003). Hofferth and Sandberg (2001) examined the time spent in the presence of children and found that single-parent households spend substantially less time with children.[28]

Less evidence can be found regarding the time devoted to adults using time-use data. This is an important issue, since when people assume the role of assisting a person with impairments, or an older person, care activities account for a significant portion of their daily routines. Bittman et al., 2005 contrast two different measures of care time: an estimated average weekly hours question, and diary estimates from the 1997 national Australian Time Use Survey. They find that diaries provide information for a more robust estimate, and that even people who offer only occasional assistance to a person with impairments tend to spend the equivalent of more than 10 minutes a day providing care. Most caregivers undertake the equivalent of a part-time job to help a friend or family member. More than a quarter of Australian households caring for an adult or child provide the equivalent of a full-time employee's labour, and another quarter work between 20 and 39 total weekly hours to provide informal care.

The literature is inconclusive for two reasons. First, the theoretical approach developed by Cox and Stark (1996) has omitted other factors, which additionally affect eldercare. Second, there are limitations in the data, as the data used do not account for the presence of children, who can have an effect on dependent care (adult and child care).

We provide further insight into this subject with the use of a simple theoretical model, linking an altruism model to the "Demonstration Effect", and we carry out an empirical test of the hypotheses derived from the model.

3 The Model

We begin with a description of the basic framework, after which we analyse the model. This paper departs from standard models based on altruism, combining a model of altruism and the demonstration effect theory.

Cox and Stark (2005) consider that a mother P maximizes the expected value of her utility, $U(x, y)$ where x is "what the maximizer does for her mother", G, and y is "what the maximizer's daughter, K, does for the maximizer", P. They suppose that the daughter may imitate her mother's behaviour or not with probability $0 \leq \pi \leq 1$, as follows:

[28] All these studies use data from the United States.

$$EU(x, y, \pi) = \pi U(x, x) + (1 - \pi)U(x, y)$$

Let $\bar{x} = \bar{x}(y, \pi)$ be the solution of the maximization problem. In that case, the imitative behaviour benefits G ($\partial\bar{x}/\partial\pi > 0$). However, if there is no child $x = 0$, there are no time transfers. When they consider a family with n children, the demonstration effect "is more productive".

Our work relies on the demonstration effect theory, in which the child's behaviour is conditioned by parents who take care of their elders in order to elicit a similar conduct from their children. Jellal and Wolff (2002) explain that "The demonstration effect theory is part of the endogenous preferences literature, but provides no convincing explanation why the demonstration effect works". From a theoretical perspective there are two main problems. First "each individual is a maximizer who solves an optimization problem, taking into account the effect of his or her behaviour on the future generation. However, there is one aspect which is beyond this maximization, and this is imitating the previous generation"(Jellal and Wolff, 2002). In other words, there is an incomplete cycle. Second, "the process of acquisition of endogenous altruism is completely black-boxed" (Jellal and Wolff, 2002). To solve these problems, they focus on a model of cultural transmission of altruistic values between generations, considering altruistic and egoistic agents. In our case, we use the social cognitive theory as a framework. Vicarious learning incorporates four components: attention, retention, motor production, and motivational processes. Attention and retention affect the degree of altruism, and motor production and motivational processes influence the Demonstration Effect parameter. Individuals are viewed both as products and as producers.

The main assumption of the altruistic motive is that the utility of an agent (in this case, the parent) depends positively on the utility of the other (the grandparent). We focus on one period in which only the parent takes decisions. In this setting, we assume one-sided altruism and we also consider that the grandparent utility depends positively on the services provided by the parent. We do not develop a model of exchange, since in the case of time assistance, the grandparent does not make money transfers, or the repayment is not warranted, to their children as a payment for the services provided.

We assume a family consisting of three generations, and we consider three periods of time. In period -1 the grandparent (1^{st} generation) devotes time to care for his/her child (2^{nd} generation); in period 0 the parent decides the hours he/she devotes to child care and elder care, and in period 1 the grandchild (3^{rd} generation) decides the time he/she spends on caring for his/her parent (2^{nd} generation).

We focus on period 0. Let U_{s1} be the utility of the parent (2^{nd} generation) which takes the following form:

$$U_{s1} = U_{s1}(C_{s1}, Q, T_{s1}, U_g) \tag{1}$$

The utility of the parent depends on the level of private consumption, C_{s1}; on Q[29] which represents the child development, or child "quality", which is the output of a household production process whose inputs are parental time; on T_{s1}, which is the output of elder care; and on the utility of the grandparent, that is, U_g. The level of satisfaction is increasing in all cases. We also assume that U_{s1} is continuous, twice differentiable and quasi-concave.

In that case, the parent takes the effects of actions into account, so he/she considers the consequences of parent care for child development, and he/she provides time to produce positive child development. We point out a relationship between parent actions and child responses.

We consider a model of altruism, but we introduce in this model the demonstration effect. We should point out that assuming a model of altruism may be a strong assumption, but considering the demonstration effect, we are assuming that early transfer experience affects subsequent transfer behaviour. Although one agent makes his decisions in one period, this agent is affected by a dynamic process.

3.1 Analysis

We begin our analysis with an intergenerational model of time transfers, where the parent (2^{nd} generation) determines the hours he/she devotes to child care and elder care. We consider two scenarios. In the first, we assume that the parent's labour supply is endogenous, and in the second that the parent's labour supply is exogenous.

Case 1 *The parent allocates his/her own time, m,among three activities, (labour market ,e_{s1}; child care,h_{s1}; and elder care, t_{s1}), and his/her own resources, (nonlabour income,y_{s1}). We examine the parent's choice as follows:*

$$\underset{h_{s1},t_{s1}}{Max} U_{s1} = U_{s1}(C_{s1}, Q, T, U_g)$$
$$s.t.$$
$$C_{s1} = C_{s1}(w_{s1}e_{s1}, y_{s1})$$
$$e_{s1} = e_{s1}(m, t_{s1}, h_{s1})$$
$$T_{s1} = T_{s1}(t_{s1}, r_{s1}, w_{s1}e_{s1}, y_{s1})$$
$$Q = Q(h_{s1}, \alpha t_{s1}, c_{s1}, w_{s1}e_{s1}, y_{s1})$$

[29] The effects of child care on the development of the grandchildren.

where w_{s1} is the parent's wage, r_{s1} represents the productivity in elder care outcome and c_{s1} indicates the productivity in child quality. Additionally, α, represents the Demonstration Effect, that is, the portion of time the parent devotes to care for the grandparent when the grandchild is present. We also assume that T_{s1} and Q are marketable, so we consider that adult care and child care activities can be marketable, taking into account that the distance between agents can affect the time they devote to these activities, but they can make money transfers to achieve the same results.

The first order conditions are:[30]

$$-\frac{\partial U_{s1}}{\partial U_g}\frac{\partial U_g}{\partial t_{s1}}=(w_{s1}\frac{\partial U_{s1}}{\partial C_{s1}}\frac{\partial C_{s1}}{\partial e_{s1}}+\frac{\partial U_{s1}}{\partial T_{s1}}\frac{\partial T_{s1}}{\partial e_{s1}}+\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial e_{s1}})\frac{\partial e_{s1}}{\partial t_{s1}}+\frac{\partial U_{s1}}{\partial T_{s1}}\frac{\partial T_{s1}}{\partial t_{s1}}+\alpha\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial t_{s1}} \tag{2}$$

$$-w_{s1}\frac{\partial U_{s1}}{\partial C_{s1}}\frac{\partial C_{s1}}{\partial e_{s1}}\frac{\partial e_{s1}}{\partial h_{s1}}=\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial h_{s1}} \tag{3}$$

If individuals are becoming altruistic with respect to their parents through a demonstration effect, then they should help their elders without generating a further demonstration effect for their own children. Observers retain a symbolic representation of the modelled behavior, which then serves as a blueprint for the behaviour itself. Psychological factors interfere with the rational decision process.

We suggest that the treatment the grandparent gave to his/her own parent affects the degree of altruism of his/her son/daughter and consequently increases intergenerational time tranfers. So, we assume that $\frac{\partial U_{s1}}{\partial U_g}=\beta_{s1}(t_g^{-1})$,where β_{s1} is the degree of altruism, which depends on the time that the grandparent devotes to his/her own parent with the second generation present in the period -1. Under the SCT, the time transfers made by the grandparent to his/her own parent do not affect human behavior directly. Instead, they affect it to the degree of altruism. In this case, ascending services are not incentivised by self-interest alone. This approach suggests that the decisions taken by the son/daughter depend on the previous behaviour of his/her own parent. We also consider that $\alpha=\alpha(t_k^1)$, therefore the Demonstration Effect parameter depends on the time that the 3^{rd} generation will devote in period 1 to care for his/her own parent. If engaging in the observed behaviour produces

[30] We assume that $\frac{\partial e_{s1}}{\partial h_{s1}}<0$ and $\frac{\partial e_{s1}}{\partial t_{s1}}<0$.

results and expectations, the individual is motivated to adopt the behaviour. The parent enacts this behaviour, which seem to be effective for the 3^{rd} generation. We suppose that both β_{s1} and α are increasing in t_g^{-1} and t_k^1, respectively.

Let us denote the solution to the maximization problem as h_{s1}^* and t_{s1}^*. Solving the first order condition implicitly for h_{s1}^*,t_{s1}^* we find that[31]

$$h_{s1}^* = h_{s1}^*(w_{s1}, y_{s1}, m, r_{s1}, \alpha, c_{s1}, \beta_{s1}) \tag{4}$$

$$t_{s1}^* = t_{s1}^*(w_{s1}, y_{s1}, m, r_{s1}, \alpha, c_{s1}, \beta_{s1}) \tag{5}$$

We also obtain the hours that the parents spend in the labour market, e_{s1}^*,in equilibrium:

$$e_{s1}^* = e_{s1}^*(w_{s1}, y_{s1}, m, r_{s1}, \alpha, c_{s1}, \beta_{s1}) \tag{6}$$

On the basis of the above, we are in a position to draw a series of results on the influence of the "Demonstration Effect" and on the relationship between t_{s1}^*, t_k^1 and t_g^{-1}.

It is straightforward to deduce that changes in t_k^1 and t_g^{-1} have a positive effect on t_{s1}. Differentiating expressions 2 and 3 in equilibrium we obtain the expressions:[32]

$$\frac{\partial t_{s1}^*}{\partial t_g^{-1}} = \frac{-\frac{\partial \beta_{s1}(t_g^{-1})}{\partial t_g^{-1}} \frac{\partial U_g}{\partial t_{s1}} \frac{\partial^2 U_{s1}}{\partial h_{s1}^2}}{\Delta} > 0 \tag{7}$$

$$\frac{\partial t_{s1}^*}{\partial t_k^1} = \frac{-\frac{\partial \alpha(t_k^1)}{\partial t_k^1} \frac{\partial U_{s1}}{\partial Q} \frac{\partial Q}{\partial t_{s1}} \frac{\partial^2 U_{s1}}{\partial h_{s1}^2}}{\Delta} > 0 \tag{8}$$

We may assume that the changes in t_g^{-1} and t_k^1 can affect elder care t_{s1}^*, in the same way. Thus, the parent would like to be treated, later, by the 3^{rd} generation in the same way that he cared for his own parent, that is, an indirect process of intergenerational interaction, incorporating imitative behaviours. The parent cares for the grandparent, as he would like to be cared for himself in the future, by his own children. Formally, this expression is satisfied

$$\frac{\partial t_{s1}^*}{\partial t_{k1}^1} = \frac{\partial t_{s1}^*}{\partial t_g^{-1}} \tag{9}$$

[31] Second order conditions are satisfied.

[32] Given the second order conditions $\Delta > 0$.
$\Delta = \frac{\partial^2 U_{s1}}{\partial h_{s1}^2} \frac{\partial^2 U_{s1}}{\partial t_{s1}^2} - (\frac{\partial^2 U_{s1}}{\partial t_{s1} \partial h_{s1}})^2$

when $\frac{\partial \beta_{s1}(t_g^{-1})}{\partial t_g^{-1}} \frac{\partial U_g}{\partial t_{s1}} = \frac{\partial \alpha(t_k^1)}{\partial t_k^1} \frac{\partial U_{s1}}{\partial Q} \frac{\partial Q}{\partial t_{s1}}$. If we suppose that $\frac{\partial \beta_{s1}(t_g^{-1})}{\partial t_g^{-1}} = \frac{\partial \alpha(t_k^1)}{\partial t_k^1}$,in that case $\frac{\partial U_g}{\partial t_{s1}} = \frac{\partial U_{s1}}{\partial Q} \frac{\partial Q}{\partial t_{s1}}$.Therefore, time transfers are chosen such that the parent equalizes the effect of the time transfer t_{s1} on the utility of the grandparent with the effect of the same time transfer on the quality of the grandchildren, which is weighted by the effect of the quality of the children on the utility of the parent.

We compare this framework with the model developed by Cox and Stark (2005). In our case, if there is no child t_{s1} may be other than 0. The parent is affected by the early life-cycle experiences by way of the effect of t_g^{-1} on the degree of altruism.

We also study this model considering n grandchildren, because of the importance of transactional costs which may generate free-riding behaviours across siblings, due to the public- good nature of the time transfers. In our case, the demonstration effect may not be more productive when the number of grandchildren increase. If we consider that $t_{k1}^1 = t_{k2}^1 = ... = t_{kn}^1$, so $\alpha(t_{k1}^1, t_{k2}^1, ..., t_{kn}^1)$.In this case, we can analyse the relationship between $t_{k1}^1, t_{k2}^1, ..., t_{kn}^1$ and t_{s1}. Formally, we obtain the following expressions:

$$\frac{\partial t_{s1}^*}{\partial t_{ki}^1} = \frac{-\frac{\partial \alpha(t_{k1}^1,...,t_{ki}^1,...,t_{kn}^1)}{\partial t_{ki}^1} \frac{\partial U_{s1}}{\partial Q} \frac{\partial Q}{\partial t_{s1}} \frac{\partial^2 U_{s1}}{\partial h_{s1}^2}}{\Delta}; \ \forall i = 1, ..., n \tag{10}$$

We may suppose that $\frac{\partial t_{s1}^*}{\partial t_{k1}^1} + ... + \frac{\partial t_{s1}^*}{\partial t_{ki}^1} + ... + \frac{\partial t_{s1}^*}{\partial t_{kn}^1} = \frac{\partial t_{s1}^*}{\partial t_g^{-1}}$,so, when there are n grandchildren and $\frac{\partial t_{s1}^*}{\partial t_{k1}^1} = ... = \frac{\partial t_{s1}^*}{\partial t_{ki}^1} = ... = \frac{\partial t_{s1}^*}{\partial t_{kn}^1}$.The parent expected that the children replicate the observed behaviour. In this case, $n\frac{\partial t_{s1}^*}{\partial t_{ki}^1} = \frac{\partial t_{s1}^*}{\partial t_g^{-1}}$.Comparing this expression with 9 we deduce that when the number of grandchildren increases, the parent expects a lesser demonstration effect. Therefore, the changes, which are expected in t_{ki}^1, have less effect on t_{s1}^*.

Case 2 *The parent allocates his/her own time, m',that is the hours this agent spends on dependent care, among two activities, (child care,h_{s1}; and elder care, t_{s1}), and allocates his/her own resources, (nonlabour income,y_{s1}). We examine the parent's choice as follows:*

$$\begin{aligned}
&\underset{t_{s1}}{Max} U_{s1} = U_{s1}(C_{s1}, Q, T, U_g) \\
&s.t. \\
&C_{s1} = C_{s1}(w_{s1}\bar{e}_{s1}, y_{s1}) \\
&h_{s1} = h_{s1}(m', t_{s1}) \\
&T_{s1} = T_{s1}(t_{s1}, r_{s1}, w_{s1}\bar{e}_{s1}, y_{s1}) \\
&Q = Q(h_{s1}, c_{s1}, \alpha t_{s1}, w_{s1}\bar{e}_{s1}, y_{s1})
\end{aligned}$$

whose first order condition is of the form:

$$\beta_{s1}(t_g^{-1})\frac{\partial U_g}{\partial t_{s1}} = \frac{\partial U_{s1}}{\partial T_{s1}}\frac{\partial T_{s1}}{\partial t_{s1}} + \frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial h_{s1}}\frac{\partial h_{s1}}{\partial t_{s1}} + \alpha(t_k^1)\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial t_{s1}} \tag{11}$$

Let us denote the solution to the maximization problem as $\hat{h}_{s1}$ and $\hat{t}_{s1}$. Formally, we obtain that

$$\hat{h}_{s1} = \hat{h}_{s1}(w_{s1}\bar{e}_{s1}, y_{s1}, m, r_{s1}, \alpha, c_{s1}, \beta_{s1}) \tag{12}$$

$$\hat{t}_{s1} = \hat{t}_{s1}(w_{s1}\bar{e}_{s1}, y_{s1}, m, r_{s1}, \alpha, c_{s1}, \beta_{s1}) \tag{13}$$

It is straightforward to deduce that a changes in t_k^1 and t_g^{-1} have a positive effect on t_{s1}.Formally, we obtain that

$$\frac{\partial \hat{t}_{s1}}{\partial t_g^{-1}} = \frac{-\frac{\partial \beta_{s1}(t_g^{-1})}{\partial t_g^{-1}}\frac{\partial U_g}{\partial t_{s1}}}{\frac{\partial^2 U_{s1}}{\partial t_{s1}^2}} > 0$$

$$\frac{\partial \hat{t}_{s1}}{\partial t_k^1} = \frac{-\frac{\partial \alpha(t_k^1)}{\partial t_k^1}\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial t_{s1}}}{\frac{\partial^2 U_{s1}}{\partial t_{s1}^2}} > 0$$

In this case, we obtain the same results as in the previous case.

In this framework, let $\bar{t}_{s1}$ be the solution of the maximization problem when $\alpha(t_k^1) = 0$. We compare the time transfer $\hat{t}_{s1}$, that is, the optimum time transfers under the assumptions that there is a demonstration effect, with $\bar{t}_{s1}$,the level of time transfers without a demonstration effect. It is straightforward to deduce that $\hat{t}_{s1} > \bar{t}_{s1}$, given that $h_{s1} = h_{s1}(m', t_{s1})$, if m' is constant ($\frac{\partial m'}{\partial \alpha(t_k^1)} = 0$) and $\frac{\partial \hat{h}_{s1}}{\partial t_{s1}} < 0$, $\hat{h}_{s1} < \bar{h}_{s1}$ (Substitution Effect). So, the presence of the grandchild while the parent devotes time to his own parent, when there is a demonstration effect, decreases the hours the parent spends on child care, with m' constant. Given that

$$\frac{\partial \hat{t}_{s1}}{\partial \alpha(t_k^1)} = \frac{-\frac{\partial U_{s1}}{\partial Q}\frac{\partial Q}{\partial t_{s1}}}{\frac{\partial^2 U_{s1}}{\partial t_{s1}^2}} > 0$$

and

$$\frac{\partial \hat{h}_{s1}}{\partial \alpha(t_k^1)} = \frac{\partial \hat{h}_{s1}}{\partial t_{s1}}\frac{\partial \hat{t}_{s1}}{\partial \alpha(t_k^1)} + \frac{\partial \hat{h}_{s1}}{\partial m'}\frac{\partial m'}{\partial \alpha(t_k^1)}$$

When $\alpha(t_k^1)$ increases, if both $\hat{h}_{s1}$ and $\hat{t}_{s1}$ change positevely, it is necessary that $\frac{\partial m'}{\partial \alpha(t_k^1)} \neq 0$,which is not possible because we have supposed that m' is exogenous.[33]

If we consider the first case, we obtain results that are similar to the second case. However, when the parent devotes time to his own parent, when there is a demonstration effect, the hours the parent spends on child care may not decrease, which affects the hours this agent devotes to the labour market. Formally:

$$\frac{\partial h_{s1}^*}{\partial \alpha(t_k^1)} > 0; \frac{\partial t_{s1}^*}{\partial \alpha(t_k^1)} > 0 \rightarrow \frac{\partial e_{s1}^*}{\partial \alpha(t_k^1)} < 0$$

given that m is constant and there is Substition Effect between h_{s1}^* and t_{s1}^*. This result implies that the parent specializes in dependent care.

This model generates testable predictions, which we analyse in the next sections using Spanish data. First, we describe the Spanish Time Use Survey and then we analyse the empirical results obtained.

4 Data

The data used for the empirical analysis come from the Spanish Time Use Survey (STUS). The STUS is a national, household-based study with multiple questionnaire and time diary components that was conducted in 2002-2003. Each household in the study completed one questionnaire that provided information on household-specific characteristics. Each household member completed another questionnaire providing information on personal characteristics such as education and employment status. Time diaries were collected for each individual aged 10 and older. These diaries identified the primary and secondary nature of activities, the location of each activity, and who else was present during each activity for every 10-minute interval during a 24-hour period. In sum, the STUS obtained 45,134 individual time diaries from 2,115 families.[34] Our reference sample are people aged 24-65 who are not students, not retired and are the head of the family or are married/cohabiting with the head of the family.

We focus on two uses of time: child care and adult care. The child care activities are defined here to include physical care, teaching, playing,

[33] If m' is endogenous, and both $\hat{h}_{s1}$ and $\hat{t}_{s1}$ increase when $\alpha(t_k^1)$ increases, m' must also increase. The parent specializes in dependent care.

[34] More information can be found in the webpage of the Spanish National Statistical Agency www.ine.es/prodyser/micro_emptiem.htm.

talking and transporting children as primary activity.[35] The adult care activities are defined here to include general care of adults as primary activity.[36] We consider the time devoted to child and adult care activities, without considering if these activities are received by individuals who are part of the household or not. For example, the grandparents can live in another household but need help, to go shopping or to go to the doctor. If we only considered the care offered to individuals of the household, such situations would not be considered.

The key explanatory variables in our study are the number of children in the household and the presence of children while individuals devote time to adult care activities. To control for the number of children in the household we use three explanatory variables, for children aged 0-4, 5-12 and 13-17, respectively. The age intervals have been selected according to the degree of dependence of children. Clearly, children aged 0-4 are quite dependent on parental care (breastfeeding, changing nappies,...) in their first years, at least until they go to nursery school. In the 2003 American Time Use Survey, individuals have to keep an additional diary to report the time spent with children under 13 during the day. The 2003 ATUS considers three different dependence intervals: children under 5, children under 13, and the rest of the children, so we consider the same intervals. As a result, the dependence of children aged 0-4 might be higher than the dependence of children aged 13-17, so the "Substitution Effect" generated should be higher for children aged 0-4 than for children aged 13-17.

The second key explanatory variable is a dummy of the presence of children while the individual is engaged in adult care activities. In the STUS there is information about the presence of individuals under 10 while individuals are engaged in the primary and secondary activities, which allows us to study the "Demonstration Effect".[37] This variable takes the value "1" if the individual has reported at least once engaging in adult care accompanied by household members under 10. Otherwise, if the individual does not devote time to adult care activities, or there were no children present while the individual was engaged in the adult care activities, the variable takes the value "0".

The questionnaire components of the STUS include many variables that we use as controls in our model. We include the age and the age

[35] The codes in the STUS considered as child care are the following: 38, 380, 381, 382, 383, 384 and 427.

[36] The codes in the STUS considered as adult care are the following: 39, 391 and 428.

[37] There are different stages in the learning process of the chidren. Children under 10 are in the perceptual stage (under 5) and in the analytical stage (under 11).

squared divided by 100, that allows us, for example, to control for the fertility period of the woman (Rasul 2005). We control for the marital status of the individual with a dummy variable that takes value "1" if the individual is married/cohabiting and "0" otherwise. The marital status can influence individuals decisions on the allocation of time. Specialization within the household (Becker 1965) can lead to women devoting time only to non-market activities (home production), thus spending more time on child and adult care.

We include two variables to control for the labour status of individuals. Participating in the labour market can drastically reduce the disposable leisure time, or can reduce the time devoted to home production activities. For this reason, working people can be less likely to devote time to child and adult care activities. We include a variable indicating if the individual is working (1) or not (0), and another variable to indicate if the individual is working full-time (1) or not (0). Aguiar and Hurst (2007) conclude that women in the U.S.A. have increased leisure time while simultaneously increasing market work, in the period 1965-2003, though working women enjoy less leisure than their non-working counterparts. Working women have achieved an increase in leisure by reducing time spent on market and non-market work equally. Working status seems to be another important factor to explain individual decisions on the allocation of time.

We include two variables to control for the educational level of individuals. The opportunity costs of participation in the labour market, mainly wages, are important determinants in the decisions of how much time to devote to paid work. Normally the opportunity costs depend on the educational level. Higher wages mean higher opportunity costs and a reduction in the time devoted to home production activities. Aguiar and Hurst (2007) define highly-educated people as having more than a high school diploma, and show a dispersion of leisure favoring the less-educated in the period 1985-2003, and that there has been a larger increase in leisure for less-educated adults in the same period. To control for the educational level of the individuals we introduce two dummy variables: one for the secondary level and another for the university level. The variable of the secondary level of education takes the value "1" if the highest level of education reached by the individual is high school, and "0" otherwise. We do the same for the university level of education.

The number of grandparents in the household can be an important determinant of the time devoted to adult care activities.[38] The greater

[38]In the dependent variable measuring the time devoted to adult care, we have computed the time devoted to adult care activities in general, without taking into account if the receivers are inside or outside the household. This avoids an endogene-

the number of grandparents present in the household, the higher the productivity of the time devoted to adult care activities. The higher the opportunity cost of working related to the time devoted to adult care activities, the higher the probability of devoting time to adult care activities. Additionally, if grandparents living in the household are married, their partner can help them, requiring less attention than if there is only one grandparent.

Finally, we include some regional variables to control for the region of residence. In Spain there are 17 autonomous regions of residence (Catalonia, the Basque Country, Galicia, the Canary Islands, Valencia,...) so we include one dummy for each region, giving each dummy variable the value "1" if the individual is living in the region of reference and "0" otherwise.[39]

Means and standard deviations for time use, and the full explanatory variables are reported in Table 1. Column (1) reports the values for the whole sample. Men constitute 46.7% of the sample, with a mean age of 43.6 years. There are 0.90 children under age 18 per household, with 0.29 children under age 5 , 0.35 children aged 5-12 and 0.25 children aged 12-17. The percentage of married people is about 94%, primarily because we have selected the head of family and partners of the heads of family. We highlight the low number of grandparents per household (only 0.06 grandparents per household). As for labour status and educational level, about 64% of the sample participates in the labour market, and the people working full time represent about 61%. People with university and secondary levels of education are 16% and 18% respectively. Finally, regarding the adult care and child care, people devote 5.54 minutes per day to adult care activities and 39.25 minutes per day to child care activities, while the proportion of people engaged in some kind of adult care activity in the presence of children under 10 years is only 0.6%.

Column (2) in Table 1 reports the values for the women sample.[40] Regarding the presence of children in the family, results are very similar to those in Column (1). There are 0.87 children per household, with 0.29 children aged 0-4, 0.34 children aged 5-12 and 0.25 children aged 13-17. There are differences in the participation in the labour market,

ity problem with the number of grandparents living in the household. Additionally, this allows us to take into account some situations that otherwise could not be studied, for example, the grandparents live in another household but the parents help them.

[39] We use 17 dummy variables; the omitted region of residence is Cantabria. In addition, there are two autonomous cities, Ceuta and Melilla. We have combined them in one category since they are both very small.

[40] The demonstration effect behaviour is more likely in women who have a longer life expectancy (Jellal and Wolff, 2000).

with only 43% participating in the labour market and 38% working full time. There is a lower percentage of women than men with secondary education. For the adult care and child care activities, the amount of time devoted to these activities is higher. In this case, women in general devote 7 minutes per day to caring for adults, while they spend 53 minutes per day caring for children. Finally, 0.7% of women report the presence of children while they are engaged in adult care activities.

Column (3) in Table 1 reports the values of the variables for the sample that reports devoting time to adult care activities (the carers sample). We compare these values with the values obtained for the whole sample. In this case, the percentage of men is much lower, almost 30%, and the mean age is higher, 47.06 years. For the household status, the number of children per household is lower (about 0.65 children per household), the number of children age 0-4 and 5-12 is lower than in the whole sample, 0.15 and 0.23 children per household respectively.

The percentage of married people is higher (96.5%) than in the whole sample, and the number of grandparents living in the household is higher (0.16) than in the whole sample. As for working status and educational level, adult carers tend to participate less in the labour market (43%) and their educational level is lower than the whole sample (13.3% and 15.9% for secondary and university education, respectively). Finally, adult carers devote 25.78 minutes per day to adult care activities and 91.70 minutes to child care activities. The number of carers reporting that children are present in the adult care activities is 10%, which is significantly higher than the 0.6% reported in the whole sample.

Looking at the values of the different sub-samples, especially to the carers sample, we can see that people who report devoting time to adult care activities are older (47.06 years), mainly women (71%), married, participating less in the labour market (43.6%) and with a lower educational level. This last may mean that the opportunity costs of working are lower (their predicted or real wage is lower than that of more educated people) and thus they participate less often in the labour market, devoting more time to adult and child care activities than people better educated.[41]

Additionally, people who devote time to adult care activities report that children are very often present, and this leads us to infer the existence of a "Demonstration Effect". We test if the motivation of this effect is that parents (2^{nd} generation) try to set an example of how to care for their grandparents (1^{st} generation), so that children (3^{rd} generation) can learn how to do it, and offer the same services to their parents

[41] This result is consistent with Becker's model of allocation of time inside the family.

(2^{nd} generation), in the future, as they grow older.

5 Results

In this section we present the results obtained using the STUS. Table 2 presents estimates of the Tobit I and Tobit II models (Equations (16), (17), and Equations (18), (19), respectively) for the adult care activities. Table 3 presents estimates of the Seemingly Unrelated Regressions for the "SUR I" and "SUR II" models on adult and child care activities (Equations (20), (21), and Equations (23), (24), respectively) The specifications are regressions of the time devoted to adult and child care activitites on age, age squared divided by 100, marital status, working status, full-time employment, secondary education, university education, number of grandparents in the family, marital status of grandparents, number of children aged 0-4, 5-12 and 13-17, and the presence of children during the adult care activities. Regional dummy variables are also included.

6 Empirical Specification

Our main purpose is to study the "Demonstration Effect", which requires several considerations.

First, the number of hours devoted to adult care activities is left-censored at zero hours, since there are no negative hours of adult care. As a solution, we use in a first step a Tobit Model that takes into account the censoring problem.

Second, in Becker´s model (1965), individuals combine time and goods to obtain commodities inside the household. Additionally, children are time-intensive commodities. Many authors have considered children inside the family as public goods who need time devoted to them (Apps and Rees, 2002; Folbre, 1994). However, time is normally scarce and people suffer from time stress, which is to say the lack of sufficient time to accomplish all the desired activities (Hamermesh and Lee 2007).[42] As parents maximize their utility, restricted by a temporal constraint that creates time stress, parents normally have to substitute time devoted to other activities, for example leisure, market work, home production, by time devoted to child care activities. [43] For this reason

[42] People must choose what activities to develop with more and more scarcity of time, so time stress can be analogous to time poverty (Hamermesh and Lee, 2007).

[43] Aguiar and Hurst (2007) report that while parents without children experienced an increase in leisure time from 1993 to 2003 in the U.S.A, parents with children experienced a decrease in leisure time in the same period. Burda et al. (2006) find an increase in the time devoted to family care in the period 1985-2003, including child care.

we need to consider simultaneously the amount of time devoted to adult and child care activities.

Third, comparing the time devoted to adult and child care activities by mean, for the different sub-samples in Table 1, we see that the more time is devoted to adult care activities, the more time is devoted to child care activities. We observe that those individuals devote 91.70 minutes per day to child care activities. However, in the general population, the time devoted to child care activities by mean is lower than in the carers sample. This, and the second consideration, leads us to conclude that the times devoted to child care and to adult care activities are related. For this reason, in the second step we estimate a Seemingly Unrelated 2-Regression Model (SUR).

6.1 Tobit Model

Since the number of hours devoted to adult care is left-censored, we use this model to analyze the time devoted to such activities. [44] The problem is the following: there is a variable with quantitative meaning, call it y, and we are interested in the population regression $E(y^*|X)$. If y^* and X were observed for everyone in the population, there would be nothing new. We could use standard regression methods (ordinary or nonlinear least squares), but a data problem arises because y is censored above or below some value; that is, it is not observable for a segment of the population. By definition, a censored variable has a large fraction of observations at the minimum or maximum. Because the censored variable is not observed over its entire range, ordinary estimates of the mean and variance of a censored variable will be biased.[45]

As a solution, censored regression models are generally applied when the variable to be explained is partly continuous but has positive probability mass at one or more points. In our case, we apply a Tobit Model of individual daily allocation of time devoted to adult care, with the dependent variable left-censored to 0. We apply the following statistical model: for a randomly drawn observation "i" from the population, let AC_i represent the minutes per day that the individual "i" reports performing adult care activities, and let X_i be a vector of demographic characteristics. Let u_i be a random variable that represents unmeasured factors. The general model is defined as:

[44] Altonji et al. (1996), Schoeni (1997) and Jellal and Wolff (2002) also specify a tobit model for the determinants of time spent helping parents.

[45] Estimates of Ordinary Least Squares (OLS) regression on a set of explanatory variables will be biased, and are not consistent (i.e. the bias does not become smaller when the sample size increases).

$$AC_i^* = X_i\beta + u_i, \qquad u_i|X_i \sim Normal(0, \sigma^2) \tag{14}$$

$$AC_i = \max(0, AC_i^*) \tag{15}$$

where β is the vector of unknown parameters. While the true response is AC_i^*,only the left censored version AC_i of AC_i^* is observable. Additionally, a censoring indicator δ is defined, with $\delta = 1$ if $AC_i^* > 0$ and $\delta = 0$ otherwise.These equations constitute what is known as the standard censored Tobit model (after Tobin, 1956) or type I Tobit model (Amemiya, 1985).

We hypothesize that children have two effects on the time devoted to adult care activities: on the one hand, they have a negative effect on the time devoted to adult care activities since children are time-intensive commodities ("Substitution Effect"). On the other hand, children have a positive effect because parents try to set an example of how adult people should be looked after, trying to encourage their children to devote time to care for them in the future as parents aged ("Demonstration Effect"). With this model, we want to test the "Demonstration Effect". However, we have to take into account the "Substitution Effect" generated by children, since time is scarce and people must choose what activities to engage in.

We estimate two tobit models to test if both effects are opposite. In the first model, we consider only the "Substitution Effect" (Tobit I) and in the second model we consider both the "Substitution Effect" and the "Demonstration Effect" (Tobit II). In the first, we do not consider if children are present while parents are engaged in adult care activities, so any variable to control for the presence of children in the family captures both effects. In the second model, we include variables to control for the "Substitution Effect" and the "Demonstration Effect" separately. If both effects are opposite, the inclusion of variables to control for the "Demonstration Effect" should increase the effects of the variables controlling for the "Substitution Effect". For this reason, effects obtained in the first model regarding the presence of children in the family (Tobit I) should be lower than the effects obtained in the second model (Tobit II).

In the Tobit I model we include variables related to the presence of children in the family. The statistical model is the following: for a randomly drawn observation "i" from the population, let AC_i represent the minutes per day that the individual "i" reports performing adult care activities; let X_i be a vector of demographic characteristics; let P_{i5}, P_{i12}, P_{i17} be variables to indicate the number of children in the family

aged 0-4, 5-12 and 13-17 respectively, and let u_i be a random variable that represents unmeasured factors. The model is defined as,

$$AC_i^* = X_i\beta + \sum P_{ij}\eta_j + u_{i,} \qquad u_i|X_i, \sum P_{ij} \sim Normal(0, \sigma^2) \quad (16)$$

$$AC_i = \max(0, AC_i^*) \quad (17)$$

where β, η_j are vectors of unknown parameters and $j = 5, 12, 17$.

In the Tobit II model we include variables related to the presence of children in the family, and to the presence of children while parents devote time to adult care activities. The statistical model is the following: for a randomly drawn observation "i" from the population, let AC_i represent the daily minutes that the individual "i" reports performing adult care activities; let X_i be a vector of demographic characteristics; let P_{i5}, P_{i12}, P_{i17} be variables to indicate the number of children in the family aged 0-4, 5-12 and 13-17 respectively; let D_i be a dummy variable indicating the presence of children in adult care activities ($D_i = 1$ if there is at least one child under 10 present in any adult care activity during the day, $D_i = 0$ if there are no children aged under 10 present in adult care activities), and let u_i be a random variable that represents unmeasured factors. The model is defined as,

$$AC_i^* = X_i\beta + \sum P_{ij}\eta_j + D_i\varphi + u_{i,} \qquad u_i|X_i, \sum P_{ij}, D_i \sim Normal(0, \sigma^2) \quad (18)$$

$$AC_i = \max(0, AC_i^*) \quad (19)$$

where β, η_j, φ are vectors of unknown parameters and $j = 5, 12, 17$.

6.2 Seemingly Unrelated Regressions

In our sample, each individual reports on several time uses. They report the time devoted to both adult and child care activities as primary activities. With the time devoted to both activities, we estimate both decisions (adult and child care time) as a Seemingly Unrelated Regression model, and we first control for the "Substitution Effect" (SUR I model), and then we control for both the "Substitution Effect" and the "Demonstration Effect" (SUR II model). We first estimate a model (SUR I) that only considers the presence of children in the family. For a given individual, let AC_i, CC_i represent the daily minutes that the individual "i" reports performing adult and child care activities, respectively, let X_i be a vector of demographic characteristics, let P_{i5}, P_{i12}, P_{i17} be variables to

indicate the number of children in the family aged 0-4, 5-12 and 13-17 respectively, and let e_{surIa},e_{surIc} be random variables that represent unmeasured factors. We assume that the time spent in adult and child care activities is a linear function of the observed and unobserved variables, such that:

$$AC_i = \gamma_{surIa} + X_i\beta_{surIa} + \sum P_{ij}\beta_{surIaj} + e_{surIa} \tag{20}$$

$$CC_i = \gamma_{surIc} + X_i\beta_{surIc} + \sum P_{ij}\beta_{surIcj} + e_{surIc} \tag{21}$$

with γ, β vectors of parameters and $j = 5, 12, 17$. For each activity and each individual in our sample, we jointly estimate the two regressions, allowing for the correlations among the e_{surIa} and e_{surIc}. Regarding the specification of the error terms for each individual, we allow for correlations in the unobserved determinants of their activities by allowing the error terms to be jointly normally distributed with an unrestricted covariance structure:

$$\begin{bmatrix} e_{surIa} \\ e_{surIc} \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma^2_{surIa} & \varrho_{surIa,surIc}\sigma_{surIa}\sigma_{surIc} \\ \varrho_{surIa,surIc}\sigma_{surIa}\sigma_{surIc} & \sigma^2_{surIc} \end{bmatrix} \right) \tag{22}$$

This specification, which is akin to the Seemingly Unrelated Regressions framework, accounts for the overchanging time constraint that may require individuals spending more time on one activity and therefore less time on another. We additionally assume that the error components are independent across individuals.

In the second model (SUR II) we consider both the "Substitution Effect"and the "Demonstration Effect". For a given individual, let AC_i, CC_i represent the daily minutes that the individual "i" reports performing adult and child care activities, respectively; let X_i be a vector of demographic characteristics; let P_{i5}, P_{i12}, P_{i17} be variables to indicate the number of children in the family aged 0-4, 5-12 and 13-17 respectively; let D_i be a dummy variable indicating the presence of children in adult care activities (defined as in Model Tobit II); let e_{surIIa},e_{surIIc} be random variables that represent unmeasured factors, and let α, β and φ be vectors of coefficients. We assume that the time spent in adult and child care activities is a linear function of the observed and unobserved variables, such that:

$$AC_i = \gamma_{surIIa} + X_i\beta_{surIIa} + \sum P_{ij}\beta_{surIIaj} + D_i\varphi_{surIIa} + e_{surIIa} \tag{23}$$

$$CC_i = \gamma_{surIIc} + X_i\beta_{surIIc} + \sum P_{ij}\beta_{surIIcj} + D_i\varphi_{surIIc} + e_{surIIc} \quad (24)$$

with γ, β, φ vectors of parameters and $j = 5, 12, 17$. For each activity and each individual in our sample, we jointly estimate the two regressions, allowing for the correlations among the e_{surIa} and e_{surIc}. Regarding the specification of the error terms, for each individual, we allow for correlations in the unobserved determinants of their activities by allowing the error terms to be jointly normally distributed, with an unrestricted covariance structure:

$$\begin{bmatrix} e_{surIIa} \\ e_{surIIc} \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma^2_{surIIa} & \varrho_{surIIa,surIIc}\sigma_{surIIa}\sigma_{surIIc} \\ \varrho_{surIIa,surIIc}\sigma_{surIIa}\sigma_{surIIc} & \sigma^2_{surIIc} \end{bmatrix}\right) \quad (25)$$

We additionally assume that the error components are independent across individuals.

6.3 Tobit Model

Table 2 shows the results obtained for the Tobit I and Tobit II models on the time devoted to adult care activities. The Tobit I model controls for the number of children present in the family aged 0-4, 5-12 and 13-17. Tobit II model controls for the number of children present in the family and the presence of children during the adult care activities. In the Tobit I model we control for the "Substitution Effect" of children, and in theTobit II model we control for both the "Substitution Effect" and the "Demonstration Effect". As we show in the theoretical approach, both effects are opposite. We expect the estimates in the Tobit I model regarding the number of children to be lower than the estimates in the Tobit II model. Table 2 shows the marginal effects of the Tobit I and Tobit II models, calculated as the marginal effects for the unconditional expected values of the dependent variable at mean values.[46]

Column (1) in Table 2 for the Tobit II model shows that age has a positive correlation with the time devoted to adult care activities. As parents grow older, grandparents grow older as well and probably require more help, so parents have to devote more time to care for grandparents. One additional year increases the probability of caregiving by 1.04 percentage points. However, this effect is not permanen, as shown by the negative effect of age squared. Over the life-cycle, the time devoted to

[46]For dichotomous variables (presence of children, marital status,...) we calculate incremental effects, calculated as variations in the distribution function with discrete changes in the values of the dichotomous variables.

adult care activities has an inverted U-shaped trend. As parents grow older, grandparents grow older also, but normally grandparents die before parents. Thus, age has a positive effect on the time devoted to adult care activities, but the time devoted to adult care activities decreases as the probability of the grandparents dying increases.

The marital status has a positive correlation with the time devoted to adult care activities, but this correlation is not significant. It seems that the marital status is not important as a factor in the time devoted to adult care activities.

Working full time has a negative and significant correlation with the time devoted to adult care activities. It seems that participating full time in the labour market has a negative effect on the time devoted to adult care activities, regarding non-participation and part-time participation. Working full time decreases the probability of caregiving by 4.63 percentage points.

The educational level has a positive correlation with the time devoted to adult care activities, but this correlation is not significant. Secondary and university education has no effect on the time devoted to adult care activities regarding primary educational level. It seems that increased opportunity costs generated by higher educational status are not important to explain the time devoted to adult care activities. This can be due to the fact that the time devoted to adult care activities in the general sample is only 5.5 minutes per day.

The number of grandparents present in the family has a positive and significant correlation with the time devoted to adult care activities. One additional grandparent in the household increases the probability of caregiving by 4.45 percentage points. The marital status of grandparents has a positive correlation with the time devoted to adult care activities, but the correlation is not significant.

Regarding the presence of children in the household, we see that in both models (Tobit I in column (1) and Tobit II in column (1)) the number of children has a negative correlation with the time devoted to adult care activities. However, we must highlight several observations. First, we see that in both models the negative correlation is higher in children aged 0-4 than in children aged 5-12, and in children aged 5-12 than in children aged 13-17. This reflects the fact that the dependence level of children regarding parents' time is higher because the "Substitution Effect" is higher in younger children. As the dependence level of children aged 0-4 should be higher than for children aged 5-12, the negative correlation with the time devoted to adult care activities is higher for children aged 0-4 than for children aged 5-12 in both models. The same holds when comparing children aged 5-12 and 13-17. It appears that

the "Substitution Effect" is higher, the higher the dependence level of children. An additional child in the family aged 0-4 decreases the probability of caregiving by 2.91 percentage points. For children aged 5-12 and 13-17, one additional child decreases the probability of caregiving by 2.03 and 1.13 percentage points, respectively.

Second, children present during the adult care activities have a positive and significant correlation with the time devoted to adult care activities, in such a way that parents increase the probability of caregiving by 11.63 percentage points. This result supports the "Demonstration Effect" hypothesis.

Third, we find consistent results supporting our proposal that the "Substitution Effect" and the "Demonstration Effect" are opposite. The negative effects of the presence of children in the family are higher in the Tobit II than in the Tobit I model. In this way, in the Tobit I model, the correlations of the time devoted to adult care with the number of children present in the family are lower than in the Tobit II model, since in the Tobit I model, we control only for the presence of children in general, and in the Tobit II model we control for the presence of children in general and during the adult care activities. In the Tobit I model, coefficients corresponding to the number of children in the family aged 0-4, 5-12 and 13-17 are lower, as they are used to control for both the "Demonstration Effect" and the "Substitution Effect". However, when we control separately for the "Demonstration Effect" in the Tobit II model, the coefficients corresponding to the "Substitution Effect" are higher.

6.4 Seemingly Unrelated Regressions

With the Tobit models we have seen that the time devoted to adult care activities depends negatively on the number of children in the family. Additionally, as children are time-intensive public goods, the more children there are in the family, the more time individuals have to devote to them. For this reason, the time devoted to child care activities should be related to the time devoted to adult care activities. In this section, we estimate Seemingly Unrelated Regressions on the time devoted to adult and child care activities. Table 3 shows the results obtained for the SUR I and SUR II models, on the time devoted to adult and child care activities. The SUR I model controls for the number of children present in the family aged 0-4, 5-12 and 13-17. The SUR II model controls for the number of children present in the family and the presence of children during the adult care activities. In the SUR I model we control for the "Substititution Effect" on the time devoted to adult care activities, and in the SUR II model we control for both the "Substitution Effect" and

the "Demonstration Effect" in the adult care activities. We expect the estimates in the SUR I model regarding the number of children to be lower than the estimates of the SUR II model.

Column (1) for the SUR II model shows results for the general sample.[47] Regarding the age and age squared, they have a positive and negative correlation with adult care activities, while the correlations are negative and positive with child care activities. This shows an inverted U-trend, and U-trend of age in adult and child care activities, respectively. An additional year means an increase in the time devoted to adult care activities of 1.14. minutes per day, and a decrease in the time devoted to child care activities of 2.13 minutes per day. These results are consistent with a life-cycle model. On the other hand, age has a negative correlation with the time devoted to child care activities, and the time requirements of children decrease as parents grow older. However, as parents grow older, the probability of having grandchildren increases, and they can help their children by caring for the grandchildren, increasing the time that they have to devote to child care activities. This explains the U-shape trend.

Regarding marital status, while the correlation is not significant with the time devoted to adult care activities, being married is positively correlated with the time devoted to child care activities. Being married increases the time devoted to child care activities by approximately 9 minutes per day.

Considering the labour status of individuals, participation in the labour market is not correlated with the time devoted to adult care activities, but is negatively correlated with the time devoted to child care activities. Working in the labour market does not influence the decisions about the time devoted to adult care activities, but reduces the time devoted to child care activities by 15.9 minutes per day. Additionally, participating full-time in the labour market has no significant correlation with the time devoted to adult care activities, while it is negatively correlated with the time devoted to child care activities. In this way, working full time in the labour market requires people to devote 22.4 less minutes per day to child care activities. This is consistent with time scarcity or time poverty. Participating in the labour market is a time-intensive activity, and it necessarely requires taking time away from other activities, such as leisure or home production.

Educational level has no effect on the time devoted to adult care activities and is positively correlated with the time devoted to child care activities. However, for child care activities both levels are positively

[47] We analyze results from the SUR II model, since we include the SUR I for comparison purposes.

correlated. An individual with the secondary level of education devotes 11.16 more minutes per day to child care activities than an individual with the primary level of education. An individual with the university level of education devotes 16.81 more minutes per day to child care activities than an individual with the primary level of education. These findings are consistent with those of Kalenkosky et al. (2005), that higher-educated individuals devote more time to active child care than individuals with the primary education level.

The number of grandparents present in the household has a positive correlation with the time devoted to adult and child care activities. An additional grandparent in the household increases the time devoted to adult care activities by 9.09 minutes per day and the time devoted to child care activities by 7.39 minutes per day. These results are consistent with the "specialization hypothesis" within the family, meaning that some individuals in households specialize in home production activities (normally the ones with the lowest opportunity costs of working). The marital status of the grandparents has no significant correlation with the time devoted to adult activities, but has a negative correlation with the time devoted to child care activities.

Children aged 0-4 and 5-12 have positive correlations with the time devoted to child care activities. An additional child aged 0-4 increases the time devoted to child care by 71.46 minutes per day, while an additional child aged 5-12 increases the time devoted to child care activities by 15.74 minutes. However, children aged 13-17 have a negative correlation with the time devoted to child care activities, such that one additional child aged 13-17 decreases the time devoted to child care activities by 2.98 minutes per day.[48] We see that children aged 0-4 are more time-demanding, followed by children aged 5-12, while children aged 13-17 are not time-demanding. This fact supports the idea that children are time-intensive public goods and that the more dependent the children, the more time parents need to devote to care for them.

The number of children in the family has a negative correlation with the time devoted to adult care activities for the three age intervals considered (0-4, 5-12, 13-17). This means that an additional child aged 0-4 decreases the time devoted to adult care activities by 1.64 minutes per day. Our results for the other two age intervals show decreases of 2.03 and 1.4 minutes per day, respectively. On the other hand, the presence

[48] Results are consistent with results obtained in Kalenkosky et al. (2005). While the variables controlling for the presence of children aged 0-3, 4-6 and 7-11 have positive correlations with the time devoted to child care activities, the variable controlling for the presence of children aged 12-17 has a negative correlation with the time devoted to child care activities.

of children while parents are caring for the grandparents has a significant and positive correlation with the time devoted to adult and child care activities. The presence of children while parents are caring for grandparents requires parents to devote 38.18 more minutes per day to such care. This result supports the "Demonstration Effect" hypothesis.

There is a positive correlation between the presence of children during adult care activities and the time devoted to child care activities, which may be a result of increases in productivity due to specialization. If children were present during adult care activities, individuals could care for children and adults at the same time, increasing the overall productivity in care activities.[49] As a result, the time devoted to child care activities as a primary activity should decrease.[50] If the presence of children during adult care activities was motivated by increases in productivity, parents who report children present during the adult care activities should devote less time to child care activities as primary activity, since some of the time needed to care for children might be included in the time spent caring for adult members of the family.

However, results show an opposite correlation, reinforcing the idea of the existence of the "Demonstration Effect". Parents who report children present while performing the adult care activities devote more time to child care activities, so the presence of children during the adult care is not motivated by increases in productivity but by the "Demonstration Effect".

Comparing the results in the SUR I and the SUR II models, we observe that estimates in the SUR I model that only control for the effect of the presence of children aged 0-4, 5-12 and 13-17 are somewhat lower than the results in the SUR II model, which controls for both the number of children and the presence of children during adult care activities. Again, we obtain evidence to support the idea that the presence of children in the family has two opposite effects on the time devoted to adult care activities: the "Substitution Effect" and the "Demonstration Effect".

6.5 Robustness Checks

The previous results correspond to individuals aged 24-65. However, for consistency we have estimated with different sub-samples to correct for selection bias, and we can see that results are consistent with the results

[49] This is one of the reasons why we estimate SUR models, to relate the time devoted to adult care and child care activities.

[50] We take into account adult and child care as primary activities, but we do not take into account the kind of secondary activity. The presence of children refers to children present while parents report adult care as primary activity.

previously obtained .[51] In tables 2 and 3, Column (2) corresponds to individuals aged 30-55, column (3) corresponds to married individuals aged 24-65, column (4) corresponds to women aged 24-65, column (5) corresponds to women aged 30-55 and column (6) corresponds to married women aged 24-65. Results are quite consistent. Additionally, for consistency we construct variables with the relative time devoted to child and adult care activities. These variables are constructed as the percentage of the time devoted to child and adult care activities regarding the sum of the time devoted to home production, leisure and market work.[52] We have done the estimations for the same sub-samples and results are quite consistent.[53]

In this section we have shown how the presence of children, while parents are caring for grandparents, requires parents to devote time to adult care activities. Additionally, we have shown that the presence of children in the family requires parents to devote less time to adult care activities. This is consistent with a model of time devoted to adult care activities with two opposite effects: the "Substitution Effect" and the "Demonstration Effect".

7 Conclusions

This paper has studied, on the basis of the "Demonstration Effect" hypothesis, the influence that children have on their parents' time transfers. We have developed a theoretical model by combining the Social Cognitive Theory and an inter-generational altruism model. We concentrate on children under 10, since, in line with Sears et al. (1965), we assume that early transfer experience affects subsequent transfer behaviour. This approach suggests that the decisions taken by the child depend on the previously-observed behaviour of the parent. We use time-diary data from the 2002-03 Spanish Time Use Survey (STUS) in order to implement this theoretical framework. In our empirical analysis, we first specify a Tobit model to analyze the time that parents spend in adult care activities, taking into account the effects of children. We then estimate a Seemingly Unrelated Regression (SUR) on adult care and child care to see how the number of children, as well as their presence during adult care activities, influence the time devoted to dependent care.

[51] We consider that the selection bias can be generated by any of these 3 factors: age, sex and marital status. For this reason we change the age range, we estimate only with women, and only with married people.

[52] Definitions of this group of time use variables are the same as in Burda et al. (2006).

[53] Results are shown in Tables A1 (Tobit models) and A2 (SUR models).

Our Tobit results show that an additional child in the family aged 0-4, 5-12 and 13-17 reduces the probability of caregiving by 2.91, 2.03 and 1.13 percentage points, respectively. On the other hand, the presence of children during the adult care activities increases the probability of caregiving by 11.63 percentage points. These empirical results argue in favour of the "Demonstration Effect" in Spain. We find evidence to support the idea that the presence of children, while parents are caring for grandparents, encourages parents to devote more time to adult care activities by way of setting an example. Parents normally want their children to care for them in the future, and one way to set an example is by caring for their own parents.

The SUR estimation allows us to compare the effects that the presence of children during adult care have on child care as primary activity. We find evidence to support the idea that the presence of children is not due to an increase in productivity, but is a result of the "Demonstration Effect", since time devoted to child care activities increases by 11.19 minutes per day when children are present during adult care activities. Our empirical results show that the presence of grandchildren has a positive effect on both the time devoted to adult care, and to child care, which supports the "Demonstration Effect".

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Table 1. Descriptive Statistics

Variables	(1) All Sample		(2) Women Sample		(3) Carers Sample	
	Mean	*S.E.*	*Mean*	*S.E.*	*Mean*	*S.E.*
Male	0.467	(0.50)	-	-	0.291	(0.45)
Age	43.615	(10.17)	43.429	(10.52)	47.059	(9.49)
Number of children	0.905	(0.96)	0.870	(0.96)	0.651	(0.85)
Number of children <5	0.299	(0.57)	0.286	(0.56)	0.154	(0.40)
Number of children 5-12	0.352	(0.62)	0.339	(0.61)	0.233	(0.51)
Number of children 13-17	0.254	(0.51)	0.245	(0.50)	0.264	(0.51)
Married	0.940	(0.24)	0.943	(0.23)	0.965	(0.18)
Number of grandparents	0.063	(0.27)	0.063	(0.27)	0.163	(0.38)
Working status	0.644	(0.48)	0.430	(0.50)	0.436	(0.50)
Working full- time	0.617	(0.49)	0.386	(0.49)	0.404	(0.49)
University Education	0.163	(0.37)	0.161	(0.37)	0.133	(0.34)
High School Education	0.179	(0.38)	0.159	(0.37)	0.144	(0.35)
Time devoted to childcare	39.252	(79.70)	53.614	(93.85)	91.697	(119.63)
Time devoted to elderly care	5.549	(36.651)	7.532	(41.74)	25.778	(59.88)
Children present in elderly care	0.006	(0.11)	0.007	(0.12)	0.105	(0.45)
Nº Observations	17211		9179		1087	

Note: Descriptive Statistics calculated from the STUS.

Table 2. Tobit Model for the time devoted to adult care activities

	(1)		(2)		(3)		(4)		(5)		(6)	
	All Sample		All Sample 30-50		All Sample Married		Women		Women 30-55		Married Women	
Variable	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care
Age	1.085***	1.043***	1.124***	1.119***	1.121***	1.075***	1.929***	1.878***	1.738**	1.667**	2.072***	2.011***
	(0.19)	(0.18)	(0.46)	(0.42)	(0.20)	(0.19)	(0.30)	(0.29)	(0.76)	(0.72)	(0.32)	(0.31)
Age_2	-1.130***	-1.082***	-1.142**	-1.138**	-1.158***	-1.107***	-1.940**	-1.893***	-1.642*	-1.585**	-2.062***	-2.007***
	(0.20)	(0.19)	(0.53)	(0.49)	(0.22)	(0.20)	(0.31)	(0.30)	(0.86)	(0.82)	(0.34)	(0.33)
Married	1.397	1.009	0.779	0.370	-	-	-0.251	-0.556	-1.564	-1.789	-	-
	(0.82)	(0.81)	(0.96)	(0.93)	-	-	(1.71)	(1.70)	(2.15)	(2.11)	-	-
Working	-0.435	-0.375	-1.161	-0.862	-0.422	-0.364	-0.556	-0.620	-1.470	-1.263	-0.312	-0.389
	(1.08)	(1.01)	(1.24)	(1.12)	(1.14)	(1.07)	(1.42)	(1.36)	(1.56)	(1.48)	(1.47)	(1.42)
Working full time	-4.991***	-4.630***	-4.152***	-3.964***	-5.177***	-4.789***	-3.557***	-3.190**	-3.072**	-2.880**	-3.954***	-3.556***
	(1.32)	(1.24)	(1.46)	(1.36)	(1.38)	(1.30)	(1.35)	(1.30)	(1.55)	(1.47)	(1.37)	(1.33)
Educ_2	0.391	0.386	0.706	0.646	0.410	0.413	-0.291	-0.069	0.276	0.382	-0.373	-0.121
	(0.55)	(0.52)	(0.59)	(0.55)	(0.59)	(0.55)	(0.88)	(0.86)	(0.99)	(0.95)	(0.93)	(0.91)
Educ_3	0.568	0.450	0.707	0.514	0.704	0.577	-0.903	-0.930	-0.405	-0.542	-0.923	-0.947
	(0.59)	(0.55)	(0.63)	(0.57)	(0.63)	(0.59)	(0.89)	(0.85)	(0.98)	(0.93)	(0.93)	(0.89)
Number grandparents	4.687***	4.446***	4.023***	3.704***	4.945***	4.679***	7.040***	6.771***	6.075***	5.692***	7.344***	7.054***
	(0.52)	(0.49)	(0.60)	(0.55)	(0.54)	(0.51)	(0.81)	(0.78)	(0.96)	(0.91)	(0.84)	(0.80)
Married grandparents	0.826	1.161	3.439	3.756	0.676	1.026	6.009	6.249	7.339	7.752	5.774	6.020
	(3.89)	(3.87)	(5.53)	(5.44)	(3.92)	(3.90)	(8.70)	(8.67)	(9.70)	(9.72)	(8.69)	(8.64)
Number Children <5	-2.153***	-2.909***	-2.097***	-2.757***	-2.069***	-2.877***	-2.882***	-3.774***	-3.103***	-4.000***	-2.479***	-3.434***
	(0.48)	(0.48)	(0.50)	(0.48)	(0.51)	(0.51)	(0.85)	(0.86)	(0.92)	(0.93)	(0.91)	(0.92)
Number Children 5-12	-1.982***	-2.029***	-1.869***	-1.858***	-1.992***	-2.042***	-2.265*	-2.378***	-2.218***	-2.324***	-2.125***	-2.250***
	(0.37)	(0.35)	(0.37)	(0.34)	(0.38)	(0.36)	(0.60)	(0.58)	(0.62)	(0.60)	(0.63)	(0.61)
Number Children 13-17	-1.188***	-1.131***	-1.381***	-1.303***	-1.179***	-1.125***	-0.997*	-1.020*	-1.283**	-1.318**	-0.897	-0.928
	(0.38)	(0.36)	(0.38)	(0.35)	(0.40)	(0.38)	(0.60)	(0.58)	(0.62)	(0.59)	(0.62)	(0.60)
Sim. Presence	-	11.627***	-	11.051***	-	11.998***	-	13.952***	-	13.848***	-	14.265***
	-	(0.87)	-	(0.90)	-	(0.90)	-	(1.50)	-	(1.71)	-	(1.54)
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N° Observations	17211	17211	12454	12454	16412	16412	9179	9179	6468	6468	8778	8778

Note: * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria. The lower limit for left censoring is 0. Marginal Effects for the unconditional expected values of the dependent variable are calculated at mean values.

Table 3. Simultaneous Equations System for the time devoted to adult and child care activities

	(1) All Sample				(2) All Sample 30-55				(3) Married Men and Women			
	SUR I		SUR II		SUR I		SUR II		SUR I		SUR II	
Variable	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care
Constant	-16.906***	88.281***	-16.894***	88.285***	-8.065	173.677***	-8.544	173.511***	0.869	0	0.799	37.263***
	-5.95	-10.15	-5.9	-10.15	-14.79	-26.86	-14.67	-26.85	-6.27	0	-6.23	-11.36
Age	1.143***	-2.130***	1.138***	-2.132***	0.668	-5.489***	0.688	-5.481***	0.071	-0.178	0.075	-0.177
	-0.26	-0.45	-0.26	-0.45	-0.71	-1.28	-0.7	-1.28	-0.28	-0.51	-0.28	-0.51
Age_2	-1.161***	1.458***	-1.149***	1.462***	-0.44	4.913***	-0.45	4.910***	0.027	-0.164	0.024	-0.165
	-0.3	-0.51	-0.29	-0.51	-0.83	-1.51	-0.82	-1.51	-0.32	-0.58	-0.329	-0.58
Married	0.713	9.015***	0.477	8.945***	0.223	4.730*	-0.034	4.641*	-	-	-	-
	-1.23	-2.1	-1.22	-2.1	-1.46	-2.66	-1.45	-2.66	-	-	-	-
Working	-2.686	-15.939***	-2.569	-15.904***	-3.448*	-15.503***	-3.22	-15.423***	0	37.276***	0	0
	-1.79	-3.05	-1.77	-3.05	-2	-3.63	-1.98	-3.63	0	-11.36	0	0
Working full time	-2.916*	-22.423***	-2.831	-22.398***	-2.743	-25.047***	-2.758	-25.052***	-2.630*	-26.006***	-2.557*	-25.993***
	-1.75	-2.99	-1.74	-2.99	-1.96	-3.55	-1.94	-3.55	-1.42	-2.57	-1.41	-2.57
Educ_2	-0.155	11.143***	-0.108	11.157***	0.491	12.481***	0.518	12.490***	0.922	9.070***	0.804	9.048***
	-0.77	-1.31	-0.76	-1.31	-0.85	-1.53	-0.84	-1.53	-0.73	-1.32	-0.72	-1.32
Educ_3	-1.091	16.828***	-1.16	16.808***	-0.917	19.945***	-1.024	19.908***	-0.22	17.003***	-0.318	16.985***
	-0.8	-1.37	-0.8	-1.37	-0.88	-1.6	-0.87	-1.6	-0.72	-1.3	-0.72	-1.3
Number grandparents	9.111***	7.396***	9.097***	7.392***	8.835***	7.388***	8.727***	7.351***	5.292***	6.133***	5.387***	6.151***
	-1.06	-1.81	-1.05	-1.81	-1.24	-2.26	-1.23	-2.26	-1.08	-1.96	-1.07	-1.96
Married grandparents	-3.016	-39.506***	-2.527	-39.363***	0.617	-46.658***	1.202	-46.454***	-4.843	-19.106	-4.651	-19.07
	-6.74	-11.51	-6.69	-11.5	-7.81	-14.19	-7.75	-14.19	-6.88	-12.45	-6.83	-12.45
Number Children <5	-1.310**	71.557***	-1.635***	71.462***	-1.048*	67.376***	-1.346**	67.272***	-0.556	55.011***	-0.821	54.961***
	-0.57	-0.97	-0.56	-0.97	-0.63	-1.14	-0.62	-1.14	-0.54	-0.99	-0.54	-0.99
Number Children 5-12	-1.913***	15.776***	-2.034***	15.740***	-1.708***	15.592***	-1.819***	15.554***	-0.988**	11.355***	-1.055**	11.342***
	-0.49	-0.83	-0.48	-0.83	-0.52	-0.94	-0.51	-0.94	-0.48	-0.86	-0.47	-0.86
Number Children 13-17	-1.397**	-2.985***	-1.400**	-2.986***	-1.601***	-2.089*	-1.615***	-2.094*	-0.362	-2.491**	-0.337	-2.486**
	-0.59	-1.01	-0.59	-1.01	-0.61	-1.11	-0.6	-1.11	-0.59	-1.07	-0.59	-1.07
Sim. Presence	-	-	38.184***	11.193***	-	-	37.221***	12.960***	-	-	32.779***	6.138
	-	-	-2.45	-4.21	-	-	-2.59	-4.74	-	-	-2.77	-5.06
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	Yes
N° Observations	17211	17211	17211	17211	12454	12454	12454	12454	16412	16412	16412	16412

Note: Robust Standard errors in brackets * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria.

Table 3. Simultaneous Equations System for the time devoted to adult and child care activities (Cont.)

	(4) Women				(5) Women 30-55				(6) Married Women			
	SUR I		SUR II		SUR I		SUR II		SUR I		SUR II	
Variable	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care
Constant	-33.626***	76.673***	-33.732***	76.628***	-11.597	148.793***	-10.659	149.412***	0	7.304	-8.259	0
	-8.87	-14.32	-8.83	-14.31	-23.67	-39.05	-23.58	-39.02	0	-19.72	-10.06	0
Age	1.986***	-1.786***	1.985***	-0.631	0.778	-4.419**	0.739	-4.444**	0.4	0.769	0.414	0.774
	-0.39	-0.63	-0.39	-1.09	-1.13	-1.87	-1.13	-1.86	-0.47	-0.91	-0.47	-0.91
Age_2	-2.022***	1.087	-2.021***	0.704	-0.3	3.521	-0.254	3.551	-0.252	-1.306	-0.269	-1.313
	-0.44	-0.7	-0.43	-0.7	-1.34	-2.2	-1.33	-2.2	-0.55	-1.07	-0.55	-1.07
Married	0.051	6.576**	-0.096	6.514**	-0.767	0.741	-0.874	0.67	-	-	-	-
	-1.95	-3.15	-1.94	-3.148	-2.45	-4.04	-2.44	-4.04	-	-	-	-
Working	-2.848	-20.734***	-2.787	-20.709***	-3.571	-21.031***	-3.411	-20.925***	-8.03	0	0	7.218
	-2.17	-3.5	-2.16	-3.49	-2.47	-4.07	-2.46	-4.07	-10.08	0	0	-19.72
Working full time	-2.054	-8.770**	-1.899	-8.706**	-2.063	-7.873*	-2.004	-7.834*	-2.123	-13.536***	-2.051	-13.509***
	-2.19	-3.54	-2.18	-3.54	-2.5	-4.12	-2.49	-4.12	-1.59	-3.11	-1.59	-3.11
Educ_2	-1.191	9.817***	-0.967	9.910***	-0.502	10.561***	-0.342	10.667***	-0.364	6.755***	-0.377	6.750***
	-1.26	-2.04	-1.26	-2.04	-1.45	-2.39	-1.44	-2.39	-1.26	-2.47	-1.26	-2.47
Educ_3	-1.846	11.512***	-1.924	11.480***	-1.36	14.007***	-1.487	13.923***	-0.316	12.620***	-0.379	12.596***
	-1.3	-2.1	-1.29	-2.2	-1.48	-2.44	-1.47	-2.44	-1.15	-2.25	-1.15	-2.25
Number grandparents	13.665***	8.480***	13.619***	8.460***	11.895***	7.305**	11.690***	7.170**	6.712***	13.141***	6.728***	13.147***
	-1.65	-2.67	-1.65	-2.67	-1.98	-3.27	-1.97	-3.27	-1.79	-3.51	-1.79	-3.51
Married grandparents	1.039	-57.354***	1.592	-57.122***	5.214	-65.911***	5.959	-65.419***	3.09	-24.419	3.161	-24.392
	-10.56	-17.04	-10.51	-17.04	-11.88	-19.6	-11.83	-19.59	-13.12	-25.67	-13.1	-25.67
Number Children <5	-1.872**	102.459***	-2.232**	102.308***	-1.248	97.637***	-1.585	97.414***	-1.067	86.310***	-1.204	86.259***
	-0.91	-1.47	-0.91	-1.47	-1.07	-1.77	-1.07	-1.77	-0.95	-1.86	-0.95	-1.87
Number Children 5-12	-2.498***	22.360***	-2.683***	22.282***	-2.018**	22.085***	-2.194**	21.969***	-1.138	17.841***	-1.185	17.824***
	-0.77	-1.24	-0.77	-1.24	-0.86	-1.42	-0.86	-1.42	-0.81	-1.58	-0.81	-1.58
Number Children 13-17	-2.121**	-4.609***	-2.184**	-4.636***	-1.958**	-3.724**	-2.026**	-3.769**	-0.55	-2.884	-0.547	-2.883
	-0.94	-1.51	-0.93	-1.51	-0.99	-1.63	-0.99	-1.63	-1.02	-1.99	-1.01	-1.99
Sim. Presence	-	-	35.121***	14.721**	-	-	30.908***	20.416***	-	-	16.425***	6.134
	-	-	-3.7	-5.99	-	-	-4.27	-7.06	-	-	-5.35	-10.49
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N° Observations	9179	9179	9179	9179	6468	6468	6468	6468	8778	8778	8778	8778

Note: Robust Standard errors in brackets * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria.

Table A1. Tobit Model for the percentage of time devoted to adult care activities

	(1)		(2)		(3)		(4)		(5)		(6)	
	All Sample		All Sample 30-50		All Sample Married		Women		Women 30-55		Married Women	
Variable	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care	Adult Care
Age	0.076***	0.073***	0.079**	0.079***	0.079***	0.075***	0.135***	0.132***	0.123**	0.118**	0.145***	0.141***
	(0.01)	(0.01)	(0.03)	(0.03)	(0.01)	(0.01)	(0.02)	(0.02)	(0.05)	(0.05)	(0.02)	(0.02)
Age_2	-0.079***	-0.076***	-0.081**	-0.080**	-0.081***	-0.078***	-0.136***	-0.133***	-0.116*	-0.112*	-0.145***	-0.141***
	(0.01)	(0.01)	(0.04)	(0.03)	(0.02)	(0.01)	(0.02)	(0.02)	(0.06)	(0.06)	(0.02)	(0.02)
Married	0.098*	0.071	0.055	0.026	-	-	-0.017	-0.039	-0.109	-0.125	-	-
	(0.06)	(0.06)	(0.07)	(0.07)	-	-	(0.12)	(0.12)	(0.15)	(0.15)	-	-
Working	-0.030	-0.026	-0.082	-0.061	-0.029	-0.025	-0.038	-0.043	-0.103	-0.089	-0.021	-0.027
	(0.08)	(0.07)	(0.09)	(0.08)	(0.08)	(0.07)	(0.10)	(0.10)	(0.11)	(0.10)	(0.10)	(0.10)
Working full time	-0.351***	-0.325***	-0.292***	-0.279***	-0.364***	-0.337***	-0.251***	-0.225**	-0.217**	-0.203**	-0.279***	-0.250***
	(0.09)	(0.09)	(0.10)	(0.10)	(0.10)	(0.09)	(0.09)	(0.09)	(0.11)	(0.10)	(0.10)	(0.09)
Educ_2	0.027	0.027	0.050	0.045	0.029	0.029	-0.020	-0.005	0.020	0.027	-0.026	-0.008
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)
Educ_3	0.040	0.031	0.050	0.036	0.049	0.040	-0.064	-0.066	-0.029	-0.038	-0.065	-0.067
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)
Number grandparents	0.329***	0.312***	0.283***	0.261***	0.347***	0.328***	0.495***	0.476***	0.429***	0.402***	0.516***	0.496***
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.05)	(0.07)	(0.06)	(0.06)	(0.06)
Married grandparents	0.056	0.080	0.239	0.261	0.046	0.071	0.417	0.434	0.510	0.539	0.401	0.418
	(0.27)	(0.27)	(0.39)	(0.38)	(0.27)	(0.27)	(0.61)	(0.61)	(0.68)	(0.68)	(0.61)	(0.60)
Number Children <5	-0.148***	-0.201***	-0.145***	-0.191***	-0.142***	-0.199***	-0.197***	-0.260***	-0.213***	-0.276***	-0.169***	-0.236***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Number Children 5-12	-0.138***	-0.141***	-0.131***	-0.130***	-0.139***	-0.142***	-0.157***	-0.165***	-0.155***	-0.162***	-0.147***	-0.156***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Number Children 13-17	-0.083***	-0.079***	-0.097***	-0.091***	-0.083***	-0.079***	-0.070*	-0.071*	-0.090**	-0.093**	-0.063	-0.065
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Sim. Presence	-	0.820***	-	0.782***	-	0.846***	-	0.988***	-	0.985***	-	1.010***
	-	(0.06)	-	(0.06)	-	(0.06)	-	(0.11)	-	(0.12)	-	(0.11)
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N° Observations	17211	17211	12454	12454	16412	16412	9179	9179	6468	6468	8778	8778

Note: * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria. The lower limit for left censoring is 0. Marginal Effects for the unconditional expected values of the dependent variable are calculated at mean values.

Table A2. Simultaneous Equations System for the percentage of time devoted to adult and child care activities

	(1) All Sample				(2) All Sample 30-55				(3) Married Men and Women			
	SUR I		SUR II		SUR I		SUR II		SUR I		SUR II	
Variable	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care
Constant	-1.184***	0.072***	-1.183***	0.072***	-0.603	0.152***	-0.639	0.151***	-1.187***	0.096***	-1.197***	0.096***
	-0.42	-0.01	-0.41	-0.01	-1.04	-0.03	-1.03	-0.03	-0.46	-0.01	-0.46	-0.01
Age	0.080***	-0.002***	0.080***	-0.002***	0.049	-0.005***	0.05	-0.005***	0.082***	-0.002***	0.081***	-0.002***
	-0.02	0	-0.02	0	-0.05	0	-0.05	0	-0.02	0	-0.02	0
Age_2	-0.081***	0.001**	-0.081***	0.001**	-0.033	0.004***	-0.034	0.004***	-0.082***	0.002***	-0.081***	0.002***
	-0.02	0	-0.02	0	-0.06	0	-0.06	0	-0.02	0	-0.02	0
Married	0.052	0.006***	0.035	0.006***	0.018	0.002	-0.001	0.002	-	-	-	-
	((0.09)	0	-0.09	0	-0.1	0	-0.1	0	-	-	-	-
Working	-0.186	-0.016***	-0.177	-0.016***	-0.243*	-0.016***	-0.226	-0.016***	-0.193	-0.016***	-0.184	-0.016***
	-0.13	0	-0.12	0	-0.14	0	-0.14	0	-0.13	0	-0.13	0
Working full time	-0.210*	-0.017***	-0.203*	-0.017***	-0.195	-0.019***	-0.197	-0.019***	-0.203	-0.017***	-0.196	-0.017***
	-0.12	0	-0.12	0	-0.14	0	-0.14	0	-0.13	0	-0.13	0
Educ_2	-0.01	0.010***	-0.006	0.010***	0.036	0.011***	0.038	0.011***	-0.003	0.009***	0.001	0.009***
	-0.05	0	-0.05	0	-0.06	0	-0.06	0	-0.06	0	-0.06	0
Educ_3	-0.077	0.015***	-0.082	0.015***	-0.065	0.018***	-0.073	0.018***	-0.072	0.014***	-0.077	0.014***
	-0.06	0	-0.06	0	-0.06	0	-0.06	0	-0.06	0	-0.06	0
Number grandparents	0.639***	0.006***	0.638***	0.006***	0.623***	0.006***	0.615***	0.006***	0.667***	0.061***	0.666***	0.007***
	-0.07	0	-0.07	0	-0.09	0	-0.09	0	-0.08	0	-0.08	0
Married grandparents	-0.223	-0.036***	-0.188	-0.036***	0.024	-0.041***	0.067	-0.041***	-0.264	-0.036***	-0.228	-0.036***
	-0.47	-0.01	-0.47	-0.01	-0.55	-0.01	-0.54	0.01	0.48	-0.01	-0.47	-0.01
Number Children <5	-0.084**	0.062***	-0.108***	0.062***	-0.065	0.058***	-0.087**	0.058***	-0.264	0.007***	-0.097**	0.060***
	-0.04	0	-0.04	0	-0.04	0	-0.04	0	-0.04	0	-0.04	0
Number Children 5-12	-0.130***	0.012***	-0.139***	0.012***	-0.117***	0.012***	-0.125***	0.011***	-0.127***	0.011***	-0.136***	0.011***
	-0.03	0	-0.03	0	-0.04	0	-0.04	0	-0.04	0	-0.04	0
Number Children 13-17	-0.098**	-0.003***	-0.098**	-0.003***	-0.112***	-0.002*	-0.113***	-0.002*	-0.093**	-0.002**	-0.094**	-0.002**
	-0.04	0	-0.04	0	-0.04	0	-0.04	0	-0.04	0	-0.04	0
Sim. Presence	-	-	2.795***	0.009**	-	-	2.750***	0.011**	-	-	2.796***	0.009**
	-	-	-0.17	0	-	-	-0.18	0	-	-	-0.17	0
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N° Observations	17211	17211	17211	17211	12454	12454	12454	12454	16412	16412	16412	16412

Note: Robust Standard errors in brackets * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria.

Table A2. Simultaneous Equations System for the percentage of time devoted to adult and child care activities (cont.)

	(4) Women				(5) Women 30-55				(6) Married Women			
	SUR I		SUR II		SUR I		SUR II		SUR I		SUR II	
Variable	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care	Adult Care	Child Care
Constant	-2.354***	0.058***	-2.362***	0.058***	-0.895	0.122***	-0.823	0.123***	-2.541***	0.083***	-2.549***	0.083***
	-0.62	-0.01	-0.62	-0.01	-1.66	-0.04	-1.65	-0.04	-0.68	-0.01	-0.68	-0.01
Age	0.139***	-0.001*	0.139***	-0.001*	0.058	-0.004*	0.055	-0.004*	0.146***	-0.002***	0.145***	-0.002***
	-0.03	0	-0.03	0	-0.08	0	-0.08	0	-0.03	0	-0.03	0
Age_2	-0.142***	0.001	-0.142***	0.001	-0.026	0.003	-0.022	0.003	-0.148***	0.001**	-0.147***	0.001**
	-0.03	0	-0.03	0	-0.09	0	-0.09	0	-0.03	0	-0.03	0
Married	0.006	0.004	-0.005	0.004	-0.051	-0.002	-0.059	-0.002	-	-	-	-
	-0.14	0	-0.14	0	-0.17	0	-0.17	0	-	-	-	-
Working	-0.197	-0.021***	-0.192	-0.021***	-0.252	-0.021***	-0.239	-0.021***	-0.193	-0.021***	-0.189	-0.021***
	-0.15	0	-0.15	0	-0.17	0	-0.17	0	-0.16	0	-0.16	0
Working full time	-0.149	-0.005	-0.138	-0.005	-0.147	-0.004	-0.143	-0.004	-0.16	-0.006	-0.148	-0.006
	-0.15	0	-0.15	0	-0.18	0	-0.18	0	-0.16	0	-0.16	0
Educ_2	-0.081	0.009***	-0.065	0.009***	-0.032	0.009***	-0.019	0.009***	-0.083	0.008***	-0.064	0.009***
	-0.09	0	-0.09	0	-0.1	0	-0.1	0	-0.09	0	-0.09	0
Educ_3	-0.131	0.011***	-0.137	0.011***	-0.097	0.013***	-0.107	0.013***	-0.131	0.010***	-0.137	0.010***
	-0.09	0	-0.09	0	-0.1	0	-0.1	0	-0.1	0	-0.1	0
Number grandparents	0.959***	0.007***	0.956***	-0.052***	0.843***	0.006*	0.827***	0.006*	0.995***	0.007***	0.991***	0.007***
	-0.12	0	-0.12	-0.02	-0.14	0	-0.14	0.003	-0.12	0	-0.12	-0.002
Married grandparents	0.05	-0.053***	0.091	0.007***	0.332	-0.059***	0.39	-0.058***	0.002	-0.053***	0.044	-0.052***
	-0.74	-0.02	-0.74	0	-0.83	-0.02	-0.83	-0.02	-0.75	-0.02	-0.75	-0.02
Number Children < 5	-0.119*	0.090***	-0.145**	0.090***	-0.073	0.086***	-0.099	0.086***	-0.094	0.088***	-0.123*	0.088***
	-0.06	0	-0.06	0	-0.08	0	-0.08		-0.07	0	-0.07	0
Number Children 5-12	-0.169***	0.016***	-0.183***	0.016***	-0.137**	0.016***	-0.150**	0.016***	-0.161***	0.016***	-0.175***	0.016***
	-0.05	0	-0.05	0	-0.06	0	-0.06	0	-0.06	0	-0.06	0
Number Children 13-17	-0.148**	-0.004***	-0.152**	-0.004***	-0.137**	-0.004**	-0.142**	-0.004**	-0.143**	-0.004***	-0.148**	-0.004***
	-0.07	0	-0.07	0	-0.07	0	-0.07	0	-0.07	0	-0.07	0
Sim. Presence	-	-	2.613***	0.011**	-	-	2.370***	0.017**	-	-	2.616***	0.011**
	-	-	-0.26	-0.01	-	-	-0.3	-0.01	-	-	-0.26	-0.01
Regional dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N° Observations	9179	9179	9179	9179	6468	6468	6468	6468	8778	8778	8778	8778

Note: Robust Standard errors in brackets * Significant for the 90% confidence level; ** Significant for the 95% confidence level; *** Significant for the 99% confidence level. The reference regional dummy is Cantabria.