School of Economics and Management

TECHNICAL UNIVERSITY OF LISBON

Department of Economics

Paula Albuquerque & José Passos

Grandparents and women's participation in the labor market

—————————————————————————————————

WORKING PAPERS

Grandparents and women's participation in the labor market

Paula Albuquerque

pcma@iseg.utl.pt

ISEG, Technical University of Lisbon/ Socius

Portugal

José Passos

passos@iseg.utl.pt

ISEG, Technical University of Lisbon

Portugal

Abstract

The conciliation of work and family life is a challenge to most women. In some countries, although not in southern Europe, women make significant use of part-time schedules as a way of balancing work and family life. Informal care, typically care by grandparents, is an alternative. It is cheap, trustworthy, and possibly compatible with non-standard labor schedules.

In this paper we investigate how childcare by grandparents affects the probability of working of mothers in southern European countries. We empirically evaluate the verification and the significance of such an effect, accounting for a potentially endogenous grandparent-caring status.

Keywords: labor market, women, childcare, grandparents, ageing.

Grandparents and women's participation in the labor market

0. Introduction

The conciliation of work and family places a particular strain on the lives of women, and more so in southern European countries, where the involvement of men in household chores and in care is traditionally low (see, for example Trifiletti, 1999; Gonzalez, Jurado, and Naldini, 1999; Caldwell and Schindlmayer, 2003; Crompton and Lyonette, 2006). Although the modern discourse is to re-familialize men and de-familialize women (Saraceno, 2008), there is still a long way to go. Even in a country like Holland, Van Dijk and Siegers (1996) found that the availability and the quality of non-parental care only have an effect on the mothers' care, but not on the time fathers spend taking care of children. For Portugal, Perista (2002) calculates the difference between time spent caring for children by men and by women, and also observes that the men's participation in childcare is usually restricted to certain types of activities, such as transportation.

Numerous studies demonstrate that childcare reduces the participation of women in the labor market (Connelly, DeGraff and Levison, 1996; Uunk, Kalmijn and Muffels, 2005; Angrist and Evans, 1998; Carrasco, 2001). One way of combining work and childcare is to take part-time employment. However, this is not a common alternative in southern European countries (Del Boca, 2002; Cousins, 2000; Mínguez, 2005), mostly because corresponding wages would be too low. The availability, the price, and the judgments about the quality of alternative childcare (Pfau-Effinger, 2005; Wheelock and Jones, 2002) definitely influence the dimension of the negative effect of childcare on the female labor supply.

At an aggregate level, authors like Bernhardt (1993) and Engelhardt and Prskawetz (2004) show that the previously negative cross-country correlation between the total fertility rate and the female labour force participation, in industrialized countries,

has turned into positive, which may be regarded as evidence that country-specific factors are important to explain the relation between both variables.

Many studies exist that confirm the importance of the availability of public childcare to the women's labor supply (Stier, Lewin-Epstein and Braun, 2001; Uunk, Kalmijn and Muffels, 2005; Marcos, 2006; Connelly, 1992; Connelly and Kimmel, 2003; Del Boca, 2002; Del Boca, Pasqua and Pronzato, 2007). However, informal childcare is under-researched (Kalb, 2009). The main reason for this is the lack of information. Wheelock and Jones (2002), in their survey of a sample of British working parents, state that "what professionals and academics usually call 'informal care' was overwhelmingly 'grandparent care'" (p.449). In several countries, even in the USA, family multigenerational relations, namely the role of grandparents, is expected to grow in importance (Giarrusso and Silverstein, 1996; Bengston, 2001). As Andreotti et al. (2001, p.52) note, demographic transformations have extended the kinship network through the generations, but reduced it within the same generation (also, Giarrusso and Silverstein, 1996; Grundy, Murphy and Shelton, 1999; and Hoff, 2007). Grandparents tend to have fewer grandchildren competing for their attention (Gray, 2005), and therefore are more present in each one's life.

Grandparents play diverse roles, some of them symbolic (Bengtson, 1985; Barranti, 1985; Giarrusso and Silverstein, 1996; etc.), but in this study, we will focus on a practical role: childcare. Care provided by grandparents is usually viewed as the closest to the care that mothers themselves provide (Kuhlthau and Mason, 1996; Wheelock and Jones, 2002), due to their special characteristics of home environment, attention, flexibility, and trust. Flexibility, for instance, may be a determining factor allowing mothers to work in jobs that require non-standard hours (Presser, 1989; Hunts and Avery (1998), Vandell et al., 2003; Hank and Buber, 2009). Gray (2005) finds evidence that mothers of children aged under 12 and living with a partner work longer hours if they receive childcare help from grandparents. Kimmel and Powell (2006) find that an increase in the probability of non-standard work significantly reduces the probability of choosing formal care, while it increases the probability of using relative care. Davis and Connelly (2005), using data from a US state, find that women most likely to be employed are also most likely to choose family care, suggesting that family care is particularly used to facilitate employment. In the sample used by James-

Burdumy (2005), for the US, mothers who worked more in the first year of the children's lives were more likely to have a grandmother living in the household than the mothers who worked less.

Childcare by grandparents may or may not be the main source of childcare. Informal care and formal care strategies are possibly intertwined and complementary (Wheelock and Jones, 2002; Larsen, 2004; Del Boca, Pasqua and Pronzato, 2005; Raeymaeckers et al., 2008; Sümer et al., 2008). Larsen (2004) bases the analysis on interviews of several families from countries that are traditionally classified in different welfare regimes and in all of the countries, formal care arrangements seem to be insufficient to cover all the families' childcare needs.

In the present paper, we investigate whether the care provided by grandparents has, in fact, a measurable impact on the participation of mothers in the labor market, or if it does not make much difference.

Southern Europe is generally viewed as a group of strong-family countries (Andreotti et al., 2001). Additionally, the state has a weak presence in the social areas, particularly in the provision of publicly-funded day care for under-fours (Flaquer, 2000; Del Boca et al., 2005). Therefore, it could be feasible to expect that southern European grandparents more frequently provide care-giving services to their grandchildren than in the rest of Europe, and that it has an impact on female labor supply. Thus, we focus our analysis on southern European countries.

Very few previous articles have addressed this issue, possibly due to the unavailability of data. The studies that are closer to ours are Wheelock and Jones (2002) and Gray (2005). In a qualitative study based on a survey, conducted in an industrial region in the north-east of England, Wheelock and Jones (2002) illustrate the importance of informal care, mostly grandparental care, for working parents, even if in a complementary way. Gray (2005) uses the UK Time Use Survey to investigate whether care by grandparents influences the mother's participation in the labor market. She concludes that there is a significant difference in the proportion of mothers who work with the help of GP childcare and the proportion of mothers who work with no help

with childcare from the GP, if these mothers do not have a higher education qualification.

Maurer-Fazio et al. (2009) estimate a model for the participation of married Chinese women in the labor force where the existence of a co-resident parent/parent-in-law improves the chances of participation, but it is not known if there is any grandchild care involved.

One of the unique features of our study is that it uses a large international data base (European Social Survey), which in its second wave asks the question "What is the main type of childcare that the youngest child receives?". This does not include childcare carried out by the parents. The first alternative answer is "Child's grandparent(s)".[1] This information allows us to have a dummy variable that indicates whether the mother's youngest child is taken care of by a grandparent. Alternative data bases would not permit this. For instance, using the European Community Household Panel (ECHP), we could identify households with grandparents who mention looking after children. Besides not being sure that these children were their own grandchildren, - although that would certainly be the commonest case - we would be restricted to co-resident grandparents, which would largely underestimate the provision of childcare by grandparents. Another alternative data base could be the Survey of Health, Ageing and Retirement in Europe (SHARE). However, the problem here is that respondents are individuals aged 50+, and only one per household. Even if the respondent was not identified as caring for a grandchild, we would not know about the wife/husband. Furthermore, the information would be centered on the grandparent, rather than the mother. Hank and Buber (2009) have an interesting study on grandparents who care for their grandchildren, based on SHARE, but they naturally focus on the grandparent; they investigate the probability of providing grandchild care. Del Boca et al. (2005) use the ECHP in a study of fertility and employment, but they are restricted to considering co-resident grandparents only.

The inclusion of questions about relationships with grandparents or with grandchildren in national surveys is advisable.

---

[1] We are grateful to Jane Lewis for kindly offering us this information.

Our paper is, to our knowledge, the only one that addresses this question using an econometric approach, and also the only one focusing on the effect of the provision of care by grandparents in southern European countries.

1. Theoretical Framework

We sketch a simple utility-maximizing framework to motivate the discussion.

The mother chooses her employment status as a function of her consumption (x_m), the well-being of her children (k), and the amount of leisure time that she can use (l). She maximizes $U(x_m, k, l)$ subject to:

$$x_m = \bar{Y} + w.t_w - \sum_{i=0}^{n} x_{ki} - \sum_{i=0}^{n} C_i$$

$$k = f(x_{ki}, h_i, s_i)$$

$$l = T - t_m - t_w$$

Her consumption depends on the net income that she can use after paying for the children's expenditures. She can use income that is independent of her labor market status (part of her husband's income, asset earnings) ($\bar{Y}$), and if she can earn her own wage, if she is working ($w.t_w$); t_w is the time she spends in the labor market; w is the wage rate. We distinguish the cost of child care (C) from the rest of the children's expenditures (x_k); n is the number of children; C is a function of the type of care.

The well-being of her children depends on their consumption (x_k) and on the quality of the care services that they receive. x_k increases with x_m. Following El-Attar (2007), we assume that the quality of the care services consists of h_i, the good treatment of the children, and s_i, their acquisition of social skills. Both h_i and s_i are functions of the type of care they receive. They may receive family care, which may be care from a parent, and that we assume is mainly from the mother (t_m), or care from a grandparent (t_{GP}). These two types of family care are assumed to be perfect substitutes for the children, meaning that both types provide the same level of good treatment of the children and the same level of acquisition of social skills. The alternative to family care

is care by non-relatives, which we shall call professional care (t_{PC}). We assume here that family care is not paid (C=0), whereas professional care is paid (C>0). Typically, the level of good treatment is higher with family care, since it is probably more individualized and there are probably affective links that are deeper than in professional care. As for the acquisition of social skills, the ranking is more ambiguous. The interaction with other children may be a strength of professional care, but its value depends on the child's age and on the number of siblings that would be in family care together.

Leisure is a residual variable. It is what is left from total time (T) after the time in the labor market (t_w) and the time spent in mothering (t_m).

As we see, the woman's choice of participation in the labor market has several implications.

If a grandparent is available to care for the children, her participation in the labor market increases x_m, increases k through x_k, while not affecting h. It is not clear what happens to s, but for small children, the balance of the mother's participation when a grandparent cares for the children will be positive. t_{GP} is in place of t_m. The woman could use that time for work or leisure purposes, but in this paper we assume that grandparents care for grandchildren to allow mothers to participate in the labor market. The effect on leisure is, therefore, simplified to be null. Clearly, we expect the existence of caring grandparents to increase the probability of the woman's participation in the labor market.

If the woman uses professional childcare, the increase in x_m is lower, and it may even be negative if $\sum_{i=0}^{n} C_i > (w.t_w)$. As a consequence, x_k is also smaller. h will probably decrease, while s increases. The overall effect on k, is indeterminate.

This framework identifies more incentives to work when there is a grandparent providing care.

This model justifies the inclusion of variables like the woman's wage, income of the household without the woman's wage, cost of alternative child care, number of siblings needing care and children's age, in the empirical specification.

2. Empirical specification

The empirical framework

The above discussion suggests that the existence of a grandparent caring for a grandchild increases the probability of participation of the mother in the labor market. We test the empirical verification and the significance of such an effect.

The existence of a grandparent caring for a child may not be a truly exogenous variable: the decision of the grandparents to care for their grandchildren and the decision of the mother to work or to look for a job may be jointly determined; there may be unobservable factors that affect the chances of working and of having a grandparent of the child providing care (the personality of the mother, her preferences, for instance). This selection-bias problem results in the existence of correlation between the error and the explanatory variable of interest.

The typical methodology that is used when endogeneity is suspected is the instrumental variable approach applied to a standard probit. However, this is only valid when the endogenous regressor has a Normal distribution (Carrasco, 2001), which is not possible if it is a binary indicator. In this case, the bivariate probit and the switching probit are valid alternatives. They account for the interaction between dummy endogenous variables, or omitted variables related to both the labor market outcome and the use of care by grandparents.

Each mother of at least one young child (under 6 years old) is characterized by values for the variables (y_1, y_0, z, x). y_1 is a variable that indicates the labor market outcome of women who use grandparental care; $y_1 = 1$ if the woman participates in the labor market, and zero otherwise; y_0 is a variable that indicates the labor market outcome of women who do not use grandparental care; $y_0 = 1$ if the woman participates in the labor market, and zero otherwise. For each woman, only one of either y_1 or y_0 is realized, the other being latent. y_1 is realized if $z=1$, and y_0 is realized if $z=0$. z is a binary variable that indicates if the woman uses grandparental childcare services; x_1 and

x_0 are vectors of observed covariates that affect y_1 and y_0; w is a vector of observed covariates that affect the use of grandparental childcare.

The switching probit is a model that estimates the following system:

$y_1 = 1$, if $\beta_1 . x_1 + e_1 > 0$

$\quad = 0$, otherwise;

$y_0 = 1$, if $\beta_0 . x_0 + e_0 > 0$

$\quad = 0$, otherwise;

$z = 1$, if $\gamma . w + u > 0$

$\quad = 0$, otherwise;

The participation outcome for each woman i is, therefore:

$y_i = (1 - z_i) . y_{0i} + z_i . y_{1i}$

and (e_1, e_0, u) are assumed to be jointly normally distributed with zero mean vector and covariance matrix:

$$\Sigma = \begin{pmatrix} 1 & \rho 10 & \rho 1u \\ & 1 & \rho 0u \\ & & 1 \end{pmatrix}$$

The switching probit is a more general form of the bivariate probit and of the univariate probit. If $\beta_0\, x_0 = \beta_1\, x_1$, the three types of models differ only on the assumptions about the error correlations. The bivariate probit assumes that $\rho 1u = \rho 0u$. The univariate probit assumes that $\rho 1u = \rho 0u = 0$.

Explanatory variables

The explanatory variables used in the estimation are consistent with the theoretical model presented in Section 1.

Data on the **regional female rate of unemployment**, at NUTS 2, is from Eurostat. Most of the other explanatory variables are the authors' calculations, based on data from the European Social Survey (ESS).

When the household's income is higher, there is less need for the woman to work. However, the household's income depends on the income earned by the woman, so there would be a problem of endogeneity. To avoid this, we build the variable **household income without the woman's** in the following way. In the ESS, the household income is provided by categories. There is a variable consisting of the proportion of household income that is provided by the respondent, also by categories.[2] We have combined information from both variables to obtain a new variable with 6 categories. Details on this will be supplied on request.

When the income variable is used in explaining care by grandparents, **total household income** is considered.

The **age** of the mother (as of the other household members) is obtained using the variables year of birth and year of the interview, which are given in the survey.

In the survey, education is divided into levels from zero to six.[3] We regroup it into only four levels, with the zero category as the reference category. Therefore, we have **edu12**, **edu34**, and **edu56**. The education of the mother is a proxy for her wage rate, although it can also affect the subjective preferences for one type of childcare or another.

The **number of siblings** under 12 years old and the **age of the youngest child** are also obtained by calculation. First, we identify in each household the individuals who are children, and then we make the correspondence with the age. The two variables are obtained from there.

---

[2] 1="None", 2="Very small", 3="Under half", 4="About half", 5="Over half", 6="Very large", 7="All".

[3] 0="Not completed primary education", 1="Primary or first stage of basic", 2="Lower secondary or second stage of basic", 3="Upper secondary", 4="Post secondary, non-tertiary", 5="First stage of tertiary", 6="Second stage of tertiary".

The dummy expressing the co-residence with a **partner** is obtained directly from the survey. The presence of a husband may indicate an alternative to the income obtained by the woman and create opportunities for specialization.

The dummy expressing the existence of a caring grandparent, **Gpcaring**, is obtained from one variable that identifies households where care of the youngest child given other than by the mother or the partner is provided by a child's grandparent. This is unique information and unfortunately, it is present in only this wave of the ESS. It includes grandmothers and grandfathers. Although grandmothers are much more likely to be carers, grandfathers also provide childcare, a fact which should not be overlooked. (Guzman, 2004).

Dummies for **countries** have Portugal as the reference category.

Carecost is the average cost of formal childcare in each country. The source of the values is Bradshaw and Finch (2002), Table 5.4. Since it is a variable that assumes a different value for each country when carecost is included, the dummies for the countries are removed.

The dummy indicating that **Both parents** of the mother are **born in country** intends to capture cultural specificities. In the survey there are two variables, each indicating whether the mother or the father of the mother was born in the country of present residence.

The existence of a grandparent in the household, **Co-resident grandparent,** had to be calculated, using the information on the relations of each household member with the respondent (mother).

Data are weighted. The appropriate weights are the product of population size weights and design weights. Please see: http://ess.nsd.uib.no/files/WeightingESS.pdf for details.

Summary statistics of the variables are presented in Table 1.

3. Empirical results

Typically, the title of southern European countries is applied to Portugal, Spain, Greece and Italy. In order to have a model with more observations, we have also estimated models in which France was added, since this country is also sometimes classified as southern European, as it is a Latin country. For instance, Leibfreid (1992) includes France in the "Latin Rim" group. Also, in a cluster analysis of defamilization, Bambra (2007) finds that France and Portugal belong to the same cluster, whereas Spain and Greece belong to another cluster, when 4 clusters are considered, but that they all belong to the same cluster when five clusters are considered. This is the cluster that includes the largest group of countries from the 21 that the author included in the analysis.

Although the inclusion of France has the advantage of enlarging the number of observations, we could suspect that it might weaken the effect, since, according to Lewis, Campbell and Huerta (2008), grandparental care is a highly significant source of childcare in all countries considered except in France. However, no such weakening occurs.

We estimated several versions of the switching probit, but in almost all cases where conversion was obtained, the correlation coefficients (rhos) were not significantly different from zero. This means that there are no unobserved factors that justify the labor market behaviors of mothers and, simultaneously the use of childcare by grandparents, allowing for differences between those using and those not using childcare by grandparents. We tried the bivariate probit, but once again the correlation coefficient was not significant, denoting the inexistence of unobserved factors affecting both the labor market status and the use of childcare by grandparents. Therefore, we conclude that there is no evidence that care by grandparents is endogenous to the labor market status. In this case, it is correct to estimate the univariate probit. Nevertheless, the more complex probits provide additional information: they help understand the determinants of childcare by grandparents, and in the case of the switching probit, it is possible to identify factors that influence differently the labor market behavior of mothers who use and who do not use GPcaring. The number of versions of models that we estimated is far too large to have all their results presented here. We have switching probits, bivariate probits and univariate probits. For each case, we used four samples (five countries, four countries excluding Italy, four countries excluding France, and

three countries excluding Italy and France). Each model type/sample combination was also estimated with participation in the labor market and with work as the labor-market status dependent variable.

Although the influence of some variables and the importance of GPcaring may differ, depending on the version of the model that we are observing, some results are remarkably persistent. We choose to present only the best estimated models (according to the Akaike Information Criterion), using data for the five countries and Work as the labor market status variable. In Table 2, we present the estimated switching probit, in Table 3 the estimated bivariate probit, and in Table 4 the univariate probit. Nevertheless, in our discussion of the results, we also take into account the best models of the other versions.

All models pass the Wald tests for joint significance of the explanatory variables. We have reestimated the univariate probits including the square of the estimated prediction in the controls. As we would wish, it is never statistically significant.

The regional feminine level of unemployment is highly significant. The higher the unemployment rate, the less mothers work or actively look for jobs.

The influence of the household's income, excluding the part provided by the woman, is also very important. A higher income allows for higher levels of stay-at-home mothers, which is consistent with the theoretical framework.

The level of education has a significant influence on the labor market outcome: the higher the level of education, the more the mothers work or look for a job, which was to be expected, since the opportunity cost of staying at home and looking after their children is higher. The switching probits indicate that the level of education is more important to the mothers who have no childcare help from grandparents. This is consistent with the behavior portrayed in the theoretical section: mothers with lower education levels would work less, because the lower wages could fall short of compensating such costs as the payment of formal full-time childcare. The availability of GP caring would make work compensating even for these less educated mothers and therefore, education level would be less important for the labor market status of mothers using grandparental childcare.

Whether the mother lives with a partner or not, the number of siblings aged under 12 in the household and the age of the youngest are significant in some models, but not in others. In the cases in which they are significant, the direction of the effects is always the same.

The larger the number of other young children in the household, the lower the probability of a mother being in the labor market, which is in line with our theoretical framework. It has also a negative effect on the probability of having a grandparent taking care of the youngest. This may be because taking care of one would imply taking care of several, and this could place too heavy a burden on the grandparent; it could also mean that the grandparent is more interested in taking care of first-born grandchildren, when he/she is also younger.

Women living with a partner tend to work more and generally participate more in the labor market. Nevertheless, there is no evidence that grandparents have more responsibility in the care of children when the mothers have no partner, contrary to what might be expected.

The older the youngest child, the higher the probability of participation. The age of the youngest child is never significant in models of work, but it is generally very significant in models of labor market participation. This suggests that when children grow, mothers want to return to work, but may be unsuccessful in obtaining a job. The age of the youngest child does not seem to affect the probability of using grandparental childcare.

Age is seldom significant. This may be partly explained by the fact that we selected only mothers with at least one child up to 6 years old, which would limit the age range. Quadratic age was also tried, with no different result. Age appears significant only in some switching probits, and in this case, it has a negative sign for mothers with grandparental caring and a positive sign for mothers with no GP caring.

With few exceptions, mothers with both their parents already born in the country where they live significantly use more grandparental childcare. The same is true for co-resident grandparents: they tend to increase the probability of childcare by grandparents. Moreover, co-residence with grandparents is a common phenomenon, for example in Portugal (Albuquerque, 2008). Grandparental childcare does not seem to be affected by

the income of the household. Households with lower incomes do not use this type of childcare more than those with higher incomes. In addition, the cost of formal childcare is almost never relevant in explaining the choice of care by grandparents, but when there is a significant effect, it is positive, as would be expected: the higher the cost, the higher the probability of care by a grandparent.

The main objective of this study was to establish whether having a grandparent who takes care of the children facilitates the woman's presence in the labor market. We find some evidence that grandparents are important in this respect, although the result depends on the dependent variable, the sample and the type of model that are adopted.

The effects are seldom significant when the dependent variable is participation, but are generally significant when the dependent variable is work.

The effect of GPcaring on the probability of working, using the switching probits, is obtained via the Average Treatment Effect (ATE) and the Treatment on the Treated (TT). The ATE is the average effect on the probability of working by a mother of a young child randomly selected from the population. The obtained values are between 0.340 and 0.535, depending on the countries considered in the sample. This means that a randomly-selected mother could have approximately a 50% higher probability of working if she had a GP caring for her youngest child.

The TT is similar, but instead of considering a randomly-selected mother, the focuses moves to mothers who actually use care by a grandparent. We obtain values between 0.549 and 0.853, which means that those mothers who use GPcaring are indeed much more likely to work than if they did not use this form of care.

Based on bivariate probits, the estimated coefficients for GPcaring are quite significant, the marginal effects of GPcaring on Work being between 0.127 and 0.135, while those of the ATT are between 0.085 and 0.148. This means that using grandparental care as the main type of childcare for the youngest child predicts an increase in the probability of working by a randomly-selected mother of about 10% relative to her probability of working if that was not the chosen type of childcare.

Using the univariate probits, the estimated coefficients for GPcaring and the marginal effects are almost always significant –the exception is when the sample excludes France. These effects are between 0.113 and 0.206.

The difference in the dimension of the effects using the switching probits and the other models is rather large. However, it is not uncommon; see, for instance Damrongplasit, Hsiao and Zhao (forthcoming).

4. Discussion and conclusions

Population ageing has brought with it an increase in dependency ratios, which has, in turn, originated a demand for segments of the population that have smaller rates of activity, i.e., women and the elderly. The Lisbon Strategy has set goals: an overall employment rate of 70% by 2010, an employment rate for women of over 60% and an employment rate of 50% among older workers. However, if these targets are met, they are likely to have ramifications with regard to grandparental childcare. If the provision of care by grandparents, especially by grandmothers, has a sizable impact on the labor supply of mothers of young children, then raising the age of retirement may have the effect of decreasing the activity rates of women. In this study, we have investigated whether the provision of care by grandparents has any significant impact on the labor-market participation of mothers of children up to 6 years old in southern European countries, and we find evidence of that effect.

We have used information on the provision of childcare by grandparents, and not merely co-resident grandparents, which is an asset in our analysis. We have only considered situations in which the main care received by a child, other than parental care, is given by grandparents. Nevertheless, this underestimates the total provision of care by grandparents, since this may not be the main source of care, but serve as complementary, although essential, care.

Policymakers should, therefore, be aware of this double effect of demanding that people retire later, especially women.

We found that a mother of a child up to six years old has a higher probability of working if she lives in a region with a lower unemployment rate, lives with a partner,

specially with lower income, has a smaller number of children, has more education and uses care of the youngest child by a grandparent.

Finally, we stress the need for national surveys to include as a matter of routine questions on relationships with grandparents or with grandchildren/grandparent-grandchild relationships and care responsibilities.

References

Albuquerque, Paula. (2008), Grandparents in multigenerational households, ISEG Economics Department WP46/2008/DE/CISEP.

Andreotti, A., S. Garcia, A. Gomez, P. Hespanha, Y. Kazepov and E. Mingione. (2001). Does a Southern European model exist? *Journal of European Area Studies 9*(1), 43-122.

Angrist, Joshua and William Evans. (1998). Children and their parents' labor supply: evidence from exogenous variation in family size. *The American Economic Review 88*(3), 450-477.

Bambra, Clare. (2007). Defamilisation and welfare state regimes: a cluster analysis. *International Journal of Social Welfare 16*(4), 326-338.

Barranti, Chrystal. (1985). The grandparent/grandchild relationship: family resource in an era of voluntary bonds. *Family Relations, 34*(3), 343-352.

Bengtson, Vern. (1985). Diversity and symbolism in grandparental roles. In *Grandparenthood* , ed. Vern Bengtson and J. F. Robertson. Beverly Hills, CA: Sage.

Bengtson, Vern. (2001). Beyond the nuclear family: the increasing importance of multigenerational bonds. *Journal of Marriage and Family*, *63,* 1-16

Bernhardt, Eva. (1993). Fertility and Employment. *European Sociological Review*, *9*(1), 25-42.

Bradshaw, Jonathan and Naomi Finch. (2002). A comparison of Child Benefit packages in 22 countries. Department for Work and Pensions Research Report No 174, London: http://research.dwp.gov.uk/asd/asd5/rrep174.pdf

Caldwell, John, and Thomas Schindlmayr. (2003). Explanations of the fertility crisis in modern societies: a search for commonalities. *Population Studies 57*(3) 241-263.

Carrasco, Raquel. (2001). Binary choice with binary endogenous regressors in panel data: estimating the effect of fertility on female labor participation. *Journal of Business & Economic Statistics 19*(4), 385-394.

Connelly, Rachel. (1992). The effect of child care costs on married women's labor force participation. *The Review of Economics and Statistics 74*(1) 83-90.

Connelly, Rachel, Deborah DeGraff and Deborah Levison. (1996). Women's employment and child care in Brazil. *Economic Development and Cultural Change 44*(3), 619-56.

Connelly, Rachel, and Jean Kimmel. (2003). The effect of child care costs on the employment and welfare recipiency of single mothers. *Southern Economic Journal, 69*(3), 498-519.

Cousins, Christine. (2000). Women and employment in Southern Europe: the implications of recent policy and labor market directions. *South European Society & Politics, 5*(1), 97-122.

Crompton, Rosemary and Clare Lyonette. (2006). Work-life 'balance' in Europe. *Acta Sociologica, 49*(4), 379-393.

Damrongplasit, Kannika, Cheng Hsiao, and Xueyan Zhao. Forthcoming. Decriminalization and Marijuana Smoking Prevalence: Evidence From Australia. *Journal of Business and Economic Statistics.*

Davis, Elisabeth and Rachel Connelly. (2005). The influence of local price and availability on parents' choice of child care. *Population Research and Policy Review, 24*, 301-334.

Del Boca, Daniela. (2002). The effect of child care and part time opportunities on participation and fertility decisions in Italy. *Journal of Population Economics, 15,* 549-573.

Del Boca, Daniela, Silvia Pasqua, and Chiara Pronzato. (2005). Fertility and employment in Italy, France and the UK. *Labor, 19*(s1), 51-77.

Del Boca, Daniela, Silvia Pasqua, and Chiara Pronzato. (2007). The impact of institutions on motherhood and work, CHILD Working Papers wp06_07, CHILD - Centre for Household, Income, Labor and Demographic economics.

El-Attar, Mayssun. (2007). Trust, child care technology choice and female labor force participation. IZA DP no. 3135.

Engelhardt, Henriette and Alexia Prskawetz. (2004). On the changing correlation between fertility and female employment over space and time. *European Journal of Population, 20*, 35–62.

Flaquer, Lluís. (2000). Family policy and welfare state in Southern Europe. Institut de Ciènces Polítiques i Socials WP 185.

Giarrusso, Roseann and Merril Silverstein. (1996). Family complexity and grandparent role. *Generations, 20*(1), 17-23.

Gonzalez, María, Teresa Jurado and Manuela Naldini. (1999). Introduction: Interpreting the Transformation of Gender Inequalities in Southern Europe. *South European Society and Politics, 4*(2), 4-34.

Gray, Anne. (2005). The changing availability of grandparents as carers and its implications for childcare policy in the UK. *Journal of Social Policy, 34*(4), 557-577.

Grundy, Emily, Mike Murphy and Nicola Shelton. (1999). Looking beyond the household: intergenerational perspectives on living kin and contacts with kin in Great Britain, *Population Trends*, *97*(Autumn), 19-27.

Guzman, Lina. (2004). Grandma and grandpa taking care of the children: patterns of involvement, *Child Trends,* Research Brief, Publication #2004-17.

Hank, Karsten, and Isabella Buber. (2009). Grandparents caring for their grandchildren: findings from the 2004 Survey of Health, Ageing, and Retirement in Europe, *Journal of Family Issues, 30*(1), 53-73.

Hoff, Andreas. (2007). Patterns of intergenerational support in grandparent-grandchild and parent-child relationships in Germany. *Ageing & Society, 27,* 643-665.

James-Burdumy, Susanne. (2005). The effect of maternal labor force participation on child development. *Journal of Labor Economics, 23*(1), 177-211.

Kalb, Guyonne. (2009). Children, labor supply and childcare: challenges for empirical analysis. *Australian Economic Review, 42*(3), 276-299.

Kimmel, Jean and Lisa Powel. (2006). Nonstandard work and child care choices of married mothers. *Eastern Economic Journal, 32*(3), 397-419.

Kuhlthau, Karen and Karen Mason. (1996). Market child care versus care by relatives: choices made by employed and nonemployed mothers. *Journal of Family Issues, 17*(4), 561-578.

Larsen, Trine. (2004). Work and care strategies of European families: similarities or national differences? *Social Policy & Administration, 38*(6), 654-677.

Leibfried, Stephan. (1992). Towards a European welfare state. In *Social Policy in a Changing Europe*, ed. Zsuzsa Ferge and Jon Kolberg. Frankfurt: Campus-Verlag.

Lewis, Jane, Mary Campbell and Carmen Huerta. (2008). Patterns of paid and unpaid work in Western Europe: gender, commodification, preferences and the implications for policy. *Journal of European Social Policy, 18*(1), 21-37.

Marcos, Cristina. (2006). Female labor participation and child care choices in Spain. Centro de Estudios Andaluces WP E2006/16.

Maurer-Fazio, Margaret, Rachel Connelly, Chen Lan, and Lixin Tang. (2009). Childcare, eldercare, and labor force participation of married women in urban China: 1982-2000, IZA DP no. 4204.

Mínguez, Almudena. (2005). A comparative view of working women and the family in the welfare systems of southern Europe. The continuance of the male breadwinner. *Revista Española de Investigaciones Sociológicas, 112*, 131-164.

Perista, Heloísa. (2002). Género e trabalho não pago. *Análise Social, 37*, no.163:447-474.

Pfau-Effinger, Birgit. (2005). Welfare state policies and the development of care arrangements. *European Societies, 7*(2), 321-347.

Presser, Harriet. (1989). Some economic complexities of child care provided by grandmothers. *Journal of Marriage and Family, 51*(3), 581-591.

Raeymaeckers, Peter, Caroline Dewilde, Laurent Snoeckx and Dimitri Mortelmans. (2008). Childcare strategies of divorced mothers in Europe: a comparative analysis. *European Sociological Review, 24*(1), 115-131.

Saraceno, Chiara. (2008). Gender and care: old solutions, new developments? Ursula Hirschmann Annual Lecture Series on Gender and Europe, http://hdl.handle.net/1814/9307.

Stier, Haya, Noah Lewin-Epstein and Michael Braun. (2001). Welfare regimes, family-supportive policies, and women's employment along the life-course. *The American Journal of Sociology*, *106*(6), 1731-176.

Sümer, Sevil, Janet Smithson, Maria Guerreiro and Lise Granlund. (2008). Becoming working mothers: reconciling work and family at three particular workplaces in Norway, the UK, and Portugal. *Community, Work & Family, 11*(4), 365-384.

Trifiletti, Rossana. (1999). Southern European welfare regimes and the worsening position of women. *Journal of European Social Policy, 9*(1), 49-64.

Uunk, Wilfred, Matthijs Kalmijn and Ruud Muffels. (2005). The impact of young children on women's labor supply: a reassessment of institutional effects in Europe. *Acta Sociologica, 48*(1), 41-62.

Van Dijk, Liset and Jacques Siegers. (1996). The division of child care among mothers, fathers, and nonparental care providers in Dutch two-parent families. *Journal of Marriage and the Family, 58*(2), 1018-1028.

Vandell, Deborah, Kathleen McCartney, Margaret Owen, Cathryn Booth and Alison Clarke-Stew. (2003). Variations in child care by grandparents during the first three years. *Journal of Marriage and the Family, 65*(2), 375-381.

Wheelock, Jane and Katharine Jones. (2002). 'Grandparents are the next best thing': informal childcare for working parents in urban Britain. *Journal of Social Policy, 31*(3), 441-463.

Table 1 – Descriptive statistics of the variables (pooled data for the 5 countries)

	Mean	Std. Dev.	Min.	Max.
regional feminine unemploym.	12,04	4,49	4,30	28,00
househ. income without woman (categ.)	4,16	1,66	1	6
total household income (categ.)	6,01	2,16	1	12
age	33,33	5,58	19	59
coresident grandparent	0,07	0,25	0	1
both parents born in country	0,85	0,36	0	1
nr of siblings	0,69	0,76	0	5
age of youngest child	2,98	1,93	0	6
partner	0,89	0,32	0	1
GP caring	0,26	0,44	0	1
participation in labor market	0,67	0,47	0	1
work	0,62	0,49	0	1
edu12		36,14%		
edu34		35,45%		
edu56		25,68%		

Table 2 – Switching Probit for Work – 5 countries

	Coefficient	P-value
Dependent variable: GP caring		
household total net income	0,008	0,898
coresident GP	0,668	0,044
nr of siblings	-0,429	0,000
age of youngest child	0,012	0,825
GR	0,374	0,115
ES	0,328	0,241
FR	-0,378	0,185
IT	1,196	0,000
cons	-0,675	0,044
Dependent var.: Work, if GP caring = 0		
regional feminine unemployment	-0,112	0,007
household income without the woman	-0,142	0,040
age	0,042	0,009
edu12	0,348	0,485
edu34	0,863	0,120
edu56	0,964	0,105
GR	-0,260	0,435
ES	0,690	0,099
FR	0,758	0,002
IT	-0,079	0,896
cons	-0,580	0,456

	Coefficient	P-value
Dependent var.: Work, if GP caring = 1		
regional feminine unemployment	-0,128	0,003
household income without the woman	-0,133	0,437
age	-0,091	0,017
edu12	-1,530	0,145
edu34	-0,764	0,458
edu56	0,723	0,509
GR	-0,372	0,480
ES	0,217	0,724
FR	-0,270	0,737
IT	-1,408	0,018
cons	7,294	0,000
$\rho 0u$	-0,676	0,133
$\rho 1u$	-0,180	0,718
Average Treatment Effect	0,468	0,001
Treatment on the Treated	0,751	0,001
Nr. observations	427	
Wald Chi2	57,23	Prob>chi2=0,000

Note.- Robust standard errors.

Table 3 – Bivariate Probit for Work – 5 countries

	Coefficient	P-value	Marginal effect
Dependent variable: GP caring			
cost of formal care	0,010	0,074	0,001
coresident GP	0,931	0,009	0,211
nr of siblings	-0,414	0,000	-0,060
both parents born in country	0,711	0,009	0,072
cons	-2,892	0,006	
Dependent variable: Work			
regional feminine unemployment	-0,100	0,001	-0,010
househ. income without woman	-0,183	0,006	-0,018
age of youngest child	0,041	0,297	0,004
partner	0,643	0,037	0,051
GP caring	1,326	0,003	0,127
edu12	0,169	0,708	0,017
edu34	0,732	0,126	0,072
edu56	0,994	0,047	0,097
GR	-0,246	0,368	-0,022
ES	0,431	0,219	0,043
FR	0,446	0,042	0,042
IT	-0,284	0,391	-0,026
cons	0,543	0,342	
ρ	-0,725	0,930	
Average Treatment Effect	0,085	0,090	
Nr. Observations	440		
Wald Chi2	148,82	Prob>chi2= 0.000	

Note.- Robust standard errors.

Table 4 – Simple Probit for Work– 5 countries

	Coefficient	P-value	Marginal effect
Dependent variable: Work			
househ. income without woman	-0,209	0,003	-0,073
youngest	0,010	0,842	0,004
nr of siblings	-0,243	0,025	-0,086
age	0,025	0,159	0,009
regional feminine unemployment	-0,114	0,000	-0,040
partner	0,752	0,028	0,288
GP caring	0,365	0,097	0,122
edu12	0,352	0,453	0,119
edu34	0,898	0,061	0,286
edu56	1,162	0,017	0,352
GR	-0,190	0,536	-0,070
ES	0,576	0,106	0,184
FR	0,527	0,034	0,185
IT	-0,258	0,508	-0,095
cons	0,176	0,824	
Nr. Observations	440		
Wald Chi2	79,53	Prob > chi2 = 0.0000	
Pseudo R2	0,2095		

Note.- Robust standard errors.