

Intergenerational Transmission Models: A Survey

by Anne Laferrère*

The paper presents transfers between generations taking place within families: inheritance, gifts, help and services. Their economic motivations are seen through three main frameworks: the altruistic model where the child's utility influences the parent's utility; the model where transfers are exchanged, more or less directly, for services from adult children; and a model, labelled the "mutuality model", where three generations co-exist and where transfers to children are an investment for old age. The consequences of the different models of transfer for inequality and the links between private and public or market transfers are then presented, together with the most recent empirical tests.

There is no such thing as an isolated man or woman; we are each of us made of a cluster of appurtenances. Henry James (*The Portrait of a Lady*, 1881)

Intergenerational transfers within families are varied. They go from bequests, *inter vivos* gifts, birthday or wedding presents to all kind of help and services exchanged between parents and children. Those transfers are different from transfers taking place on the market in that there is no immediate counterpart. Inheritances and donations are called "mutations à titre gratuit" ("free" mutations) in French, to stress this absence of monetary counterpart. Services, such as child care or loans between generations, may have market substitutes. But their exchange within families takes place "outside the market".¹ The exchange may not be perceived as an exchange or is very indirect (I receive a present, the rule is that I do not give back immediately but later and differently). Usually there is no written contract, as would be the case with market insurance for example, although some return favour may be expected: for example, my parents invest in my education, I shall give back by helping them when they are old. In some instances, there is no market for those services: the grandmother who looks after her grandchild would not do it for a neighbour's. What is "bought", and at what price, is not known exactly. Finally those transfers include goods such as affection, caring, which clearly have no market substitutes.

The fact that the limits were not clear made access to the family sanctuary quite easy for the economist. I am surveying here economic models of transfers between households,

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¹ More exactly, they are not "produced", in the meaning of national accounting.

² A review of inheritance models is to be found in Masson and Pestieau (1991). I leave aside marriage and exchanges between non-related households.

focusing on transfers between generations.² Individuals are assumed to be rational and to maximize their utility under constraints. Analysis has been improved by taking a better account of time (dynamic programming), of habits or non-reversibility, or by links with game theory. I wish to show that in spite (or because) of their being caricatures, these models are helpful. Confronting a complicated global phenomenon, it is useful to concentrate on a specific issue, abstracting in some instances from choice of the number of children, from time and life-cycle in others, from the type of transfer, from legal or fiscal institutions, from power distribution between parents and children and between brothers and sisters, uncertainty, liquidity constraints, etc. The problem is divided up in order to see the consequences of simple assumptions, thus throwing light on one aspect of reality.

I first review the most common models, examining their assumptions, and trying to distinguish the model itself from the mechanism (game) which makes it work (section 1). Then I discuss the economic interest of the models (besides their pure intellectual interest) and try to summarize their testable predictions and some tests of which I am aware (section 2).

1. Models of transfer motives

There are two main types of models. In the first type, the utility of an individual is influenced by the utility level of another, which is an argument of his own utility function. This individual is then said to be altruistic. In the second type of models, the utility of others has no effect. I first present the basic one-sided altruistic model (my daughter's utility is an argument of mine), before extending it to mutual altruism (my daughter's utility is an argument of mine, and mine is an argument of hers). The model will then be modified to include an exchange between parent and child (I pay my daughter the service she provides by her affection). This model is no longer altruistic. Finally, I present an intertemporal model where the transfer I make to my daughter is a way of saving for my old age.

The altruistic model

Downward altruism

If there be any law truly natural (. . .) I can say, that next to the care every animal has of its own preservation, and to flee from danger, the affection that the begetter bears to his offspring holds the second place in this rank. And seeing that nature appears (. . .) having regard to spread and move forward the successive pieces of its machine of hers, 'tis no wonder if, going backward, that from children towards their fathers, affection is not so great. To this we may add this other Aristotelian consideration: he who does good to anyone loves him better than he is loved. That he to whom something is owed, loves better than he who owes. Montaigne (*Essais*, book II, ch. VIII.)

The altruistic model was made famous by Becker (1974, 1991). An individual's utility U (here, that of the giving parent p) is an increasing function of his consumption c_p and of other individuals' utility V (here, that of the beneficiary child k).³ The parent maximizes:

³ In a simpler model, the parent's utility is only a function of the quantity and quality of the children. Becker also calls it altruistic. Here I use altruism to refer to a model where the child's *utility* (and not only one element of the child's consumption vector) is an argument of the parent's utility: see below the discussion on the services s given by the child.

$$\text{Max } U(c_p, V(c_k)).$$

The child is not altruistic. He maximizes V , which is an increasing function of c_k , which does not depend on U , and he accepts without bargaining the transfer amount which is fixed by the parent. It should be noted that an altruistic person maximizing her utility is just as “selfish” as any *homo economicus*. As Becker (1991) writes, there is no psychology nor moral, but just a model aiming at explaining consumption and production, with no pretension to attain their “real” motivations.⁴

Denoting the incomes by $y_i (i = p, k)$ and the transfer from parent to child by T the budget constraints are given by:

$$c_p = y_p - T$$

$$c_k = y_k + T$$

$$T \geq 0.$$

At each date, the parent chooses his own consumption, the transfer to his child, and his child’s consumption. If $T > 0$, the two budget constraints can be pooled into one:

$$c_p + c_k = y_p + y_k.$$

Then c_p and c_k can be written as a function of the sum $y_p + y_k$, and the transfer T can be written as: $T = y_p - c_p(y_p + y_k)$. The first order condition is

$$U'_c = U'_v V'_c.$$

Thus the transfer equalizes the parent’s and the child’s marginal utilities of consumption, as seen from the parent’s point of view. This means that, when the transfer is strictly positive, what matters for the altruistic parent is only the sum of his child’s and his own income.

When $T > 0$, if $dy_p = -dy_k$ is a small income variation such that total income remains constant, the optimal consumptions do not change. It is as if parent and child pooled their resources. Thus

$$dc_p = dy_p - \frac{\partial T}{\partial y_p} dy_p - \frac{\partial T}{\partial y_k} dy_k = 0,$$

if $dy_p = -dy_k$, from which it follows that:

$$\frac{\partial T}{\partial y_p} - \frac{\partial T}{\partial y_k} = 1.$$

This very strong prediction yields a test called “the difference in transfer income derivatives”, mentioned for the first time by Cox (1987), and carefully tested by Altonji, Hayashi and Kotlikoff (1997). If $dy_k < 0$ the parent adjusts his transfer T so that the change in income of his child is cancelled; the rise in his income is also cancelled, so the parent does not increase his own consumption. Thus a change in the distribution of income between individuals linked by altruism does not modify their consumptions.⁵ There is an insurance between parent and child against any event which leaves total family income unchanged. More generally, if the

⁴ However in a footnote on the same page (p. 279), Becker seems to go back to psychology, quoting Dickens, in *Bleak House*, who, with his usual intuition, has a beneficiary of generosity by saying: “You should be grateful to *me*, for giving you the opportunity to enjoy the luxury of generosity . . . (and) increase your stock of happiness”.

⁵ In those cases where a transfer does take place.

constraint on T is not binding (the parent's income is high enough), the parent will compensate the child for a decrease in his revenue. For example, in case of unemployment of the child which would cut his income by half, the parent would raise his transfer to partially compensate (by diminishing his own consumption) for his child's loss of income. A rise in the child's income benefits the altruistic parent, even when the child is not altruistic, because the parent is able to lower his transfer, thus raising his own consumption.

When there is no transfer ($T = 0$), each consumes his own income. From the point of view of the parent, there might be cases when it would be optimal to receive a transfer from the child; however, as he is not altruistic, the child does not make the transfer.

This basic model can be extended, by giving an intensity α to altruism. Consider a separable logarithmic utility function:

$$U(c_p, V(c_k)) = (1 - \alpha)\ln c_p + \alpha \ln c_k,$$

with $0 < \alpha < 1$.⁶ Under the same constraints as before, we obtain:

$$c_p = (1 - \alpha)(y_p + y_k)$$

$$c_k = \alpha(y_p + y_k)$$

$$T = \alpha y_p - (1 - \alpha)y_k$$

$$c_p/c_k = (1 - \alpha)/\alpha$$

The transfer increases when the parent's income increases, when the child's income decreases or when α rises. The transfer is positive if $\alpha/(1 - \alpha) > y_k/y_p$. Consider the plane y_p, y_k , and the line of slope $\alpha/(1 - \alpha)$: below it the parent makes a positive transfer to his child; above it, there is no transfer (Figure 1).

In this simple model, incomes are exogenous. The intensity of altruism, α , may depend on certain actions of the child, which have consequences on his income, and thus on family income and the parent's utility. For example, Becker mentions the child's merit goods that may affect the parent's utility (and, in my opinion, leads Becker away from the altruistic model).

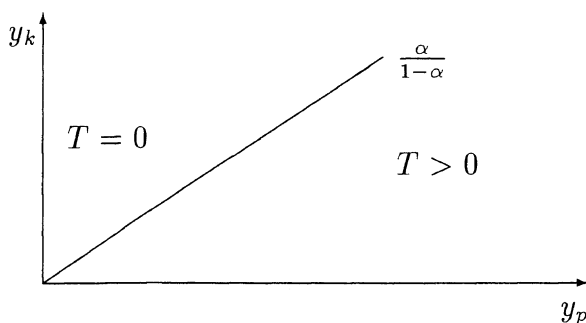


Figure 1

⁶ If α is above unity, the altruistic person gives more weight to his child's marginal utility than to his own. This would lead to non-bounded dynastic utility.

Mutual altruism

Some have supposed that altruism is two-sided. Kimball (1987) studies the implications of a complete model where generations are linked together to infinity, not only to their offspring, as in Barro (1974),⁷ but also to their parents: $U_t = V_t + \phi U_{t-1} + \beta U_{t+1}$. He shows that inefficiency cannot be eliminated in the dynamic of such a model. I stick here to a more simple model (Stark, 1989, 1995).

The mutual altruism model is the following, U and V being the utility and felicity (instantaneous utility), p and k the indexes of parent and child:

$$U_p(c_p, c_k) = (1 - \beta_p)V_p(c_p) + \beta_p U_k(c_k, c_p)$$

$$U_k(c_k, c_p) = (1 - \beta_k)V_k(c_k) + \beta_k U_p(c_p, c_k)$$

with $0 < \beta_i < 1$. It can be put in the following equivalent form:

$$U_p(c_p, c_k) = (1 - \alpha_p)V_p(c_p) + \alpha_p V_k(c_k)$$

$$U_k(c_k, c_p) = (1 - \alpha_k)V_k(c_k) + \alpha_k V_p(c_p)$$

where $\alpha_p = \beta_p(1 - \beta_k)/(1 - \beta_p\beta_k)$ and $\alpha_k = \beta_k(1 - \beta_p)/(1 - \beta_p\beta_k)$ satisfy the conditions $\alpha_p > 0$, $\alpha_k > 0$ and $(\alpha_p + \alpha_k) < 1$. Each maximizes his utility under the constraints:

$$c_p = y_p - T$$

$$c_k = y_k + T.$$

T is positive if the father transfers to his son and negative if the son transfers to his father. Total consumption $C = c_p + c_k$, equals total (fixed) income $(y_p + y_k)$. When the father maximizes his utility, the logarithmic preferences, $V_p = \ln c_p$ and $V_k = \ln \mu c_k$, $\mu > 0$ (or any homothetic form) yield an optimal consumption allocation ratio from the father's point of view given by:

$$\left(\frac{c_p}{c_k}\right)_p = \frac{1 - \alpha_p}{\alpha_p}.$$

Conversely, when the son maximizes his utility, we get:

$$\left(\frac{c_p}{c_k}\right)_k = \frac{\alpha_k}{1 - \alpha_k}.$$

Since $(\alpha_p + \alpha_k) < 1$, it always follows that:

$$\left(\frac{c_p}{c_k}\right)_p > \left(\frac{c_p}{c_k}\right)_k.$$

This implies that the father would like to consume more than what his son wants him to consume. Two consequences follow. First, there are zones of the allocation ratio where father and son have a higher utility when a transfer is active (hence the justification of private transfers). Going back to Figure 1 and drawing a line of slope $\alpha_p/(1 - \alpha_p)$, and another of slope $(1 - \alpha_k)/\alpha_k$, there are zones where the parent agrees to transfer to his child (below the line of slope $\alpha_p/(1 - \alpha_p)$), or where the child agrees to transfer to his parent (above the line of

⁷ Who notes that his neutrality result holds as long as a chain exists, whatever the direction.

slope $(1 - \alpha_k)/\alpha_k$. Here, parent and child agree on the direction of the transfer, but may disagree on its size (unless if $\alpha_p = \alpha_k$). The model is silent on how father and son agree on the transfer amount (Figure 2). Comparing this situation with altruism going in one direction only (Figure 1), the zone with transfers (giving a higher utility to both) is larger. Second, there is a zone of conflict where both would like a bigger portion of consumption (between the two lines).

The first result shows the force of family altruistic ties; for instance, if public or market transfers involve high transaction costs, private altruistic transfers will be preferred. This challenges the idea that private non-market exchanges in developing countries always decrease to the benefit of market exchanges.⁸

The second result shows that while altruism reduces the conflict zone, it does not eliminate it altogether.

The model also leads to a paradoxical result: a rise in the father's altruism β_p can lower both father's and son's utilities.⁹ The son, when his felicity level is low enough (in fact here in this simple case, as soon as it is lower than his father's), loving his father (since he is altruistic), is sad when his father is sad because of him (because of his own altruism) . . . The same thing happens when his father's felicity level is high enough compared to his own. He would again rather have a less altruistic father, who would rejoice more in his own felicity than be sad at the low level of his son's felicity . . . The intuition is that altruism makes one feel unhappy as a result of the other person's unhappiness.

When transfers are introduced, it can be shown that they rise with altruism, but that it is not necessarily the case for utility. There are cases when altruism lowers both father's and son's utility, even when reciprocal transfers rise.

The intuition is the following: even if the transfers are higher, the possibility of exploiting the partner rise¹⁰ and altruism limits the credible retorting measures (knowing that the father is altruistic and indulgent, his threats are not taken seriously), reducing the possibility of beneficial social arrangements (Bernheim and Stark, 1988).

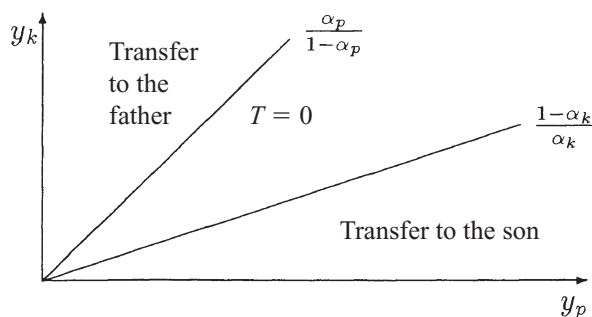


Figure 2

⁸ For instance, it questions the idea that market services to the old will displace the free services provided by the family (Rocheftort, 1995). Arrow (1972), in a reflexion on Titmuss (1971), takes the example of blood collection in the U.S., which was less efficient than in countries where it was donated for free.

⁹ See Stark (1995) for details.

¹⁰ In general, those of parents by the children, but sometimes in the other direction as shown by a recent French example of a son taking his father to court; he had worked for him all his life without being paid any disability, social security or retirement insurance.

Altruism and services given by the child

I now change the model and assume that an argument of the child's utility function, s , represents care or attention provided by the child to the parent. This attention has no market substitute and has a direct influence on the parent's utility function (Cox, 1987). Viewed from the parent's perspective, the problem becomes

$$\text{Max}_{T,s} U = U(c_p, s, V(c_k, s))$$

when U is the altruistic parent's utility and $V(c_k, s)$ is his non-altruistic child's utility. Assume $\partial U/\partial V = U_v > 0$ (the parent has an altruistic utility function) and $\partial V/\partial s = V_s < 0$ (the child gets disutility from providing attention). The budget constraints are:

$$c_p = y_p - T$$

$$c_k = y_k + T$$

The child, as before, takes the transfer as given and maximizes his utility. Cox modifies the model by introducing another constraint: the child enters into the relation with his parent only if it does not lower his utility.

$$V(y_k + T, s) \geq V(y_k, 0) = V_0$$

V_0 is the child's threat point, his level of utility when no exchange takes place. Introducing this constraint yields two possible regimes: one is altruistic, the other is non-altruistic exchange.

Under the first regime, in a world where altruism can exist (for instance the parent's income is high enough compared to the child's), the child's constraint is not binding ($V > V_0$). In this world, the service exists, but it has no market value, no price. It does not enter the budget constraint. The parent transfers and the child helps, but there is no direct link, the child is more than compensated for his service. Transfers T are chosen such that $U_c = U_v V_c$, and s is chosen such that $U_s = U_v V_s$. One again obtains:

$$\frac{\partial T}{\partial y^p} - \frac{\partial T}{\partial y^k} = 1.$$

When total family income is held constant, a rise in the child's income implies lower transfers received. The level of attention, s , may increase or decrease with the child's income.

Under the second regime (because, for instance, the child's income is too high compared to the parent's, or because the parent is not altruistic enough) there is no altruistic transfer, but transfers may be exchanged for the child's services. In this case the child's constraint is binding ($V = V_0$), the parent can no longer influence his child's utility, and the marginal transfer does not equalize the marginal utilities of the consumptions ($U_c < U_v V_c$). The transfer only compensates for the service given by the child at a price p . The child has the same utility level whether he participates in the exchange or not. The parent, in this specification, benefits from the gains of the exchange. In contrast to the altruistic case, the transfer amount can rise with the child's income if the demand for services by the parents is inelastic (or if there are no substitutes for the services of the child).¹¹ If the child's income

¹¹ The model can be extended to two periods and it can be shown that the child is induced to enter the system when he is constrained on the borrowing credit market. Cox assumes that the child will pay back his parents (1990, p. 191, note 7) in the second period. In fact if the child pays back by services, it is the same as the 1987 model, with two periods instead of one.

increases, so too does his threat point V_0 and the parent may have to increase his transfer to get the same level of services.

Lucas and Stark (Stark, 1995) propose a model in which migrant children make transfers to their family at home, for a reason which at first seems far from altruistic: they want to avoid the downward pressure on their salary caused by the presence of other immigrants: so they send them money to encourage them to stay at home. Transfers protect more qualified (or first come) workers against less qualified workers (when qualifications are not known to potential employers). This is not far from the situation regarding syndicates in Great Britain described by Simmel at the end of 19th century. They helped their unemployed members, not so much to alleviate their personal situation, but to prevent them seeking work for little money, which would lower the salaries in the whole sector (Simmel, 1899). Could this not be analyzed as a model with an external effect which might be called altruistic?¹²

Transfers as a means of intertemporal exchange

Besides altruistic models, there are some non-altruistic models. The transfer can be a simple exchange, more or less simultaneous, in the absence of a market substitute (a child's service, as just seen). But the transfers can also be a means of intertemporal allocation of resources. The parent wants to get not only a service, but an income for a future period (during retirement, for example) when he has none. If the markets for insurance or credit are imperfect, the transfers can be a means of improving the intertemporal allocation of resources.

Transfers as insurance

Intrafamily transfers help to smooth consumption between uncertain states of the world: they work as an insurance system.¹³ With descending altruism parents insure their children. Symmetrically, with ascending altruism, the children protect their parents. Kotlikoff and Spivak (1981) present a model where non-altruistic individuals protect themselves against the risk of outliving their resources, by an implicit or explicit contract of transfers. When a market for annuities exists, it can be done efficiently. Otherwise, involuntary transmissions may be important: they calculate that a single male aged 55 denies himself consumption of a quarter of his wealth, and gains 20 per cent in risk-sharing, by pooling his income with a spouse. Such an insurance model is suitable for analyzing marriage (with the mutual care it yields) and marriage contracts, which define the surviving spouse's share of inheritance.¹⁴ I see less clearly how it applies between parents and children who have such different probabilities of surviving, and thus non-symmetric risks. The way has to be found to induce the child to take care of his parents in old age. The authors lean toward altruism, combined with trust and honesty. Thus a purely selfish interest (I do not care about my partner's utility, I just want insurance) needs an altruistic mechanism in order to work.¹⁵

¹² Simmel also mentions the case when a child is helped, not for his own sake, but "so that the family's reputation is not tainted because of the poverty of one of its members". For whatever reason, the parent's utility reacts to the lower utility of the child.

¹³ On one hand it is less efficient than mutualizing the risks over a large population, but on the other hand the family incurs less transaction costs, and has more complete information, more mutual supervision and trust, reducing moral hazard and adverse selection.

¹⁴ The surviving spouse does not inherit in France. Hence the success of certain types of contractual wills ("donations au dernier vivant"), which give a specific portion to the survivor.

¹⁵ This may explain the difficult empirical distinction between the models. See below.

Strategic transfers

A father is very miserable who has no other hold on his children's affection than the need they have of his assistance, if that can be called affection. Montaigne (*Essais*, book II, ch. VIII.)

It is not as dangerous to behave badly to most men as to be too good to them. (La Rochefoucauld, *Maximes*, CCXXXVIII)

Another strategy devised by Kotlikoff and Spivak, and developed by Bernheim, Shleifer and Summers (1985) is blackmailing the children. Let me go back to Cox's exchange model; why would children enter into an exchange when they do not get anything? In all the models I have presented, time does not play an explicit role and it does not matter whether the transfer is aimed at the child's consumption, or is a loan, or an investment in human capital, or takes place at the parent's death. In the absence of credit constraints, the beneficiary is indifferent about the timing of the transfer.

Now, the parents get their children's attention, care or visits by threatening not to leave any inheritance, the amount of which is fixed in advance by a non-revocable will. By this threat, the parent plays his children one against the other, letting them know he will leave his wealth to the one who takes best care of him.

At first glance this mechanism may be seen as clever: by giving early to one's children, one loses a means of getting attention and affection from them. The whole 19th century is full of parliamentary discussions (for France, see Gotman 1988), which saw in the mere existence of the hereditary reserve and of equal sharing prescribed by the civil code, the end of fathers' authority and the decline in old age status. The character of Père Goriot depriving himself out of love for his daughters is there to remind us of the danger of premature gifts. King Lear is also mentioned in this context. Lear's situation makes it clear that the problem in Bernheim et al.'s model is not so much the early transmission, as the rivalry established between the daughters (Girard, 1990). The duty of a parent, as a parent, is just the reverse: to prevent his children from becoming rivals. If he fails, he immediately loses his status as a father (or king). It is Lear's "Which of you shall we say doth love us most", which provokes the catastrophe, not the gift. This is what the man in the street feels when asked about his sharing behaviour and the help given to each of his children, as was done at INSEE while preparing the Actifs Financiers 1992 survey. He declares that he helps his children according to their needs, *when he is alive*.¹⁶ He is thus able to prevent fraternal jealousy (the man in the street is not as foolish as King Lear and is aware of the possible rivalries). However he will never leave an inheritance to be shared unequally for fear of destroying the family. The results of these interviews are confirmed by the study of inheritance division: when transfers are shared unequally, they are *inter vivos* and not *post mortem*, in France (Laferrère, 1992) as well as in the U.S. (Dunn and Phillips, 1995). Besides this criticism of the model, there are other more practical ones: Bernheim et al. mention the possibility of a coalition of the children, deciding to share equally (Cigno, 1991, p. 163). The system does not work for parents with only one child, or for those who do not leave

¹⁶ Most empirical data are collected at the household level, so expenditure on children living in the household is usually not identified. If the child does not live with his parents, transfers will appear. Empirically, it makes a difference whether a child eats spaghetti (to borrow a formulation from Franco Modigliani) at home (household consumption), or on the campus where he lives (lower consumption or savings from his parent). This should be kept in mind in empirical analysis. On transfers and co-residence see Rosenzweig and Wolpin (1993), Mason and Miller (1995).

any inheritance (this was the case for 40 per cent of the French population in 1994 (Accardo, 1997)) or those whose children do not need any inheritance. An altruistic parent will also find it hard to stick to his threat (not to mention the French law limiting the freedom to testate).

What is the right timing for transfers? In discussing the Good Samaritan dilemma, some put forward the negative effect of early inheritance on human capital formation and accumulation.¹⁷ Inheritance may be a chain which entraps the spirit of enterprise; help and gifts may be poisonous, which is evident in German where *Gift* means both a present and poison. Not making a poisonous gift may be one of the reasons for tardy inheritance.

Transfers as old age security

Pity is often the sentiment of our own suffering in the suffering of others. It is a clever means of providing for the evils we might fall into. We give help to others to encourage them to help us in similar situations; and those services we give are strictly speaking goods that we deliver to ourselves in advance. (La Rochefoucauld, *Maximes*, CCLXIV)

Gratitude is like a merchant's good faith: it maintains commerce, and we pay not because it is just to discharge a debt, but to find more easily people to lend to us. (La Rochefoucauld, *Maximes*, CCXXIII)

I think now of an intertemporal exchange between the generations in the presence of credit market imperfections. The family is a substitute or a complement of the credit market. I loan to my daughter who will pay me back. Since she cannot borrow (or only do so with difficulty) against her future income, or since she is impatient to consume, she agrees to give me an interest rate which is above the market rate. For me it is a good investment,¹⁸ specially if I want to be paid back in care and affection, which I value greatly.

Transfers are an investment (and not a substitute for consumption as in the altruistic model). It is like a portfolio choice operation: one has a credit when one makes a transfer (one loans), and one reduces one's debt when paying back.

It is the "child as insurance for retirement model".¹⁹ In Samuelson (1958), Shell (1971), Hammond (1972), there is a game involving retirement benefit paid by one generation to its predecessor, and a kind of social contract between generations²⁰ but without explicit investment of one generation in the next. Shubik (1981) and specially Costa (1988) propose a solution. Cigno (1991, 1996) has extensively studied this model. Individuals live through three periods and only get an income in period 2, adult age. They are purely selfish and get utility from their own consumption. For an individual in generation t

¹⁷ See Stark 1995, ch. 2, in the case of land inheritance. Several studies note the advantage of not being the heir at some historical points of time. See Adams and Kasakoff (1992) on younger siblings leaving for the West in America, when the eldest stayed behind on his small plot (19th century); Biet (1991) on the access of younger sons to a personal status, free from the lineage, in 18th-century France; and, more recently, the farmer's child staying on the land, comparing his fate with his siblings who received an education (Barcello, 1988). In the Bible it is striking that success always goes to younger siblings, never to the eldest (see a subtle analysis in Barc, 1991).

¹⁸ Interest rates r_c on consumption loans are above the interest rates on savings r_s . The child k can only borrow at a high price; the parent p agrees to lend at a rate above r_s but below r_c . It could be said that I borrow instead of my daughter.

¹⁹ It is found, for example, in Willis (1980), Lillard and Willis (1996).

²⁰ Such contracts were effectively written among peasants in Europe up to the 20th century. See Anderson (1995) and, for instance, Berkner (1972) for Austria. Regarding the demographic consequences of the model, see also Lee (1995), who quotes Caldwell's classic paper (1976).

$$U^t = U(c_1^t, c_2^t, c_3^t).$$

Period 1 is youth during which one cannot borrow and gets a fixed amount z^{t-1} from one's parents. Period 2 is adult age where one earns y^t , transfers $n^t z^t$ to one's n^t children (the number of children per individual from generation t is endogenous), makes optional transfers d^t to one's elderly parents, and saves s^t at the interest rate $r - 1$. Period 3 is old age where one consumes c_3^t from one's savings and (hypothetically) transfers $n^t d^{t+1}$ from one's children. The choice is of the number of children and the amount saved. The transfers z^t , d^t and d^{t+1} are supposed to be fixed, and so is the interest rate. The rule of the intergenerational game is as follows: one may choose not to transfer to one's elderly parents ($d^t = 0$), but then the children will be allowed not to help in the next period ($d^{t+1} = 0$). When U is quasiconcave, individuals would like to transfer purchasing power from period 2 to period 3. They have the choice between using the capital market and saving, or, if they have children at the beginning of period 2, to substitute a transfer network over three generations.

The programme of generation t is:

$$\text{Max}_{n,s} U^t = u_1(c_1^t) + u_2(c_2^t) + u_3(c_3^t)$$

under the constraints:

$$0 \leq n^t \leq m$$

$$s^t \geq 0$$

$$c_1^t = z^{t-1}$$

$$c_2^t = y^t - z^t n^t - d^t - s^t$$

$$c_3^t = n^t d^{t+1} + r s^t.$$

The first order conditions for an optimum are:

$$\frac{\partial u_2 / \partial c_2}{\partial u_3 / \partial c_3} = \frac{u_2^t}{u_3^t} = \frac{d^{t+1}}{z^t} = \rho^{t+1}$$

where ρ^{t+1} is the family interest rate, at which one generation lends and the next borrows.

In period 2 one has the choice between having children and lending to them, or investing on the market. The family interest rate must be above the market rate of interest. But this is not high enough, because income is diminished by paying back the parents, which is a fixed cost. The intertemporal budget constraint is:

$$c_2^t + \frac{c_3^t}{r} = y^t - d^t - n^t z^t + \frac{n^t d^{t+1}}{r}.$$

If one decides not to have any children, in the absence of family mutualization the budget constraint is:

$$c_2^t + \frac{c_3^t}{r} = y^t.$$

One will comply with the family contract between generations only if:

$$-d^t - n^t z^t + \frac{n^t d^{t+1}}{r} > 0$$

$$\rho^{t+1} > \frac{d^t + n^t z^t}{n^t z^t} r = \frac{n^t d^{t+1}}{n^t d^{t+1} - r d^t} r.$$

In order to invest in children, what they will repay must outweigh what has been discharged to one's own parents instead of invested in the market at the interest rate $r - 1$.

A testable prediction of the model is that, contrary to the altruistic case, the transfers are little affected by the incomes of givers or receivers. Moreover a small positive variation in the period 2 transfer (either dd^t or dz^t) will be offset by ds rather than by dC . Increasing the transfers reduces savings, and consumption may react positively to what is given (because I shall have more income tomorrow).

Ehrlich and Lui's model (1991) is close to Cigno's, and richer in certain respects. Parents invest in their children's human capital because it will bring them material security in old age and because they will need their companionship (what is called "conditional altruism" by the authors). According to my definition it is not pure altruism (the children's utility is not an argument of the parent's), but simply a need for a service such as affection, without a market substitute, and thus not included in the budget constraint, but only in the parent's utility function. The parent receives both material transfers (proportional to the children's human capital, who are an investment, as in Cigno) and affection, s (which is a function of the number of surviving children²¹), and which enters the parent's utility. In Ehrlich and Lui, as in Cigno, the selfish parent invests so that the child repays in the next period.

Mechanism allowing the exchange to work

Honour thy father and thy mother, to live a long life. (Exodus 20:12; Deuteronomy 5: 16.)

He who glorifies his mother is like a man who stores a treasure

He who honours his father will have joy in his children.

Support thy father in his old days (...), thy mercy towards thy father shall not be forgotten, it shall exalt thy family. (Ecclesiasticus 3:5-6, 14.)

If intergenerational transfers are motivated, at least partly, by exchange, the mechanisms which support the exchanges to start have to be explained. How can the children be compelled to take care of their aged parents? That is the blunt question, asked from time immemorial. With today's longer life expectancy, it takes on a new importance.

Bernheim et al.'s solution, enabling the parents to have the last word and to extract help from their children, has been mentioned above. So has the fact that mutual altruism does not suppress conflicts.²²

Becker (1993) suggests that parents teach their children the desired behaviour by instilling in them a sentiment of culpability if they do not conform to the norms. A small g , for *guilt*, is introduced in the equations and makes it costly for the children not to help the parents; providing they invest properly in this "education", the parents gain.

Cox and Stark (1996) modify the mechanism by assuming that the parents shape their children's preferences by setting an example. They themselves help their parents, the grandparents, ostentatiously, in front of their children, young and alert, so that, when the

²¹ The probability of survival for a child is a function of the parents' investment. It is independent of it in Rosati (1996).

²² Ascending altruism is symmetric to descending altruism and raises the same questions (Veall, 1986); O'Connell and Zeldes, 1993).

moment comes, the children help them in turn. Thus there is a testable prediction: parents will help their own parents more when they have young children around.²³ Another prediction is that the transfers will be *visible*: visits rather than phone calls, in kind rather than in cash. Parents are helped not in the hope of any inheritance, just in order for the helper to be helped by one's children in the future. It is the formulation of the Book of Ecclesiasticus: "He who honours his father will be happy in his children".

The parent maximizes the expectation of his utility:

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

where x is what the parent, say the mother, transfers to her own mother (the grandmother), and y is what she will get from her daughter. With probability π , the daughter will imitate her mother (and give her x); with probability $1 - \pi$ she will give y , knowing that her own daughter might be an imitator. I use a feminine example: women have a longer time horizon than men (they live longer, eight years on average in 1994 France, and are two years younger than their husbands (Barthez and Laferrère, 1996)), and they know that they will not be able to rely on a spouse to take care of them in their old age. Their interest in having children is greater than men's, their need to rely on them being greater. This fits in with what is known on who takes care of the elderly. According to Attias-Donfut (1995), two-thirds of the helpers of old disabled persons in France are women, helping other women.²⁴

The mechanism put forward by Cigno (1993) avoids the need for the parents to brainwash their children. He assumes the existence of a family constitution prescribing at each date t , the transfers z^t to young children, and the transfer d^t made by each adult to his parents. The rule is that if the adult does not transfer to his parents, his children are exempted from transferring to him in the next period. Cigno shows that this constitution $F^t = (z^t, d^t, d^{t+1})$ is self-fulfilling under certain conditions. This model was inspired by the situation in Argentina where immigrants' children did not help their parents: the assumption is that they did not do it because the parents had never repaid their own parents (the grandparents who had stayed in Europe), because of the rupture caused by emigration. From premises close to those of Becker or Stark on imitation, he puts forward a model of family mutuality and proves that either all parties are interested in going on with the chain, under certain conditions, or else it stops completely. As he puts it: "it is not as if selfish individuals behaved as if they were altruistic in a repeated game (the so-called Rotten Kid theorem²⁵), but rather that altruistic ones behave as if they were selfish in a game played only once". One is closer to the precept in Ecclesiasticus: "He who glorifies his mother is as a man who stores a treasure", or to La Rochefoucauld.

The mechanism proposed by Ehrlich and Lui (1991) is close to Cigno's.²⁶ As material transfers (proportional to the human capital of children) and affection (a function of the

²³ Which is effectively found by Cox and Stark, without being totally convincing: the arrival of young children often brings the generations together without the need for a strategy. They conclude: having children makes people altruistic, this descending altruism (they call it concern and care) extends to one's own parents, by a kind of positive externality. I would say that having children leads one to identify with one's own parents (see section 3 below).

²⁴ The explanation put forward by Attias-Donfut (1995) (a sociologist) is "the custom of our society" and a lower value of time for women. Kotlikoff and Morris (1989) show that women help more, even when equally paid. Stark (1995) provides an explanation for the lower interest of women in market activities, even with no discrimination. For them the benefits of time spent in a network of sociability are larger.

²⁵ Under certain conditions (the child's consumption is a normal good for the parent; all goods are "produced", which excludes leisure; the model is static; the parents choose after the children in a two-stage game; and they make positive transfers), the altruist and the selfish child maximize the same utility function (Becker, 1991, p. 9).

number of surviving children) co-exist, the mechanism is even more efficient: if one could do without material transfers from the children by saving, there is no market substitute for affection.

2. Economic consequence of the models and their tests

The economic consequences of private transfers can be looked at in three interrelated ways: their effect on incomes and wealth inequality; their relation to public transfers (in terms of savings in particular);²⁷ and their role when compared to market exchanges.

Predictions of the models

Intergenerational transfers and inequality

Intergenerational transfers have an effect on income and wealth inequality if they are important enough to change the income distribution.

Inequality will be viewed differently depending on whether most of household wealth comes from life-cycle savings or has been handed down from parents. The importance of life-cycle savings in wealth has been hotly debated (see the contributions in Kessler and Masson, 1989). For Modigliani (1988) 80 per cent of the wealth is accumulated during the life-cycle. In contrast, Kotlikoff (1988) claims that the bulk of wealth is inherited from previous generations. In France (Laferrère, 1989), with steady state assumptions, I calculated that inheritance and gifts made up between a quarter and a half of the wealth, which is close to the estimate by Masson (1986). Gale and Scholtz (1994) sum up American surveys and estimate the inherited part (including *inter vivos* transfers) to be half of the total wealth, excluding higher education spending. What seems certain is that intergenerational transfers account for a significant proportion of personal wealth holdings.

What about inequality? A consequence of the altruistic model is that private transfers can reduce inequality between individuals linked by altruistic relations: within a cohort, since they tend to benefit those whose level of utility is the lowest; between the cohorts, since they flow from rich to poor.²⁸ In this particular context, to oppose these transfers (by compulsory equal sharing of inheritance), or interfere with them (for example through taxes) reduces well being and may increase overall inequality. The overall effect on inequality in the whole society will depend on the magnitude of the transfers: the reduction in inequality by private transfers may be small compared to the inequality existing between groups which are not related by altruism. Models based on exchange (simultaneous or intertemporal) offer no predictions in terms of inequality.

²⁶ To ensure that the family contract is self-fulfilling the following assumptions are imposed: (1) parents and children have the same preferences; (2) when the contract is violated the result is that all the offspring violate it in turn; (3) the consumption of the young and of adults is sufficiently non-substitutable; and (4) the horizon is infinite.

²⁷ The models also have consequences for fertility decisions. The determinants of fertility according to Barro and Becker (in Becker, 1991, ch. 5, suppl.) are very different from those of Cigno and Rosati (1996) or Ehrlich and Lui (1991).

²⁸ Transfers can flow from children to parents, as is often the case with migrants sending money to their country of origin. When he is altruistic the child will react to a reduction in his parents' income by sending more money, thus reducing income inequality.

Public and private transfers

When talking of income distribution and inequality, public transfers come to mind. As they co-exist with private transfers it is important to know whether they are substitutes or complements in order to predict the true effects of public transfers. Models can predict, to a certain extent, whether private transfers will disappear, or be reinforced, in response to a public transfer to the beneficiary.

With the assumptions of the altruistic model, consider two households, one old and one young, pooling their resources (the old transfers to the young). If the government raises the taxes of the young to finance the retirement benefit of the old, the consumption of the two households will not change. Redistribution policy will have no effect (and could have negative effect on well being if it involves administrative costs). If the resources of one generation are diminished to benefit the next generation, private transfers will offset the change. For example if education is paid by taxes on the current adult generation, parents will lower the transfers to their children (the private financing of education).²⁹ This is the consequence of the model of Barro (1974): private transfers offset the forced transfers between generations created by a public deficit, for instance. Altruistic parents will give their children the amount necessary to reimburse the public deficit.³⁰

But if the transfer was a loan, a means of entering a network or an exchange of services, the public transfer may have no effect on the private transfer and could even increase it. Suppose that the giver is paying a service, at the current wage rate, and consider the same example of a tax on the young, which diminishes his net wage, to benefit the old through retirement benefit. The donor's well being increases, the beneficiary's decreases; moreover the donor may now compensate the beneficiary for his services at a lower rate. This further raises his well being and lowers even more the beneficiary's. It is exactly the reverse of the altruistic model. In a mutuality model, the development of retirement benefit may also lower the transfer to the child: the parent has less need to invest in his child, and can therefore save other assets.

The motives of the transfer has to be known in order to assess the links between public and private transfers (and their consequences in terms of inequality if such was the aim of the public transfer). Public transfers may have less impact than believed from their gross amount. The beneficiaries of public transfers may be partly the private donors (if they give less than before) and not only the direct beneficiaries. For instance the introduction of a minimum income for young people would partly benefit the altruistic parents, who stop providing for their children in other ways.

Market versus private services

Private transfers may not only be displaced by public transfers but also by services provided through a market. It is well known that there is a natural development of the market at

²⁹ One may think of public crèches paid for by taxes in France which benefit rich households, who would otherwise pay for private baby-sitting, thus making a private transfer.

³⁰ To the extent that households are not all linked by altruism and active transfers, and that some public transfers change the total income of the linked households, the public transfers may well have a real effect (Cox and Jimenez, 1990). Cox, with various co-authors, estimates the intensity of the *crowding out*: 20 per cent in Peru, 14 per cent in the U.S., less than Barro neutrality, but not negligible. Some have developed a model where people are assumed to get a "warm glow" of giving. In this context also crowding out will be less important (Andreoni, 1989).

the expense of non-market activities³¹ as people become better off. From barter to money, from family help to salaried services, from village loans to sophisticated credit system, the progress and progression seem inevitable.³²

What the models show is that (1) welfare can decrease when some services become marketable, (2) when financial market are imperfect or when information is asymmetric, private transfers have a *raison d'être*, (3) goods which have no market equivalent, may become more important at a higher level of development: in short, to be richer leaves more time for affection.³³

Tests

Many authors try to find tests which can discriminate between the models. One of the best tests is how the probability of the transfer, and its amount, react to the incomes of the beneficiary *and* of the giving parent. Cox (1987) shows that if the *probability* increases (decreases) when the beneficiary's income (donor's) decreases, one can be in the altruistic model or in the exchange model; however if the *amount* decreases (increases) when the beneficiary's income (donor's) decreases, this rules out the altruistic model. The strongest test is the one labelled "difference in the derivative of transfer amount", presented above, which is equal to one in the case of altruism. The non-altruistic model of a mutuality family predicts no such reaction to incomes.

To be or not to be altruistic

This test is hard to implement for many reasons. First, very few sources of individual data give at the same time the current incomes of the parents³⁴ and of the beneficiary children, and their permanent incomes, which are needed if they enter the parent's information set at the time of the transfer decision. Only one French file, the "Three Generations" survey from the Caisse nationale d'assurance vieillesse (CNAV) has this information, for a sub-sample of the population (Wolff, 1996). Nearly all studies "control" for the unknown income, y_k or y_p , by imputation (or do not control at all). Altonji, Hayashi and Kotlikoff (1997) are the only ones, to my knowledge, who provide a complete test, using data from the Panel Study of Income Dynamics. They mention that not controlling for the parent's income may introduce a bias against altruism.³⁵ They mention two other *caveats*. The first is that for the test of the sum of the income derivatives to be valid, the transfers have to be positive. Thus there is a selection

³¹ For national accountants the right concept is not "non-market", but "non-produced": mutual services between families are not non-market, but do not enter GNP. I try to use "private" rather than "non-market", and "sold on a market" rather than "marketed". But the term "non-produced" is not commonly used and households have the impression of producing a service. (I thank Virginie Madelin for her explanations of National Accounts.) Those distinctions remind us of another: is the service a consumption good (with a price) which enters the budget constraint, or is it only an argument of the utility function? In a model including altruism and simple exchange the family would be a production unit, with inputs and outputs.

³² The development of leisure time could lead to a revival of importance of not only domestic production but also exchanges of non-produced goods (I thank Daniel Verger for this observation).

³³ See for instance, Zeldin (1995) on affection for children appearing at the turn of this century in the U.S. among the poorest classes of the population. See also the section below on tests of the mutuality models.

³⁴ The models mention a parent, abstracting from decision-taking within the couple. There is a *pater familias*, benevolent dictator. However data are in general collected at the household level, so the composition of the household should be taken into account.

³⁵ The first test was made by Cox and Rank (1992) who imputed the parent's income.

bias problem. The second is that the distribution of the unknown parameter α , the intensity of altruism, which as shown above influences the existence of positive transfers (through the ratio y_p/y_k), has to be taken into account. There is therefore a second bias against altruism: families with the richest children must be relatively more altruistic for transfers to appear. Altonji et al. (1997) solve the problem by integrating over the parameter of the intensity of altruism $\alpha/(1 - \alpha)$, and correct for the selection bias in an econometrically sophisticated way.

Altonji et al. find that the *sign* of the parameter estimates is compatible with the altruistic model, but that their value is too low for it to be valid: -0.09 for the transfer derivative with regard to the child's income, and 0.04 for the parent's income, thus a difference of 0.13 , far from the 1 predicted by the model.

The test joins dozens of others less econometrically precise: the strong prediction of the altruistic model is not supported, but less strong predictions sometimes are.³⁶

Among the tests, special mention must be made of Cox's. His first test (challenged by Altonji et al., 1997) had, according to him, validated the exchange model (1987). He adds to it in 1990 a thought on permanent income. He thinks that, in the altruistic model, the decision to transfer depends only on the marginal utility of consumption from current income. With the exchange model, the amount transferred is negatively related to the current income of the child (as in the case of altruism) and positively to his future income (which, he says, does not play a role in the altruistic model), if the mechanism of exchange is motivated by liquidity constraints of the child. The most constrained children are those who will earn more later in life, with a steep income profile; their permanent income is high compared to their current income. He finds empirically that the decision to transfer is linked to liquidity constraints of the beneficiary, but the amount of the transfer is not.³⁷

With numerous co-authors, Cox goes on testing the altruistic model on micro economic data from various countries. For example, for Russia in 1992 and 1993, they find that private transfers help to equalize the income distribution and diminish poverty (Cox, Eser and Jimenez, 1996). In Poland, too, private transfers act as safety nets (Cox, Jimenez and Okrasa, 1996). In France, Marpsat and Firdion's study (1996) clearly shows that the early absence of all family ties and roots is a co-factor, if not the cause, of the marginalization of homeless persons.³⁸

Cox, Hansen and Jimenez (1996) assume there are non-linearities in the variables, hence an erroneous rejection of altruism if not taken into account. They assume that altruism will be present when the beneficiary is poor. Then the predicted inverse relation between income and transfers will be found. But as soon as the beneficiary's income rises above a certain limit, the relation will not be verified, and transfers may then be motivated by exchange. They do find such non-linearities for the Philippines. Their conclusion is that altruism is not the only motivation for transfers.

Altonji et al. (1996) find that transfers reduce income inequality and that time transfers

³⁶ Wilhelm (1996) on American fiscal data does not find that inheritance has any compensatory effect on the inheriting children's income, as predicted by the altruistic model. Arrondel and Laferrère (1991) also do not find compensation. However Wilhelm does find that parents of an only child are altruistic (their behaviour is not influenced by strategic considerations); however his data does not provide information on *inter vivos* gifts, and does not allow conclusions to be drawn regarding the complete behaviour of parents over the life-cycle (which should also include the transmissions of human capital).

³⁷ Guiso and Jappelli (1991) find that being credit constrained increases the probability of receiving a transfer (when an increase in current income does not decrease by much the transfer received). See also Cox and Jappelli (1990). Laferrère and McEntee (1996) find that in certain instances transfers from parents help the children to become established as self-employed.

³⁸ See also Paugam (1996) for a comparative analysis of cumulative social disadvantage in Europe.

are not related to income. Using the same data, Ioannides and Kan (1994) reject the exchange model.

For France, Degenne and Lebeaux (1991) look at the effects of transfers on inequality, without any reference model. They find that those with highest income level in their sample make more numerous exchanges of services: 88 per cent in the highest bracket, 83 per cent in the lowest. However, those who give without receiving are also the richest (14 per cent versus 10 per cent, always comparing the extreme deciles) and the proportion of those who receive is fairly constant with income. The differences with income seem tenuous and they conclude that help is universal and goes to the most needy. However, they conclude that mutual help is a factor of social inequality. What they seem to mean is that if help reduces inequality within a social stratum (going from rich to poor), it cannot have a compensatory effect on the (more important) inequality between social classes.³⁹ The fact that the frequency of helping does not relate to income might be compatible with the idea of mutuality family networks, rather than with the altruistic model.

From the “Budget de famille” INSEE survey, de Barry et al. (1996) estimate that private transfers, financial help in kind (housing, buying of durables, education and vacations) or in cash, redistribute 3 to 4 per cent of French households’ income and represent FF 135 billions (\$27 billion) a year. By comparison, family allowances and housing benefits have amounted to FF 219 billion. Three-quarters of the transfers go from parents to their offspring. This happens at two moments in the life-cycle: when the children leave home (in kind and in cash transfers for many years) and in old age. After 70 years old, the proportion of income going to the children or grandchildren increases: from 6 per cent at 60 years old to 12 per cent at 80 years old, and is more important at a high level of wealth. The transfers decrease instantaneous inequality, because they go from rich to poor: students, young unemployed, youths with unstable jobs, single women after a separation. Private transfers increase by 20 per cent the first decile of households’ income (the lowest). However the authors note that the main beneficiaries are the transitory poor (students). Individuals who are over 30 and unemployed, those with unstable jobs, and households with low permanent income, tend to receive less. On the other hand transfers received represent 13 per cent of the income of a household (under 40) when it comes from an executive background, against 4 per cent when it is from a blue collar origin. The authors conclude that family solidarity *accentuates* inequality. This conclusion seems speculative. It could be that private transfers decrease intergenerational inequality (within altruistic lineages, or families engaging in exchange), but increase intragenerational inequality, not only because some, the poorest, are excluded from the transfer process, but because most of the transfers go to those with the highest permanent income within a generation.⁴⁰ The global effect is not determined without ambiguity.

Tests of family mutuality models

According to the family mutuality model (Cigno, Giannelli and Rosati, 1996), parents facing credit market constraints may be *more* likely to give assistance to their children. This paradox (the giver is constrained) comes from the fact that the family interest rate is very high. Investing in children, by lowering the giver’s present consumption, allows a higher consumption in the next period when the children discharge their debt, and hence globally

³⁹ Their dataset, the INSEE “Mode de vie” survey, does not allow more detailed analysis.

⁴⁰ But they do not provide any econometric test.

a higher intertemporal utility.⁴¹ Cigno et al. find a positive influence of being constrained on the probability of making a transfer to somebody outside the household. Using the same data, the very small effect of the giver's income leads them to reject the altruistic model (although they cannot control for the beneficiary's income).

Bommier (1995), using data from Malaysia, wonders whether children can be relied on to look after their parents in their old age. He rules out the strategic model, but supports the idea that children repay their aged parents for their education. He does not reject altruism, since the transfers go to those parents who need them most. To him this supports a model of direct reciprocity.

Laferrère (1996), looks at transfers in kind (providing a house, acting as collateral) or in cash (paying for the rent, making money gifts or loans) to independent children's households and tries to follow Cigno et al. (1996). In France, 14 per cent of households aged 30 to 65 mention having helped in this way one or more of their independent children. The probability of helping increases with the giver's wealth, his current income (although his permanent income has no effect), and his level of education. The beneficiary's income is not observed directly. However, since some of the independent children's characteristics are known (sex, age, education, profession, number of children) an income can be imputed to them from equations run on the parents' characteristics. The probability of helping the independent children is either *positively* related to their income (both mean and minimum children's incomes are used) or else unrelated (which rejects the altruistic model). The beneficiaries are primarily children under 30 years old, which fits with some of the models: altruistic (the child needs it), mutuality or intertemporal exchange (the child is constrained and ready to enter a family deal), but is less compatible with the direct exchange of services model, which tends to predict that transfers go to older adult children. In contrast, making a proper *inter vivos* gift is positively linked to permanent income and negatively related to education level and child's income. The four kinds of assistance are found to be different. Helping with housing (either in kind or by paying the rent) appears to be related to investment in the child's human capital and is not linked to credit constraints of the helping parents. It gives the impression of parents who can "afford" to be altruistic: they both invest in their children's human capital and save for other transfers. Money transfers, similar in certain respects, look more like intertemporal exchange. Loans and collaterals seem to be a family credit system: they are made by parents who are, or have been, constrained⁴² and are therefore active in families conforming to the mutuality model. Thus different types of transfers could correspond to different types of model.

Few ascending transfers are observed, only FF 10 billion (\$2 billion) from households of intermediary age to old households, compared to FF 100 milliard (\$20 billion) in descending transfers, or, adding inheritance, gifts, and help, FF 465 billion against 33 (see Table 1). This can be interpreted in three ways: (1) ascending altruism is low (sociobiology predicts descending altruism); (2) the repayment of the transfers from parents predicted by the mutuality model does not exist (perhaps because retirement benefits make the parents' income high compared to their children's); or (3) transfers take a non-monetary form. The CNAV survey shows the importance of non-monetary transfers (Attias-Donfut, 1996). Aged parents

⁴¹ In fact, the parents compare different investments. If investing in the children was riskless and if the parents could borrow at a rate inferior to ρ , they could even borrow on behalf of their children, in order to lend to them. When constrained, either they consume everything, or they lend to their children, in order to be able to consume more in the future.

⁴² The variable is instrumented.

Table 1:
Intergenerational transfers in France

| 1994 | Fr.Fr. billion (US\$ billion) Total | Descending | Ascending | Other |
|--|-------------------------------------|-----------------|---------------|----------------|
| <i>After death bequests</i> | 175 (35) | | | |
| <i>After death bequests unregistered</i> | 31 (6) | | | |
| Total after death bequests | 206 (41) | 175 (35) | 2 (0.4) | 29 (6) |
| <i>Inter vivos formal gifts</i> | 111 (22) | 111 (22) | 0 | 0 |
| Financial help | 135 (27) | 100 (20) | 10 (2) | 25 (5) |
| Gifts and presents | 88 (18) | 51 (10) | 10 (2) | 27 (6) |
| Total | 540 (108) | 465 (87) | 33 (4) | 90 (17) |
| Households' wealth | 22,000 (4,400) | | | |
| Gross disposable income | 5,140 (1,028) | | | |
| Family allowances and housing benefits | | 219 (44) | | |
| Retirement benefits | | | 744 (149) | |

Source: Laferrère and Monteil (1994) (line 2), author's computations from the 1994 INSEE-DGI "Mutation à titre gratuit" survey (lines 1, 3), from de Barry et al. (1996) (line 6) and from Herpin and Verger (1996), line 7 (gifts outside the household). 1994 French National Accounts (4 last lines).

do seem to need goods without market substitutes, namely affection and attention. Personally I think it is easier to replace a relative with a salaried worker when child care is required, rather than care for an aged parent. Age carries with it a stock of shared personal memories, of common human capital, the evocation of which is a joy for old people, and cannot be replaced with paid help (although much material care can be provided by the market sector).

Arrondel and Wolff (1996) try to separate wealth transfers between generations (inheritance, donations, some of the gifts and help) from education spending (human investment), which includes all spending when the child is within the parental home and some gifts and help provided when the child is a student. This distinction is similar to the one made in the debate between Modigliani and Kotlikoff. They also separate help with housing and money (which to them are part of education) from loans and collateral (based on altruism or exchange), and all form of help from *inter vivos* gifts. The probability of receiving help and *inter vivos* gifts seems to decrease when the income of a salaried beneficiary increases (thus having the compensatory effect predicted by altruism), but the reverse is found to be true for gifts to self-employed (which are therefore anti-compensatory).

Arrondel and Laferrère (1996) show that, while intergenerational wealth transfers of the moderately wealthy conform with what they label "family models", transfers from the few very wealthy (who own a large part of total wealth) appear to follow a different pattern. Their transfer behaviour is neither altruistic, nor mutuality, nor an exchange. They call it "capitalist" without proposing any testable model. It is likely that tax considerations, dynastic motives or enterprise survival are relevant factors. More generally, where inheritance and *inter vivos* gifts are concerned, the strong reaction to tax incentives is more in line with a simple joy of giving model than with altruism (Arrondel and Laferrère, 1998).

Some think that the direction of transfers could be a test: if the transfers flow from the old

to the middle-aged and the young, and from the middle-aged to the young, the model is that of exchange. Transfers flowing from the middle-aged to the old and the young would be compatible with altruism, but also with the mutuality model. If transfers are only ascending, they are, in some instances, preference shaping of the young. But when services, affection and monetary transfers are combined, things are less clear.

Drawing conclusions is not easy, because the tests are difficult to implement both in theory (the model is not always written down, and the tests are not always discriminating) and in practice. Lack of data is a handicap (possibly only temporarily), as is the subtlety of the required econometric tests. Altonji et al. (1997) is exemplary, but unique.⁴³

The strong and clear predictions of the altruistic model seem to be rejected. Those of the exchange model, simultaneous or not (à la Cox or à la Bernheim) seem validated according to some authors. Others find that the intertemporal exchange and mutuality model fits with reality. I find the altruistic model is a victim of its extreme simplicity, while the others seem to offer less clear-cut testable predictions. Research is oriented toward testing the co-existence of different models in the course of the life-cycle or across different populations.

3. Imitation

He that was seen to beat his father answered that it was the custom of their family: that his father had beaten his grand-father, his grand-father his great-grand-father, and pointing to his son: "And he will beat me when he comes to my age". Montaigne (*Essais*, book I, ch. XXIII.)

A clear conclusion of some studies (Arrondel and Masson (1991), Arrondel and Wolff (1996), Cigno et al. (1996), Laferrère (1994, 1996), amongst economists) is the strong heritability of transmission practice. Parents help their children when they have been helped, and in the same fashion. Lautman and Gossiaux (1977) also conclude that "the probability is high that people act with their children as their parents had acted toward themselves". This could be compatible with the mechanism of family mutuality à la Cigno: the help that parents provide is a signal to their children that they accept the family contract, so that the children will help in turn, and go on with the tradition with their own children.⁴⁴ Family information is transmitted. For the parents the belief that investing in their children is better than investing on the market may be encouraged by the fact that they themselves have been helped by their parents, so that family investment looks less risky than other options. The proof is only indirect in the absence of tests from a survey providing two-sided time and money transfers on three generations.⁴⁵ The mutuality model (Cigno, or Ehrlich and Lui) assumes that succeeding generations have the same preferences: this would be the case if practice were inherited.

Thus it could be that the preferences are shaped by the receipt of a transfer.⁴⁶

⁴³ Cigno and Rosati (1996) use macroeconomic time series on fertility, interest rate, savings and public deficit to support the mutuality model *vis-à-vis* ascending or descending altruism.

⁴⁴ Tradition has the same etymology as transmission: inheritance goes with the rules of the game.

⁴⁵ The correlation might also be spurious, due to non-observation of variables affecting both parents and children: cf. Gottschalk (1996).

⁴⁶ Altruistic or strategically selfish parents make children in their own image, altruistic or selfish. Cox and Stark (1996) mention the possibility of shaping the children's preferences by having them observe their parents helping the grandparents. People act towards their parents as they would like their children to act towards themselves. Masson (1996), following Rawls, thinks that a parent acts towards his children as he *would have liked* his parents to act towards him; but it is not what is observed in the data.

One also thinks of investment in social capital à la Becker (even if it may seem an *ad hoc* concept): the fact that the parents behaved in a certain way, informs the child about the consequences of certain types of actions, and increases his social capital, which is an input of his household production function (the relative price of a loan to her child is lower because her own parents made such a loan in the past, so she knows how to behave) (Becker and Stigler, “De gustibus non disputandum”, in *Accounting for Tastes*, Becker, 1996). To enter into a transfer system with one’s children is to play the parent’s role, thus more or less consciously referring to one’s own parents. One shifts from period 1 to period 2 in the intertemporal model. Having children allows one to get into the shoes of one’s parents, and thus, as seems to be the case, to endorse their practices and to imitate them.

Another idea is that a way of repaying the parents is to do it through one’s own children, the grandchildren. There is uncertainty, not so much with the children’s survival (Rosati, 1996), as with the parents who gave. If one is not able to repay one’s parents because of a premature death, or because their income is too high, the debt is paid by transfers to the grandchildren in the very way the parents had behaved when one was in the child’s position. This fits with sociologists’ intuitions on indirect gift (for instance Déchaux, 1994): “What is dispensed to the children is used to discharge a debt toward one’s own parents”.

4. Conclusion

The insight of sociologists, psychologists and anthropologists that any transfer implies reciprocity, (gift and counter-gift in Mauss) is absent from altruistic models. In that sense the exchange or mutuality models seem more satisfactory. Without taking directly into account phenomena such as the power of the giver over the receiver, these models can incorporate reciprocal actions. Their insight into the timing of exchange, and the long-term investment characteristics of help, conforms with intuition. Helping is a form of insurance to be helped in return if and when needed. A precious good is stored.⁴⁷ What is put forward by the intertemporal exchange model is also the sequence of generations, with the successive roles everybody occupies: as a beneficiary child, as a giving parent, then as helped grandparent. The co-existence of three generations is crucial to the model. In comparison, altruistic models need only two generations, and one does not have to occupy each of the different roles.

However the intuition of the altruistic model that “each of us is made of a cluster of appurtenances”, as Henry James wrote, has a very strong appeal. How am I to deny that my utility is influenced by others’ utility, and not only by what they can give or ask from me? And the sign of the derivative of U with respect to V is, without doubt, not always positive. Envy, jealousy, the desire to protect oneself, and altruism, are intertwined.

The models are simplistic, and I have presented very little of the various games which underlie them. However, with simple specifications they provide different predictions, which are testable to a certain extent. In an age of crisis, regarding both family and public transfers, be it of the retirement system facing the demographic pressure of the baby-boomers and rising life expectancy, or of the health benefit organizations faced with the costs of caring for the very old, or of unemployment insurance in Europe, it is important to know how private, market and public transfers between the generations are connected.

⁴⁷ And this good is transferable to a third-party member of the network: “Can you give me some information on this school for my niece” (*hinting*, “you remember I gave you a good address for your vacation”).

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