

## **Grandchild Care Transfers by Ageing Immigrants in France: Intra-household Allocation and Labour Market Implications**

### **La garde des petits-enfants par les migrants âgés en France: Allocation intra-familiale et conséquences sur le marché du travail**

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**Abstract** Using a unique sample on ageing first generation immigrants in France, we explore the distribution of grandchild care across offspring and the impact of this transfer on the labour supply of the mother. Our results indicate that grandchild care is spread unequally across siblings, and this inequality is driven more strongly by better labour market potential than by weaker financial status of the recipient. There is further evidence that even after accounting for potential endogeneity and unobserved heterogeneity, grandchild care has a positive impact on the labour supply of the mother. The pattern of intergenerational time transfers differs across people with different national and religions backgrounds.

**Keywords** Grandchild care · Family transfer · Intra-household allocation · Labour force participation

**Résumé** A partir d'un échantillon unique sur une première génération d'immigrés âgés vivant en France, nous étudions l'allocation de la garde des petits-enfants entre les frères et sœurs et l'impact de ces transferts sur l'offre de travail des mères. Nos résultats indiquent que la garde des petits-enfants est répartie de manière inégale entre les collatéraux, cette inégalité étant plus reliée à des opportunités sur le marché du travail qu'au statut financier moins favorisé des bénéficiaires. Nous

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montrons également qu'une fois corrigée de l'endogénéité potentielle et de l'hétérogénéité inobservée, la garde des petits-enfants a un impact positif sur l'offre de travail des mères. L'ampleur de ces transferts en temps varie suivant le pays d'origine et la religion des migrants.

**Mots-clés** Garde des petits enfants · Transfert familial · Allocation intra-familiale · Participation sur le marché du travail

## 1 Introduction

During the past several decades, the increasing involvement of ageing people in downward time transfers such as grandchild care has been one of the most intriguing phenomena among transforming industrialized societies. In the United States for example, during the late 1990s, about 2.4 million (or 7% of total) families with children aged under 18 co-resided with, and received at least occasional help from, grandparents, and the incidence of this type of multi-generational family structure has since been on the rise (Raveis and Burnette 2001).

In Europe, about 12% of women aged 50+ have devoted substantial amount of time to grandchild care (Tobio 2001; Leira et al. 2005). Expectedly, given the differences in culture and availability of public childcare, this percentage is highest in countries like Italy (29%) and Greece (25%) and lowest in countries like Denmark (5%). But even in the latter set of countries, social networks, including parent shifts and help by other family members, such as grandparents, have, at least on an irregular basis, been preferred over both free and paid sources of institutionalized childcare (Leira et al. 2005).

Despite the significant incidence of grandchild care and its non-negligible impact on phenomena such as maternal labour supply (Tobio 2001), poverty alleviation among children (Uhlenberg 2001) and human capital development in cases of divorce or social exclusion (Raveis and Burnette 2001), economists have devoted virtually no attention to its study. The few economic articles touching upon the subject have focused on either the sharing of resources among co-residing multi-generational families (Ermisch and Di Salvo 1997; Le Blanc and Wolff 2006), or the impact of multi-generational co-residence on the labour supply of married women (Ermisch and Ogawa 1996; Sasaki 2002).

By and large, economic research on intergenerational time transfers has remained confined to their upward allocation (Wolf and Soldo 1994; Ettner 1995, 1996; Pavalko and Artis 1997). The nature of sociological studies, on the other hand, has largely been qualitative, and the scarce quantitative analyses linking grandchild care to economic phenomena have remained constrained to simple correlations and have failed to disentangle causal relations (Tobio 2001).

The purpose of this article is to address the gaps in the socio-economic literature with a study of the characteristics of providers and recipients of grandchild care and the impact of grandchild care on the labour supply of female immigrants in France. We contribute to the literature in several different ways. To begin with, we cast

fresh light on the pattern of resource allocation among numerous recipients. Economic theory has devoted considerable attention to understanding the distribution of monetary transfers among a number of siblings. For example, it has been shown that in an altruistic framework with perfect information, passive siblings, non-constrained parents and exogenous children's characteristics, parents distribute financial resources unequally in order to compensate for endowment differences among siblings (Laferrère and Wolff 2006).<sup>1</sup>

At the same time, the allocation of downward time transfers and their potential economic implications have remained largely neglected. We extend the theoretical framework related to monetary transfers to the study of downward transfers of childcare. Under the assumption of no special public childcare provisions for people in different socio-economic conditions,<sup>2</sup> and following the stylized logic of an altruistic theoretical paradigm and the assumption of exogenous child characteristics, grandchild care should be allocated from well-off parents towards their poorer children in order to alleviate resource constraints associated with affording formal care. But once the labour market opportunities of children are endogenized, the question of whether grandchild care addresses less well-off children or those with the highest labour market potential becomes a matter of empirical assessment (Dimova and Wolff 2006).

The sociological literature has shown that grandchild care should, under all circumstances, have a positive impact on the recipient's labour supply. If the child has low labour market potential, grandchild care influences the trade-off between low-paid employment and either costly institutionalized child care or high-social security incentives to withdraw from the labour force, which would make labour force entry impossible in the absence of grandchild care (Attias-Donfut and Segalen 1998). In the case of offspring with high-human capital endowments, it enhances the labour market opportunities of the most endowed children in the family (Attias-Donfut and Segalen 1998; Tobio 2001). In either case, grandchild care has

<sup>1</sup> There may also be differences between inter vivos transfers and bequests (Lundholm and Ohlsson 2000; Bernheim and Severinov 2003; Jellal and Wolff 2007).

<sup>2</sup> With regard to public childcare provision, the French institutional setting caters to the needs of parents from different income strata. On one hand, there are tax breaks for hiring paid childcare. On the other hand, non means-tested parental leave benefit (Allocation Parentale d'Education) is paid to parents who take care of their children themselves. Unfortunately, there is no information on the use of formal childcare to incorporate in our econometric analysis. Hence, we could only speculate on the possible effects that the absence of the specific childcare policies would have on the parental choices of grandchild care and labour supply. It is plausible to assume that the French institutional framework creates a kink in the grandchild care—income and labour supply income functions with people from higher-income strata benefiting from the tax break and people from the lower-income strata benefiting from the APE initiative. Furthermore, simulations have shown that while the tax break has a negligible impact on the labour supply of parents in France, abolishing the APE would raise female labour force participation by 4 points and the proportion of mothers utilizing paid care by 2 points (Choné et al. 2003). It is therefore possible that if parents with lower-human capital endowments opt for the APE benefit and grandchild care is given preference over formal paid care, the choice for grandchild care in France would increase if the APE did not exist. However, the impact that this would have on the labour supply of the mother is unclear. Importantly, as noted in the conclusion of this article, cross-country studies indicate that our main results, namely the allocation of grandchild care towards children with better endowments, and the positive link between grandchild care and labour supply, is not significantly affected by the specificity of the French institutional system.

important consequences for the shrinking labour markets of ageing economies. However, it has largely been ignored by the economic literature on ageing which tends to concentrate on the increase in retirement age and the phasing out of the public pension premium, despite overwhelming evidence of prime age inactivity in the shrinking labour force in Europe (Eurostat 2005), and in spite of the stylized dual negative impact of female labour supply on fertility and of institutional inflexibility on the balancing of career and motherhood in developed economies (Iglesias and Ribout 1985; Gustaffson et al. 1996).

Exploring the behaviour of immigrants with various national and religious backgrounds provides an additional interesting element to the story. Indeed, while most of the literature on the choice between childcare and labour supply has concentrated on its institutional (or cross-country) determinants, significantly less attention has been given to its cultural determinants. Yet people from different cultural backgrounds, but facing the same institutional constraints, may make different choices. Our access to a rich data set on immigrants in France allows us to explore this possibility.

The rest of the article is organized as follows. Drawing on economic models of private transfers, Sect. 2 provides a theoretical background to our empirical analysis and explains why it is relevant to study grandchild care transfers within the migrant population. In Sect. 3, we describe the data. Section 4 outlines the underlying empirical framework and provides evidence on the redistribution of grandchild care among migrant offspring. In Sect. 5, we extend the analysis to explore the impact of grandchild care on the labour supply of young mothers. Finally, Sect. 6 provides some concluding comments.

## 2 Theoretical Background

Several economic studies have documented the importance of private transfers from parents to adult children (Arrondel and Masson 2006; Laferrère and Wolff 2006). Two main motives have been suggested by economists to explain such transfers.

According to the altruistic motive, parents devote financial resources to their children because they get some satisfaction from the subsequent increase in the child's well-being. Transfers are made independently of any past, present or future decisions of the child to help the parents. Specifically, it can be shown that the amount of money transferred by the parent increases with the parental income and decreases with the child's income (Cox 1987). By contrast, under the exchange motive, parents provide money to their children in exchange for upstream services (Cox 1987). Another possibility is the existence of family loans such that parents help their children while young and are reimbursed later (Cox 1990). In both of these latter cases, the transfer is more likely to increase as a function of the child's income (and hence the child's labour market performance).

While all these models have essentially focused on financial transfers, significantly less attention has been given to the provision of time-related resources. In the existing economic models, time transfers are usually restricted to care provided to elderly parents. However, as indicated at the outset of this article, the sociological literature

has highlighted the influential role of time transfers in the form of grandchild care (Attias-Donfut 1995; Attias-Donfut and Segalen 1998; Tobio 2001).

Dimova and Wolff (2006) show that grandchild care transfers can easily be incorporated within an altruistic framework. Parents caring for the well-being of their children have two different means of helping their children, i.e. money and/or grandchild care. Although, as indicated above, altruistic parents would allocate money to their less well-off children, once time transfers are taken into account, predictions are less clear and altruistic parents may even favour children facing with job opportunities.

Specifically, in the case of time transfers with endogenous labour supply, the child's well-being in terms of time allocation across different activities becomes part of the parental utility function, and by devoting time-related resources to a child with a better labour market potential, the parent increases his/her own levels of satisfaction. Given that higher labour market potential (measured by higher wages which are a positive function of high levels of human capital, e.g. education and experience) increases the labour supply incentives of the child, one would therefore expect a positive association between grandchild care and better labour market opportunities of the recipient. Similar predictions, namely the allocation of transfers towards children with better labour market potential, hold true under the exchange motive.

The study of the patterns of time transfers and labour supply is especially interesting in the case of migrants, who live within the same institutional setting, but follow different cultural norms. Wolff et al. (2007) show that in France, cultural norms, mainly in terms of Muslim or non-Muslim religion, strongly influence the provision of cash gifts to children. On one hand, Muslim migrants are less likely to give money to their children. On the other hand, while both Muslim and non-Muslim parents are more likely to give money to their less well-off children, Muslim parents are less likely to make financial transfers to their daughters. It would be interesting to find out whether nationality and religion also influence time transfers to any significant extent.

### 3 Data and Descriptive Statistics

The Passage à la Retraite des Immigrés en France (PRI) survey was conducted in 2002 and 2003 by the Caisse Nationale d'Assurance Vieillesse (CNAV) and Institute National de la Statistique and Etudes Economiques (INSEE) in Paris. It is a representative survey of the diverse nationalities of first generation immigrants in France at retirement age or nearing that age.

It includes detailed information on 6211 middle-aged and elderly immigrants and represents about 90% of the population of immigrants in age groups 45–70 in France.<sup>3</sup> The interviews were based on the CAPI questionnaire and were

<sup>3</sup> While the lower age limit for similar types of surveys (e.g. SHARE) is typically set at 50 and there is no requirement for an upper limit, the restriction of the PRI between age groups 45 and 70 was based on the principle of ensuring sufficient representativeness of all immigrant nationalities in France. One of the most obvious examples is the case of younger immigrant cohorts from origins such as sub-Saharan Africa or eastern Europe, whose representation in advanced ages is rather low.

administered in the respondent's home. The sample was constructed by random selection from the population census and included around 10,000 places of residence in 12 regions of the country. About 51% of the respondents in the final sample come from Europe, 38% come from Africa, and 11% from all other continents. Six highly represented countries, Portugal, Italy and Spain from southern Europe, and Algeria, Morocco and Tunisia from North Africa account for about 70% of the respondents.

The primary aim of the survey is to analyse the different economic decisions of ageing migrants with detailed information on their work trajectories, choice of location and social activities during retirement, health and financial status, etc. In addition, the survey includes very extensive data on the children of the main respondents, including education, family and career status, number and age of children, income and wealth, and monetary and time transfers.

Detailed questions on grandchild care allow us to tease out not only the characteristics of each respondent's child receiving grandchild care, but also the intensity of grandchild care received. The corresponding information is given by a categorical indicator, taking the following answers to the question "On average, how often do you care for your children?": "Every day or almost, Every week, Every month, Several times per year, At least once per year, Less often". We differentiate between three different cases of grandchild care: (i) no grandchild care, (ii) irregular grandchild care (less than once per week) and (iii) regular care (every week or every day). The underlying logic behind this differentiation is that both the opportunity cost for the donor and the impact on the recipient should differ across the different frequencies of care. On one hand, regular grandchild care is more costly for the grandparent in terms of not only transaction costs (such as going to the child's home), but also available free time. On the other hand, frequent grandchild care provides more opportunity for the child to allocate time to both leisure and labour market involvement.

Several restrictions of the sample are needed for the appropriate study of grandchild care. First, we delete the respective observations for respondents whose children do not have at least one child.<sup>4</sup> Second, for obvious reasons, we restrict our attention to the case of respondents whose youngest grandchild is less than 10 years old, i.e. in early childhood and first years of schooling. These restrictions reduce the respondent sample to 2624 observations and we call this restricted sample the "parent sample".

Given the high quality of the data set, we are able to construct a second sample allowing us to account for unobserved heterogeneity at the family level. Specifically, we construct a sample where each child is counted as one observation.

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<sup>4</sup> We therefore assume exogenous child fertility, i.e. fertility independent of the potential help received by grandparents. The appropriate study of the impact of potential grandchild care on child fertility is precluded by the availability of only one cross-sectional body of data and hence the inability to track entry into motherhood and changes in intergenerational co-residence and transfers across time. However, since the primary focus of this study is on the labour market consequences of grandchild care for married women with children, we consider this restriction immaterial and concentrate on the determinants of grandchild care and its consequences, conditional on the (exogenous) presence of grandchildren in the family.

This means that a parent who has four children (themselves having children) contributes to four observations in the new sample, and this allows us to account for individual characteristics of both the donor and recipient of care during the econometric analysis.<sup>5</sup> Obviously, for each set of siblings the parental characteristics are the same, and we therefore address the underlying bias with the use of family fixed effects models. This second sample, used for the study of intra-family differences in grandchild care, includes 4637 parent–child pairs belonging to 2624 families. In what follows, it is referred to as the “child sample”. Due to the more informative nature of the “child sample”, we use it as a basis for all our descriptive and econometric analysis.

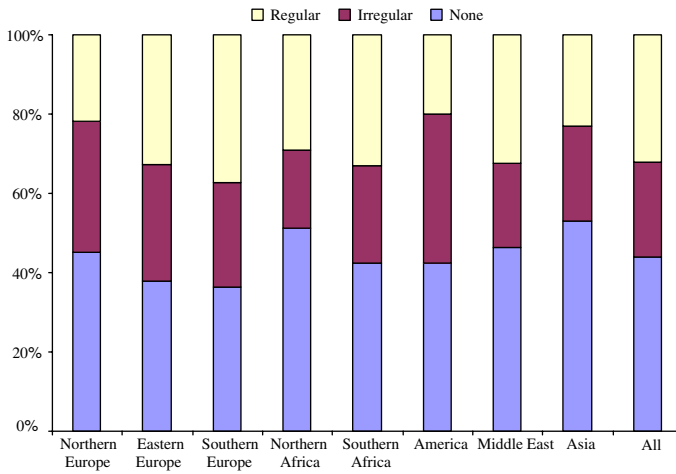
Figure 1 highlights the allocation of grandchild care by origin of the grandparent. The provision of grandchild care, either regular or irregular, is highest among grandparents of eastern European and southern European origin, the transfer rate being above 60%. By contrast, the lowest amount of transfers (less than 50%) is provided by grandparents of North African origin. Given the religious differences among people with these two sets of national backgrounds, this observation may indicate religious more than national differences in the allocation of time transfers (Wolff et al. 2007). There are also significant differences in the frequency of time transfers. About 60% of the grandparents from southern Europe, North Africa, southern Africa and the Middle East who provide help, do so on a regular (or weekly) basis. By contrast, this proportion is less than 40% for grandparents with northern European and American origins.<sup>6</sup>

Figure 2 indicates that the cross-national differences observed above are indeed to a large extent explained with reference to religion. Specifically, Muslim grandparents are less likely than non-Muslim parents to provide care on either a regular or irregular basis. This evidence is consistent with the evidence on financial transfers by Muslims and non-Muslims in France documented by Wolff et al. (2007). A possible explanation is a culturally determined higher probability of Muslim mothers taking care of their own children instead of benefiting from grandchild care and pursuing a career. It is also possible that Muslims in France, typically of North African origin, belong to the lower-income strata of the society, finding lower-employment opportunities and lower-incentives to pursue a career, especially in the context of welfare benefits which may encourage women to give up their working career in favour of parental child care.

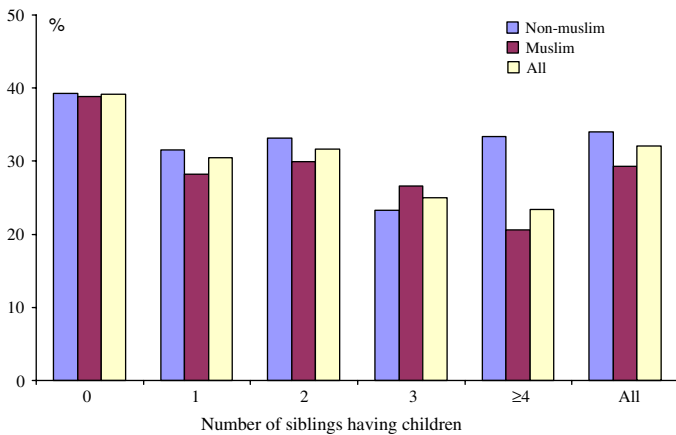
Among the various factors influencing grandchild care, the number of children is one of the most intriguing candidates. Hence, Fig. 2 also highlights the frequency of grandchild care by number of children. As expected, children who have no siblings are much more likely to receive help than children with siblings. However, there is virtually no difference in the receipt of care by children with one or two siblings, and the receipt of care by children with three or more siblings is only slightly lower. It is difficult to draw any strong conclusions from this graph. To begin with, the

<sup>5</sup> The alternative analysis based on the “parent sample” would have involved using only aggregate characteristics related to all children in the family, and we would have missed important nuances related to the preference for certain types of children.

<sup>6</sup> However, the small proportion of immigrants from northern Europe and America in our sample makes it difficult for us to explore this differentiation more rigorously in our empirical analysis.



**Fig. 1** The pattern of grandchild care, by parental origin country (Survey PRI 2003). Irregular grandchild care means less than once per week, while regular care signifies at least once per week



**Fig. 2** The receipt of regular grandchild care, by number of siblings and parental religion (Survey PRI 2003). Irregular grandchild care means less than once per week, while regular care signifies at least once per week

same level of care for two offspring and three offspring might indicate that either the care that could have been equally distributed across two offspring is now equally distributed across three offspring; or all the care is devoted equally to two of the three offspring and one child does not receive any care; or one child receives all the care and two of the three offspring do not receive any care.

It is therefore imperative to explore whether grandchild care is distributed equally across various offspring. Based on the information provided in Table 1, we test the hypothesis of unequal sharing of care within families of different sizes. We observe that in the case of more than one child per family, distribution is unequal in



**Table 1** The distribution of regular grandchild care among siblings

Number of children (per family)	Number of families	No recipient	One recipient at least, but not all	All children receive	% of unequal distribution
<i>A. All</i>					
1	1422	60.8	–	39.2	–
2	715	54.6	29.9	15.5	65.9
3	287	41.5	49.1	9.4	83.9
4	121	43.0	54.6	2.5	95.6
5	79	36.7	62.0	1.3	97.9
More than 1	1202	49.1	39.1	11.8	76.8
<i>B. Non-Muslims</i>					
1	1005	60.7	–	39.3	–
2	485	52.2	32.6	15.3	68.1
3	161	38.5	52.8	8.7	85.9
4	58	43.1	55.2	1.7	97.0
5	18	27.8	72.2	0.0	100.0
More than 1	722	47.8	39.9	12.3	76.4
<i>C. Muslims</i>					
1	417	61.2	–	38.8	–
2	230	59.6	24.4	16.1	60.2
3	126	45.2	44.4	10.3	81.2
4	63	42.9	54.0	3.2	94.4
5	61	39.3	59.0	1.6	97.4
More than 1	480	51.0	37.9	11.0	77.5

Survey PRI 2003

*Note:* The sample comprises 2624 families, having at least one adult child with at least one grandchild aged less than 10. Regular care signifies at least once per week

76.8% of families, while all children receive time transfers in only 11.8% of cases. Note, however, that the inequality of time distribution increases significantly with the size of the sibship. It amounts to 65.9% in the case of two children, but 83.9% in the case of three children and more than 95% in the case of more than three children.

The inequality in grandchild care distribution can be triggered by several different factors, including not only factors such as education and experience, total household income or wealth, as emphasized at the outset of this article, but also gender and cultural background. For instance, we observe that the inequality of transfer distribution is slightly higher among Muslim parents than non-Muslim parents, possibly on account of higher preference for helping male as opposed to female children (Wolff et al. 2007). As a first step in our empirical analysis, we therefore look at the mean values of various parental and child characteristics in an attempt to form hypotheses about the behaviour of key explanatory variables.

The descriptive statistics are reported in Table 2 by frequency of grandchild care (no care, infrequent care, frequent care). They indicate, for example, that daughters

**Table 2** Descriptive statistics of the sample

Variables	Grandchild care						All	
	No		Irregular		Regular		Mean	s.d.
	Mean	s.d.	Mean	s.d.	Mean	s.d.		
<i>Characteristics of the child</i>								
Female	0.519	0.500	0.538	0.499	0.601	0.490	0.550	0.498
Age	32.904	5.453	33.432	4.959	32.170	5.300	32.794	5.310
Number of children								
1	0.424	0.494	0.344	0.475	0.445	0.497	0.412	0.492
2	0.337	0.473	0.416	0.493	0.389	0.488	0.373	0.484
3	0.154	0.361	0.173	0.378	0.121	0.327	0.148	0.355
4 and more	0.085	0.279	0.067	0.250	0.044	0.206	0.068	0.251
Education								
None	0.221	0.415	0.134	0.341	0.144	0.352	0.176	0.380
Middle-school diploma	0.136	0.343	0.117	0.321	0.113	0.316	0.124	0.330
Vocational diploma	0.320	0.467	0.310	0.463	0.372	0.483	0.334	0.472
High-school diploma	0.120	0.326	0.146	0.353	0.150	0.358	0.136	0.343
BA degree	0.095	0.293	0.134	0.341	0.114	0.318	0.110	0.313
MA degree	0.069	0.253	0.089	0.284	0.071	0.257	0.074	0.262
PhD	0.039	0.194	0.071	0.256	0.036	0.185	0.046	0.208
Country of birth								
France	0.518	0.500	0.583	0.493	0.642	0.479	0.573	0.495
Europe	0.119	0.323	0.138	0.346	0.112	0.316	0.121	0.326
Africa	0.273	0.445	0.195	0.396	0.175	0.380	0.223	0.416
Other	0.090	0.286	0.082	0.275	0.070	0.255	0.082	0.274
Paid job								
No	0.342	0.474	0.256	0.437	0.237	0.425	0.288	0.453
Yes	0.658	0.474	0.744	0.437	0.763	0.425	0.712	0.453
Financial status								
Rich	0.311	0.463	0.387	0.487	0.352	0.478	0.342	0.475
Fair	0.504	0.500	0.476	0.500	0.474	0.500	0.488	0.500
Poor	0.182	0.386	0.132	0.339	0.170	0.376	0.166	0.372
Home ownership								
	0.339	0.474	0.468	0.499	0.393	0.488	0.387	0.487
Distance to parents								
Less than 10 kms	0.299	0.458	0.402	0.490	0.678	0.467	0.445	0.497
From 10 to 50 kms	0.179	0.384	0.245	0.430	0.182	0.386	0.196	0.397
In France: $\geq 50$ kms	0.289	0.454	0.279	0.449	0.120	0.325	0.232	0.422
In a foreign country	0.233	0.423	0.074	0.262	0.020	0.141	0.127	0.333
<i>Characteristics of the parent</i>								
Female	0.474	0.499	0.563	0.496	0.540	0.499	0.516	0.500
Age	60.042	6.309	59.560	6.152	59.103	6.288	59.625	6.277
Live in couple	0.802	0.398	0.829	0.377	0.852	0.356	0.824	0.380

**Table 2** continued

Variables	Grandchild care						All	
	No		Irregular		Regular		Mean	s.d.
	Mean	s.d.	Mean	s.d.	Mean	s.d.		
Number of children at home	1.044	1.473	0.903	1.497	1.111	1.495	1.032	1.488
Number of children outside	3.995	2.171	3.271	1.790	3.042	1.751	3.516	2.002
Health problem	0.392	0.488	0.343	0.475	0.361	0.480	0.370	0.483
Years of education	5.290	4.988	6.681	5.156	5.603	4.432	5.722	4.888
Has a paid job	0.252	0.434	0.281	0.450	0.288	0.453	0.270	0.444
Level of income (log)	9.456	0.900	9.603	0.871	9.618	0.853	9.543	0.881
Home ownership	0.431	0.495	0.542	0.498	0.513	0.500	0.484	0.500
Country of origin								
Northern Europe	0.050	0.219	0.068	0.252	0.034	0.180	0.049	0.216
Eastern Europe	0.025	0.158	0.036	0.187	0.030	0.171	0.030	0.169
Southern Europe	0.327	0.469	0.439	0.496	0.457	0.498	0.395	0.489
Northern Africa	0.449	0.497	0.319	0.466	0.352	0.478	0.386	0.487
Southern Africa	0.031	0.174	0.033	0.180	0.034	0.180	0.033	0.178
America	0.008	0.091	0.014	0.116	0.005	0.073	0.009	0.092
Middle	0.064	0.245	0.054	0.227	0.062	0.241	0.061	0.239
Asia	0.045	0.207	0.037	0.189	0.027	0.162	0.037	0.190
Number of observations	2042		1105		1489		4637	

Survey PRI 2003

Note: The sample comprises 4637 male and female children who have at least one child aged less than 10

are not only significantly more likely than sons to receive grandchild help from their parents, but they are also more likely than sons to receive this care on a regular basis. This observation is consistent with sociological evidence (Tobio 2001; Herlyn 2001).

Our discussion at the beginning of the article suggested that parental and child income, as well as human capital characteristics like education and experience, are likely to be the strongest and most intriguing determinants of inequality in intra-family time reallocation. Our data set provides information on the total monthly level of income for the household of the ageing respondent, as well as categories of (i) rich (ii) fair and (iii) poor, defining the financial status of the household of the respondent's child. In addition, we are able to control for the education level of the parent and the child, whether or not the parent and the child are home owners, whether or not they have any health problems, and a number of other demographic characteristics at the individual and household levels.

Our descriptive statistics indicate that not only are more affluent parents more likely to provide care and affluent children more likely to receive care than children with a fair or poor financial status, but also that children with education levels higher than the lowest two categories are more likely to be helped out on both an irregular and a regular basis. In other words, we find some preliminary evidence that

downward childcare transfers may be driven to a higher extent by the labour market potential of the child than by the weaker financial status of the child. In what follows, we explore these hypotheses in greater depth.

#### 4 The Intra-family Distribution of Grandchild Care

As indicated at the outset, one of the main questions addressed in this article is that of whether parents allocate resources with the intention of reducing inequalities among their offspring, or whether resources such as grandchild care are reallocated towards the children who can most productively use these additional resources.

Under the former hypothesis, we would expect wealthier parents to devote larger amounts of care to their less well off children and hence release their financial and time constraints. The alternative hypothesis would involve the maximization of total resources within the family, regardless of distributional outcomes. Other factors that can complicate these relationships are self-interest or affinity to specific children, and we therefore account for all these possibilities by correcting for unobserved heterogeneity at the household level. In this section, we focus on the allocation of grandchild care across children with different human capital and other characteristics. In the next section, we relate grandchild care to the labour market outcomes of care-receiving children.

Our specification is fairly stylized. The previous literature on monetary and time transfers suggests that in order to avoid biases, it is essential to account for the characteristics of both the donor and the recipient of transfers (Arrondel and Masson 2006; Laferrère and Wolff 2006; Altonji et al. 1997). We therefore control for the income levels of both the donor and recipient of grandchild care, and we introduce into the regression their different demographic characteristics such as age, educational level, health and marital status and number of children, as well as location and the geographical distance between them. Finally, we control for the religion of the grandparent, distinguishing between non-Muslim and Muslim grandparents.

Let the receipt of grandchild care be denoted by  $C_{ij}^*$  such that  $C_{ij} = 1$  if  $C_{ij}^* > 0$ , and  $C_{ij} = 0$  otherwise. Our specification is therefore:

$$C_{ij}^* = X_{ij}\beta + u_j + \varepsilon_{ij} \quad (1)$$

where  $i$  and  $j$  are individual and family indexes,  $X_{ij}$  is a vector of characteristics of the child and the parent,  $\beta$  is the vector of coefficients to estimate,  $u_j$  is a specific error term reflecting unobserved heterogeneity at the family level (common to all children of a sibship), and  $\varepsilon_{ij}$  is an individual-specific error term which reflects unobserved heterogeneity. In the first stage of our analysis, we neglect the family component, meaning that we treat the residual term  $u_j + \varepsilon_{ij}$  as normally distributed (with zero mean and unitary variance). The corresponding specification is a simple Probit model of the supply of regular grandchild care, the results of which are reported in column 1 of Table 3.

**Table 3** Estimates of the regular grandchild care equation

Variables	Probit		Random effect Probit		Fixed effect Logit	
	Coef	<i>t</i> -test	Coef	<i>t</i> -test	Coef	<i>t</i> -test
Constant	0.330	(0.49)	0.379	(0.44)		
<i>Characteristics of the child</i>						
Female	0.233***	(5.47)	0.316***	(5.97)	0.540***	(4.05)
Age	-0.079**	(2.22)	-0.104**	(2.34)	-0.261**	(2.05)
Age squared (10e - 2)	0.111**	(2.09)	0.151**	(2.28)	0.384**	(2.09)
Number of children						
1	Ref		Ref		Ref	
2	0.026	(0.53)	0.016	(0.27)	-0.032	(0.20)
3	-0.152**	(2.23)	-0.187**	(2.23)	-0.085	(0.40)
4 and more	0.005	(0.05)	0.006	(0.05)	0.163	(0.55)
Education						
None	Ref		Ref		Ref	
Middle-school diploma	0.051	(0.64)	0.103	(1.02)	0.440	(1.59)
Vocational diploma	0.133**	(2.07)	0.176**	(2.16)	0.222	(1.01)
High-school diploma	0.134*	(1.69)	0.170*	(1.70)	0.063	(0.22)
BA degree	0.088	(1.02)	0.125	(1.13)	0.234	(0.72)
MA degree	0.214**	(2.10)	0.252**	(1.96)	0.516	(1.42)
PhD	0.102	(0.82)	0.102	(0.64)	-0.564	(1.00)
Country of birth						
France	Ref		Ref		Ref	
Europe	-0.018	(0.26)	-0.035	(0.38)	-0.350	(1.02)
Africa	-0.011	(0.18)	-0.028	(0.33)	-0.153	(0.46)
Other	-0.076	(0.92)	-0.075	(0.67)	0.070	(0.12)
Financial status						
Rich	Ref		Ref		Ref	
Fair	-0.100**	(2.04)	-0.112*	(1.81)	-0.110	(0.62)
Poor	0.092	(1.36)	0.136	(1.60)	0.400	(1.64)
Home ownership	0.012	(0.26)	0.018	(0.29)	-0.022	(0.13)
Distance to parents						
Less than 10 kms	Ref		Ref		Ref	
From 10 to 50 kms	-0.538***	(10.04)	-0.674***	(9.73)	-1.073***	(5.65)
In France: $\geq 50$ kms	-1.062***	(18.74)	-1.304***	(16.99)	-1.700***	(8.68)
In a foreign country	-1.604***	(16.71)	-1.990***	(15.41)	-2.731***	(7.63)
<i>Characteristics of the parent</i>						
Female	0.158***	(3.32)	0.183***	(2.81)		
Age	0.007	(1.36)	0.010	(1.55)		
Live in couple	0.097	(1.58)	0.128	(1.50)		
Number of children at home	0.008	(0.47)	0.023	(0.92)		
Number of children outside	-0.130***	(9.76)	-0.171***	(8.75)		
Health problem	-0.034	(0.76)	-0.053	(0.87)		

**Table 3** continued

Variables	Probit		Random effect Probit		Fixed effect Logit	
	Coef	<i>t</i> -test	Coef	<i>t</i> -test	Coef	<i>t</i> -test
Years of education	-0.015***	(2.79)	-0.021***	(2.84)		
Has a paid job	-0.072	(1.30)	-0.088	(1.16)		
Level of income (log)	0.087***	(3.32)	0.105***	(2.89)		
Home ownership	0.042	(0.91)	0.067	(1.04)		
Muslim	-0.025	(0.41)	-0.033	(0.39)		
Number of observations	4637		4637		1390	
Number of families	2624		2624		470	
Log likelihood	-2462.7		-2408.5		-413.6	

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The sample comprises 4637 male and female children who have at least one child aged less than 10. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). Regular care stands for at least once per week

Recalling that the altruism hypothesis involves the allocation of help from better off parents towards worse off children, we first look at the coefficients of our income variables for both the parent and the child. While the highly significant coefficient of 0.087 of the parents' income indicates that better-off donors are more likely to provide care, we observe a negative and significant coefficient of the "fair" financial status of the child vis-à-vis the omitted category of "rich" and a positive, albeit insignificant, coefficient of the "poor" financial status variable. In other words, we do not find strong support for the altruistic hypothesis of grandchild care transfers.

This is confirmed by the absence of significance in the coefficient of the home ownership variables. At the same time, although we do observe a non-monotonic performance of the education variable, in that intermediate types of education like CAP-BEP and graduate studies acquired by the child have stronger positive impact on grandchild care than education levels such as Baccalaureat and postgraduate studies, the coefficients of all education type variables are in most cases significant and positive with respect to the omitted category of no education. Our findings are thus consistent with the hypotheses developed in our descriptive statistics and suggest that care reallocates to a higher extent towards children with better labour market potential, rather than to children with weaker financial endowments.

By and large, the results on the rest of the child's characteristics perform according to expectations. Female children are much more likely to receive grandchild care assistance than male children. The age profile of the child exhibits a U-shape form. A larger number of siblings has a negative impact on the receipt of grandchild care. Having three grandchildren has a negative impact on the provision of grandchild care, but the presence of four or more children in the family has no impact on grandchild care, possibly on account of the increased probability of the mother being inactive and devoting all her time to child upbringing once the number of children reaches 4.

Geographical distance between the donor and recipient has a strong negative impact on the receipt of grandchild care. This result, which is not surprising, sheds light on the importance of transaction costs in the provision of family transfers. When living far away from the parents, such services become very costly owing, for instance, to transportation costs, which decrease the likelihood of grandchild care. However, the child's country of birth plays no significant role in the regression.

The results related to the rest of the parental characteristics also conform with our hypotheses. As in the majority of sociological studies, female parents are more likely to provide care than male parents, but living in couple has a positive impact on grandchild care supply, albeit significant at only the 10% level (see Tobio 2001). The probability of grandchild care decreases with the increase in the number of offspring, but is not affected by the health status of the parent. Higher parental education is associated with lesser provision of grandchild care. This evidence is consistent with Dimova and Wolff (2006) and gives some support to the hypothesis that family resources are allocated in the most effective manner, away from people with lesser labour market potential towards people with higher labour market potential. Finally, there is no significant difference in the transfer allocation by grandparents who practice different religions.<sup>7</sup>

As mentioned previously, one of the most interesting features of our data is the availability of several observations per family. We are therefore able to control for unobserved heterogeneity by including a set of family fixed effects. The rationale for this approach is as follows. Let us assume that there are some family variables, such as parental altruism or unaccounted affinity to specific children, which are unobserved by the econometrician, but are likely to influence the pattern of transfers. Clearly, these unobserved characteristics are likely to bias the results from the simple Probit model. The primary advantage of our data is therefore our ability to obtain unbiased estimates with the use of family fixed effects, as in standard panel data models (Greene 2003).

Under the assumption that the residuals  $u_j$  and  $\varepsilon_{ij}$  follow a bivariate normal distribution with unknown variances (they have to be estimated) and zero correlation, the corresponding model is a random-effects Probit model. This specification assumes that the family effects are uncorrelated with the different explanatory variables. The results reported in column 2 of Table 3 indicate that introducing random effects does not qualitatively affect our estimation, although it does slightly change the magnitude of some of our coefficients. Specifically, we observe that, after accounting for unobserved heterogeneity, female gender of the child has stronger impact on the receipt of grandchild care. In addition, the impact

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<sup>7</sup> Although the religion variable was not significant in our regression, we decided to experiment further with the data by dividing the sample by Muslim and non-Muslim religion of the grandparent and then re-estimating the models for these two different samples. Our results indicated that, as expected, Muslim grandparents are less likely to help their daughters than non-Muslim grandparents. In addition, while non-Muslim parents are most likely to help their children with education levels in the middle range of the education distribution, Muslim grandparents tend to help only children with the highest levels of education. Finally, while grand-parental education has a negative impact on the provision of time transfers by non-Muslim grandparents, there is no significant impact of education on the grandchild supply of Muslim parents. For conciseness of presentation, we do not provide this set of results in the current article. The results are available upon request.

of the child's financial status, i.e. "fair" economic conditions, is even less significant, compared to the simple Probit model. Despite the insignificant differences between the simple Probit and random effects Probit model estimates, a Lagrange Multiplier test shows that the error component model is more appropriate for our data.

The assumption of uncorrelated family effects would not be appropriate if, for instance, (unobserved) parental altruism is stronger in the case of richer parents. Let us therefore treat the residuals  $u_j$  as nuisance parameters of unknown law, and suppose that the residuals  $\varepsilon_{ij}$  follow an i.i.d. double exponential law. The corresponding model is then a fixed effect Logit model, and consistent estimates of the parameters can be obtained by maximizing a conditional maximum likelihood function (Chamberlain 1980). Unfortunately, this model can be estimated only for the sub-sample of families where at least one child, but not all, benefits from grandchild care. Similarly, since there is no variation in the parental covariates for siblings, the parents' set of characteristics has to be excluded from our specification.

The results from the fixed effects Logit model are reported in column 3 of Table 3. Controlling for family fixed effects noticeably affects the estimates of the different child covariates. While the receipt of grandchild care is still much higher for women and less likely with the increase in geographical distance, the results for the number of grandchildren and the educational level of the child are no longer significant. Furthermore, while the coefficient of the "fair" financial status variable is no longer significant, the coefficient of the "poor" financial status variable is positive (albeit significant at only the 10% level). In other words, the fixed effect Logit model results give higher credence to the altruistic hypothesis than do either the simple Probit or the random effects Probit models. Note, however, that a Hausman test of model appropriateness indicates that the hypothesis that the family characteristics are uncorrelated cannot be rejected at any reasonable significance level (see Hausman 1978). Hence, the random effects model appears to be the preferred one.

## 5 Does Grandchild Care Influence Labour Participation?

When testing the altruism hypothesis whereby parents provide more help to their less well off children against the hypothesis that parents stimulate children with better labour market potential, our results give higher credence to the latter hypothesis. We are therefore interested in taking a further step and trying to disentangle the impact of grandchild care on the labour supply of the recipient.

Since the literature cited at the outset of this article indicates that it is the daughters' rather than the son's labour market prospect which is significantly impacted by the chosen strategy of balancing career and family life, we restrict our sample to only female offspring. In doing so, we concentrate on the impact of grandchild care on the labour supply of respondents' daughters receiving it. Our new sample consists of 2202 parent-child pairs. Importantly, we still have several children per family, with the 2202 daughters belonging to 1629 families.



As a first step, we look at the distribution of grandchild care by working status of the child. Ideally, one would like to investigate the impact of parental transfers on the number of hours of work. Unfortunately, this information is not available in the PRI survey and we only focus on the discrete decision of the child to have a paid job or not. We observe that when the child does not work, the probability of receiving regular care is equal to 45%, while in the case when the child works, the receipt of regular care amounts to about 65%. In other words, more parental help is associated with a higher likelihood of working.

Although these results are consistent with the logic of our previous section, they tell us little about the causal relationship between care and labour supply. On one hand, a lesser amount of grandchild care to a child who does not work may be a consequence of the fact that the child who gives preference to not working does not need help with caring for her offspring. On the other hand, it can be a consequence of the fact that the child cannot afford to work because she does not receive help from her parent. It is therefore imperative to account for the possible endogeneity of grandchild care in the child's labour supply equation.

We start our econometric analysis with the simplest possible case, in which grandchild care is treated as exogenous in the child's labour supply equation. Once again, we estimate different specifications, with and without accounting for unobserved heterogeneity.

Column 1 of Table 4 reports the results from a simple Probit model of labour supply with exogenous grandchild care. The main finding is that the coefficient of the grandchild care variable is positive and significant at the 1% level. Accounting for unobserved heterogeneity through the introduction of family effects does not alter the conclusions. When estimating either a random effects Probit model (Table 4, column 2) or a fixed effects Logit model (Table 4, column 3) of labour supply with exogenous grandchild care, we still find a positive effect of the receipt of parental services. The rest of the results reported in Table 4 are in conformity with the hypothesis that higher-level of human capital and lower level of family involvement have positive impact on the labour supply of the mother. Specifically, higher education increases labour participation, while higher number of children has negative impact on the mother's labour supply.

As indicated at the outset of this section, it is essential to account for the endogeneity of grandchild care. As a first step we therefore account for potential endogeneity, but without correcting for unobserved heterogeneity (Table 5). Specifically, we estimate the following model:

$$L_{ij}^* = W_{ij}\alpha + C_{ij}\gamma + v_{ij} \quad (2)$$

$$C_{ij}^* = X_{ij}\beta + \delta_{ij} \quad (3)$$

where  $L_{ij}^*$  is a latent variable indicating the propensity to work such that  $L_{ij} = 1$  when the daughter works and 0 otherwise,  $W_{ij}$  is a set of covariates influencing the decision to have a paid job,  $\alpha$  and  $\gamma$  are parameters to estimate,  $v_{ij}$  and  $\delta_{ij}$  are random errors. We assume that the random errors  $v_{ij}$  and  $\delta_{ij}$  follow a bivariate normal distribution, with zero means, unitary variances, and a coefficient of correlation  $\rho$ .

**Table 4** Estimates of female labour participation—exogenous regular grandchild care

Variable	Probit		Random effect Probit		Fixed effect Logit	
	Coef	<i>t</i> -test	Coef	<i>t</i> -test	Coef	<i>t</i> -test
Constant	-5.540***	-7.47	-6.576***	-7.07		
<i>Characteristics of the child</i>						
Age	0.294***	6.43	0.350***	6.19	0.393**	1.74
Age squared (10e - 2)	-0.372***	-5.39	-0.444***	-5.26	-0.526	-1.55
Number of children						
1	Ref		Ref		Ref	
2	-0.348***	-4.92	-0.413***	-4.84	-0.600***	-2.11
3	-1.029***	-10.98	-1.202***	-10.00	-1.766***	-4.96
4 or more	-1.136***	-8.05	-1.299***	-7.55	-1.310***	-2.91
Education						
None	Ref		Ref		Ref	
Middle-school diploma	0.380***	3.56	0.435***	3.34	0.792	1.60
Vocational diploma	0.349***	3.95	0.406***	3.79	0.364	0.99
High-school diploma	0.458***	4.43	0.534***	4.25	0.566	1.11
BA degree	0.646***	5.59	0.753***	5.32	0.784	1.40
MA degree	0.789***	5.84	0.923***	5.57	1.399**	2.02
PhD	1.139***	5.70	1.340***	5.41	2.566**	1.96
Country of birth						
France	Ref		Ref		Ref	
Europe	0.333***	3.23	0.405***	3.18	0.786	1.14
Africa	-0.051	-0.67	-0.088	-0.94	0.515	1.04
Other	0.033	0.29	0.019	0.13	-1.051	-0.94
Homeownership	0.355***	5.43	0.398***	5.04	0.025	0.09
<i>Regular grandchild care</i>						
Exogenous	0.309***	5.12	0.381***	5.08	0.841***	2.96
Number of observations	2202		2202		464	
Number of families	1617		1617		179	
Log likelihood	-1254.6		-1243.6		-138.3	

Survey PRI 2003

The sample comprises 2202 female children, living in France and with at least one child aged less than 10. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). Regular care stands for at least once per week

To assure the highest degree of efficiency, we estimate Eqs. (2) and (3) simultaneously using maximum likelihood. Following Greene (1998), the recursive model given by (2) and (3) behaves like a bivariate Probit model, whose estimation is straightforward.<sup>8</sup> The results reported in Table 5, once again indicate that

<sup>8</sup> Our specifications are again fairly stylized. See for example Sasaki (2002) for simultaneous estimates of child's labour supply and co-residence with elders and Ettner (1995, 1996) for analyses of the impact of upward care on child's labour supply, albeit that these authors do not rely on maximum likelihood methods to investigate the causal effect of parental transfers.

**Table 5** Bivariate Probit estimates of female labour participation and regular grandchild care

Variable	Female labour participation		Grandchild care	
	Coef	<i>t</i> -test	Coef	<i>t</i> -test
Constant	-5.623***	(7.58)	-0.588	(0.66)
<i>Characteristics of the child</i>				
Age	0.294***	(6.42)	-0.061	(1.29)
Age squared (10e - 2)	-0.371***	(5.37)	0.091	(1.27)
Number of children				
1	Ref		Ref	
2	-0.339***	(4.78)	-0.065	(0.94)
3	-0.994***	(10.27)	-0.329***	(3.45)
4 and more	-1.101***	(7.71)	-0.041	(0.28)
Education				
None	Ref		Ref	
Middle-school diploma	0.375***	(3.52)	0.004	(0.04)
Vocational diploma	0.329***	(3.69)	0.126	(1.37)
High-school diploma	0.440***	(4.24)	0.169	(1.56)
BA degree	0.632***	(5.46)	0.084	(0.70)
MA degree	0.776***	(5.75)	0.180	(1.30)
PhD	1.142***	(5.73)	0.022	(0.12)
Country of birth				
France	Ref		Ref	
Europe	0.332***	(3.23)	-0.021	(0.21)
Africa	-0.044	(0.57)	-0.013	(0.15)
Other	0.051	(0.44)	-0.152	(1.26)
Home ownership	0.347***	(5.31)	-0.003	(0.05)
Distance to parents				
Less than 10 kms			Ref	
From 10 to 50 kms			-0.597***	(8.13)
In France: $\geq 50$ kms			-1.217***	(15.84)
<i>Characteristics of the parent</i>				
Female			0.215***	(3.23)
Age			0.018***	(2.61)
Live in couple			0.087	(1.02)
Number of children at home			0.029	(1.22)
Number of children outside			-0.137***	(7.45)
Health problem			-0.046	(0.74)
Years of education			-0.020***	(2.64)
Has a paid job			0.001	(0.01)
Level of income (log)			0.118***	(3.25)
Home ownership			0.015	(0.24)
Muslim			-0.147*	(1.75)
<i>Regular grandchild care</i>				

**Table 5** continued

Variable	Female labour participation		Grandchild care	
	Coef	<i>t</i> -test	Coef	<i>t</i> -test
Endogenous	0.537***	(3.66)		
Coefficient of correlation	-0.164 (-1.66)			
Number of observations	2202			
Log likelihood	-2522.2			

Survey PRI 2003

The sample comprises 2202 female children, living in France and with at least one child aged less than 10. Significance levels are respectively 1% (\*\*\*), 5% (\*\*) and 10% (\*). Regular care stands for at least once per week

grandchild care has a positive and highly significant impact on the labour supply of the mother. In sum, our results indicate that the positive impact of grandchild care on the labour supply of the young mother goes indeed in the direction from care to labour supply. Another interesting finding is that when the sample is restricted to only female recipients of grandchild care, we observe that the probability of being helped is lower for a daughter (at the 10% level) when the parent is of Muslim religion. This result is consistent with both our hypotheses and our grandchild care distribution results based on samples separated by religion.

To complete our analysis, we would like to control for not only the possible endogeneity of grandchild care, but also unobserved heterogeneity. As the estimation of binary models with endogenous discrete covariates is excessively complex, we decide to use a linear specification as an approximation, so that we treat the decision to have a paid job (a binary outcome) as if it were a continuous outcome. For the sake of robustness and comparability across models that do or do not correct for unobserved heterogeneity, we begin with the estimation of a 2SLS model of labour supply with endogenous grandchild care, the results from which are reported in column 1 of Table 6. These results once again show a positive effect for the parental transfer variable, and the rest of the estimates are very close to those obtained with the binary Probit model.

We therefore proceed to accounting for unobserved heterogeneity using a generalized 2SLS random effects IV regression model and a fixed effects IV regression model (Baltagi 2001). The results from these models are reported in columns 2 and 3 of Table 6. As in the previous section, the difference between these two models involves assumptions about the correlation between unobserved family characteristics and the set of explanatory variables. We observe that the coefficient of the (endogenous) grandchild care variable is significant in the G2SLS model and insignificant at any conventional level in the fixed effects IV model (though it is still positive). We therefore repeat the Hausman test which once again shows the inappropriateness of the fixed effects model.

The final question to be addressed is whether the above discussion sufficiently solves the problem of causal relationship between grandchild care and labour supply. In particular, our results may suffer from the problem of reverse causality.

**Table 6** Linear IV estimates of labour force participation, with endogenous regular grandchild care

Country	2SLS		G2SLS random effect IV regression		Fixed effect IV regression	
	coef	t-test	coef	t-test	coef	t-test
Constant	-1.455***	-5.93	-1.429***	-5.81	-1.017*	-1.73
<i>Characteristics of the child</i>						
Age	0.103***	6.78	0.102***	6.71	0.082**	2.30
Age squared (10e - 2)	-0.131***	-5.68	-0.129***	-5.62	-0.108**	-2.01
Number of children						
1	Ref		Ref		Ref	
2	-0.110***	-4.85	-0.110***	-4.89	-0.115***	-2.69
3	-0.346***	-11.10	-0.342***	-11.05	-0.319***	-5.83
4 or more	-0.382***	-8.20	-0.372***	-8.03	-0.258***	-3.24
Education						
None	Ref		Ref		Ref	
Middle-school diploma	0.132***	3.69	0.127***	3.53	0.124	1.62
Vocational diploma	0.121***	4.05	0.118***	3.93	0.062	1.01
High-school diploma	0.161***	4.68	0.158***	4.58	0.109	1.46
BA degree	0.223***	5.90	0.220***	5.80	0.162*	1.83
MA degree	0.262***	6.18	0.258***	6.07	0.276***	2.64
PhD	0.342***	6.16	0.338***	6.04	0.410***	2.96
Country of birth						
France	Ref		Ref		Ref	
Europe	0.100***	3.14	0.103***	3.14	0.140	1.31
Africa	-0.018	-0.73	-0.025	-0.98	0.029	0.39
Other	0.009	0.24	0.003	0.08	-0.181	-1.13
Homeownership	0.113***	5.34	0.109***	5.13	0.064	1.34

Table 6 continued

Country	2SLS		G2SLS random effect IV regression		Fixed effect IV regression	
	coef	t-test	coef	t-test	coef	t-test
<i>Regular child care</i>						
Endogenous	0.151***	3.07	0.149***	2.96	0.219	1.32
Number of observations	2202		2202		2202	
Number of families	1621		1621		1621	
R <sup>2</sup>	0.187		0.188		0.153	

Survey PRI 2003

The sample comprises 2202 female children, living in France and with at least one child aged less than 10. Significance levels are respectively 1% (\*\*\*) and 10% (\*). Regular care stands for at least once per week

As it stands, our analysis is essentially driven by the conception of grandchild care as a non-cooperative decision of grandparents. However, it could be argued that a cooperative model based on Pareto-improving arrangements between grandparents and parents, possibly with altruism in the formulation of preferences, could explain the phenomenon more accurately.<sup>9</sup> Such a cooperative setup would imply a double causality, i.e. from care to labour supply and from labour supply to care.

We proceed in the following way to investigate the double causality. First, we estimate a bivariate Probit model with two equations, one for the labour participation of the young adult and the other for the grandchild care decision with the child's participation as an additional regression. In order to achieve that, we then need to find at least one variable which influences the child's probability of working, but has no effect on the parental transfer. Some empirical experimentations indicated that the child's place of birth is an appropriate choice variable, which we can justifiably exclude from the transfer equation, while still arguing that it significantly affects the probability of having a job (see Tables 4, 5).<sup>10</sup> When estimating the bivariate model, we find that the child's labour force participation variable is not significant in the grandchild care equation. In other words, our reverse causality hypothesis is rejected.

Second, we estimate a fully simultaneous model using a three-stage least squares method, since we have previously shown that linear specifications for the dependent variables do not affect our conclusions.<sup>11</sup> Our findings from this more general model confirm the results from the two bivariate Probit models. On one hand, having a job does not affect the provision of grandparental care, with a coefficient of 0.098 and a *t*-test of 0.28. By contrast, the receipt of parental services has a positive impact in the child's labour participation equation, with a coefficient of 0.151 and a *t*-test of 3.07. Of course, panel data would be needed to better investigate the relationship between care and labour supply, but our results suggest that the issue of double causality is not a problem when interpreting our findings.

In order to summarize the results from this section, all our models confirm the positive impact of grandchild care on the labour supply of the mother. They are consistent with the results from our previous sections, which indicated that unequal sharing of care across off-spring tends to favour higher labour market potential as opposed to simply lower monetary endowments, robust to the correction of unobserved heterogeneity at the household level. They therefore bring an interesting dimension to the debate on intergenerational transfers and labour market supply in ageing economies and emphasize the importance of taking downward transfers seriously into account in any policy making related to the shrinking labour markets in these economies.

<sup>9</sup> We are indebted to an anonymous referee for valuable suggestions on this issue.

<sup>10</sup> In Table 4, we note that the child's place of birth is significantly correlated with the likelihood of working. By contrast, in Table 5, we observe that this explanatory variable remains insignificant in the transfer equation.

<sup>11</sup> As clearly pointed out in Greene (1998), a fully simultaneous model with double causality and discrete dependent variables cannot be estimated using a bivariate Probit model.

## 6 Concluding Remarks

During the past several decades, decreasing fertility and rising life expectancy turned the attention of economists towards several major implications of population ageing around the globe. On one hand, researchers forecasted the impact of a shrinking labour force on economic growth and the fiscal sustainability of the pay-as-you-go pension system (Börsch-Supan 2001; Beetsma et al. 2003). On the other hand, they explored the impact of the rising demand for informal elderly care on the labour supply of care providers (Ettner 1995, 1996).

Despite overwhelming evidence of prime age inactivity in the shrinking labour force of Europe and the related problems associated with prime age labour supply and the balancing of career and family life among young women, virtually no attempt has been made by economists to explore the impact of downward transfers such as grandchild care on the labour supply of young mothers. While both the incidence and the impacts of grandchild care around the industrialized ageing world has been found to be impressive, its study has remained constrained to sociological and psychological analyses and has been virtually ignored by economists.

In this article, we first explore the pattern of grandchild care among immigrants in France, and then link this transfer to the labour supply of young mothers. We find that grandchild care is distributed unequally across offspring. Interestingly, our analysis of the determinants of unequal sharing provides larger support for the hypothesis that grandchild care favours children with higher labour market potential against the hypothesis of pure altruism whereby grandchild care favours children in poorer financial conditions. This result, robust to the correction for unobserved heterogeneity at the household level, is supported by the further indication that grandchild care has a strong positive impact on the labour supply of care-receiving mothers. Indeed, we find strong indication of redistribution of resources from parents with lower human capital towards children with a higher-level of human capital. In other words, there is strong evidence in favour of efficient redistribution of resources in intergenerational migrant families in France towards their most productive uses.

While offering us incredibly rich information for the study of the phenomenon of grandchild care and labour supply, our data set based on immigrants in France confronts us with several important challenges. To begin with, it is not possible for us to compare the behaviour of migrants with that of native French citizens. However, we find that our results are broadly comparable with those of sociological studies using surveys on the French population as a whole. For instance, similarly to us, Attias-Donfut and Segalen (1998) find that grandchild care in France is especially intense between inactive grandmothers and active mothers developing a professional career. Indeed, even employed grandmothers play an important role in taking care of their grandchildren. Importantly, our main hypothesis of allocation of care towards children with high-employment potential is confirmed.

Another shortcoming of our data is the impossibility to formally account for the parental choice between grand-parenting and public provision of childcare. We therefore consider the institutional setting in France, which offers opportunities to both parents with good employment conditions and parents with poorer financial



status to benefit from governmental provisions in terms of child care, simply as a background for our analysis of the impact of grandchild care on labour supply. Accounting for both private and public support devoted to child care would require much more detailed information.

Research using data from around Europe indicates that our main results, namely the allocation of grandchild care towards children with better labour market opportunities are not driven by a specific institutional setting, but are common for Europe as a whole (Dimova and Wolff 2006). At the same time, differences in behaviour by people from different cultural backgrounds, namely Muslims and non-Muslims in France, add an interesting dimension to our research. They indicate that institutional characteristics are not the sole determinant of the choice between childcare and parental labour supply, but culture should be taken seriously into account.

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