

# How do migrants care for their elderly parents? Time, money, and location

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**Abstract:** This paper examines how middle-aged migrants care for their elderly parents, who may live either in the origin or in the host country. We present an altruistic model of transfers where children are expected to provide support to their parents either in the form of money or informal care and the child's labor supply is endogenous. We examine the pattern of transfers and labor using a detailed data set about migrants living in France in 2003. Our results show that time is primarily devoted to parents living in France, while children mainly send cash gifts to their elderly parents living in the origin country. Our econometric results are rather consistent with an altruistic motive of transfer. We also find that the provision of financial transfers leads to an increase in the labor force participation, while there is no causal effect for informal care.

**Keywords:** Intergenerational transfers, care, migration

**JEL classification:** J14, J22, O15

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## 1/ Introduction

During the past several decades, as low fertility rates and increase in life expectancy led to population ageing across the developed (especially Europe and Japan) and developing (China) world, ageing as a phenomenon has received unprecedented attention in academic and policy making circles. In much of the developed world the main concern of economists has been the fiscal sustainability of the welfare system.

Several studies have tried to forecast the impact of ageing on labor supply until the end of the century (McDonald and Kippen, 2001), while others have searched for resolution of the moral hazard problem of social security, inducing early retirement among the elderly workers despite the fiscal pressure of increased longevity (Börsch-Supan, 2003). Simulations have gone on to show that the impact of benefit reduction, an increase in retirement age and smoothing of the public pension premium over time, are likely to have significant welfare implications (Beetsma et alii, 2003), and the governments of major countries like Germany, France and the US have tried to build upon the forecasts and find an optimal response to the economic challenges.

The fiscal implications of population ageing and the related social security and labor market reform have remained the primary focus of research undertaken in the framework of industrialized economies. At the same time, the study of intra-family transfers of money and time has long been an almost exclusive concern of research on developing countries, marked by poor public infrastructure and prevalence of private social networks in the provision of old age security. Only recent statistics have highlighted the importance of upward private transfers of time and money even in advanced economies, characterized by well developed benefit systems.

For the United States, Sloan et alii (2002) have shown that in the two year period prior to the Health and Retirement Study, 11% of the adult respondents had made a financial transfer of at least 500 USD, while 10% of them provided more than 100 hours of personal care to a parent. In addition, 4% of the respondents were found to co-reside with a parent and as many as 30% reported occasional help with chores. Even in France, a country characterized by one of the most generous social security system, the incidence of upward monetary transfers was found to occur among 8% and the incidence of upward service transfers was found to occur among as many as 31% of the respondents (Wolff, 2000). It is obvious that the projected increase in the proportion of elderly citizens in the population,

together with phase-out tendency in the administration of social security, is bound to raise the importance of upward transfers even further, hence rendering such transfers an increasingly noteworthy phenomenon.

The study of upward private transfers in the context of population ageing and phasing out social security is important for several reasons. To begin with, it has been argued that by crowding out current monetary streams such as those made available by public transfers, altruistically linked households are capable of neutralizing the impact of health, education and retirement related government policies, thus undermining the negative consequences of social security phase-out in response to the pressure of population ageing (Becker, 1974, Barro, 1974). Alternatively, it has been suggested that if the null hypothesis of altruism does not hold, phasing out of social security is likely to induce a suboptimal provision of care and increase in poverty among the elderly (Pezzin and Schone, 1997, Lloyd-Sherlock, 2000).

It has been shown that the problem of optimal provision of care in the context of reduced public resources to the elderly can be further aggravated if upward transfers are the result of either strategic bequest motive (Bernheim et alii, 1985), or non-cooperative game of a number of siblings (Byrne et alii, 2005, Hiedemann and Stern, 1999, Engers and Stern, 2002). However, empirical evidence has failed to provide compelling evidence in favor of either hypothesis. Indeed, results have ranged across the whole gamut of options, either rejecting (Pezzin and Schone, 1997) or providing support for the altruism hypothesis (Sloan et alii, 2002), but typically failing to convincingly accept the hypothesis of strategic behavior (Perozeck, 1998, Sloan et alii, 1996, 1997)<sup>1</sup>.

While failure to reach an empirical consensus has sustained empirical efforts in the prolific area of intergenerational transfers, related, yet different and rapidly expanding group of studies have focused on the allocation of time available to economic agents across divergent socio-economic activities. In the context of a shrinking labor force and increasing need of care for the expanding pool of disabled elderly individuals, the interest in the subject is hardly surprising. The empirical problem has typically been modeled as a system of simultaneous equations of work and care provided to a disabled elderly parent, and inference has been drawn about the impact of care on the labor supply of care-giving individuals.

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<sup>1</sup> For comprehensive surveys of the empirical literature about private intergenerational transfers, see Laferrère and Wolff (2005) and Arrondel and Masson (2005).

As with empirical tests of the theory of altruistic behavior, and despite a relative similarity in approaches, researchers have failed to reach an unambiguous answer vis-a-vis the impact of care-giving to either labor force participation or the supply of work hours of care providers. Wolf and Soldo (1994), Stern (1995) and Pavalko and Artis (1997) have found an insignificant impact of informal care on the labor supply of care-giving individuals, while Boaz and Muller (1992) and Ettner (1995, 1996) have found the latter impact to be significant and negative. While the majority of the preceding references focused on the care provision on the part of daughters, Johnson and Lo Sasso (2000) found that time help to parents substantially reduced labor supply for both men and women<sup>2</sup>. Whether or not the provision of care to disabled elderly individuals has negative impact on the supply of labor in a shrinking labor market has therefore remained an open question.

It is evident from the preceding discussion that microeconomic research in the area of population ageing has centered around two main research topics, i.e. transfers of money and time on the one hand, and the distribution of time between work and care-giving activities on the other hand. Despite macroeconomic evidence in favor of the beneficial impact of immigration on demographic transition and economic growth in ageing developed economies (see Dekle, 2004, Storesletten, 2004), and despite the significant proportion of immigrants in the shrinking labor markets of these economies, analyses of transfers and the impact of transfers on other economic decisions for both the migrants and their families have been strikingly absent.

It is important to note that while research on the transfer behavior of the migrants is virtually nonexistent, the interest in the impact of migration on an ageing economy as such is not new. It has been argued, for example, that gradual ageing of the immigrant population in the majority of advanced economies is likely to add to the already high expected fiscal pressure on account of retirement of the baby-boom generation (Glaude and Borrell, 2002). It has further been shown that institutional constraints such as labor market barriers and access of even unproductive foreign residents to the social security system may contribute to high level of inactivity among the migrants vis-à-vis the natives, hence to an exacerbation rather than amelioration of the fiscal burden on account of immigration (Nannestad, 2004,

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<sup>2</sup> Using data from the UK, Carmichael and Charles (1998, 2003) not only find that male and female carers are less likely to be in paid work than non-carers, but they also show that when being in paid work, carers earn significantly less. See also Heitmueller (2004) with recent evidence on the British case.

Attias-Donfut, 2004). If the parents of the majority of ageing first generation migrants are already in the host country, higher labor market barriers is expected to boost the relative rate of inactivity on account of rising need for informal care.

Such arguments, sound as they are, ignore a crucial characteristic of the migrant, namely the search for a better future while keeping in mind the well-being of families remaining in the origin country (Lucas and Stark, 1985, de Coulon and Wolff, 2005). Indeed, in view of rich evidence in the literature on both remittances to the origin country and the location choice of immigrants prior or during retirement, it is plausible to expect the majority of first generation migrants' less fortunate and disabled relatives to reside in the origin country, thus causing at least part of the economic benefits acquired abroad to be channeled to that country of origin. It is equally plausible, in turn, to expect a positive impact of these remittances on the labor supply of the migrants who make them, to an extent outweighing the negative labor market impact of increased need for informal care. Assessing the balance of these different types of transfers, namely the transfers of time and money, on the labor supply of migrants lies at the heart of our paper.

Our analysis is based on a simple theoretical framework, followed by an empirical estimation of its reduced form equations derived. Specifically, drawing on an altruistic model of transfers, we endogeneize the labor supply of the adult child and investigate the relationship between work hours, time transfers and cash gifts of this child, which leads us to a system of three reduced form equations. We also assess the impact of the two different types of transfers on the labor supply of the donor.

The estimates are based on the PRI survey conducted in 2003 in France on a sample of more than 6000 migrants, aged above 45 and living in France<sup>3</sup>. The survey focuses on the process of ageing of the migrant population and includes detailed information on both the location of the family members and the incidence and amount upward financial and time transfers, as well as characteristics of both the donor and recipient of transfers such as living standards, human capital and health. Our estimates conform with the predictions of an altruistic model of transfers whereby resources reallocate from more to less fortunate family members. Importantly, we find that while informal care to a parent living in the host country has virtually no impact on the labor supply of the care-giving child, remittances to elderly

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<sup>3</sup> The PRI survey means 'Passage à la Retraite des Immigrés' (passage to retirement of migrants).

parents in the origin country exercise a strong positive impact on the labor force participation of the migrant donor.

The remainder of the paper is organized as follows. In section 2, we outline a theoretical model of altruistic time and financial transfers with endogenous labor supply and investigate the effect of exogenous covariates on the transfers and labor decisions. In section 3, we describe the PRI survey along with some descriptive statistics. In section 4, we discuss our econometric strategy, which includes both reduced-form estimation of the model and instrumental variable models in order to control for the endogeneity bias of transfers into the participation equation. Determinants of the transfers and labor decisions are discussed in section 5, where we also investigate how transfers influence the work decision of migrants providing support. Section 6 concludes.

## **2/ A theory of upstream transfers**

Our theoretical framework comprises of two actors: one middle-aged individual who has migrated from the origin to the recipient country and one elderly parent. The child is assumed to be altruistic, and hence provide help to the elderly parent through either informal care or financial transfers. The central question that we try to answer while studying these actors' interaction is to better understand the interrelationships between upward transfers and the labor supply of the donor. To do that, we rely on two crucial assumptions.

First, we concentrate on the interaction between one adult child and one elderly parent, thereby neglecting the potentially important interactions between siblings, which we highlighted at the outset of this paper. While in our context this assumption is stimulated by the absence of elaborate data on the characteristics and behavior's of the siblings of the donor, empirical studies have failed to confirm any significant influence of these characteristics on the behavior of the donor (see the discussion in Wolff, 2005). Hence, we believe our assumption to not be unreasonable<sup>4</sup>.

Secondly, we take the location of the donor and recipient as given, despite the fact that a number of studies have emphasized the importance of the location choice of the family members of migrants including permanent residence in the origin or recipient

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<sup>4</sup> Using detailed data on time-related transfers and attention of middle-aged adults to their parents in France, Jellal and Wolff (2002) cannot reject the hypothesis that children behave in an independently way. However, it could be that migrants and natives select very different strategies when caring for their parents.

country, or no fixed residence in either of these countries (de Coulon and Wolff, 2005, Dustmann, 2003)<sup>5</sup>. As we focus on the labor related decision- making of the adult child at present residing in the host country, the potential retirement location of this child is of no interest for our study. At the same time, it is possible that the parent resides in either the origin or the host country. However, given the typically low age of migration (Attias-Donfut, 2004), and hence high probability that a parent residing in the host country has migrated there during his/her youth, and was not directly influenced by the care-giving ability of the child, we believe it plausible to assume that the location choice made significantly prior to the transfer is optimal. In what follows, we treat this choice as exogenous.

We now turn to the formal description of the model, where subscripts  $k$  and  $p$  indicate child and parent, respectively. The child's utility function  $u(C_k, l_k)$  depends on its own level of private consumption  $C_k$  and on the hours of leisure  $l_k$ . This utility function is continuous and quasi-concave, i.e.  $u_1 > 0$ ,  $u_{11} < 0$ ,  $u_2 > 0$  and  $u_{22} < 0$ . In other words, caring for parents is costly as it entails a loss in income. While either altruism or exchange can potentially motivate the parent-child interaction (Laferrère and Wolff, 2005), we rely on the former hypothesis. First, migrants often come from poor countries. It has been shown that the richest citizens from these countries typically do not migrate (Epstein and Hillman, 1999). Hence, it is reasonable to assume that the parents of the migrants have low amounts of inheritable wealth and therefore the potential benefit of caring for the elderly in exchange of money is reduced. Second, there is evidence in support to hypothesis of altruistically behaving migrants to France (Wolff et alii, 2005)<sup>6</sup>.

Following Becker (1991), we model the altruistic behavior of the child, in our case the only decision-maker whose transfers lead to an optimal allocation of resources within the family. Let  $\beta_k$  be the caring parameter, which indicates the weight of the parental satisfaction in the child's extended utility function. We assume that  $0 < \beta_k < 1$ , meaning that

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<sup>5</sup> Again, there may exist some interactions between siblings. As parents are like a public good for the different children, there is an incentive to move far away from the parent. Konrad et alii (2002) propose such a model where first-born children live far away from the parents, while latter-born children live more closely and have to provide more care.

<sup>6</sup> In particular, Wolff et alii (2005) show that parents are more likely to give financial transfers to their less well-off children and to those children who live in the origin country. However, a scenario such that the respondents behave in an altruistic way with respect to their children, but favor exchange considerations when caring for their own parents is also a possibility.

we exclude the cases of malevolence and of excessive altruism. The parent's utility function  $v(\cdot)$  depends on his private consumption  $C_p$  and on the amount of informal care  $s_k$ . The parent enjoys receiving time-related transfers from the child, so that  $s_k$  enters the utility function as a separate parameter; and the gift enters the utility function through the parent's consumption. Again, we suppose that the utility function  $v(C_p, s_k)$  is continuous and quasi-concave, i.e.  $v_1 > 0$ ,  $v_{11} < 0$ ,  $v_2 > 0$  and  $v_{22} < 0$ .

We now turn to the different resource constraints. In our model, the labor force participation is endogenous for the child. He allocates his total time  $L_k$  between paid work  $H_k$ , leisure  $l_k$ , and upstream services  $s_k$ . The child's income is given by the sum of paid work hours  $wH_k$  and exogenous income  $Y_k$ ,  $w$  being the hourly wage rate. The gross revenue is devoted to consumption and to a financial transfer  $T_k$  made to the parent. The parent's resources are supposed to be exogenous (as they stem from decisions made in the past). They include his personal income  $Y_p$  and the gift  $T_k$ . The budget constraints are :

$$H_k + l_k + s_k = L_k \quad (1)$$

$$C_k = wH_k + Y_k - T_k \quad (2)$$

$$C_p = Y_p + T_k \quad (3)$$

We further assume that there are two non-negativity constraints, one for each type of transfer, so that  $T_k \geq 0$  and  $s_k \geq 0$ . This implies that both transfers flow upward, as our interest lies in the study of helping the parents<sup>7</sup>. By combining constraints (1) and (2), we get the child's full budget constraint  $C_k + wl_k + ws_k + T_k = wL_k + Y_k$ . In the presence of an interior solution for the financial gift, i.e.  $T_k > 0$ , there is a single budget constraint for the family, which is given by:

$$C_k + wl_k + ws_k + C_p = wL_k + Y_k + Y_p \quad (4)$$

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<sup>7</sup> Those inequalities may be relaxed under the assumption of two-sided altruism, from child to parent and from parent to child, in which case there could be some transfers in the reverse direction. However, under altruism, one can easily show that there cannot be simultaneously both a transfer to the parent and a transfer to the child (Laferrère and Wolff, 2005).



Under altruism, we observe that the consumption of each generation does not depend on the distribution of resources between the parent and the child. It only depends on the family income  $wL_k + Y_k + Y_p$ , which corresponds to the well-known income pooling property.

The problem for the child is to maximize his augmented utility function subject to the different resource and non-negativity constraints :

$$\max_{l_k, s_k, T_k} u(wL_k + Y_k - wl_k - ws_k - T_k, l_k) + \beta_k v(Y_p + T_k, s_k) \quad (5)$$

The first-order conditions, respectively with respect to  $l_k$ ,  $s_k$  and  $T_k$  give :

$$-wu_1 + u_2 = 0 \quad (6)$$

$$-wu_1 + \beta_k v_2 = 0 \quad (7)$$

$$-u_1 + \beta_k v_1 = 0 \quad (8)$$

The interpretation of these conditions is straightforward. The marginal utility of leisure  $u_2$  is equal to the marginal disutility  $wu_1$  involved by the foregone income (eq. 6). The marginal loss involved by a lower income is equal to the marginal benefit from helping the parent, weighted by the caring parameter (eq. 7). Finally, condition (8) indicates that the financial transfer is such that the marginal cost for the child of transferring resources (due to a lower private consumption) is equal to the marginal benefit resulting from the increase in the parental level of well-being. By combining (7) and (8), we obtain  $wv_1 = v_2$ . When this condition is not satisfied, it would be preferable for the child to modify his allocation between time and money transfers in order to reach a higher level of satisfaction.

By differentiating the system of first-order conditions (6)-(8), one can determine the effects of the exogenous variables  $w$ ,  $Y_k$ ,  $Y_p$  and  $\beta_k$  on the choice variables  $l_k$ ,  $s_k$  and  $T_k$ . In so far as the income variables are concerned, we obtain the classical for the altruistic model prediction, i.e. lower probability for a poor child to make a financial transfer to a rich parent. However, the impact of the wage rate is less straightforward, as labor supply is endogenous. Specifically, while higher  $w$  improves the ability to provide financial help as a result of an income effect, the same effect is also expected to reduce the number of paid hours of work supplied. At the same time, we have no clear prior about the impact of the income effect of a wage increase on the informal care supplied.

With the use of a logarithmic utility function, we can get closed form solutions. Specifically, optimizing utility function:

$$\alpha_1 \ln(wL_k + Y_k - wl_k - ws_k - T_k) + (1 - \alpha_1) \ln l_k + \beta_k [\gamma_1 \ln(Y_p + T_k) + (1 - \gamma_1) \ln s_k] \quad (9)$$

where the two parameters  $\alpha_1$  and  $\gamma_1$  are such that  $0 < \alpha_1 < 1$  and  $0 < \gamma_1 < 1$ , gives the following optimal values :

$$l_k = \frac{(1 - \alpha_1)(wL_k + Y_k + Y_p)}{w(1 + \beta_k)} \quad (10)$$

$$s_k = \frac{\beta_k(1 - \alpha_1)(wL_k + Y_k + Y_p)}{w(1 + \beta_k)} \quad (11)$$

$$T_k = \frac{\beta_k \gamma_1 L_k w + \beta_k \gamma_1 Y_k - (1 + \beta_k - \beta_k \gamma_1) Y_p}{(1 + \beta_k)} \quad (12)$$

Let us first focus on the transfer decision (eq. 12). First, the financial gift is an increasing function of the child's income  $L_k w + Y_k$ , and in the particular case of separable and logarithmic utility function, higher wage rate implies a higher value of the financial gift. Second, under the assumption of altruism, there exists an intergenerational redistribution of resources within the family, as  $\partial T_k / \partial Y_p < 0$ . Furthermore, setting  $\bar{Y}_k = L_k w + Y_k$  it follows that  $\partial T / \partial \bar{Y}_k - \partial T / \partial Y_p = 1$ , which is the neutrality property (Altonji et alii, 1997)<sup>8</sup>.

In the case of informal care, the pattern is slightly different. We can easily see from equation (11) that while the time transfer is positively related to the exogenous income of both the child and the parent, an increase in the wage rate reduces the child's provision of informal care. Interestingly, we also observe that the optimal time transfer is not affected by the distribution of revenues between the two generations:  $s_k$  is a function of the family income  $(wL_k + Y_k + Y_p)$ , which implies that  $\partial s / \partial \bar{Y}_k - \partial s / \partial Y_p = 0$ .

Finally, based on (10), we can investigate the factors that affect the child's decision to undertake a paid activity. The number of paid hours is given by :

$$H_k = \frac{wL_k(\alpha_1 + \beta\gamma_1) + (\alpha_1 - \beta_k + \beta_k\gamma_1 - 1)(Y_k + Y_p)}{w(1 + \beta_k)} \quad (13)$$

The inequality  $(\alpha_1 - \beta_k + \beta_k\gamma_1 - 1) < 0$  implies that the child is less likely to work when the exogenous incomes  $Y_k$  and  $Y_p$  are large. While the intra-family distribution of these incomes

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<sup>8</sup> The meaning of the neutrality property is as follows. When taking one euro to the child and giving it to the parent, the transfer to the parent should also be reduced by one euro under altruism.

does not have impact on the child's labor supply decision, the positive derivative  $\partial H_k / \partial w > 0$  implies that better remuneration increases the hours of paid work. Note however that this result only holds in our parametric setting. In the case of a more general utility function, the wage effect is the sum of an income-effect and of a substitution effect, hence the derivative  $\partial H_k / \partial w$  does not have a definite sign. The most important implication of this model is that one has to take into account the joint determination of labor supply and transfers, in order to fully understand the donor's behavior. In what follows, we concentrate on an empirical analysis of this interaction.

### 3/Description of the data

Our empirical analysis is based on the Passage à la Retraite des Immigrés (PRI) data set collected by the Caisse Nationale d'Assurance Vieillesse and Institute National de la Statistique et des Etudes Economiques in Paris between December 2002 and March 2003.

This is a representative sample of the diverse nationalities of immigrants in France at retirement age and age close to retirement. It includes very rich information on elderly immigrants, their parents, spouses and children, such as age, educational and professional attainment, transfers of money and time, migration history, health status and wealth. While the lower age bound for similar types of surveys (e.g. SHARE) is typically set at 50 and there is usually no requirement for an upper bound, the PRI sample was restricted between age groups 45 and 70. This restriction was based on the requirement for assuring sufficient representativeness of all nationalities in the sample, which is rather low for example in the case of cohorts coming from Sub Saharan Africa<sup>9</sup>.

The interviews were based on the CAPI questionnaire and were administered in the residence of the respondent. The sample was constructed by way of random selection on the basis of the population census and included around 10,000 residences of immigrants in age groups 45-70 from 12 regions in the country, accounting altogether for 90% of the population of immigrants in these age groups in France<sup>10</sup>. About 51% of the respondents to the final sample come from Europe, 38% come from Africa, and 11% from all other

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<sup>9</sup> Specifically, these are cohorts facing high representation in the lower parts of the age distribution and virtually no representation in the age groups above 70.

<sup>10</sup> For details, see Attias-Donfut (2004).

continents. Six highly represented countries, Portugal, Italy and Spain for Southern Europe, Algeria, Morocco and Tunisia for Northern Africa, account for 70% of the respondents.

There are two location possibilities for the parents of the respondents: they can reside either in France or in the country of origin. Hence, it is crucial for the purposes of the present study to take a look at the geographical distribution of the migrants' families and the link of this distribution to the portfolio of transfers of time and money. Given the low retirement age in France, with the majority of workers with regular employment retiring at age 60, an informed study of labor force behavior in France should necessarily take into account this peculiarity<sup>11</sup>. We therefore choose the age of 60 as the upper limit to our sample, and we report in Table 1 the cross tabulation of time and money transfers of immigrants in this age group by location of their parents<sup>12</sup>.

As indicated in the table, about 28% of the migrants' parents reside in France, while the majority of parents (72%) reside in the country of origin. Expectedly, the former group attracts the bulk of the upward transfers of time, while the second of these groups attracts the bulk of the upward financial transfers.

This dichotomy of transfers of time and money on the basis of location of the parent is also captured by Figure 1, which highlights the distribution of the two different types of transfers not only for these two distinct cases (parental location in country of origin or host country), but also for the intermediate cases of different geographical distances within France and outside of France. We see that while within the host country, informal care to the parents is an increasing, and financial care decreasing function of the geographical distance, informal care to parents outside of France decreases gradually when moving from near foreign countries towards distant foreign countries. At the same time, the incidence of upward financial transfers for parents residing in distant foreign countries increases dramatically, when compared to the financial aid channeled towards parents residing in nearby countries.

This latter observation highlights the high probability that transfers depend crucially on the financial position of the recipient and donor and we address this possibility with the cross-tabulations reported in figures 2A and 2B. Figure 2A highlights the distribution of

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<sup>11</sup> Those who retire at ages above 60 typically sustain self-employment and irregular jobs, rather than full time contractual work for an employer.

<sup>12</sup> Questions concerning financial transfers are as follows. For financial transfers, 'did you give money to your parents during the last five years?'. For time, 'do you actually spend time helping your parents in old age?'

financial transfers to parents living in France and parents living outside of France by financial status of the respondent. We observe a significantly higher and increasing by the financial status of the donor incidence of transfers towards parents residing outside of France and insignificant and less drastically increasing incidence of financial transfers to parents residing in France, an observation that further highlights the difference in standards of living across advanced and less advanced economies and explains the dramatic incidence of financial aid to countries far away from France, noticed on Figure 1. Figure 2B reveals the opposite trend of significantly higher incidence of informal care to parents residing in the host country. However, unlike with financial transfers, the intensity of this care does not vary significantly by financial status of the donor.

Turning back to Table 1, we see that aside from providing important information on the location of parents and the reallocation of different types of transfers, this table also reveals a rather peculiar pattern whereby respondents providing higher level of informal care (to parents living in France) enjoy higher level of labor force participation than respondents providing monetary transfers (to parents residing outside of France). However, these cross-tabulations should not necessarily imply any causality vis-à-vis the impact of upward transfers of money and time on labor force participation.

For example, a close look at the data, in particular the information on the age of the respondent at the time of migration, and the timing and reasons for migration of the respondent's parents had they also migrated to France, indicates a higher probability for parents residing in France to have migrated with the young respondents, than to have been helped by their children to migrate to France during old age. The implication would be that many of the currently middle-aged or elderly respondents were able to benefit from the French education system and the networks created by their parents and thus have labor market advantages vis-à-vis migrant cohorts of higher ages. This hypothesis finds at least some confirmation in the nationality based cross-tabulations reported in Table 2.

For the Italian groups of immigrants, the oldest cohort of immigrants in France, one observes that 65.7 percent of the parents are already in the host country. At the same time, Italian respondents enjoy relatively high labor force participation. By contrast, for younger cohorts of immigrants such as those coming from East Europe and Southern Africa, we observe a low proportion of parents residing in France. However, we do observe in general a relatively high labor force participation as well as high positive association of financial

transfers with the labor force participation. In other words, in order to draw an informed picture of the association of upward transfers and labor force participation, one should take seriously into account the origin and duration of migration, after controlling for human capital characteristics such as education.

Table 3 reports some descriptive statistics for our sample. We report the means of different human capital and family characteristics of the donors and recipient by labor force participation or provision of money and time transfers by the donor. The main exogenous variables, implied by our theoretical model, are the income levels on both the donor and the recipient and the wage rate faced by the donor. The data set makes available a continuous variable of the total household income of the donor and we use this variable as a proxy for the child's income. However, given the high number of nationalities among the parents residing outside of France, implying a high diversity of living standards and currencies, it is difficult to construct an easily comparable continuous proxy for the income of the parent. We therefore use a qualitative variable, reported by the respondent and indicating a different level of lifestyle of the parent<sup>13</sup>.

Another shortcoming of the data is the lack of information on wages. However, as indicated by Ettner (1996), empirical construction of wage rates for non-workers involves issues of identification. We therefore follow the broader empirical literature in including factors influencing the wage (like gender, age or education) directly in our structural equation as a proxy for the potential wage rate. In addition to these main independent variables, we include controls for the geographical distance between donors and recipients, duration of migration, health, marital status and children of both donor and recipient. As argued earlier, all of these covariates are expected to have important impact on both the transfer and labor supply decisions.

Our statistics indicate that while the age distribution of migrants does not vary significantly on the basis of whether they participate in the labor force or provide any upward transfers, higher level of labor force participation and provision of monetary transfers occurs among the better educated respondents. This observation conforms to the predictions of our theoretical model. Interestingly, however, we note that these are the higher educated respondents who have also a higher probability of providing time transfers.

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<sup>13</sup> The question is about the standard of living of the parent when the child was a teenager. It indicates whether the parents were 'very poor', 'poor', 'fair', or 'rich'.

While deviating from our priors, this observation could be consistent with a theory of return of favors to parents who have invested in their offspring's education (see Bhaumik and Nugent, 2000, Balestrino, 1997).

The descriptive statistics also provide support to the altruistic hypothesis for transfers of money and time, in that upward transfers of both time and money reallocate predominantly towards parents of either poor or fair financial status and to a much lesser extent towards rich parents. Conversely, the lesser reallocation of transfers towards the poorest parents is perhaps indicative of relatively low level of upward mobility and hence lower ability among the respondents to help their parents. This is also confirmed by the fact that the means of current and permanent wealth of children providing any type of transfers are slightly higher than those of children not providing transfers.

The rest of the descriptive statistics conforms to expected patterns. Higher duration of migration is associated with higher level of labor force participation and time transfers and lower level of financial transfers, higher distance of the parents from France is associated with higher incidence of monetary and lower incidence of time transfers, resources reallocate more intensively towards parents of poorer health, and are less important if both parents are alive and hence able to help each other and married or cohabiting respondents are more likely to provide monetary, as opposed to time transfers.

While giving a good idea of the characteristics of respondents on the basis of labor force participation and provision of financial or time transfers, the descriptive statistics provide insufficient information on the causal relationships between transfers and work. We explore these relationships more rigorously in the next sections.

#### **4/ Econometric methodology**

As indicated in the theoretical section, a migrant is expected to choose simultaneously the value of the financial gift, the amount of informal care and the number of working hours. Following equations (10), (11) and (13), these choices can be expressed as a function of several different exogenous characteristics.

Let  $H^*$ ,  $s^*$ , and  $T^*$  be three latent variables which indicate the propensity to work, the propensity to provide time-related resources, and the propensity to make a cash gift, respectively. In our analysis, owing to data limitations (there is no information on work hours), we only focus on the discrete decisions of working and giving denoted by  $H$ ,  $s$ , and

$T$ . We have  $H = 1$  if  $H^* > 0$  ( $H = 0$  if  $H^* \leq 0$ ),  $s = 1$  if  $s^* > 0$  ( $s^* \leq 0$  otherwise), and  $T = 1$  if  $T^* > 0$  ( $T^* \leq 0$  otherwise). The econometric reduced-form specification that we want to estimate is given by :

$$\begin{cases} H^* = X_H \beta_H + \varepsilon_H \\ s^* = X_s \beta_s + \varepsilon_s \\ T^* = X_T \beta_T + \varepsilon_T \end{cases} \quad (14)$$

where  $X_H$ ,  $X_s$  and  $X_T$  are three sets of exogenous variables which respectively influence labor force participation, time and financial transfers,  $\beta_H$ ,  $\beta_s$  and  $\beta_T$  are the corresponding vector of parameters, and  $\varepsilon_H$ ,  $\varepsilon_s$  and  $\varepsilon_T$  are three random perturbations.

As transfers and labor supply are jointly decided, the residuals of each equation are likely to be correlated. Omitted variables which are expected to influence the probability to give money, for instance the unobserved helper's degree of altruism, are also likely to influence the probability of informal care. In the same vein, individual characteristics of those people who dislike doing nothing should have the same influence on the propensity to work and to undertake time-related services. To account for the correlation between these random errors, we assume that  $(\varepsilon_H, \varepsilon_s, \varepsilon_T)$  follow a Normal trivariate distribution :

$$\begin{pmatrix} \varepsilon_H \\ \varepsilon_s \\ \varepsilon_T \end{pmatrix} \sim \begin{pmatrix} 0 & 1 & \rho_{12} & \rho_{13} \\ 0, \rho_{12} & 1 & \rho_{23} & \\ 0 & \rho_{13} & \rho_{23} & 1 \end{pmatrix} \quad (15)$$

where  $\rho_{12}$ ,  $\rho_{13}$  and  $\rho_{23}$  are three additional parameters to estimate. Under the normality assumption, the model is a trivariate Probit model. The corresponding results, which are obtained with the use of a simulated likelihood method (Cappellari and Jenkins, 2003), are reported in Table 4<sup>14</sup>.

The trivariate Probit model is the immediate empirical equivalent of the structural model obtained from our theoretical analysis. It allows us to take into account the influence of individual characteristics on the three different choices made by the donor. However, it tells us little about the causal effect of transfer on the labor force participation of the donor.

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<sup>14</sup> The GHK simulator is used to evaluate the trivariate Normal integrals. For each observation, a likelihood contribution is calculated for each replication, and the simulated likelihood contribution is the average of the values derived from all the replications. We choose 50 replications in the estimation, which is approximately the square root of the size of the sample.



As a next step, we therefore follow Ettner (1995, 1996), Johnson and Lo Sasso (2003), Soldo and Wolf (1994) and Carmichael and Charles (2003) among others and take seriously into account the endogeneity of transfers. One can put forward several arguments in favor of endogeneity. For instance, it is plausible to assume that parents expect children who are more familiar with domestic tasks (most often daughters) to provide a higher amount of informal care. Furthermore, the existence of formal care substitutes for some time-related services can make it possible for a child whose opportunity time cost is high to pay for formal care provision to parents instead of giving time. Hence, we explicitly take into account the interrelation between the labor and transfer decisions.

Based on the observations of dichotomy of time and money transfers for parents living in France and parents living outside of France, respectively, we split the sample by parental location. Specifically, when the parents live in the origin country, we investigate the causal effect of financial gift on the propensity to work since time transfers are very infrequent in that subsample. On the other hand, time transfers are the primary form of family support when parents live in France, and hence we only focus on the effect of informal care on the propensity to work and neglect cash gifts in that case.

The econometric model that we seek to estimate can therefore be formalized as :

$$\begin{cases} H^* = X_H \beta_H + \gamma_T T + \varepsilon_H \\ T^* = X_T \beta_T + \varepsilon_T \end{cases} \quad (16)$$

when the parent lives abroad (money being the primary transfer), and as :

$$\begin{cases} H^* = X_H \beta_H + \gamma_s S + \varepsilon_H \\ S^* = X_s \beta_s + \varepsilon_s \end{cases} \quad (17)$$

when the parent lives in the origin country (time is the primary transfer). The estimates of special interest for our causal analysis are  $\gamma_T$ , which captures the effect of cash gift on labor participation, and  $\gamma_s$  which captures the effect of informal care on labor supply.

Clearly, the endogeneity bias stems from the correlation between the residuals from the two equations under consideration, i.e. either  $(\varepsilon_H, \varepsilon_T)$  or  $(\varepsilon_H, \varepsilon_s)$ . While several studies have controlled for the potential endogeneity bias using a two-stage estimate for discrete models (Ettner, 2002, Sasaki, 2002), we rely on a full maximum method estimation which avoids any efficiency loss. The model defined either by (16) or (17) is a simultaneous recursive bivariate Probit model. Although this model has no linear reduced form (since we

have either  $T$  or  $s$  as exogenous covariates rather than their latent counterpart  $T^*$  or  $s^*$ ), one can rely on a maximum likelihood method which provides an easy solution to the problem (see the further discussion in Greene, 1998)<sup>15</sup>.

It seems a priori difficult to determine the direction of the bias. In the case of parents living in France, for example, one could expect a negative correlation between  $\varepsilon_H$  and  $\varepsilon_s$ . Respondents who currently have no paid job are likely to devote more time to family activities, including domestic tasks or care of children, and hence be more available for the provision of informal care as well. By contrast, informal care may also require a taste effort of any kind, and hence increase the propensity of employed individuals to provide family help, implying a positive correlation between the residuals. Similar arguments hold for the correlation between  $\varepsilon_H$  and  $\varepsilon_T$ . Specifically, the unobserved propensity to be altruistic should decrease the propensity to have a paid job, but increase the will to make cash gifts. In sum, the direction of the bias is a matter of empirical verification.

## 5/Empirical results

Let us first describe the estimates of the trivariate Probit model, which is the three reduced form equations for labor force participation and the provision of transfers of time and money (see Table 4). Following the broader empirical literature (see for instance Ettner, 1996), we assume that the characteristics of the parents do not have a direct influence on the work decision. In the transfer equation, we introduce the characteristics of the parents, i.e. number of children, marital, health and financial status, as well as geographical distance of the parents from their donor children. We further exclude the household's level of income and home ownership dummy from the labor force participation equation. Finally, we keep the variable indicating problems in reading or writing French along with the local rate of unemployment out of the transfer equations<sup>16</sup>.

Our results are consistent with both the predictions of the theoretical model, and the priors developed on the basis of our descriptive statistics. To begin with, education and age have respectively a positive and a negative impact on the probability of labor force

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<sup>15</sup> As shown in Greene (1998), the simultaneity problem does not matter when the two dependent variables (labor and transfers) are jointly determined in the bivariate model.

<sup>16</sup> The level of unemployment is measured at the departmental level using aggregate data provided by Insee. There are 95 departments in France.

participation. While the former of these effects is consistent with the predictions of any labor market research, the latter effect is easy to explain given the age restrictions of our sample and the related higher probability of people belonging to this age group to drop out from the labor force. Expectedly, duration of migration has a nonlinear inverted U-shape impact on the labor participation of the migrant and higher rate of regional unemployment has negative impact on the probability of work. Finally, both a larger number of children and health problems have negative impact on the supply of labor.

Our financial transfer estimates are consistent with the altruistic hypothesis of transfers. Specifically, we observe an inverted U-shape impact of the donor's income on the probability of a monetary transfer, and richer parents are less likely to receive a financial transfer. At the same time, we do not find strong evidence supporting the positive impact of the expected wage on monetary transfers<sup>17</sup>. The results from the tests of our hypotheses in the context of time transfers are even weaker. Specifically, we do not find any impact of either income or expected wage on the provision of upward time transfers, although we do find a doze of altruism on the part of the donors in that parents of poorer health are more likely to receive informal care.

Table 4 provides some especially interesting evidence with respect to the impact of geographical distance on either time or monetary transfers, evidence that is consistent with both our cross tabulations reported in Table 1 and our figures, reflecting the impact of geographical distance on upward transfers. Specifically, we observe a highly significant and positive impact of foreign location on the provision of financial transfers and negative and increasingly strong impact of distance on the provision of time transfers. This observation provides further justification of the appropriateness of separation of our samples into parents living in the host, versus parents living in the origin country. We therefore split the samples and report separate estimates when estimating the causal impact of the two different types of transfers on labor decision.

The results from our bivariate Probit estimates, one accounting for the impact of financial gifts on labor force participation, and a second one accounting for the impact of informal care on labor supply, are reported in Tables 5 and 6, respectively. In both cases, we present first the labor supply equation with the transfer decision treated as exogenous, and

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<sup>17</sup> In particular, while age has negative impact on the provision of financial transfer, the coefficient of years of education of the donor in the monetary transfer equation is positive, but insignificant.

then the recursive model with the endogeneity-corrected estimate. As before, for the purposes of appropriate identification, we exclude parents' characteristics, household's level of income and home ownership from the labor force participation equation. At the same time, we exclude from the transfer equations both the variable indicating problems in reading or writing French and the local rate of unemployment.

The coefficients from these estimations are consistent with those from our trivariate Probit model and we therefore concentrate on the interpretation of our measures of causality. We first focus on the sample of immigrants whose parents live in the origin country, i.e. the potential recipients of financial gifts. We observe that when the decision to make a monetary transfer is treated as exogenous, we obtain a significant value of 0.348 for the transfer variable. On the other hand, when the monetary transfer is treated as endogenous, the respective coefficient is equal to 1.319. The understatement of the impact of the exogenously treated transfer is due to a negative correlation between the error terms from the labor supply and transfer equation. We find a further confirmation of this effect from the high and significant coefficient of correlation in the bivariate model is large<sup>18</sup>.

We now turn to the relationship between the time transfer and labor decisions. The results reported in Table 6 indicate that when the probability to provide informal care is treated as exogenous, the relationship is not significant. Moreover, even when we account for endogeneity of the time transfer in the determination of labor supply, we find no causal impact of the former on the latter decision. The coefficient of informal care is slightly higher in the endogeneity corrected labor supply equation, but it is still insignificant at conventional levels. In other words, the effect of endogeneity appears to be minimal. Finally, the negative (though again insignificant) coefficient of correlation between the residual terms from the two equations grants weak support to our hypothesis of negative selection bias.

The observation that the provision of informal care does not reduce the respondent's labor supply runs counter to the evidence of Ettner (1995, 1996), Johnson and Lo Sasso (2000) and Carmichael and Charles (2003). A possible explanation for this inconsistency could be the fact that we only focus on discrete decisions, both for labor and informal care, the main reason for our choice being the absence of information on work hours and hours of informal care in the PRI survey. This data limitation puts significant restrictions on our measure of flexibility in the use of time. Specifically, it precludes the possibility that donors

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<sup>18</sup> The coefficient of correlation is equal to -0.636 and is significant at the 1 percent level.

of informal can choose to work less or part-time when providing more care, without compromising their standards of living to the extent imposed by complete exit from the labor force. Aside from these empirical limitations, the difference in our results from those based on analyses using US data could stem from institutional differences, the labor market being less flexible for instance<sup>19</sup>.

Importantly, our analysis shows that financial transfers to parents who live in the origin country have positive effect on the labor force participation of respondents. This observation is easy to understand. Migrants typically leave their countries in search of a better future while keeping in mind the well-being of their families through remittance (Rapoport and Docquier, 2005). As a result, part of their economic benefits is *ex ante* expected to return to the origin country through remittances and these financial transfers, in turn, have positive impact on the labor supply of the migrants in their host country. This impact, which highlights the main innovation of our paper over previous research on informal care transfers, brings to light the importance of careful analyses of migrant behavior in studies of the implications of population ageing on economic performance.

Before we end, it is useful to note that our result could be a consequence of reverse causality. The causality could be a consequence of an income effect, whereby richer (i.e. professionally more successful) individuals have larger ability to provide financial transfers. To test this hypothesis, we also estimated a non-recursive, simultaneous model with two equations. A cash gift is introduced in the labor equation, and at the same time a dummy variable for the labor decision is brought as an explanatory variable of the transfer equation. As such a model is not internally consistent and is inestimable when the right hand side variables are binary, we estimate the model via the latent variables approach described in Maddala (1983)<sup>20</sup>. Our results (available upon request) indicate that while the cash gift estimate is positive and significant in the labor equation, the estimate of the labor force participation does not influence at any conventional level the probability to make a transfer. In other words, we have evidence to suggest that the impact of financial transfers on the labor force participation of migrants to France is, indeed, causal.

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<sup>19</sup> Another suggestion is that there exist better formal care opportunities in France, which would lessen the need for supply of informal care in that country with respect to the United States.

<sup>20</sup> For further details on these simultaneous equations models with discrete variables and their estimations, see in particular Heckman (1978) and Maddala (1983).

## 6/ Conclusion

As migrants grow older, especially in European countries, caring for parents become an important concern and it may have strong implications from the public policy viewpoint. Based on empirical studies on natives, it has been suggested for instance that the provision of informal care may have a reducing impact on the labor force participation of those who give time to their parents. In this paper, we have investigated the pattern of private transfers given by migrants to their elderly parent, using the PRI survey recently conducted in France.

Based on a theoretical model of altruistic transfers with endogenous labor supply, our empirical analysis focuses on the joint decisions of labor supply, financial transfer and informal care. We find that the location of parents is a very significant predictor when explaining the transfers. On the one hand, when parents are living in France, they mainly receive time-related resources. On the other hand, when the parents live in the origin country, migrants send primarily cash gifts. Results from a joint trivariate estimation also evidence that upstream transfers are more likely to be consistent with an altruistic motive. Indeed, we find that poorer parents are more likely to receive cash gifts and that time transfers mainly benefit to the most needy parents, i.e. those who are in poor health.

We also investigate whether helping parents influences the labor force participation of migrants. For that purpose, we rely on an instrumental variable approach and estimate recursive, simultaneous bivariate models. We find a causal effect of cash gifts on the donor's labor supply, while there is no incidence for informal care. This latter effect stands in contrast with the results of previous similar studies performed on natives either in the US or in the UK, which have evidenced a negative impact of informal care on worked hours. While the difference may stems from the lower flexibility of the labor market in France, it may be that migrants and natives have very different strategies to care for their parents during old age. Such a comparative study would be undoubtedly of interest, and we leave this issue for future research.

## References

- Altonji J.G., Hayashi F., Kotlikoff L.J., (1997), 'Parental altruism and inter vivos transfers: Theory and evidence', *Journal of Political Economy*, vol. 105, pp. 1121-1166.
- Arrondel L., Masson A., (2005), 'Altruism, exchange or indirect reciprocity: What do the data on family transfers show?', in S.C. Kolm, J. Mercier Ythier (eds), *Handbook on the Economics of Giving, Reciprocity and Altruism*, North-Holland, Elsevier.
- Attias-Donfut C., (2004), *Passage a la retraite des immigrés. Premiers resultants*, CNAV, Paris
- Barro R.J., (1974), 'Are government bonds net wealth?', *Journal of Political Economy*, vol. 82, pp. 1095-1117.
- Balestrino A., (1997), 'Education policy in a non-altruistic model of intergenerational transfers with endogenous fertility', *European Journal of Political Economy*, vol. 13, pp. 157-169.
- Becker G.S., (1974), 'A theory of social interactions', *Journal of Political Economy*, vol. 82, pp. 1063-1093.
- Becker G.S., (1991), *A Treatise on the Family*, Enlarged Edition, Harvard University Press, Cambridge.
- Beetsma R., Bettendorf L., Broer P., (2003), 'The budgeting and economic consequences of ageing in the Netherlands', *Economic Modelling*, vol. 20, pp. 987-1013.
- Bernheim B.D., Shleifer A., Summers L., (1985), 'The strategic bequest motive', *Journal of Political Economy*, vol. 93, pp. 1045-1076.
- Bhaumik S., Nugent J., (2000), 'Wealth accumulation, fertility and transfers to elderly heads in Peru', in Mason A., Tapinos, G., *Sharing the Wealth*, Oxford University Press, New York.
- Boaz R.F., Muller C.F., (1992), 'Paid work and unpaid help by caregivers of the disabled and frail elders', *Medical Care*, vol. 30, pp. 149-158.
- Börsch-Supan A., (2003), 'Labor market consequences of population ageing', *NBER Working Paper*, n° 8640.
- Byrne D., Goeree M.S., Hiedemann B., Stern S., (2005), 'Long-term care, formal home health care, and informal care', *Mimeo*, University of Virginia.
- Cappellari L., Jenkins S., (2003), 'Multivariate Probit regression using simulated maximum likelihood', *Stata Journal*, vol. 3, pp. 278-294.
- Carmichael F., Charles S., (1998), 'The labour market costs of community care', *Journal of Health Economics*, vol. 17, pp. 745-765.
- Carmichael F., Charles S., (2003), 'The opportunity costs of informal care: does gender matter?', *Journal of Health Economics*, vol. 22, pp. 781-803.
- de Coulon A., Wolff F.C., (2005), 'Immigrants at retirement : Stay/return migration or va-et-vient?', *mimeo*, Centre for Economic Performance Discussion Paper, n° 0691, London School of Economics.
- Dekle R., (2004), 'Financing consumption in an aging Japan. The role of foreign capital inflows in immigration', *NBER Working Paper*, n° 10781.
- Dustmann C., (2003), 'Children and return migration', *Journal of Population Economics*, vol. 16, pp. 815-30
- Engers M., Stern S., (2002), 'Long-term care and family bargaining', *International Economic Review*, vol. 43, pp. 73-114.
- Epstein G., Hillman A., (1999), 'The kind never emigrates', *Review of Development Economics*, vol.3, pp. 107-121.

- Ettner S.L., (1995), 'The impact of parent care on female labor supply decisions', *Demography*, vol. 32, pp. 63-79.
- Ettner S.L., (1996), 'The opportunity costs of elder care', *Journal of Human Resources*, vol. 31, pp. 189-205.
- Greene W.H., (1998), 'Gender economic courses in liberal arts college: Further results', *Journal of Economic Education*, vol. 29, pp. 291-300.
- Heckman J.J., (1978), 'Dummy endogenous variables in a simultaneous equation system', *Econometrica*, vol. 46, pp. 931-959.
- Heitmueller A., (2004), 'The chicken or the egg? Endogeneity in labour market participation of informal carers in England', *IZA Discussion Paper*, n° 1366.
- Hiedemann B., Stern S., (1999), 'Strategic play among family members when making long-term care decisions', *Journal of Economic Behavior and Organization*, vol. 40, pp. 29-57.
- Jellal M., Wolff F.C., (2002), 'Altruisme, coopération et transferts familiaux', *Revue Economique*, vol. 53, pp. 863-885.
- Johnson R.W., Lo Sasso A.T., (2000), 'The trade-off between hours of paid employment and time assistance to elderly parents at midlife', *mimeo*, The Urban Institute, Washington.
- Konrad K.A., Künemund H., Lommerud K.E., Robledo J.R., (2002), 'Geography of the family', *American Economic Review*, vol. 92, pp. 981-998.
- Laferrère A., Wolff F.C., (2005), 'Microeconomic models of family transfers', in S.C. Kolm, J. Mercier Ythier (eds), *Handbook on the Economics of Giving, Reciprocity and Altruism*, North-Holland, Elsevier.
- Lloyd-Sherlock P., (2000), 'Primary health care and older people in the south. A forgotten issue', *The European Journal of Development Research*, vol. 16, pp. 283-300.
- Lucas R., Stark O., (1985), 'Motivations to remit. Evidence from Botswana', *Journal of Political Economy*, vol. 93, pp. 901-916.
- Maddala G.S., (1983), *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press, Cambridge.
- McDonald P., Kippen R., (2001), 'Labor supply prospects in 16 developed countries, 2000-2050', *Population and Development Review*, vol. 27, pp. 1-32.
- Nannestad P., (2004), 'Immigration as a challenge to the Danish welfare state', *European Journal of Political Economy*, vol. 20, pp. 755-767.
- Pavalko E.K., Artis J.E., (1997), 'Women's caregiving and paid work: Causal relationships in late midlife', *Journal of Gerontology: Social Sciences*, vol. 52B, pp. S170-S179.
- Pezzin L.E., Schone B., (1997), 'The allocation of resources in intergenerational households : Adult children and their elderly parents', *American Economic Review*, vol. 87, pp. 460-464.
- Pezzin L.E., Schone B., (1999), 'Intergenerational household formation, female labour supply, and informal caregiving : A bargaining approach', *Journal of Human Resources*, vol. 34, pp. 475-503.
- Rapoport H., Docquier F., (2005), 'The economics of migrants' remittances', in S.C. Kolm, J. Mercier Ythier (eds), *Handbook on the Economics of Giving, Reciprocity and Altruism*, North-Holland, Elsevier.
- Sasaki M., (2002), 'The causal effect of family structure on labor force participation among Japanese married women', *Journal of Human Resources*, vol. 37, pp. 429-440.
- Storesletten K., (2003), 'Fiscal implications of immigration. A net present value calculation', *Scandinavian Journal of Economics*, vol. 105, pp. 487-506.
- Sloan F.A., Hoerger T.J., Picone G., (1996), 'Effects of strategic behavior and public subsidies on families' savings and long term care decisions', in Sloan R.A., ed., *Long term care: Economic Issues and Policy Solutions*, Kluwer, Boston, pp. 45-68.

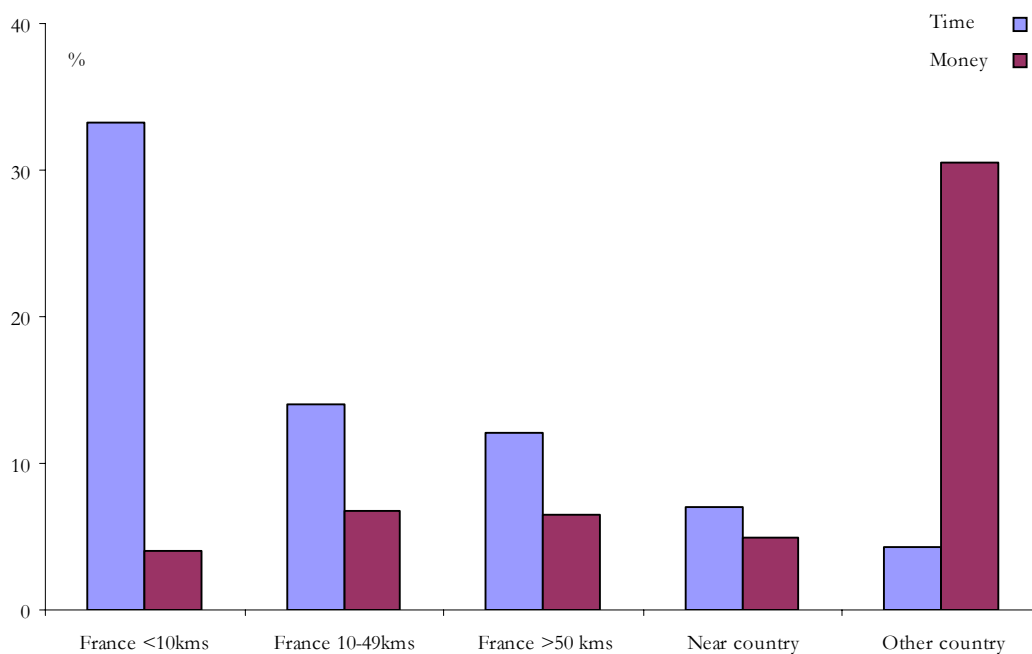


- Sloan F.A., Picone G., Hoerger T.J., (1997), 'The supply of children's time to disabled elderly parents', *Economic Inquiry*, vol. 35, pp. 295-308.
- Sloan F.A., Zhang H.H., Whang J., (2002), 'Upstream intergenerational transfers', *Southern Economic Journal*, vol. 69, pp. 363-380.
- Stern S., (1995), 'Estimating family long-term care decisions in the presence of endogenous child characteristics', *Journal of Human Resources*, vol. 30, pp. 551-580.
- Wolf D., Soldo B.J., (1994), 'Married women allocation of time to employment and care of elderly parents', *Journal of Human Resources*, vol. 29, pp. 1239-1276.
- Wolff F.C., (2000), 'Les transferts versés aux enfants et aux parents : altruisme ou échange intertemporel ?', *Économie et Prévision*, n° 142, pp. 67-91.
- Wolff F.C., (2005), 'Les transferts ascendants au Bangladesh : une décision familiale ?', *L'Actualité Economique*, forthcoming.
- Wolff F.C., Spilerman S., Attias-Donfut C., (2005), 'Do parents help more their less well-off children ? Evidence from a sample of migrants to France', *mimeo*, Université de Nantes.

**Table 1. The pattern of upstream transfers**

Variables	Parents living in France	Parents living in the origin country	All
Rate of transfer (in %)			
Time	24.8	4.7	10.3
Money	5.1	26.5	20.6
Portfolio (in %)			
No transfer	71.8	70.9	71.2
Money only	3.3	24.4	18.5
Time only	23.1	2.6	8.3
Money and time	1.7	2.1	2.0
Labor supply (in %)			
Participation	77.1	66.4	69.4
Number of observations	689	1798	2487

Survey PRI 2003.

**Figure 1. The provision of upstream transfers, by distance to parents**

Survey PRI 2003

Figure 2A. The provision of financial transfers, by distance to parents and participation status

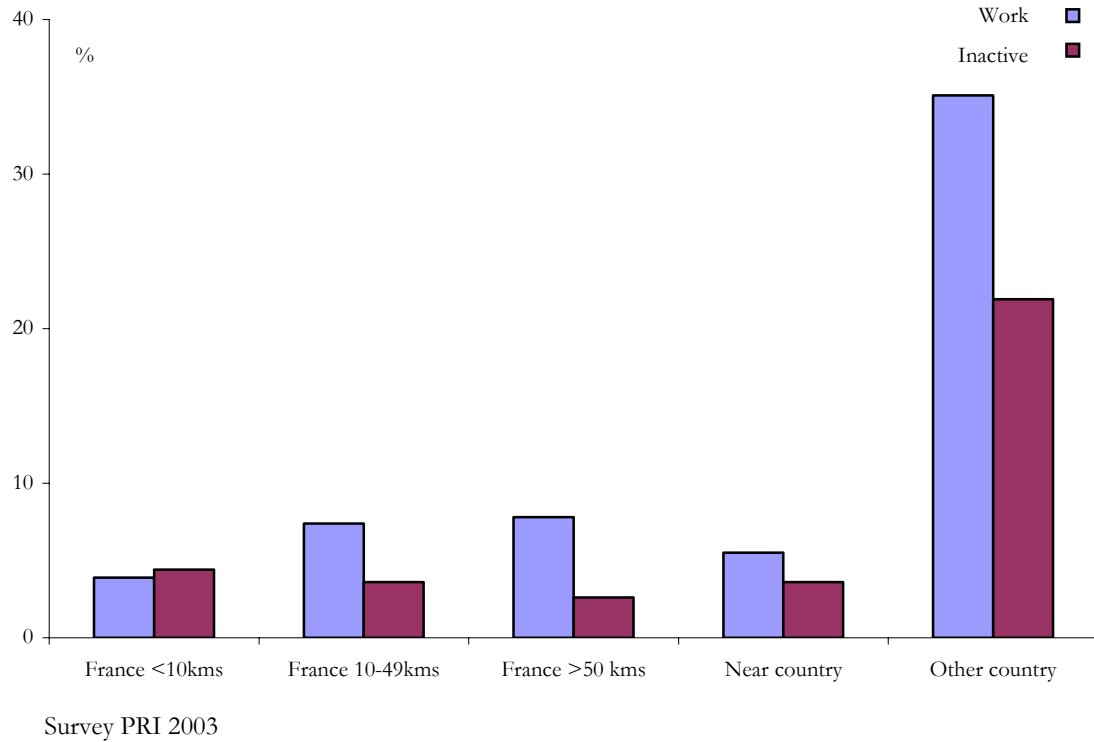
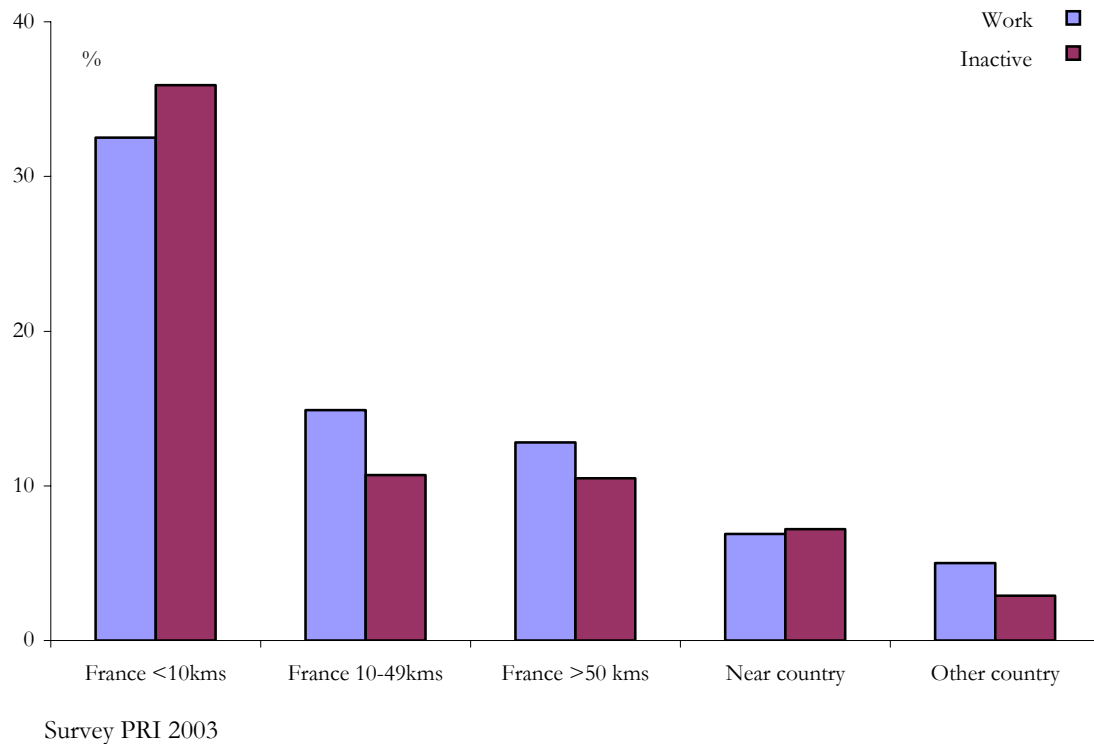
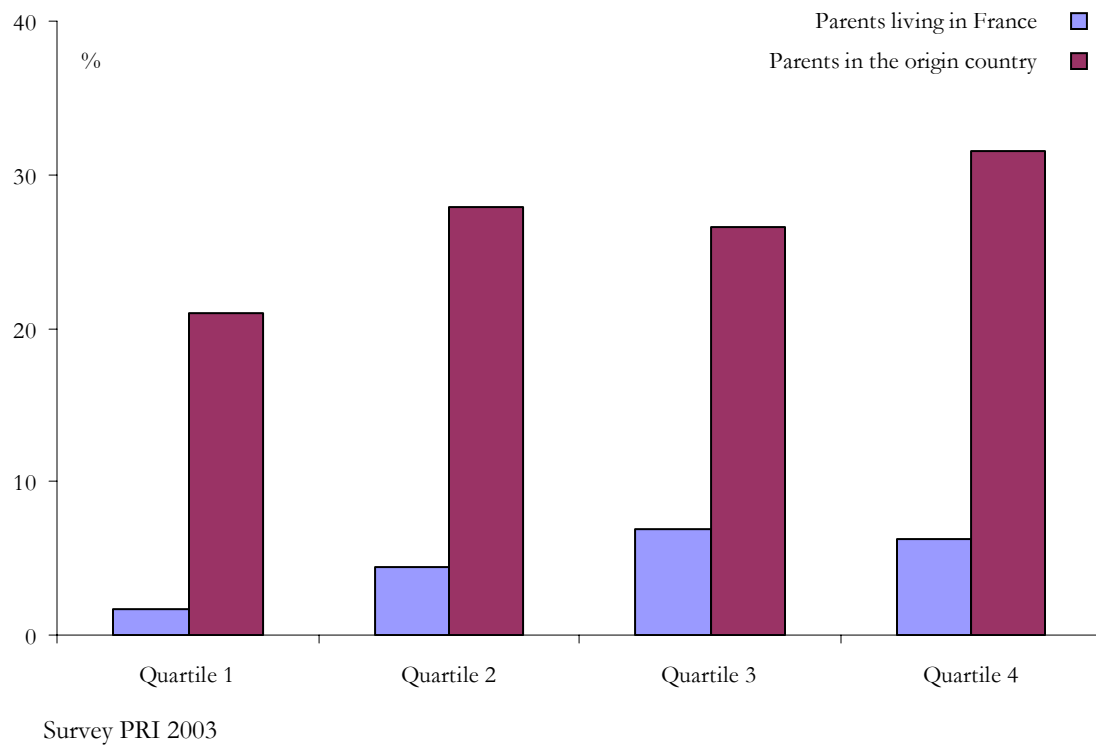


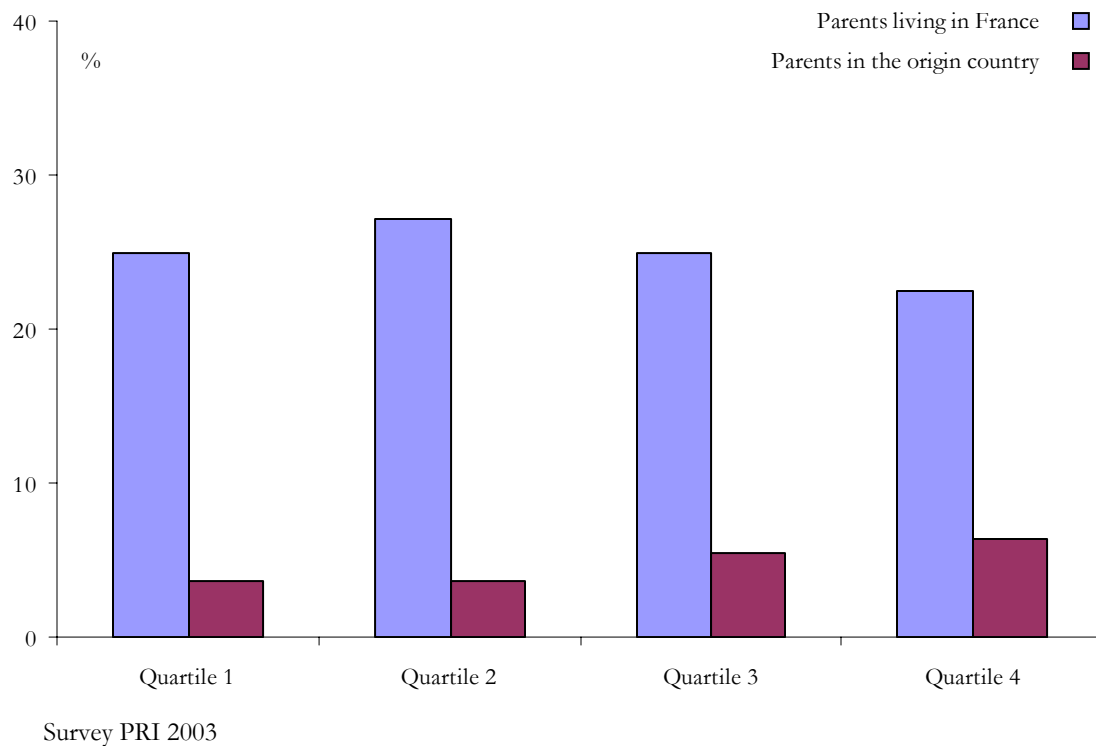
Figure 2B. The provision of time transfers, by distance to parents and participation status



**Figure 3A. The provision of financial transfer, by respondent's income and parental location**



**Figure 3B. The provision of time transfer, by respondent's income and parental location**



**Table 2. The pattern of labor participation and transfers, by respondent's origin country**

Origin country (in %)	Labor participation	Financial Transfer	Time transfer	Parents in France	Number of observations
Europe	78.1	10.1	12.0	36.9	1153
Northern Europe	67.2	3.5	9.2	15.5	174
Eastern Europe	72.7	37.4	9.1	19.2	99
Southern Europe	80.8	8.3	12.8	43.1	880
Italy	77.3	1.9	16.2	65.7	216
Spain	81.8	4.7	17.3	53.3	214
Portugal	82.0	13.1	9.1	27.4	449
Africa	59.7	30.7	9.0	18.8	1023
Northern Africa	56.8	28.1	9.4	20.0	855
Algeria	51.8	18.2	11.1	30.4	369
Morocco	54.7	35.7	9.0	12.6	333
Tunisia	73.9	35.3	5.9	11.1	153
Southern Africa	74.4	44.1	7.1	12.5	168
America	73.5	26.5	1.5	10.3	68
Middle East	53.9	21.2	9.6	15.4	104
Asia	77.7	29.5	10.8	35.3	139
All	69.4	20.6	10.3	27.7	2487

Survey PRI 2003.

**Table 3. Descriptive statistics of the sample**

Variables	Labor participation		Financial transfer		Time transfer		All
	No	Yes	No	Yes	No	Yes	
Respondent's characteristics							
Female	0.693	0.423	0.532	0.405	0.501	0.547	0.506
Age	50.871	50.362	50.548	50.401	50.479	50.855	50.518
Lives with a partner	0.848	0.856	0.846	0.883	0.858	0.809	0.853
Number of children at home	2.252	1.728	1.760	2.384	1.937	1.461	1.888
Number of children outside	1.366	0.903	1.087	0.885	1.049	1.012	1.045
Years of education	7.301	9.618	8.869	9.057	8.771	10.105	8.908
Health problem	0.322	0.165	0.214	0.207	0.210	0.238	0.213
Duration of migration	28.028	30.289	30.406	26.464	29.013	34.672	29.596
Problems in reading or writing French	0.665	0.591	0.589	0.708	0.618	0.578	0.614
Household's income (log)	9.535	9.978	9.817	9.941	9.833	9.922	9.842
Home ownership	0.429	0.547	0.540	0.397	0.501	0.602	0.511
Parents' characteristics							
Number of siblings	4.798	4.318	4.276	5.198	4.536	3.848	4.465
Both parents alive	0.298	0.328	0.326	0.288	0.320	0.309	0.318
Health problems	0.588	0.557	0.566	0.568	0.534	0.848	0.566
Financial status							
Very poor	0.177	0.160	0.157	0.196	0.165	0.164	0.165
Poor	0.252	0.268	0.265	0.256	0.255	0.336	0.263
Fair	0.382	0.414	0.411	0.378	0.410	0.355	0.404
Rich	0.189	0.158	0.167	0.170	0.170	0.145	0.168
Location							
In France. less than 10kms	0.121	0.179	0.194	0.031	0.120	0.520	0.161
In France. 10-50 kms	0.037	0.070	0.070	0.020	0.057	0.082	0.060
In France. more than 50 kms	0.050	0.059	0.066	0.018	0.055	0.066	0.056
Foreign country. near	0.109	0.117	0.137	0.027	0.119	0.078	0.115
Other foreign country	0.684	0.575	0.532	0.904	0.649	0.254	0.608
Unemployment rate (departmental)	9.671	9.254	9.411	9.270	9.362	9.557	9.382
Number of observations	762	1725	1976	511	2231	256	2487

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**Table 4. Reduced-form estimates of labor supply, time and financial transfers**

Variables	Labor participation		Financial transfer		Time transfer	
	coef	t-test	coef	t-test	coef	t-test
Constant	1.836***	3.60	-2.694***	-4.70	-2.097***	-2.92
Respondent's characteristics						
Female	-0.761***	-12.49	-0.204***	-2.98	0.130	1.58
Age	-0.018**	-2.19	0.005	0.54	0.023*	1.97
Lives with a partner	-0.095	-1.14	0.109	1.09	0.003	0.02
Number of children at home	-0.087***	-4.23	-0.008	-0.38	-0.038	-1.22
Number of children outside	-0.112***	-4.47	-0.059**	-2.10	-0.048	-1.30
Years of education	0.051**	2.49	0.008	0.34	0.005	0.15
Years of education squared (10 <sup>e-2</sup> )	-0.012	-1.09	0.008	0.67	0.013	0.84
Health problem	-0.567***	-8.36	0.071	0.89	0.000	0.00
Duration of migration	0.052***	4.21	0.074***	4.28	-0.005	-0.30
Duration of migration squared (10 <sup>e-2</sup> )	-0.076***	-3.68	-0.140***	-4.33	0.013	0.47
Problems in reading or writing French	-0.060	-0.97				
Household's income (10 <sup>e-5</sup> )			0.810***	3.95	0.228	0.38
Household's income (10 <sup>e-10</sup> )			-0.082**	-2.03	-0.354	-0.61
Home ownership			-0.084	-1.17	-0.042	-0.47
Rate of departmental unemployment	-0.047***	-3.60				
Origin country						
Northern Europe	-0.309*	-1.88	-1.154***	-4.79	-0.067	-0.27
Southern Europe	0.202	1.38	-0.664***	-4.32	-0.063	-0.31
Eastern Europe	-0.117	-0.62	0.193	1.03	-0.164	-0.60
Northern Africa	-0.350**	-2.48	-0.097	-0.69	0.210	1.07
Southern Africa	-0.036	-0.21	0.249	1.55	0.074	0.30
America	-0.141	-0.67	-0.272	-1.31	-0.739*	-1.65
Middle-East	-0.599***	-3.30	-0.383**	-2.05	0.156	0.59
Asia						
Parental characteristics						
Number of siblings			0.018*	1.66	-0.028*	-1.93
Both parents alive			-0.029	-0.41	-0.084	-0.98
Health problems			0.124*	1.90	0.821***	8.90
Financial status						
Very poor			Ref		Ref	
Poor			-0.051	-0.52	0.003	0.02
Fair			-0.237**	-2.54	-0.182	-1.54
Rich			-0.372***	-3.08	-0.153	-1.00
Location						
In France. less than 10kms			Ref		Ref	
In France. 10-50 kms			0.220	1.06	-0.653***	-4.34
In France. more than 50 kms			0.306	1.42	-0.812***	-5.00
Foreign country. near			0.414**	2.11	-1.128***	-6.75
Other foreign country			1.028***	7.45	-1.270***	-11.07
Coefficients of correlation						
Labor force participation	1	-	0.175***	3.93	0.089	1.60
Financial transfer			1	-	0.271***	4.46
Time transfer					1	-
Number of observations	2487					
Log likelihood	-2909.1					

Survey PRI 2003.

Trivariate Probit model estimated by a simulated maximum likelihood technique with 50 draws. Significance levels are respectively 1% (\*), 5% (\*\*) and 10% (\*).

**Table 5. Estimates of the impact of financial transfers on labor supply, parents living abroad**

Variables	Labor force participation		Simultaneous model with endogenous transfer			
			Labor participation		Financial transfer	
	coef	t-test	coef	t-test	coef	t-test
Constant	1.837***	2.97	1.498**	2.42	-2.051***	-3.00
Respondent's characteristics						
Female	-0.833***	-11.30	-0.638***	-6.61	-0.243***	-3.18
Age	-0.018*	-1.80	-0.016*	-1.71	0.003	0.25
Lives with a partner	-0.212**	-2.08	-0.229**	-2.26	0.093	0.84
Number of children at home	-0.098**	-4.11	-0.089***	-3.85	0.003	0.13
Number of children outside	-0.097***	-3.34	-0.073**	-2.55	-0.042	-1.44
Years of education	0.061***	2.63	0.054**	2.43	0.011	0.45
Years of education squared (10 <sup>e-2</sup> )	-0.019	-1.51	-0.019	-1.63	0.005	0.36
Health problem	-0.571***	-7.07	-0.544***	-6.66	0.094	1.08
Duration of migration	0.055***	3.30	0.031	1.59	0.064***	2.92
Duration of migration squared (10 <sup>e-2</sup> )	-0.081**	-2.40	-0.039	-1.02	-0.113***	-2.58
Problems in reading or writing French	-0.074	-1.00	-0.082	-1.21		
Household's income (10 <sup>e-5</sup> )					1.201***	5.91
Household's income (10 <sup>e-10</sup> )					-0.126**	-2.36
Home ownership					-0.115	-1.52
Rate of departmental unemployment	-0.042***	-2.75	-0.034**	-2.30		
Origin country						
Northern Europe	-0.269	-1.36	0.141	0.65	-1.274***	-4.70
Southern Europe	0.093	0.50	0.349**	1.97	-0.703***	-4.06
Eastern Europe	-0.146	-0.65	-0.239	-1.20	0.267	1.30
Northern Africa	-0.426**	-2.41	-0.337**	-2.07	-0.143	-0.90
Southern Africa	-0.168	-0.84	-0.244	-1.38	0.205	1.14
America	-0.221	-0.92	-0.061	-0.28	-0.403*	-1.85
Middle-East	-0.725***	-3.37	-0.447**	-2.03	-0.551***	-2.63
Asia						
Parental characteristics						
Number of siblings					0.020*	1.92
Both parents alive					-0.019	-0.25
Health problems					0.070	1.02
Financial status						
Very poor					Ref	
Poor					-0.155	-1.49
Fair					-0.309***	-3.18
Rich					-0.422***	-3.44
Location						
Foreign country, near					Ref	
Other foreign country					0.611***	3.74
Financial transfer						
Exogenous	0.348***	4.20				
Endogenous			1.319***	6.17		
Coefficients of correlation (t-test)					-0.636*** (-4.41)	
Number of observations	1798		1798			
Log likelihood	-929.8		-1816.4			

Survey PRI 2003.

The first specification is a Probit model with financial transfer as an exogenous covariate, the second specification is Bivariate Probit model estimated by maximum likelihood with endogenous financial transfer. Significance levels are respectively 1% (\*), 5% (\*\*) and 10% (\*).



**Table 6. Estimates of the impact of time transfers on labor supply, parents living in France**

Variables	Labor force participation		Simultaneous model with endogenous transfer			
			Labor participation		Time transfer	
	coef	t-test	coef	t-test	coef	t-test
Constant	4.790***	3.45	4.803***	3.04	-2.365	-1.59
Respondent's characteristics						
Female	-0.499***	-4.15	-0.506***	-3.79	0.410***	3.14
Age	-0.033*	-1.73	-0.034	-1.58	0.043**	2.10
Lives with a partner	0.138	0.91	0.143	0.90	-0.148	-0.79
Number of children at home	-0.093*	-1.95	-0.091*	-1.88	-0.084*	-1.66
Number of children outside	-0.175***	-3.31	-0.174***	-3.12	-0.059	-0.98
Years of education	-0.020	-0.38	-0.021	-0.34	0.042	0.72
Years of education squared (10 <sup>e-2</sup> )	0.021	0.78	0.021	0.69	-0.011	-0.36
Health problem	-0.609***	-4.58	-0.614***	-4.24	0.143	0.99
Duration of migration	-0.080*	-1.71	-0.079	-1.35	-0.048	-1.02
Duration of migration squared (10 <sup>e-2</sup> )	0.090	1.42	0.088	1.14	0.058	0.89
Problems in reading or writing French	-0.020	-0.16	-0.021	-0.15		
Household's income (10 <sup>e-5</sup> )					0.587	0.62
Household's income (10 <sup>e-10</sup> )					-0.599	-0.62
Home ownership					-0.167	-1.09
Rate of departmental unemployment	-0.068***	-2.58	-0.068**	-2.49		
Origin country						
Northern Europe	0.094	0.25	0.106	0.26	-0.530	-1.06
Southern Europe	0.890***	3.14	0.886***	2.83	0.006	0.02
Eastern Europe	0.060	0.15	0.053	0.12	0.137	0.24
Northern Africa	0.160	0.57	0.153	0.49	0.239	0.71
Southern Africa	0.379	0.96	0.379	0.90	-0.124	-0.29
America	0.630	0.90	0.650	0.83	-0.397	-0.01
Middle-East	0.086	0.21	0.073	0.19	0.633	1.27
Asia						
Parental characteristics						
Number of siblings					-0.049**	-2.21
Both parents alive					-0.058	-0.44
Health problems					1.016***	7.23
Financial status						
Very poor					Ref	
Poor					0.040	0.19
Fair					-0.136	-0.65
Rich					-0.106	-0.41
Location						
In France. less than 10kms					Ref	
In France. 10-50 kms					-0.671***	-4.08
In France. more than 50 kms					-0.793***	-4.09
Time transfer						
Exogenous	0.112	0.83				
Endogenous			0.180	0.52		
Coefficients of correlation (t-test)			-0.048 (-0.21)			
Number of observations	689		689			
Log likelihood	-307.0		-613.7			

Survey PRI 2003.

The first specification is a Probit model with financial transfer as an exogenous covariate, the second specification is Bivariate Probit model estimated by maximum likelihood with endogenous financial transfer. Significance levels are respectively 1% (\*), 5% (\*\*) and 10% (°).