

Bequests and Family Traditions :
The case of 19th Century France

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Abstract:

Are bequeathing patterns and behavior strongly influenced by those of parents? Contrary to other social science, most theoretical models in economy predict that bequest behavior does not depend *per se* on parents' behavior. To take account of retrospective aspects in bequest behavior is however important to analyze some questions connected with intergenerational transfers like the ricardian equivalence, the crowding out effect, the role of bequest in wealth accumulation, the responsiveness of bequest to tax change...

Yet because of data limitations, few empirical studies until to now have analysed both bequests and inheritances. In this paper, we evaluate the effect of inheritance received, by individual on the amount that they bequeath in France. This study is based on original historical data including wealth genealogies covering the 19th and first half of the 20th centuries for the *Loire Inférieure département*.

The data reveal a strong and specific influence (especially relative to other resources) of inheritance received on individuals' future bequests. This inheritance-bequest relationship is difficult to explain with standard bequest models (altruistic, paternalistic or exchange models). Model based on indirect reciprocities, family traditions and retrospective behavior could be more accurate to describe data...

Introduction

Two theoretical hypotheses since the last thirty years have gained favor in the literature on intergenerational transfers in explaining bequest behaviors. (1) In the case of *altruism*, parents take their children's comfort into account and aspire in their transfers to distribute resources equally between generations (Becker, 1991). (2) For the *exchange* hypothesis, gifts, or the promise of an inheritance, are used by the parents as a form of payment for the help that they receive from their children in their old age and thus serve as a kind of insurance, support or "attention" (Kotlikoff and Spivak, 1981; Bernheim *et al.*, 1985; Cox, 1987).

The distinction between these two motivations is important in appreciating the effects of *public transfer* policies. If altruism prevails, public distribution is "neutralized" (Barro, 1974) and the state transfers have an "eviction effect"³ on private transfers: parents shall decrease their bequests to children if public transfers offer greater advantages to the latter. On the other hand, the impact of public redistribution on family transfers is more ambiguous when the latter are motivated by exchange: according to this logic, children who are better off will increase the value of the services rendered to their parents, but conversely they will also be less financially motivated to render such services; overall in fact, the effect of the children's resources on the amount transferred has not been determined (Masson and Pestieau, 1997). Moreover, the effect of estate taxation on bequest will not be the same according to the different models of inheritance (Arrondel and Laferrère, 2001).

Empirical tests of altruism and exchange models have proven relatively disappointing (Arrondel and Masson, 2006). The effect of the *intergenerational* (between parents and children) "compensation" demanded by altruism is weak in the United States, and even non-existent or negative (anti-compensation) in France. The predictions of exchange models do not bear out any better, particularly as to the upward transfers from children to their aged parents.

Moreover, another empirical puzzle appears in french data (Arrondel and Masson, 2006). It concerns the high degree of transmission of bequeathing practices from one generation to the next. Households who have been helped out by their parents are more likely to help out their children 'in return'. Likewise, donees are

³ The eviction effect is when the transfers by the state are substitutable for those of a private nature: when public transfers to the children's generation increase, transfers in the private sphere decrease (and vice-versa).

more likely to become donors, and heirs more often to become bequest-leavers. This intergenerational correlation extends even to more specific practices: inheritance received through a will increases the probability to make a will; parents who have benefitted from a loan are more likely to do the same for their children...⁴ More recently and in the same vein, Cox and Stark (2005) find some evidence in USA to support the idea that the propensity to bequeath out of wealth differs depending upon whether current wealth is large or small relative to inheritance received. Ribar and Wilhem (2006) observe the transmission of elder support attitudes between generations and try to explain it by social exchange theory and role modeling.

But most theoretical models, except perhaps in growth model, predict that bequest behavior does not depend *per se* on parents' behavior, nor on the composition (human and non-human) of life resources. Contrary to other social scientists where "family traditions" play an important and obvious role to explain intergenerational transfers (Mauss, 1950, Levi-Strauss, 1958, Bourdieu and Passeron, 1964), economists have surprisingly not paid attention to the possibility of "restrospective" effects on bequest behavior. However, family tradition could help to explain some anomalies in transfer behaviors. These empirical puzzles concerns for example the ricardian equivalence, the crowding out effect, the role of bequest in wealth accumulation, the responsiveness of bequest to tax change... Moreover, there have been recent efforts among the economists to move beyond describing intergenerational correlations in wealth accumulation and instead attempt to measure intergenerational correlations in savings *behaviors* (Charles and Hurst, 2003).

Yet because of data limitations, few empirical studies until now have analysed both bequests and inheritances. In this paper, we evaluate the effect of inheritance received by individual on the amount that they bequeath in France, after controlling by other individual characteristics. This study is based on original French historical data including wealth genealogies covering the 19th and first half of the 20th centuries for the *Loire Inférieure département*.

In the first part of this study, we present briefly the empirical methodology which allows to study the role of transfers on wealth accumulation. In the second part, we give some statistics about inheritances and bequests in the *Loire-Inférieure*

⁴ Jellal and Wolff (2002) obtain the same result that french parents are more likely to help their children when they have themselves received money.

département in 19th century. After describing the make-up of the database, we shall estimate the effect of the amount of inheritance on the amount of bequest, after controlling for a host of other household characteristics. Then, we discuss the results by proposing some directions for further research. Section 5 concludes.

I. The bequest equation

The bequest equation is directly inspired by models of saving, neither of them indicate explicitly the role of past inheritance received by individual on his bequest.

The *life cycle hypothesis* developed at the middle of the 1950s by Modigliani (Modigliani and Brumberg, 1954) has been the seminal theoretical framework for research on wealth accumulation. The central message of this model lies in the fact that the primary savings motive concerns the financing and consumption of old age: wealth is likened to deferred consumption; it is a flow of future consumption. If labor incomes are nonexistent during the retirement period, the typical wealth profile of this hypothesis is that of a “hump saving profile”: in the first part of his life cycle, the individual accumulates wealth that he then consumes in order to finance his consumption needs. Two hypotheses may, however, cast doubt over the scenario of wealth completely consumed by the end of life: on the one hand, the uncertainty of the exact duration of a life, combined with the absence or imperfection of an annuities market; while on the other, the existence of a transfer motive.

Since households are compelled to leave no debts upon death, caution and/or the shortcomings of capital markets (particularly the durability, indivisibility and lack of liquidity of housing) may trigger wealth left upon death corresponding to an *accidental* bequest, the contents of which were originally designed to cover the risk of finding oneself penniless in old age. In other words, this type of inheritance corresponds to an amount of wealth which would have been consumed “if God had granted a longer life” (Davies, 1981).

Paternalistic bequests (Blinder, 1976) are based on the assumption that the household gains direct satisfaction from the transfer of sums to its children. Contrary to altruism (Becker, 1971), children’s characteristics are not determining factors in the transfer. The only factor taken into account is the presence of children and the number of them which should, according to this model, have a positive effect on the amount of the inheritance or gift: the satisfaction increases along with the amount of wealth bequeathed.

So, theoretical models suggest estimating wealth at death B_T as a function of:

$$(1) \quad B_{Ti} = B_T(Age_i, YP_i, NEnf_i, X_i) + \varepsilon_i$$

YP his human permanent income, $NEnf$ number of children, X is a vector of other variables which influence the age-wealth profile and ε is an error term.

As the topics of this paper is to test the influence of inheritance on wealth transfers, the previous equation includes also the actualized value of transfers received by individual $i : I$

$$(2) \quad B_{Ti} = B_T(Age_i, YP_i, I_i, NEnf_i, X_i) + \varepsilon_i$$

What are the predicted effects of the different variables on the amounts bequeathed (Masson and Pestieau, 1997). The nature of the data used, however, limits us to certain variables.

Notably, human resources are not available. To proxy permanent income, we will use the social status of the individuals and their marital status. The tested predictions concern mainly the effects of *age*, *inherited wealth* and *number of children* on the amount transferred. If individual have no bequest motive, they would consume their wealth during the end of their life. So, we would observe a hump saving profile of bequest over the life cycle. If the existence or number of children positively influenced the amount transferred, the bequest would not be accidental.

Neither model predicts that transfers behavior depend *per se*, every things being equal, on parents' behavior (except the growth model of Bevan and Stiglitz, 1979), nor on the composition (human and non-human) of life resources. So there would be no specific link between the amount of inheritance received and the amount of bequest left. Notably, the elasticity of bequests with respect to inheritance would be equal to the elasticity of bequest with respect to human resources : there is no difference of saving behavior between inheritance and lifetime earnings (Arrondel and Masson, 2006).

II. Wealth transmission in 19th century *département* of Loire Inférieure: some statistics

In the 19th century, the *département* of the Loire-Inférieure was primarily agricultural. Except for its two main cities, Nantes and Saint-Nazaire, it was little affected by industrialization (shipbuilding, canning and foodstuffs industries, soap factories), while trade whose expansion dates back to the 18th century remained an important activity (Bourrigaud, 1994; Rochcongar, 2003). Its population of 415,000

in 1801 grew to 457,000 in 1826 and 644,000 by 1886. It is thus essentially in the second half of the 19th century that its demographic growth accelerated, both in its rural and big city areas. In the 20th century, Nantes and Saint-Nazaire would see their populations continue to increase while in the countryside the population would experience a period of decline.

II.1. *The sources*

The statistics presented below come from a sample of patrilinear descents made up of families who were included in a representative survey called “3,000 families” whose main characteristic is that their name begins with the three letters TRA⁵ and that they were residing in the *Loire-Inférieure département*. The wealth itinerary of the reconstructed family lines covers four, five or even six generations.⁶ These biographies were formulated from the Inheritance Archives of the *Administration de l'Enregistrement* [Registry], a part of the tax administration assigned with taxing transfers, which offer the possibility to establish a kind of wealth record book for each individual. Inheritance records include the inheritance declaration for every deceased. Such records are composed of the *Tables de Successions et Absences* [*Inheritance and Absence Tables*] and the *Registres de Mutations par Décès* [*Registry of Transfers by Death*]. The former consist of semi-alphabetical lists which present, *Enregistrement* office by *Enregistrement* office⁷, all deceased by chronological order of date of death. They provide the place and date of death, the deceased’s profession, his or her marital status and, where applicable, the date of the inheritance declaration. From the date of the inheritance declaration, one can cross-reference to the declaration itself, filed chronologically in the *Registres de*

⁵ The reconstructed lines include not only the “founder” couples and their descendants of the 3,000 Families sample, but also all the other TRA families of the *département* (Arrondel and Grange, 2003). Jacques Dupâquier previously distinguished the database of TRA from the sample of TRA (Dupâquier, Kessler, 1992). The database included all of the TRA couples noted in the decennial tables at the national level between 1803 and 1832 and it was within this database of 7,500 marriages from which the 3,000 of the sample were culled. For purposes of our research, we worked using all the TRA couples in the *Loire-Inférieure*, without distinction.

⁶ Our initial basis was data collected in the scope of the 3,000 Families study: one part demographic data collected by the *Laboratoire de Démographie Historique de l'EHESS* and one part wealth data collected by the *Centre d'Etude et de Recherche sur L'Épargne, le Patrimoine et les Inégalités (CEREPI-CNRS)*, then by the *Laboratoire d'Economie Appliquée (LEA-INRA)*. Such data nonetheless required completion.

⁷ Each french *département* is divided in several *Enregistrement* offices which cover areas corresponding to French *canton*.

Mutations par Décès, which details the composition, value and beneficiaries of the deceased's estate⁸.

II.2. Estates and inheritance: a brief review

In the 19th century, for the 1840-1849 period, the percentage of solvent deceased in the *Loire-Inférieure* was 56.8%, with an average estate of about 88,000 francs 2000.⁹ According to the national data of the “*Annuaire Statistique de la France*” (1966) the percentage of solvent deceased (those who leave an estate) in France was 54.6%, with an average estate of 100,000 francs 2000¹⁰. Over the 1902-1913 period, the average estate for *Loire-Inférieure* was 60,200 francs 2000 and from 1925-1938, 45,000 francs. These amounts are greatly inferior to those observed for France which attain respectively 282,500 francs 2000 and 124,600 francs¹¹.

Let us consider, in the only case of *Loire-Inférieure*, the number of deceased leaving an estate over various periods, the corresponding average inheritance for the population of deceased adults (deceased after the age of 20) and the Gini inequality index for the different periods (Table 1). Globally, from 1800-1939, five deceased in 10 left an estate. This percentage was greater at the beginning of the 19th century (57.8%) and after the First World War (51,5%). During the second half of the 19th century, about 40% of deceased bequeathed an estate. For the whole period, the average estate was about 71,000 francs 2000 for adults. The change in averages over the period is trickier to assess since it is very sensitive to extreme values. Thus the highest amount observed between 1875 and 1900 was essentially due to a single very large estate amounting to over 8,000,000 francs 2000 (*cf.* table 2). Thus, it would seem preferable to refer to median values. The latter are only applicable to solvent deceased – meaning those who leave an estate – since in general, less than 50% of deceased leave an estate behind.

⁸ For more information on the building of data, see Arrondel and Grange (2006).

⁹ Our figures compare to those of Bourdieu *et al.* (2003), which are based on the use of a TRA sample covering several French *départements* (Calvados, Côte-d'Or, Creuse, Eure, Indre et Loire, Nord, Sarthe and Paris). For the same 1840-1849 period, they obtained a representivity rate of 0.86 compared to national data, the amount listed in the *Annuaire* being greater.

¹⁰ We shall compare in this section the figures obtained using all TRA inheritance records in the *département* of the *Loire-Inférieure* to the available statistics for France as a whole. Inheritance data were updated using cost of living indexes based on the reference year 2000. The comparison with the national data was carried out, for the 19th century, using the *Annuaire Statistique de la France* of 1966 and for the 20th century, with help from the statistics collected by Thomas Piketty (2001).

¹¹ For the 20th century, we used the inheritance statistics of the tax department for the period of 1902-1994 collected by Piketty (2001), especially the table J-1 p. 765.

An examination of median values for adult solvent deceased in table 2 demonstrates an increase in the amounts left over the 19th century, especially around 1875 : the median estate was around 17,000 francs 2000 at the beginning of the century and almost 55,000 francs at the turn of the century. The median inheritance after 1900 was about 30,000 francs. At least until 1925, there is thus a decreasing number of estates, although the median amount increases. Estates were transferred less often but were of greater value.

Examination of the Gini indexes (tables 1 and 2) shows that there is a very strong inequality of amounts transferred; for the entire period, the Gini is 0.91. Period by period, it alternates between 0.83 for the most recent period and 0.94 for the end of the 19th century¹². Among the deceased transferors (table 2), the inequality remains high: the Gini index reaches 0.82. Depending on the period, it varies from 0.66 (1925-1939) to 0.87 (1875-1899).

To refine our descriptive analysis, we broke down by socio-professional code (table 3). Six categories were assigned¹³: farmers (34.2% of the sample for which there is an indication of activity), workers, including household personnel (12.5%), an intermediary status between employee and employer (cobbler, mason, grinder, etc.) (10.3%), industrial and business leaders, including the professions (12.2%), public servants (7.3%), the independently wealthy and those without profession (23.6%). Nearly three-quarters of farmers were solvent while only one-fifth of the workers left an estate. In addition, one business leader in two left an estate and two independently wealthy in five.¹⁴ Even if the study of means should be undertaken with caution given the nature of our sample, there is still a low average value of worker estates and a high average value for those left by industrial and business leaders, and to a somewhat lesser extent that of the ‘independently wealthy and without profession’. Finally, the inequality (Gini index) of the amounts transferred among solvent adults is considerable regardless of socio-professional class : between 0.60 for intermediate status to 0.87 for the independently wealthy.

¹² This evolution of inequality is consistent with the findings of Piketty *et al.* (2006) obtained for France (Figure 7).

¹³ We took inspiration from the nomenclature established by Georges Dupeux and Jacqueline Herpin in the scope of their studies of wealth in Bordeaux in the 19th century (*cf.* Daumard, 1973, p. 432-435).

¹⁴ While by definition this category includes individuals with transferable capital, the low percentage of deceased leaving behind an estate can be explained by the composition itself of this group, which other than people of independent means, includes those individuals for whom only an indication of “no profession” would be identified.

Table 4 shows the distribution of amounts inherited measured for the population of sole heirs. As with the estates, amounts have been adjusted using inflation rates and are expressed in francs 2000. Overall, throughout the period in question, the average heir received nearly 30,000 francs, the median heir a little over 4,000 francs. Distribution of estates was very unequal, with the Gini indexes (not represented in table 5) at around 0.85. The richest heir received over 3,000,000 francs. The changes over this period demand less caution if reasoning is based on the median values. The results thus obtained reinforced the results based on the average values.

If the amounts inherited are cross-referenced with the socio-professional code of the deceased (table 5), we observe that the sons of those of independent means and of business owners inherited the most (93,000 francs and 63,000 francs, respectively). At the other end of the spectrum, the sons of workers and small farmers inherited less than 10,000 francs each.

III. Bequests in the 19th century France: a strong influence of inheritance

To successfully estimate the bequest equation introduced in section I, we selected a sample for which we have asset information on the father and child, essentially, in order to study the relationship between the inherited property and that transferred.

III.1. The selected sample : fathers and sons

Our goal was to piece together a population of father-child “couples”. At the start, we had 1,602 individual records taken from the *Tables de Successions et Absences*. Given that a single individual may constitute several entries, especially when he is the owner of property which is spread out geographically and thus figures on list of more than one *Enregistrement* office, these 1,602 records in fact correspond to 1,347 individuals.

Genealogical reconstitution work allowed us to put together 289 trees including at least three people. These 289 trees include 4,521 individuals, men and women, TRA and non-TRA. Among the 1347 individuals for whom we dispose of asset information, 1,084 were able to be identified and “placed” on the genealogical trees. A codification was created to identify for each individual present in a tree his or

her generation relative to the founding family member, the gender, the total number of children in the sib ship and the rank of birth.

These 1,084 individuals for whom we had an indication of the presence or absence of an estate (stated within the *Tables de Successions et Absences*) and identified within the genealogies, were *ego* individuals for whom we had to: 1) identify the father and 2) locate the latter's estate data.

Identifying *ego* fathers was carried out from the reconstituted genealogies. For the founders of a line, the information relative to the father is missing. Moreover, if an individual moved, even if we know the identity of the father, his inheritance data is absent since it is archived outside of the *département*. Out of 1,084 known deceased, we reconstituted 641 father-child "couples". Among these pairs, we eliminated those deceased who died before their father (58 cases), died too young (134 cases before the age of six), or for whom we do not have a date of birth (28 cases). Finally, we were forced to eliminate those children deceased after 1938 for whom we had no inheritance data. Our total final population was formed of 314 father-child "couples".

To complete this presentation of the data, we have to compare the obtained results using the "father-child" pair data to the data combining all TRA deceased within the *département*.

Table 6 collects the inheritance and heir numbers within our population of pairs. Nearly two-thirds (63.1%) of fathers leave an estate while, in the general population of the *département*, the percentage was lower (48.6%). Such a difference can be explained by the fact that our pairs are composed of a population systematically having children, thus perhaps more motivated to leave an estate. This conclusion is confirmed by the amounts transferred, since the median transfer of our fathers reaches 29,000 francs, while the median estate of all adult deceased combined amounts to 25,000 francs. Two additional consistent results : in the case of the pairs, more than half of children have a father who transferred assets (55.1%), while for the heirs overall this proportion is only 43% ; the median inheritance of our heirs is also greater than the one of the whole population of heirs : 6,237 francs compared to 5,362 francs.

In summary, the selected sample of father-child pairs concerns a richer population than the overall population of the *département*.

III.2. Econometric methodology

Table 7 and Table 8 show the results of the presence (column 3) and the amount transferred (column 4 and 5). These estimations concern two populations : adult population (>20 years old, 280 observations, table 7) and adult male population (157 observations, tables 8) for which we have also information about the number of children.

To measure the elasticity of bequest with respect to inheritance, two estimations are available: the first one use a maximum likelihood estimation of a generalized tobit model where the difference in the estimated coefficients (not with the same set of explanatory variables) between the presence of an estate and its amount allows for an appreciation of specific effects; the second one use simply the results of a standard tobit model with maximum likelihood estimators where the effects on the presence of a bequest or not and the amount transferred are no longer separable (Amemiya, 1985).

The explanatory variables include the inheritance received from the father (in logarithm¹⁵), differences between the dates of death of parent and child multiplied by inheritance received (the coefficient of this crossed variable measures the real rate of return on the individual inheritance from the date it is received until the date the person dies), the age and its square¹⁶, the social category, the gender of the deceased, the marital status and the period¹⁷. For the sub-sample of adult males, the number of children is also included.

III.3. Leaving an estate and how much ?

In a first part, we consider the discrete choice of behavior: leave an estate or not. Then, we test the influence of transfer received on the amount of estate by proposing some elasticity measures of bequest with respect to inheritance received from estimation of different standard *tobit* models (which mix discrete and continuous choice of bequest decision) and generalized tobit models. Last, we give the other effects of explanatory variables on amount of bequest (in standard tobit model).

¹⁵ The use of a logarithm of inherited wealth allows for a direct measurement of the elasticity of the transferred asset(s) relative to the inherited wealth.

¹⁶ Age is introduced in a quadratic form (age and age squared) in order to measure any decrease in the transferred wealth, depending on the position in the life cycle.

To leave or not to leave? (discrete choice)

With reference to the probit regression of holding an estate, it is possible to calculate the estimated probabilities of the existence of an estate according to the values of the different variables. We limit ourselves here to a presentation of those concerning the sample of adult males for which we have also information on number of children (Table 8, column 3).

Thus, when an individual inherits double the amount of the average heir, he is 70% more likely to leave an estate than another individual who had inherited nothing (43% versus 71%). The effect of age on the probability is concave, with a maximum at about the age of 69 : for example, an individual who dies at 40 has a 44% chance of leaving an estate, at 60 this probability reaches 83%, but at 80 years old, that probability drops to 82%¹⁸. There is also the important effect of socio-professional codes on the existence of an estate : at the two extremes it is 89% for farmers, civil servants and independently wealthy, but only 20% for the working class (42% for industry and business owners). Childless deceased only leave an estate in 6 out of 10 cases. The amount is over 88% for those deceased with two children. Finally, widows have a much less probability of leaving a bequest than the others : 48%.

The influence of inheritance received on the amount bequeathed (standard tobit)

Standard tobit regressions mix the effect of economic characteristics on two aspects of choice : leave an estate or not ; conditional of leaving an estate, the amount bequeathed. So, the coefficients presented in the tables 7 and 8 (columns 5) reveal the influence of individuals characteristics simultaneously on the two aspects. These regressions demonstrate that the inheritance received from the father is an important determining factor in the amount transferred.

For total population, the elasticity¹⁹ of the bequest compared to the inheritance received evaluated at the mean of the difference between the dates of death (about 30

¹⁷ This variable is likely to represent the effect of difference in life expectancy (Piketty *et al.* 2006) or cohort effects.

¹⁸ The age effect on leaving an estate must be corrected by the fact that it would be some *inter vivos* gift which are available in the data base.

¹⁹ Recall that elasticity – whose value is always between 0 and 1 – measures the impact of a variation of the inheritance received from the father on the amount of the child's fortune. Thus an elasticity value of b means that an individual who received an inheritance 100% greater than the average heir (or two times the average inheritance), shall leave an estate of $b*100\%$ greater than the average amount transferred.

years) is located between 0.42 (Table 7, column 5) and 0.49 for male adults (Table 8, column 5): in other words, if I inherited two times more than the average heir, I will leave my children 40-50% more than the average of my fellow deceased²⁰. These are consistent with the partial inter-generational regression towards the mean in the *Loire Inférieure département* first noted by Arrondel and Grange (2006)²¹.

If we take a greater (smaller) difference between the dates of death -40 years (20 years)-, we obtain an elasticity of 0.36 (0.52) for the all population and of 0.39 (0.45) for men. We observe that the influence of bequest received depends on duration of enjoyment of inheritance (Kessler and Masson, 1989).

Comparable studies measuring the influence of the inherited wealth on estates are rare. Hamermesh et Menchik (1987) formulated an equation of wealth of well-off parents (over \$40,000) and that of their children from inheritance data of a sample of those deceased in Connecticut who died between 1930-1940. Child information comes from the same database for those who died in the same state by the end of 1976. Their study is based on the observation of a final sample of 190 parent-child pairs. They obtain an elasticity of transferred wealth compared to inherited wealth of 0.35-0.55 (as in our study, lifetime earnings is not available) depending on the econometric specification selected (0.16-0.32 with the crossed variable of inheritance and difference between the dates of death). Menchik (1980) who on the basis of somewhat flimsy composite data obtains an elasticity of bequests with respect to human resources of approximately 2.5, and an elasticity of 0.33 to 0.38 with respect to inheritance received. If there was complete substitutability between the two components of resources, the second elasticity would be less than 0.25 (since wealth received represents less than 10% of human resources). The propensity to bequeath out of capital receipts is thereby significantly higher than the one out of life earnings.

For France, Arrondel and Masson (2006) have applied the same methodology, using bequeathable wealth at old age as a proxy for bequests. They reach a comparable conclusion: the elasticity of 'bequests' with respect to inheritance is 0.5 to 0.6 for all households, and still between 0.35 and 0.4 for households with children, whereas the corresponding one with respect to human resources is only 1.5:

²⁰ To avoid problems of outliers, we re-estimate regressions by excluding top 1% value of bequests : results are very closed of those in Tables 7 and 8.

²¹ Arrondel and Grange (2006) find a relatively large degree of intergenerational immobility: those whose father had twice the average level of wealth themselves upon death leave behind around 1.45 times the average wealth of their generation.

the first elasticity is therefore at least twice as high as the one that would be obtained if there was complete substitutability.

Even, we do not control precisely by lifetime resources, it appears that inheritance received has a specific influence on bequest, contrary to the predictions of theoretical models.

Inheritance-bequest relationship among the "richest" population (generalized tobit)

We comment here results concerning the conditional amount of bequest issued from the estimation of the generalized tobit model where we distinguish discrete and continuous estate decision. The second step of the estimation of the generalized tobit model (column 4) concerns only people who leave a bequest. As we introduce, in this last case, a dummy variable concerning the presence or not of an inheritance, the elasticity concerns only the inheritors who leave a bequest (richest population).

For the individuals who inherit and who leave a bequest, this elasticity is equal to 0.41 for adult population (table 7, column 4) if it is evaluated at the mean of the difference between the dates of death (about 30 years). For male adult population, this elasticity of bequest with respect to inheritance is lower, around 0.14. This elasticity depends on the difference between the dates of death: with a difference of 20 years (respectively 40 years), they are equal to 0.43 for adult population (resp. 0.39) and 0.16 for male adult population (resp. 0.12).

Other results on bequest amount (standard tobit): the effect of age, number of children, social categories, marital status and time period

We comment here only the table 8 (column 5) concerning the male adult. Regarding the social category, one may observe as could be expected that it is farmers, business owners and the independently wealthy who leave the largest estates. At the other end of the spectrum, we note workers and intermediate status holders. Another effect : widows leave less money to their child than married people.

There is a very pronounced life cycle effect, with a maximum at around 69 years old. Moreover, in this same sample, the number of children up to two has a positive effect on the amount of wealth transferred; beyond that number, it has no effect.

Finally, another effect is that there is a variation on the amounts by period. All else being equal, it is before 1850 that such amounts are the highest. On the other

hand, they are lowest between 1850 and 1900. This net effect of periods seems to contradict the gross effect obtained in table 6 where the biggest estates were observed after 1875.

IV. Discussion: family traditions, indirect reciprocities, retrospective effects and bequests patterns

In the previous section, we provide some evidence on the fact that the propensity to bequeath is much higher on inheritance received than on lifetime human resources. This inheritance-bequest relationship is hard to explain with standard model of transfers. So, economists interested in intergenerational transfers should pay more attention to the possibility of family tradition in bequest behavior.

Standard models of bequest rely indeed on a simplistic view of the intergenerational family: either no apparent family, for the selfish life-cycler who leaves "accidental" bequests owing to random life duration (Davies, 1981); or the unified Beckerian family, headed by a benevolent patriarch driven by altruism towards his progeny (Becker, 1991); or even pure self-interested family relations, where intergenerational exchanges act as (imperfect) substitutes for private exchanges or contracts that should exist on ideal markets (Kotlikoff and Spivak, 1981, Cox, 1987).

Recently, to go beyond these standard models, some authors provide new alternative hypothesis. Cox and Stark (2005) put forward a logic of family traditions to explain how inheritance could affect bequest behavior. At last, Arrondel and Masson (2006) suggest, drawing on anthropology, that the concept of reciprocity, based upon the gift-return-gift relation, should lead to a more satisfactory view of family linkages, providing new motivations for transfers and more realistic norms of behavior between kin generations. More specifically, they try to show that *indirect* forms of reciprocity between generations may be viewed as an appropriate dynamic synthese of altruism and exchange allowing the introduction of "intermediate" motivations for transfers which better fit the data. The concept must be adapted to the succession of generations, taking a particular form which has been introduced by the French anthropologist Mauss (1958): namely, indirect (serial) reciprocity, involving three successive generations at a time and leading to infinite endless chains of descending or ascending transfers between parents and children.

Reciprocity differs from market exchange in that it proceeds from a set of "internal" obligations – to give, to receive, and to give back –, whether driven by

family traditions, norms or collective values, group or social pressure (Kolm, 2000). Moreover, if direct reciprocity looks still like standard *quid pro quo* exchange between two parties, *indirect* reciprocity implies either that the beneficiary generation gives back to a *third* generation (e.g., provides bequests to one's children "in return" for inheritance received from one's parents), or that the giving generation will be paid back by a third generation (e.g., will receive support given by her children in return to past support given to own parents): in each case, it leads to the replication of the *same* type of transfer along the intergenerational chain. For instance, the way to pay back my parents for the education I received is to give myself proper education to my own children, and so on ; of course, this process will often work through imitation or transmission of norms.

Our initial motivation for extending exchange or reciprocity to three generations within this encompassing framework came from french evidence on parent-to-child transfers : strong and highly significant *retrospective effects*, both qualitative and quantitative, have been systematically found for downward transfers and transmission practices on different data sets by different authors (Arrondel and Masson, 2006). Recently, Cox and Stark (2005) conclude that there exists in the USA a strong relationship between inheritance received and intended bequest and suggest to take account of family traditions to explain transfers from parents to children.

In this paper, we find that what is left in bequest to children appears commensurate to what has been received from parents, the life propensity to bequeath out of inheritance being much higher than the one out of human resources.

These results refer to transmission practices and downward transfers influenced by corresponding behaviors of the previous generation. For that reason, they will be interpreted as a *backward-looking* (i.e. retrospective) and *downward* indirect reciprocity. Likewise, Barro (1974)-Becker (1991) dynastic altruism – where parents care about their child's utility *and* expect their children to exhibit a comparable degree of altruism and to adopt a similar bequeathing behavior towards their own children, and so on – may be seen as a particular variant of *forward-looking* downward indirect reciprocity, where agents are endowed with an infinite horizon.

V. Conclusion

Are bequeathing patterns and behavior strongly influenced by those of parents? Contrary to other social science, most theoretical models in economy predict that bequest behavior does not depend *per se* on parents' behavior.

Because of data limitations, few empirical studies have analysed both bequests and inheritances. The purpose of this paper was to describe and use a historical database consisting of wealth genealogies covering the 19th and first half of the 20th centuries. The database was taken from the "3,000 Families" study of individuals residing in the *Loire-Inférieure département*. The reconstitution of genealogies led to the formation of a sample of father-child pairs for whom inheritance data is available.

Our empirical study revealed the retrospective character of bequests, meaning the strong influence of inherited wealth on that transferred after controlling by other individual characteristics: a deceased having inherited two times more than the average heir shall leave 40-50% more to his own heirs than the average of his generation.

This strong inheritance-bequest relationship is difficult to explain with standard bequest models. Indeed, most models of family transfers (altruistic, paternalistic or exchange models) consider only two generations (parents and children). In face of this empirical "anomalies" of standard models to explain the specific influence of past inheritance received from parents on bequest to children, a principle of indirect reciprocities between three generations, which lead to the replication of the same type of transfer from one generation to the next could be more accurate to describe data (Arrondel and Masson, 2006). In this logic, family traditions could also influence bequest behavior (Cox and Stark, 2005).

In all case, economists interested in intergenerational transfers could no longer ignore in future research the specific role of inheritance on the bequest practices, especially to analyze the effects of public transfer and fiscal policies on saving.

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Table 1 : Estates from 1800-1939 for adults (≥ 20 years old)

<i>Year of death</i>	Number of observations	Percentage of deceased leaving an estate	Average estate	Gini index
Before 1825	83	57.8%	52 879	0.89
1825-1849	111	56.8%	61 945	0.91
1850-1874	141	48.9%	39 875	0.88
1875-1899	125	40.8%	159 375	0.94
1900-1924	169	42.6%	60 205	0.91
1925-1939	99	51.5%	44 940	0.83
<i>Total</i>	728	48.6%	70 749	0.91

Source : TRA study and records of the département of Loire-Inférieure

Note : Amounts are expressed in Francs 2000.

Table 2 : Estates 1800-1939 for solvent adults (≥ 20 years old)

<i>Year of death</i>	Number of observations	Estates						
		<i>Average</i>	<i>Standard-Deviation</i>	<i>Median</i>	<i>Quartile 3</i>	<i>Decile 9</i>	<i>Maximum</i>	<i>Gini</i>
Before 1825	48	91 437	248 643	16 990	49 528		1 598 662	0,81
1825-1849	63	109 142	317 678	16 500	46 755		2 131 758	0,84
1850-1874	69	81 483	177 203	17 783	63 140		904 650	0,77
1875-1899	51	390 676	1 258 465	54 716	142 728		8 054 804	0,87
1900-1924	72	141 768	357 274	30 296	79 428		2 174 055	0,80
1925-1939	51	87 789	139 708	35 760	100 080		641 861	0,66
<i>Total solvent adults</i>	354	145 470	543 481	24 726	75 225	287 621	8 054 804	0,82

Source : TRA study and records of the département of Loire-Inférieure

Note : Amounts are expressed in francs 2000.

Table 3 : Estates according to socio-professional code 1800-1939

<i>Socio-professional code of heir</i>	<i>Number of observations</i>	<i>Percentage for professions indicated</i>	<i>Percentage of deceased leaving an estate</i>	<i>Average estate</i>	<i>Gini index for solvent adults</i>
Farmer	216	34,2%	71,6%	36 702	0,61
Workers (inc. household staff)	79	12,5%	17,7%	5 247	0,77
Intermediate status between employees and employers (cobbler, mason, etc.)	65	10,3%	27,7%	5 877	0,60
Industry and business owners (inc. Liberal professions)	77	12,2%	50,6%	240 163	0,87
Public sector	46	7,3%	34,8%	15 026	0,77
Independantly wealthy and without profession	149	23,6%	44,3%	124 327	0,75
Not indicated or not applicable	96		47,9%	52 087	0,85
<i>Total adults (>= 20 years old)</i>	728	632	40.1%	49 276	0.82

Source : TRA study and records of the département of Loire-Inférieure

Note : Amounts are expressed in francs 2000.

Table 4 : Inheritance 1800-1939

<i>Year of death</i>	Number of observations	Amount of inheritance					
		<i>Average</i>	<i>Standard-Deviation</i>	<i>Median</i>	<i>Quartile 3</i>	<i>Decile 9</i>	<i>Maximum</i>
Before 1825	303	22 213	69 600	4 403	11 625	37 588	522 261
1825-1849	272	32 144	97 755	6 151	17 406	46 141	799 409
1850-1874	434	18 310	82 610	2 885	11 774	28 132	1 295 860
1875-1899	406	38 773	191 592	4 792	15 867	45 146	3 252 709
1900-1924	321	45 125	125 344	4 745	17 126	97 373	1 090 617
1925-1939	213	20 294	85 665	3 096	14 246	37 613	1 155 405
<i>Total heirs</i>	1949	29 743	121 297	4 160	14 053	44 590	3 252 709

Source : TRA study and records of the département of Loire-Inférieure

Note : Amounts are expressed in Francs 2000.

Tableau 5 : Inheritance according to socio-professional code 1800-1939

<i>Deceased's socio-professional code</i>	<i>Number of observations</i>	<i>Percentage for professions indicated</i>	<i>Median inheritance among heirs</i>
Farmers	335	47,9%	4 697
Workers (inc. Household staff)	60	8,6%	2 919
Intermediate status between employee and employer (cobbler, mason, etc.)	49	7,0%	2 621
Industry and business owners (inc. liberal professions)	83	11,9%	7 382
Public sector	61	8,7%	7 425
Independantly wealthy and without profession	112	16,0%	16 558
Not indicated	1249		5 167
<i>Total</i>	1949	700	5 362

Source : TRA study and records of the département of Loire-Inférieure

Note : Amounts are expressed in Francs 2000.

Tableau 6 : Number of estates and inheritances 1800-1939 (father-child pairs)

<i>Year of death of child</i>	Number of observations	Percentage of fathers leaving an estate	Median estate among solvent adults	Percentage of children heirs
Before 1850	50	78,0%	23 934	58.0%
1850-1874	63	69,8%	17 409	66.7%
1875-1899	57	63,2%	38 007	61.4%
1900-1924	88	54,5%	38 880	48.9%
1925-1939	56	55,4%	35 760	42.9%
<i>Total</i>	314	63,1%	28 776	55.1%

Source : TRA study and records of the département of Loire-Inférieure

Note : - The sample consists of 314 father-child pairs

Table 7 : Transfers among adult population (>= 20 years old)

Variables	Means	Generalized tobit model				Amount transferred (standard tobit)	
		Probability of leaving an estate		Amount transferred		Coefficient	t-stat
		Coefficient	t-stat	Coefficient	t-stat		
Inheritance received (existence)	0,62			-4,050	-6,880		
Inheritance received (in logarithm)	4,73	0,139	3,720	0,471	6,400	0,672	3,960
Inheritance*Difference between the dates of death(10-2)	144,57	-0,001	-1,220	-0,002	-2,000	-0,004	-0,980
Age(10 ¹)	58,40	5,734	1,540	0,020	1,270	28,214	1,560
Age ² (10 ²)		-0,042	-1,330	-0,040	-0,940	-0,205	-1,310
Socio-professional code							
Farmers (Ref.)	0,54	0,000		0,000		0,000	
Workers (inc. Household staff)	0,04	-1,821	-5,180	-0,262	-0,280	-10,859	-5,310
Intermediary status between employee and employer (cobbler, mason, etc.)	0,10	-1,090	-3,750	-0,095	-0,180	-5,712	-3,630
Industry and business owners (inc. liberal professions)	0,11	-0,781	-2,420	0,897	1,830	-2,705	-1,870
Public sector	0,01	-0,540	-1,200	0,107	0,280	-2,061	-0,790
Independantly wealthy and without profession	0,07	-0,875	-3,290	1,025	2,520	-3,259	-2,480
Not indicated	0,13	-0,802	-2,360	0,456	0,850	-2,987	-1,830
Gender (male)	0,56	-0,055	-0,280	0,373	1,900	-0,044	-0,050
Marital status at time of death							
Single (Ref.)	0,14	0,000		0,000		0,000	
Married or divorced	0,51	0,087	0,320	0,080	0,250	0,517	0,390
Widower	0,29	-0,284	-0,940	0,154	0,400	-1,423	-0,940
Not indicated	0,06	-0,230	-0,680	-0,637	-0,990	-2,300	-1,050
Time of death							
Before 1850 (Ref.)	0,14	0,000		0,000		0,000	
1850-1899	0,38	-0,442	-1,400	0,291	0,910	-1,948	-1,380
1900-1939	0,48	-0,439	-1,370	-0,048	-0,150	-2,192	-1,520
Constant		-0,842	-0,800	8,227	5,920	-2,047	-0,410
Number of observations	281	281				280	
Nombre of estates	174	174				174	
Pseudo-R2						0,075	
Chi ²		93,58				105,10	

Source : TRA study and records of the département of Loire-Inférieure

Note: The two regressions have been estimated by maximum likelihood.

Table 8 : Transfers among adult male population (>= 20 years old)

Variables	Means	Generalized tobit model				Amount transferred (standard tobit)	
		Probability of leaving an estate		Amount transferred		Coefficient	t-stat
		Coefficient	t-stat	Coefficient	t-stat		
Inheritance received (existence)	0,60			-1,988	-2,370		
Inheritance received (in logarithm)	5,19	0,239	3,100	0,207	2,350	0,699	3,370
Inheritance*Difference between the dates of death(10-2)	157,53	-0,003	-1,750	-0,002	-1,200	-0,003	-0,660
Age(10 ¹)	58	19,388	2,660	-8,020	-1,250	58,490	2,340
Age ² (10 ²)		-0,139	-2,270	0,078	1,440	-0,430	-2,020
Socio-professional code							
Farmers (Ref.)	0,58	0,000		0,000		0,000	
Workers (inc. Household staff)	0,04	-2,079	-3,770	-0,070	-0,100	-8,969	-4,110
Intermediary status between employee and employer (cobbler, mason, etc.)	0,08	-1,570	-3,460	-0,085	-0,180	-7,595	-4,200
Industry and business owners (inc. liberal professions)	0,12	-1,422	-2,870	1,698	2,930	-3,945	-2,700
Public sector	0,01	-0,485	-0,570	0,164	0,290	-2,726	-1,020
Independantly wealthy and without profession	0,05	-1,216	-2,670	1,343	2,300	-2,125	-1,110
Not indicated	0,13	-2,146	-4,240	1,297	2,380	-5,397	-2,210
Marital status at time of death							
Single (Ref.)	0,13	0,000		0,000		0,000	
Married or divorced	0,60	-0,656	-1,550	0,023	0,050	-2,216	-1,210
Widower	0,22	-1,314	-2,100	0,724	1,270	-5,934	-2,680
Not indicated	0,05	-1,475	-1,870	0,403	0,600	-2,738	-0,940
Number of children							
No children (Ref.)	0,32	0,000		0,000		0,000	
One child	0,08	1,001	1,940	-0,245	-0,500	4,274	1,960
Two children	0,10	0,953	2,230	-0,835	-1,700	4,552	2,210
Three or more children	0,50	0,230	0,790	0,122	0,360	-0,767	-0,510
Time of death							
Before 1850 (Ref.)	0,12	0,000		0,000		0,000	
1850-1899	0,40	-1,756	-3,450	0,979	2,190	-5,876	-3,300
1900-1939	0,48	-1,560	-2,630	0,556	1,180	-4,660	-2,620
Constant		-3,745	-1,690	12,204	6,770	-6,219	-0,890
Number of observations	157			157		157	
Nombre of estates	103			103		103	
Pseudo-R2						0,113	
Chi ²				47,10		91,50	

Source : TRA study and records of the département of Loire-Inférieure

Note: The two regressions have been estimated by maximum likelihood.