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How inheriting affects bequest plans

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ABSTRACT

We present and test the idea that bequest planning is linked with the experience of inheriting. We consider "a family tradition of bequeathing" as a channel through which the intention to bequeath is moulded by and is positively correlated with the experience of inheriting. Using data from the Survey on Health, Ageing and Retirement in Europe (SHARE), we find that the experience of inheriting enhances the intention to bequeath, independently of the positive impact of wealth. We also find that the expectation of inheriting has a positive impact on the intention to bequeath, controlling for the expected increase in wealth on account of future inheritances.

Keywords: Intergenerational transfers; Bequest behavior; Experience of inheriting; Expectation of inheriting; Intention to bequeath; Family tradition

JEL classification: D02; D03; D19; D64; H31

INTRODUCTION

There is keen interest in the dynamics of wealth distribution and the intergenerational transmission of income inequality and wealth dispersion. Because inheritances and bequests are at the heart of this dynamics, it is important to understand how they are linked. In this paper we study the manner in which bequests made by parents - which are the inheritances received by children - impact on the children's inclination to bequeath. The idea that looking at three generations could yield novel insights into the relationship and interaction between two generations is not new to the present study (see, for example, Stark 1999; Cox and Stark 2005b, 2007). Other things held the same, it is reasonable to expect that the receipt of an inheritance will create an environment that is conducive to making bequests, such that bequeathing will correlate positively with inheriting. However, the argument could also run in the opposite direction: people who did not receive an inheritance and who found it difficult to get on in life without the support provided by an inheritance will not want their children to be subjected to a similar experience, assuming, of course, that people are altruistic towards their children. In that case, bequeathing will correlate positively with the non-receipt of an inheritance. This inconclusive reasoning itself invites empirical study.

We hypothesize that there is a positive link between the intention to bequeath and the experience of inheriting. Knowing which mechanism underlies bequest behaviour is important (also) because causality matters when it comes to any social preferences for equality, widespread public concern about intergenerational transmission of wealth and equality of opportunity, and optimal taxation. If, for example, wealth as such determines the size of bequests, then a progressive wealth tax will "hurt" the intergenerational transmission of inequality. If wealth is not the determinant of bequests but family tradition, then bequests will be little elastic to the taxation of wealth. It is useful to unravel whether there is a family

tradition, because if there is, then we will have an explanation for observed variations in saving behaviour, especially among the elderly, as we could attribute such variations to heterogeneity in the desire to leave bequests. Moreover, when there is a strong family tradition of bequeathing, people may not only be impervious to changes (increases) in estate taxes but will also adjust their consumption to financial turbulence, such as a significant decline in share prices and stock market losses, by more (dip into savings by less) than if the family tradition effect were weak (namely, when there is little desire to uphold a family tradition to bequeath).

Following a brief review of related studies in Section I, the family tradition model is presented heuristically in Section II. (A formal depiction of the model is relegated to the Appendix.) Sections III and IV, respectively, describe the data, and outline the econometric procedure employed in the empirical inquiry. Our results are presented and discussed in Section V. In Section VI we discuss altruism and charitable bequests. Section VII concludes, and sketches out some reflections on follow-up research. In the Appendix we also present in brief a historical case study that lends support to our approach.

We consider it important to note, and to do so right at the outset, that our empirical analysis draws on responses provided to questions about intentions to bequeath (we explain this further in Section III). We do not test test whether these intentions were matched by action. For our purposes, it is intentions that count, not actual behaviour.[1] The occurrence of a bequest cannot reveal to us the reason for leaving the bequest. While intentions allow us to uncover a causal relationship, actual bequests can at most enable us to establish a statistical relationship with other variables. For example, when an individual hurts someone, the act may be interpreted and evaluated in a variety of very distinct ways, depending, in particular, on

whether it was intentional or accidental. Similarly with regard to bequeathing. Put differently, intentions are an intermediary between exposure (here to inheriting) and future realizations of intended bequests, and as such, enable us to track causality. Another way of "framing" a possible concern with regard to our drawing inferences from plans to bequeath as opposed to from actual bequests, is to argue that when we do so, this is akin to drawing inferences in the context of attitudes towards the environment: in that context, people consider having a clean environment important, and state that they are willing to pay considerably for that. But when it comes to actual payment, an individual reasons that if he withholds payment, then this will not matter because his contribution, or lack of it, will have only a negligible impact on the corresponding financing and, thus, he elects to withhold payment. This type of "free-riding" on others, so to speak, clearly does not apply in the case of bequeathing.

Another possible concern regarding the adequacy of the data that we use is that people who are asked, first, whether they inherited and, second, whether they plan to bequeath, could be biased in their response to the second question as a consequence of the climate created by the first question. This framing could lead to instinctive reporting of intended bequests rather than to disclosure of carefully thought-through planned bequests. We consider this concern too not well founded. It is precisely the impression left by the experience of inheriting that we seek to capture, and it seems unreasonable that the response to a question related to such a serious matter as a plan to leave a bequest will be impulsive. Nonetheless, our Survey on Health, Ageing and Retirement in Europe (SHARE) data source could be redesigned to address this issue also: people could be asked at one point in time about their inheritance experience and at another point in time, say a year, two years, or five years later, about their bequest plans. Our conjecture is that if such a survey protocol were to be invoked, the opposite of "fading" will be observed: the passage of time would enable people to gain

confidence in their ability to act on their bequest preferences by aligning their consumption and wealth accumulation to fit those preferences. Reasoned this way, the likelier finding will be amplification rather than "fading."

I. A BRIEF REVIEW OF RELATED STUDIES

Several studies that seek to explain why people make bequests do not take into account the idea that patterns of bequest behaviour are shaped by inheritance actions undertaken by preceding generations. Instead, bequeathing is attributed to altruism (Barro 1974; Becker 1974; Wilhelm 1996). Some research supports the notion that bequests are compensatory (Tomes 1981) as predicted by the altruistic motive, whereas other studies do not (Menchik 1980; Hurd 1997). The very notion that altruism entails compensatory bequests has also been challenged analytically (Stark and Zhang 2002).

Bernheim *et al*. (1985) develop the concept of strategic giving: bequests will be made to children only if the children meet parental care expectations; otherwise, bequests will be made to a third party. A disinherited child might claim the right to a share of the bequest (the so-called "forced share," meaning a legal right to part of a deceased person's estate). When the forced share is substantial, as is often the case in Europe, the threat of disinheritance is not credible and consequently cannot affect children's behaviour. Moreover, parental altruism weakens the credibility of a threat to disinherit (Bernheim and Stark 1988). The empirical support for the hypothesis that bequests are used by parents to induce their offspring to provide care is mixed: some research confirms it (Angelini 2007), other studies reject it (Tomes 1981; Perozek 1998).

Because lifelong wealth can be consumed, bequeathed, or given as an inter-vivos

transfer, there is tension between the two types of support provided to children. Kessler and Masson (1989) note that some parents may prefer to finance college education, while others may choose to make a bequest, and that the main difference between the two means of financial support is the age of the children when they receive that support. McGarry (1999) argues that inter-vivos transfers depend on the current income of the child, whereas bequests depend on the child's permanent income. Page (2003) finds evidence supporting the claim that higher inheritance tax rates significantly increase the giving of gifts in the USA. Other studies (Kolm 2006; Lundholm and Ohlsson 2000; Menchik and Jianakoplos 1998) attribute bequeathing to a variety of other factors. These and related studies are not structured to predict the size of planned bequests, the "replication effect" model of Cox and Stark (2005b) being an exception.

Another part of the literature argues that the size of bequests is essentially accidental. Uncertainty concerning the time of death induces risk-averse elderly people to save for future needs (Davies 1981). These individuals are unlikely to consume their entire wealth before dying, thus they end up bequeathing even when there was no intention to do so (Davies 1981; Abel 1985) - a bequest "by default," so to speak. However, empirical findings appear to reject the accidental nature of bequests (Hurd 1997). This is a good reason to assume intentionality of bequests.

With regard to the direct role of wealth in explaining bequest behaviour, a widely held perception has been that wealth is a key player in the inclination to bequeath (Modigliani 1988; Alessie *et al*. 1999), and that changes in the probability of leaving a bequest are significantly related to changes in wealth (Hurd and Smith 2001).

II. MODELING THE INCLINATION TO BEQUEATH

Adherence to a family tradition implies mimicking parental behaviour: bequests confer utility not only because they "serve" altruism, but also on account of satisfaction from replication. The family tradition to bequeath is a channel through which the experience of inheriting impacts positively on the inclination to bequeath. Inheriting induces parents to bequeath to their children who, in turn, are inclined to bequeath to their own children. The model of a family tradition to bequeath is presented in the Appendix.

The family tradition model explains how an inclination to bequeath is acquired through or shaped by the experience of inheriting. The model can be represented heuristically as follows. Let there be two types of individuals in the population - type A individuals who derive utility from leaving a bequest, and type B individuals who do not- and let this preference be viewed as transmitted intergenerationally. Individuals who receive an inheritance are the children of parents of type A, are of type A themselves, and will thus plan to bequeath. Individuals who did not receive inheritances are children of parents of type B. An unambiguous distinction between types A and B can be made when all the potential bequeathers are already dead. If bequest plans are revealed to future heirs, then expressed expectations concerning the receipt of inheritances might help to identify the type of individual whose potential bequeathers are still alive. In fact, we might presume that in dynasties with a long-lasting family tradition, the plan to bequeath will be well known to future heirs. (In other words, the children of type A parents might be well aware of the prevailing family tradition to bequeath in their family.)

What role does wealth play in this context? If wealth as such were the driver of bequeathing, then an increase in wealth would lead to an increase in planned bequests. The

effect would be the same regardless of whether the individuals concerned were heirs or non-heirs, that is, regardless of the source of their wealth. Our interest, however, is in finding out whether, holding wealth constant, the *source* of wealth exerts an impact on the inclination to bequeath.

Emphasizing the role of family tradition in bequest behaviour should not be interpreted as denying the role that altruism plays in prompting bequests. Yet even if altruism takes centre stage, the prediction that altruism will affect bequest behaviour is modified, in a clearly discernible way, when family tradition is taken into account. A simple way of incorporating the impact of the family tradition in a model of altruistic bequests and of highlighting the difference between the predictions emanating from an unconstrained altruistic model and from an altruistic *cum* family tradition model is presented in Section VI.

III. THE DATA

We draw on data from the Survey on Health, Ageing and Retirement in Europe (SHARE). The survey covers individuals aged 50 and over who live in 14 European countries, and in Israel. The first phase of data collection (wave 1) took place in Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden, and Switzerland in 2004/5, and in Israel in 2005/6. The second phase of data collection (wave 2) occurred in 2006/7 and covered the same countries as in wave 1, except for Israel. At the time of the second wave, the Czech Republic, Ireland, and Poland were added to the survey. Unfortunately, we cannot use data from subsequent waves 3 and 4 of SHARE because due to revisions to the questionnaire, these data do not provide any insight with regard to bequest intentions.

Because the parents of individuals younger than 50 are unlikely to have died, this

sample of individuals aged 50 and over is tailor-made for our study. The sample is limited to individuals who (reasonably) could have inherited either from a deceased parent or from a deceased parent-in-law. The research sample consists of individuals who simultaneously meet the following criteria: death of at least one parent or parent-in-law; presence of at least one child; reported "chances" (a term used in the questionnaire) to bequeath;[2] and information on the experience of inheriting. There are two types of individuals: those who were interviewed in the two waves, and those who were interviewed in only one wave. Individuals of the first type constitute our panel research sample, whereas individuals of the second type constitute our cross-section research sample.

Of all SHARE respondents, 98.3% answered the question on the chances to leave any bequest. Application of the demographic selection criteria listed in the preceding paragraph yielded a sample of 33,432 individuals. Individuals who did not provide unambiguous information on the experience of inheriting were excluded from the analysis, reducing the sample by about 9%, leaving us with a sample of 30,411 individuals.

All the individuals who inherited money, goods, or property valued at more than 5,000 euros were classified as heirs. Heirs constitute 14% of wave 2 of the panel research sample, and 13% of the cross-section research sample. The country-specific "incidences" of heirs are reported in Appendix Table A2. To the best of our knowledge, no administrative data on the fraction of heirs in the population of European countries are available for comparison with the information elicited from SHARE. No universal relationship between bequest behaviour and house ownership is found in SHARE countries. The vast majority of heirs (more than 96%, cf. Table A3 in the Appendix) inherited a house in Poland. The percentage of heirs in Ireland, the Czech Republic, Italy, Greece, Austria, and Germany who inherited a

house is above the sample average (67% and 73% in the panel and cross-section, respectively). Heirs who inherited a house are least frequent in Denmark, the Netherlands, and Sweden (at most 31% of heirs).

Answers to questions on the "chances" to bequeath anything and on the "chances" to bequeath 50,000 euros or more show how the inclination to bequeath varies. Combined information on the chances to bequeath anything, at least 50,000 euros, and at least 150,000 euros, captures the distribution of the expected amounts of bequests. A stronger inclination to bequeath leads to a larger sum of the desired bequest if bequeathable resources allow that. However, in the case of individuals who are severely restricted in terms of bequeathable wealth, a strong inclination to bequeath can be accompanied by relatively small desired bequests. Because we seek to distinguish between individuals according to the strength of their willingness to bequeath, and not with respect to the sum of their expected or desired bequests, we refer to individuals who report a positive chance of bequeathing as individuals who intend to bequeath. Individuals who report a zero chance of bequeathing are referred to as individuals who do not intend to bequeath. Table 1 presents percentages of heirs and non-heirs with an intention to bequeath and without an intention to bequeath in the panel research sample, and in the cross-section research sample. In congruence with the hypothesized positive link between the experience of inheriting and the inclination to bequeath, the numbers along the main diagonal in each part of Table 1 are larger: the fraction of individuals planning to bequeath is higher for heirs than for non-heirs by 17 percentage points in the panel research sample, and by 19 percentage points in the cross-section research sample. Interestingly, almost the same edge of 18 percentage points was observed in the USA for individuals born in 1931-1941 with at least one deceased parent (Cox and Stark 2005a).

Table 1: Percentages of heirs and non-heirs with and without the intention to bequeath in the panel, and in the cross-section research samples

	Panel		Cross-section	
	Intention to bequeath	No intention to bequeath	Intention to bequeath	No intention to bequeath
Heirs	88.71	11.29	89.14	10.86
Non-heirs	71.27	28.73	70.31	29.69

Source: SHARE waves 1 and 2, release 2-5-0.

Note: For the panel research sample, the reported percentages are from wave 2. Number of heirs: 2,192 (panel) and 3,371 (cross-section). Number of non-heirs: 14,026 (panel), and 26,662 (cross-section).

Table 2 presents descriptive statistics of heirs and non-heirs in the panel and cross-section research samples. As can be seen in the Table, non-heirs are slightly older than heirs. This corresponds to the fact that the older non-heirs are more likely to have parents who lost their lifelong wealth in the Second World War than the somewhat younger heirs. Not surprisingly, the fraction of non-heirs with a living parent is larger than the corresponding fraction of heirs. This helps to explain why the percentage of individuals with the expectation of inheriting - that is, those reporting positive chances to receive any inheritance in the ten years following the interview - is significantly larger among the thus far non-heirs than among heirs.

Table 2: Descriptive statistics of heirs and non-heirs in the panel and the cross-section research samples

	Panel			Cross-section		
	Heirs	Non-heirs		Heirs	Non-heirs	
Averages						
Age	66.56	67.01	***	66.23	66.82	***
Number of children	2.33	2.47	***	2.31	2.48	***
Financial transfers to children	6164	5704		5513	4890	
Financial transfers from children	1423	1530		1655	1501	
Real assets	271.5	218.0	***	267.9	217.1	***
Financial assets	981.9	983.4		735.1	712.9	**
Liabilities	55.0	56.2		55.3	55.3	
Net wealth	1234.3	1228.8		890.3	887.5	
Inheritances	194.8	0.0		196.4	0.0	
Expected inheritances	37.5	37.6		38.2	37.7	
Percentages						
Parent alive	15.82	19.47	***	15.67	20.06	***
Expectation of inheriting	14.86	19.96	***	19.31	21.15	**
Female	54.36	58.25	**	53.20	58.03	***
Married	63.56	58.85		65.45	59.57	***
Widowed	29.51	28.46		27.31	29.21	**
Never married or divorced	6.93	12.69	***	7.24	11.22	***
Retired	23.78	21.40	***	24.29	21.65	***
Working	52.47	54.33	***	51.46	53.86	***
Unemployed	2.63	3.59	*	2.78	3.63	**
Inactive	21.12	20.68		21.47	20.86	
Provided transfers to children	24.64	19.98	***	24.31	18.11	***
Received transfer from children	3.60	3.32		3.19	2.98	
Number of observations	2,192	14,834		3,753	26,658	

Source: SHARE waves 1 and 2, release 2-5-0.

Note: For the panel research sample, the reported values and percentages are from wave 2. Significance of the difference between heirs and non-heirs: * $p < 0.10$. ** $p < 0.05$. *** $p < 0.01$. Reported are financial transfers valued at least 250 Euros that occurred in the 12 months preceding the interview in case of interviews conducted for the first time or since the last interview in the case of subsequent interviews. Assets, liabilities, inheritances, expected inheritances (if positive), and net wealth are expressed in thousand Euros.

Although heirs are more likely to be married or to be in registered partnership than non-heirs, they have on average fewer children than non-heirs. This difference cannot be explained by the fact that heirs are slightly younger than non-heirs because the number of children is not likely to rise significantly with time for individuals in the research samples aged 50 or above. The complex tension between the choices of lifelong consumption, the number of children, planned bequests, and other intergenerational transfers is beyond the limited scope of this paper. Nonetheless, the difference between the average number of children of heirs and the average number of children of non-heirs raises a somewhat speculative question: could a strong inclination to bequeath affect individual fertility decisions? Perhaps it could be reasoned that individuals with a family tradition of bequeathing prefer having children over not having children, so that they can fulfil the tradition, but they also prefer to have fewer children so as to avoid their bequest plans being threatened as rising lifetime child-rearing costs severely bite into their bequeathable resources. (We revisit this issue in the historical case study presented in the Appendix.)

There are more retired heirs than retired non-heirs, and fewer heirs are employed or self-employed than non-heirs. A similar correlation between inheritance and retirement was found in a study by Brown *et al*. (2010). This observation might reflect international differences in the prevalence of heirs and in retirement ages (Table A2). Even though many respondents made retirement decisions before 2004, we can reasonably assume that to an extent, international differences in pension eligibility in 2004 reflect past differences. Interestingly, we do not observe a greater frequency of heirs in the richer countries.

For individuals declaring positive chances to receive an inheritance in the ten years following the interview, the expected amount of inheritances was computed. Information on

the chances of inheriting any amount and on the chances to inherit at least 50,000 euros in the ten years following the interview allows us to estimate the amount of expected inheritances, assuming normal distribution, in line with a procedure proposed by Manski (2004). The *amount* of expected inheritances does not differ between heirs and non-heirs who anticipate inheriting in the ten years following the interview. But the *incidence* does.

The SHARE data do not include information on total wealth. Respondents were asked about four types of real assets ("primary residences" and "other residences," "own businesses," and "vehicles"), seven types of financial assets ("bank and other transaction accounts," "government and corporate bonds," "stocks," "mutual funds," "individual retirement accounts," "contractual savings for housing," and "life insurance policies"), and three types of liabilities ("debt on cars and other vehicles," "debt on credit cards or store cards," and "loans from bank, building society or other financial institution"). Refusal to reply to financial questions is not a rarity, so it is likely that in a good number of cases, when it comes to wealth components, the incidence of non-response is substantial.

We used the information from the responses to the questions listed above to calculate real assets, financial assets, and liabilities. Non-response to these questions resulted in the percentages of individuals with computed real assets, computed financial assets, and computed liabilities not exceeding 73%, 56%, and 69% of the research samples, respectively. With respect to the incidence of non-response, there is no difference between heirs and non-heirs. Net wealth could be calculated as the sum of real and financial assets adjusted for liabilities if all three aggregates were available. Descriptive statistics of the subsample of individuals with computed information on household net wealth (available on request) differs considerably from the descriptive statistics of the full sample. The problem of missing data on

net wealth is addressed by resorting to multiple imputations. The SHARE data include five imputed values of household net wealth obtained in the fully conditional specification method (van Buuren *et al*. 2006). The method employs a Markov chain Monte Carlo technique, namely Gibbs sampling with data augmentation (Little and Rubin 2002), and uses information on ranges within which the amount of a particular wealth component falls. The multiplicity of imputations ensures consistency, not only of the first moment of the distribution of net wealth, but also of the second moment (Juster and Smith 1997; Christelis *et al*. 2005). Detailed description of the imputation procedure in waves 1 and 2 of SHARE is provided by Christelis (2011).

On average, household real assets are significantly larger in the group of heirs than in the group of non-heirs, and these assets are more evenly distributed among heirs than among non-heirs. Heirs seem to have slightly more liabilities than non-heirs in the cross-section research sample. As far as financial assets and household net wealth are concerned, heirs do not differ from non-heirs. The preliminary observations on the distribution of household net wealth already suggest that net wealth does not credibly explain why the fraction of heirs intending to bequeath is larger than the fraction of non-heirs intending to bequeath.

IV. THE TESTING PROCEDURE

Using the SHARE data, we inquire how, other things held constant, the behaviour of heirs who, by definition, were exposed to bequeathing by the preceding generation differs from the behaviour of non-heirs who, again by definition, did not receive bequests. We control for the expectation of inheriting in the ten years following the interview. Do the experience of inheriting and the expectation of inheriting find their match in an inclination to bequeath? In the first subsection we delineate the methods used in our testing procedure; in the second subsection we describe the empirical implementation of these methods.

ESTIMATION METHODS

The estimation strategy takes into account potential non-random selection to becoming an heir. In addition, even though there are only two waves of the survey, our analysis tries to exploit the longitudinal nature of the data. If heirs and non-heirs do not systematically differ with respect to relevant variables, then the simplest estimation methods are suitable for our purposes. We seek to explain the inclination to bequeath using linear estimation (OLS) for the cross-section data. In the panel research sample, we conduct linear estimations using random effects (RE) as indicated by the Hausman test.

If the selection into groups of heirs and non-heirs is not random, then the impact of the experience of inheriting will differ between actual heirs and individuals from the population of interest who could become heirs (Imbens and Angrist 1994; Wooldridge 2002). Descriptive statistics presented in Section III points to systematic (though not profound) differences between heirs and non-heirs, implying that the sample selection problem cannot be swept away. We address this problem by means of a difference-in-differences (DD) estimation for the panel data (Ashenfelter and Card 1985; Imbens and Wooldridge 2009a) and propensity score matching (PSM) for the cross-section data (Rubin 1974; Rosenbaum and Rubin 1983; Imbens and Wooldridge 2009b). The method of DD assumes that becoming an heir is uncorrelated with the idiosyncratic errors of the adjustments of planned bequests. The fixed effects (FE) estimation for the balanced panel allows us to isolate the pure effect of becoming an heir, distinct from other effects that might arise due to biased comparisons between heirs and non-heirs (Wooldridge 2005). For relatively large samples, the DD estimation is efficient. Unfortunately, this is not the case in our study.

The PSM method can be applied, provided that the selection into groups of heirs and

non-heirs depends only on observables (the unconfoundedness assumption). The family tradition model implies that whether a child becomes an heir depends on observable characteristics of the child's parents. Unfortunately, the unconfoundedness assumption cannot be tested directly (Imbens and Wooldridge 2009b). Nonetheless, PSM is the most reliable of the four estimation methods.

The propensity score PS_l is the probability that an individual l is an heir. We investigate the PS_l using logistic estimation (Rosenbaum and Rubin 1983). The following explanatory variables were used: gender, being an only child, age at the time of death of the deceased father, dummies for the last occupation of the deceased father, dummies for the last occupation of the deceased mother, dummies for the respondent's level of education, and dummies for countries. The coefficients of the explanatory variables obtained in the estimation of the PS_l are reported in Appendix Table A4. The predicted propensity score for heirs meets the common support criterion, as it overlaps fully with the predicted propensity score for non-heirs. There are different techniques of propensity score matching. In this paper we run seven random draws because such a procedure exploits fully the size of the subsample of non-heirs, and is insensitive to the sequence of matching. The derived estimates are used to compute a predicted propensity score, which in turn is used to select individuals into groups of heirs and non-heirs (Hirano *et al*. 2003). This allows us to obtain a group of heirs and a group of non-heirs such that the most severe biases of OLS estimates for heirs and non-heirs are eliminated (Heckman 1990; Rubin 1990).

In sum, we apply two approaches (random, and non-random selection of the group of heirs) to the two types of data (panel and cross-section) to generate four linear estimation procedures. In the random selection approach we conduct random effects for the panel data

(RE), and ordinary least squares for the cross-section data (OLS). In the non-random selection approach we conduct fixed effects in the difference-in-differences procedure for the panel data (DD), and ordinary least squares in the propensity score matching for the cross-section data (PSM). We do not anticipate profound differences between OLS and PSM results because the raw data do not point to such differences.

EMPIRICAL IMPLEMENTATION

The pairs of groups of heirs and non-heirs defined for each of the estimation methods create four research samples $S = \{\text{panel}, \text{DD}, \text{cross-section}, \text{PSM}\}$. The impact of inheriting on the intention to bequeath is estimated for each research sample, using the respective estimation method.

SHARE employs the subjective probability approach to the measurement of expectations, as developed by Manski (2004). Table A5 in the Appendix presents percentages of heirs and non-heirs who reported that their chances of bequeathing are 100 for all three questions pertaining to bequest intentions by net wealth deciles. Two observations are worth noting. First, the proportion of individuals above the seventh decile declaring 100 chances of bequeathing is lower than 67%. This indicates that there is substantial variation in chances to bequeath at the top of the wealth distribution. Second, the majority of heirs in the first, second, and third decile groups report 100 chances to leave some bequests, whereas respective figures for non-heirs are statistically significantly lower ($p < 0.01$). This finding supports the prevalence of a family tradition to bequeath.

We draw on direct responses to two questions: all the individuals were asked to state the chances that they will bequeath at least 50,000 euros. Those who answered that this

chance was zero were subsequently asked to state their chance of bequeathing anything at all. None of the variables "produced" by these questions is ready-made for testing our research question. Therefore we elected to let the inclination to bequeath be equal to the chances to bequeath anything, and take the value of 100 if the chance of bequeathing at least 50,000 euros is positive. A set of alternative measures based on responses to the questions with higher thresholds yields results similar to the ones reported in the paper.[3] Table 3 provides details of our operationalization of the inclination to bequeath. The averages and standard errors of the inclination to bequeath are similar in all research samples.

Table 3: Descriptive statistics of the inclination to bequeath in the research samples

	Inclination to bequeath			
	Panel	DD	Cross-section	PSM
Average	79.77	78.19	78.87	77.87
Standard deviation	38.08	38.83	38.68	39.62
Min	0	0	0	0
Max	100	100	100	100
Number of observations	16,911	5,758	30,209	9,989

Source: SHARE waves 1 and 2, release 2-5-0.

Note: For the P and DD research samples, the reported values are from wave 2.

The variable "inclination to bequeath" is quasi-continuous, with an upper bound (100) and a lower bound (0). For this reason, we apply the inverse sine function transformation yielding dependent variable "intention to bequeath" that can be accurately explained using linear estimations. The estimations are performed using a vector of *J* explanatory variables $\mathbf{x}_i^S$

in each of the four methods, according to the equation:

$$IB_{it}^{S} = \mathbf{x}_{it}^{S}\boldsymbol{\beta}^{S} + \varepsilon_{it}^{S}, \text{ for individual } i \text{ observed } t \text{ times } t = \begin{cases} 1,2 & if\ S = \{\text{panel, DD}\} \\ 1 & if\ S = \{\text{cross-section, PSM}\} \end{cases},$$

where IB_{it}^{S} is the intention to bequeath for individual *i* observed at time *t* in sample *S*, $\boldsymbol{\beta}^{S}$ is a vector of coefficients β_j^S on the impact of variable *j* on the intention to bequeath in sample *S*, and ε_{it}^{S} is an identically and independently distributed random term for individual *i* observed at time *t* in sample *S*.

In what follows, the hypothesis of the impact of family tradition on bequest behaviour is tested by asking whether, when estimating the intention to bequeath, the coefficients on the experience of inheriting and on the expectation of receiving any inheritance during the ten years following the interview are positive, controlling for other relevant variables; namely, whether $\beta_{\text{inheriting}}^{S} > 0$, $\beta_{\text{expectation}}^{S} > 0$ in sample *S*. Because the estimation controls for the household net wealth including expected inheritances, the coefficients $\beta_{\text{inheriting}}^{S}$ and $\beta_{\text{expectation}}^{S}$ represent solely the role of inheriting that had been already experienced or is expected to occur, respectively.

V. RESULTS, AND DISCUSSION

Table 4 reports selected results of linear regressions of the intention to bequeath for heirs and for non-heirs. The regressions control for household net wealth including expected inheritances (expected net wealth), transfers provided to and received from children after inverse hyperbolic sine transformation, and other relevant variables including age, gender, marital status, and employment status. We consider three regions: South (Greece, Italy, Spain, Israel), Central (Austria, Belgium, the Czech Republic, Germany, France, Poland, Switzerland), and North (Denmark, the Netherlands, Sweden).[4] In the case of the panel

research sample, random effects (RE) estimations were chosen over fixed effects (FE) according to the results of the Hausman test.

Table 4: Results obtained in the linear estimations of the intention to bequeath with five multiple imputations of household net wealth

Intention to bequeath	Panel (RE)		Cross-section		DD (FE)		PSM	
	Coeff.	S.e.	Coeff.	S.e.	Coeff.	S.e.	Coeff.	S.e.
Experience of inheriting	.377***	(.043)	.321***	(.032)	.633	(.682)	.306***	(.035)
Expectation of inheriting	.547***	.(036)	.470***	(.025)	.547***	(.049)	.466***	(.028)
Trans. expected net wealth	.198***	(.004)	.192***	(.006)	.205***	(.006)	.192***	(.007)
Trans. received transfers	.007	(.012)	.003	(.010)	-.005	(.017)	.004	(.011)
Trans. provided transfers	.044***	(.005)	.037***	(.003)	.048***	(.006)	.036***	(.003)
Log number of children	-.252***	(.030)	-.245***	(.029)	-.278***	(.042)	-.211***	(.032)
Inheritance tax	.004**	(.002)	.005***	(.002)	-.008***	(.003)	.007***	(.002)
Age	.002	(.002)	.001	(.002)	.004	(.003)	-.001	(.002)
Female	-.009	(.031)	-.015	(.026)	.004	(.043)	-.022	(.029)
Married	.279***	(.050)	.252***	(.044)	.379***	(.070)	.233***	(.049)
Widowed	.090	(.058)	.105*	(.053)	.175**	(.080)	.098*	(.059)
Working	.222***	(.040)	.209***	(.038)	.219***	(.054)	.207***	(.044)
Retired	.278***	(.045)	.286***	(.040)	.265***	(.063)	.256***	(.045)
South	.405***	(.038)	.329***	(.035)	.375***	(.048)	.336***	(.040)
Central	.142***	(.037)	.102***	(.030)	.328***	(.051)	.060*	(.034)
Wald/LR test	179.5***		140.5***		97.3***		110.7***	
Number of observations	16,590		20,373		9,018		15,758	

Source: SHARE waves 1 and 2, release 2-5-0.

Note: * p < 0.10. ** p < 0.05. *** p < 0.01. Trans: Inverse hyperbolic sine transformation (θ=1). Coeff.: coefficient. S.e.: standard error. Ref. group: The inactive or unemployed single men with at most ISCED level 1 of the least educated child, not receiving nor providing financial transfers to children, living in the North. Estimations with constant term control for the receipt of financial transfers from children, the provision of financial transfers to children, 6 ISCED education levels of the least educated child, and having a daughter in all estimations. South (Greece, Italy, Spain, and Israel), Central (Austria, Belgium, the Czech Republic, Germany, France, Poland, Switzerland), and North (Denmark, the Netherlands, Sweden). PSM: 7 random draws. Fuller results are available on request.

The coefficient on a dummy for the expectation to receive inheritances in the ten years following the interview is significantly positive (at the 0.01 significance level) in all the estimations, and the coefficient on the experience of inheriting is significantly positive in all but one of the estimations, namely except for the fixed effects regression in the DD method. We discuss the insignificant coefficient in the DD sample below. The positive impact of actual and expected inheriting in the three research samples supports the notion that family tradition to bequeath affects the intention to bequeath. It is noteworthy that the significant coefficient is obtained in an estimation controlling for net wealth including expected amounts of inheritances that the respondents believe they will receive in the ten years following the interview, along with other explanatory variables. This means that the experience of inheriting increases the intention to bequeath on top of any possible increase arising from a higher household expected net wealth.

Additional PSM estimations (not displayed here) with numerically calculated standard errors using kernel weights and nearest neighbour as alternatives to the random draws matching technique confirm that the experience of inheriting and the expectation of inheriting strengthen significantly the intention to bequeath.

The lack of significance of the experience of inheriting in the DD research sample arises, most probably, from the number of individuals who became heirs (244) within the short observation span of two years, yielding a proportion (1.38%) too small to reveal any statistically significant relation. In contrast to actual inheriting, the variable reflecting the expectation to receive inheritances in the ten years following the interview captures properly whether or not one belongs to a family with a tradition of bequeathing.

In sum, the prevalence of a positive relationship between the experience of inheriting

and the intention to bequeath is supported. The family tradition to bequeath impacts positively on the intention to bequeath on top of any positive impact of expected net wealth. The impact of inheriting is larger than the impact of being married, working, or retired. So is the impact of the expectation to inherit. The econometric results reaffirm what was clearly gleaned by the "naked eye" (cf. Table 1): heirs are more likely to be inclined to bequeath than non-heirs, a relation that holds when other relevant covariates are controlled for.

VI. COMPLEMENTARY CONSIDERATIONS

AN UNCONSTRAINED ALTRUISTIC MODEL PITTED AGAINST AN ALTRUISTIC *CUM* FAMILY TRADITION MODEL

Let the utility function of an individual take the form $U(c,b) = (1-\alpha)\ln c + \alpha \ln b$, where $U(\cdot)$ is twice differentiable and concave, $0 < \alpha < 1$ is the altruism weight, c is the individual's lifetime consumption, b is the bequest that the individual leaves, and $w = c + b$ is the individual's wealth, where all variables are expressed in present-value terms. Because

$$\frac{\partial U}{\partial b} = -\frac{1-\alpha}{c} + \frac{a}{b} \quad \left(\text{and } \frac{\partial^2 U}{\partial b^2} = -\frac{1-\alpha}{c^2} - \frac{\alpha}{b^2} < 0 \right),$$

it follows that b^*, the optimal level of b, is $b^* = \alpha w$ (see Figure 1). If the initial level of w is w_0, then bequests are set at b_0^*, and if the level of wealth declines to w_1, then bequests are set at b_1^*.

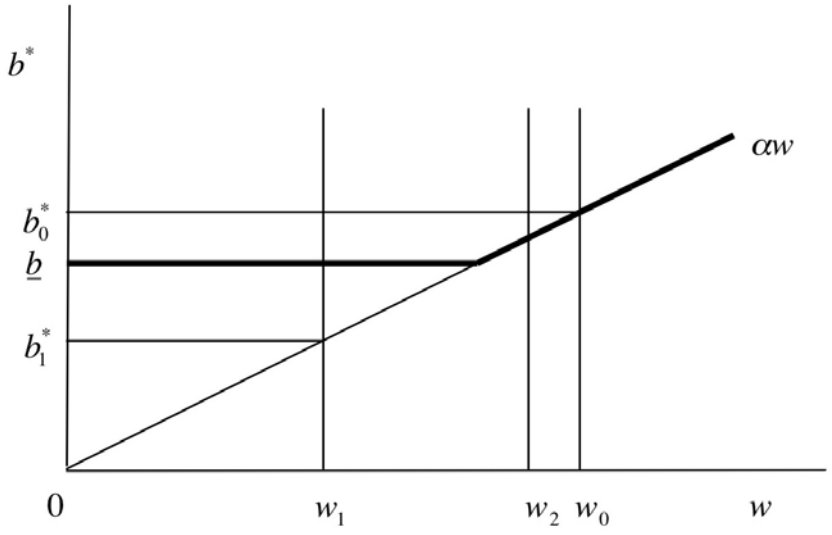

Figure 1: Altruism, replication, and bequests

The family tradition effect places a floor on bequests, say at $\underline{b}$. With the effect present, a wealth decline from w_0 to w_1 entails a decline in bequests by less than $\alpha \Delta w$, that is, only to $\underline{b}$. Of course, attenuation of the decline in the level of bequests will not arise for all reductions in wealth; it would not follow if wealth were to decline from w_0 to w_2, for example.

One reason why the giving of bequests is conditioned by the receipt of an inheritance could be dynastic altruism. If altruism is a trait that individuals receive and pass on (somewhat akin to a gene), then the altruism that guided *t* in bequeathing to $t+1$ will likewise guide $t+1$ in bequeathing to $t+2$. While the possibility that altruism is an intergenerational factor cannot be ignored (Stark 1999), it is hard to see why altruism should consistently manifest itself in the specific form of bequests: we would expect altruism to give rise to *t* giving to $t+1$, not to a particular type of giving by *t*. Moreover, if a high degree of dynastic altruism results in a dynasty creating and accumulating more wealth than a low degree of dynastic altruism (Falk and Stark 2001), then altruism, wealth, and bequests will co-vary. Yet

our data suggest that the correlation between inheriting and the intention to bequeath is neither confined to nor more pronounced at high levels of wealth.

AN APPLICATION OF THE FAMILY TRADITION APPROACH TO CHARITABLE BEQUESTS

In a dynamic economy, the reason why the wealthy give to charity is that they are likely to have obeyed the family traditions "constraint" and are therefore freer to engage in charitable giving.

Comparing the wealthy in Europe with the wealthy in the USA, two features stand out. First, the wealthy in Europe are less likely to give to charity than the wealthy in the USA. Second, the wealthy in Europe are more likely to have their wealth originate in family firms. The family tradition effect provides a connection and an explanation. On average, the wealthy in the USA are more likely to have accumulated their fortunes in their own lifetime. On average, the wealthy in Europe are more likely to have inherited their wealth. Consequently, when it comes to the free disposition of wealth, the wealthy in Europe are more constrained by the mandate of the family tradition effect than their counterparts in the USA.

The July 31, 2004 issue of *The Economist* magazine ran a special report on philanthropy. *Inter alia*, the report made the following disjoint observations: "on both sides of the Atlantic … more and more people have more money than they want to leave to their kids;" "volunteering turns out to be particularly high in [several European countries]. In America, the balance between gifts of time and cash is more equal … than in most of Europe;" "as the size of estates rises, the proportion going to heirs shrinks and the share left to charity increases;" "Could it be that today's rich think that [bequeathing] too much money harms

their children?" (pp. 48–50). Although the report explains each observation separately, it falls short of providing a unifying reasoning. Our approach can provide such reasoning.

The notion that "people have more money than they would like to leave to their kids" is questionable: it is unclear *a priori* why the *additional* money that people have should not be bequeathed to their children. Our approach suggests that it is not "more money" *as such* that prompts the giving (to charity) as opposed to bequeathing, but rather that it is the composition by source of the available money wherein a higher fraction does not originate in inheritances. Given our perspective, perhaps the quote could be rewritten: "people have more money than they *feel bound to leave* to their kids."

Indeed, a reason for volunteering being more prevalent in Europe than in the USA is that because of the higher incidence of wealth in Europe being "dynastic wealth," given the inclination or the desire to give to others rather than to one's children, people in Europe are more constrained by their legacy of inheritance in bequeathing to others rather than to their children than people in the USA.

Our reasoning further implies, then, that the often-quoted main reason for Americans giving more to charities than Europeans may not be the "kinder tax treatment" in the USA.

Our approach also enables us to shed a different light on the observation that "as the size of estates rises, the proportion going to heirs shrinks." Our approach suggests that it is intertemporal variation, not cross-sectional variation, that accounts for the shifting of the relative weights. It is the rise in the size of the estates *over time* - which gives rise to a "surplus" of bequeathable wealth over inherited wealth - that facilitates a larger allocation to

charitable giving, rather than a perception that “bequeathing too much may harm children.”

On a related note: there is plenty of evidence that the *nouveau riche* in Russia, especially in Moscow, practise conspicuous consumption on an extravagant scale. This behaviour coincides with large sections of the Russian population becoming poorer. There is no culture in present-day Russia of community service and social responsibility, as the social attitudes of the Soviet era remain largely intact. The newly-acquired private wealth is not used for charitable purposes. In principle, only a little of the newly-acquired private wealth could have been consumed, with the bulk earmarked for bequests. Under communist rule, the ownership of private property was prohibited, and there was no tradition of transferring private property intergenerationally. Thus, the prevailing extreme level of consumption may be due partly to the absence of a culture of social responsibility and moral restraint, and partly to the absence of an inheritance experience and a bequest tradition.

VII. CONCLUSIONS, AND REFLECTIONS ON FOLLOW-UP RESEARCH

We explored the idea that the intention to bequeath is influenced by a family tradition of bequeathing. A sample of individuals aged 50 and over with at least one deceased parent or parent-in-law and with at least one child drawn from SHARE data was used to test whether there is a positive correlation between having inherited or expecting to inherit and the inclination to bequeath, keeping other relevant factors constant.

Our main finding is that family tradition explicated via inheritances has a positive impact on the inclination to bequeath, controlling for net expected wealth, financial inter-vivos transfers to and from children, and other relevant variables. Our finding aligns with the idea that the receipt of inheritances signals belonging to a family that is conscious of a

tradition to bequeath. In such families, the traits of bequest behaviour are well-known and anticipated. The results confirming the role of the family tradition, controlling for net wealth, imply that it is not the case that the wealthier necessarily bequeath more because they have more to bequeath. The results suggest that policymakers who seek to modify bequest behaviour have to recognize that in societies in which the experience of inheriting affects the bequest behaviour of a large fraction of the population, the effectiveness of inheritance taxes could well be muted.

The significance of our approach arises not only from the light that it sheds on the role of inheriting in the determination of whether to bequeath and how much to bequeath, but also because it suggests an explanation for other aspects of bequest behaviour. For example, Light and McGarry (2004) seek to find out what explains the deviation of mothers from the norm of equal bequests, a category that covers 8% of mothers in the USA, according to a 1999 National Longitudinal Survey of Young Women and Mature Women. Light and McGarry (2004) do not consider as an explanation the possibility that these mothers have themselves experienced an unequal division of inheritances.

In another “mothers” study, Fernandéz *et al*. (2004) argue that a significant determinant of the gradual but steady increase in women’s involvement in the formal labour market was the increasing number of men who grew up in a family in which their mother worked. In this way, women who worked set an example for their sons, and thus made it easier for the next generation of women to follow in their footsteps. Fernandéz *et al*. (2004) show that the probability that a man’s wife works is positively and significantly correlated with whether his mother worked. This approach and finding parallel ours not only in that behavioural patterns are transferred intergenerationally, but also in that in the Fernandéz *et al*.

(2004) study, the search for an explanation is not confined to the standard determinants of women's participation in the labour market (such as the liberating effects of new consumer durables that greatly decreased the amount of work required to run a household, the revolutionary effect of the oral contraceptive, and the expansion of the service sector with its attendant white-collar jobs); in our study, the search for an explanation for planned bequests is not confined to wealth.

Related interesting questions that could be addressed in future research include whether the impact of inheriting on the intention to bequeath differs with respect to the relationship between the testator and the heir. Does the intention to bequeath depend on whether the receipt of an inheritance was via a will or without a will? What is the effect of the composition of inheritances on the incidence and composition of planned bequests? Our additional estimations yielded an insignificant coefficient on house inheritance, which suggests that the house as a form of inheritance does not affect the intention to bequeath. However, it may affect the desired form of planned bequests. Further analysis of this issue could shed light on the processes of transmitting the family tradition to bequeath. Testing the hypothesis that individuals with less non-inherited wealth will leave a larger bequest to children of lower ability than individuals with more non-inherited wealth, as presented in the model in the Appendix, deserves separate analysis once datasets including both the incomes of children and the wealth of parents become available.

In addition, longitudinal data over a longer time span might improve the accuracy of the estimates of the long-term role that inter-vivos transfers between parents and children play in the formation of the intention to bequeath, as well as estimates of the impact of unanticipated changes in inheritance tax rates. The amount of intended bequests also deserves detailed

analysis once more refined data become available. The accuracy of the estimates of expected bequests that could be derived from the subjective probabilities to bequeath amounts that exceed given thresholds is limited in SHARE because only two thresholds were used, and the feasibility of the normality assumption is disputable. Finally, if maintaining a family tradition to bequeath is considered important, then people will adjust their consumption in situations of significant changes in the value of their assets, for instance a substantial fall in the value of their share holdings. It will be intriguing to explore the link between a “duty” to bequeath on the one hand, and the value of assets, level of consumption, and possibly even labour market engagement on the other. Here, almost a counterintuitive result could be found: rather than the receipt of a (large) inheritance leading to a reduction in employment, under a family-tradition-mandated commitment to bequeath, an adverse shock to asset value could induce (or reinforce) a positive labour supply response.

APPENDIX

MODELING THE FAMILY TRADITION TO BEQUEATH

Let Y_p be the parent's lifelong income, let *I* be the inheritance received by the parent, let *B* be the bequest to the child, and let Y_k be the income of the child (*k* for kid). Let the parent's utility *U* positively depend on his or her own consumption $Y + I - B$, on the consumption of the child $Y_k + B$, and on upholding a family tradition. Then the parent's utility function is given by

$$U = \alpha \ln(Y_p + I - B) + \beta \ln[(Y_k + B) + \gamma(B - I)],$$

where $\alpha, \beta, \gamma > 0$ are parameters. The parameter γ measures the effect of "family tradition" on bequest behaviour. Bequeathing the same as inheriting or more confers satisfaction; bequeathing less than inheriting reduces utility. With these preferences, the case of pure altruism (no family tradition effect) is a special case in which $\gamma = 0$.

Suppose that we find out that individuals who inherit more tend to bequeath more. If mere wealth were the determinant of planned bequests, then an increase in wealth arising from a surge in the value of assets or savings occurring because of, say, a stock market boom or because of inheritance, should have the same impact on planned bequests. But if it is the source of the wealth that matters, then we will not observe the same impact. On receipt of an inheritance, individuals may interpret their role towards their children differently than on amassing the same amount by means of their own toil; they could consider it only fair not to leave less than they received themselves, or they could interpret their role as custodians, that is, recipients, holders, and "transferers" of the dynastic wealth, humbly asserting that they live for only a fraction of the dynasty's "lifetime," and have a moral duty to act as intertemporal purveyors or conveyers of the dynastic assets.

Consider a parent who chooses the amount of bequests such as to maximize *U*. We

express the parent's utility as a function of bequests:

$$U(B) = \alpha \ln(Y_p + I - B) + \beta \ln[(Y_k + B) + \gamma(B - I)] .$$

Then

$$U'(B) = \alpha \frac{-1}{Y_p + I - B} + \beta \frac{1+\gamma}{(Y_k + B) + \gamma(B - I)} ,$$

$$U''(B) = -\frac{\alpha}{\left(Y_p + I - B\right)^2} - \frac{\beta(1+\gamma)^2}{\left((Y_k + B) + \gamma(B - I)\right)^2} < 0 \quad \text{for all } B$$

(that is, the second-order condition for a unique maximum holds). We have that

$$U'(B) = 0$$

if and only if

$$-\alpha[(Y_k + B) + \gamma(B - I)] + \beta(1+\gamma)[Y_p + I - B] = 0 ,$$

or if and only if

$$B = \frac{\beta(1+\gamma)(Y_p + I) + \alpha\gamma I - \alpha Y_k}{(\alpha + \beta)(1+\gamma)} \equiv B^* .$$

Four predictions can be obtained from the model.

Prediction 1 A stronger family tradition results in a larger bequest, other things held constant:

$$\frac{\partial B^*}{\partial \gamma} = \frac{\partial\left(\frac{\beta(1+\gamma)(Y_p + I) + \alpha\gamma I - \alpha Y_k}{(\alpha + \beta)(1+\gamma)}\right)}{\partial \gamma} = \frac{\alpha(I + Y_k)}{(\alpha + \beta)(1+\gamma)^2} > 0 .$$

This relationship leads us to hypothesize that other things held constant, adherence to family tradition will result in a larger optimal bequest. Thus, other things held constant, planned bequests of heirs (individuals with a family tradition of bequeathing) are expected to be larger than planned bequests of non-heirs (individuals without a family tradition of bequeathing), because for heirs $\gamma > 0$, whereas for non-heirs $\gamma = 0$.

Prediction 2 For a given wealth $Y_P + I = W$, the receipt of a larger inheritance leads to leaving a larger bequest:

$$\frac{\partial B^*}{\partial I} = \frac{\partial\left(\frac{\beta(1+\gamma)W + \alpha\gamma I - \alpha Y_k}{(\alpha+\beta)(1+\gamma)}\right)}{\partial I} = \frac{\alpha\gamma}{(\alpha+\beta)(1+\gamma)} > 0 .$$

(When wealth is not given,

$$\frac{\partial B^*}{\partial I} = \frac{\partial\left(\frac{\beta(1+\gamma)(Y_p + I) + \alpha\gamma I - \alpha Y_k}{(\alpha+\beta)(1+\gamma)}\right)}{\partial I} = \frac{\beta(1+\gamma)+\alpha\gamma}{(\alpha+\beta)(1+\gamma)} > 0 .)$$

Prediction 3 Under family tradition, the receipt of a larger inheritance increases optimal bequest by more than the receipt (the gaining) of a larger non-inherited wealth.

Rewrite the optimal bequest as

$$B^* = \frac{\beta(1+\gamma)Y_p + \left(\beta(1+\gamma)+\alpha\gamma\right)I - \alpha Y_k}{(\alpha+\beta)(1+\gamma)} .$$

If inheritance increases by Δ, then the optimal bequest is

$$B^*(I+\Delta) = \frac{\beta(1+\gamma)Y_p + \left(\beta(1+\gamma)+\alpha\gamma\right)(I+\Delta) - \alpha Y_k}{(\alpha+\beta)(1+\gamma)} ,$$

and it increases by

$$B^*(I+\Delta) - B^* = \frac{\left(\beta(1+\gamma)+\alpha\gamma\right)\Delta}{(\alpha+\beta)(1+\gamma)} .$$

If non-inherited wealth increases by Δ, then the optimal bequest is

$$B^*(Y_p+\Delta) = \frac{\beta(1+\gamma)(Y_p+\Delta) + \left(\beta(1+\gamma)+\alpha\gamma\right)I - \alpha Y_k}{(\alpha+\beta)(1+\gamma)} ,$$

and it increases by

$$B^*(Y_p+\Delta) - B^* = \frac{\beta(1+\gamma)\Delta}{(\alpha+\beta)(1+\gamma)} .$$

Thus,

$$B^*(I+\Delta)-B^* = \frac{(\beta(1+\gamma)+\alpha\gamma)\Delta}{(\alpha+\beta)(1+\gamma)} > \frac{\beta(1+\gamma)\Delta}{(\alpha+\beta)(1+\gamma)} = B^*(Y_p+\Delta)-B^*.$$

Prediction 4 The sensitivity of the optimal bequest to inheritance is increasing in family tradition. This result holds regardless of whether or not total wealth is held constant; for both constant and non-constant total wealth, the expression for the sensitivity of the optimal bequest to family tradition is the same.

For a given total wealth,

$$\frac{\partial^2 B^*}{\partial\gamma\partial I} = \frac{\partial^2\left(\frac{\beta(1+\gamma)W+\alpha\gamma I-\alpha Y_k}{(\alpha+\beta)(1+\gamma)}\right)}{\partial\gamma\partial I} = \frac{\partial\left(\frac{\alpha\gamma}{(\alpha+\beta)(1+\gamma)}\right)}{\partial\gamma} = \frac{\alpha}{(\alpha+\beta)(1+\gamma)^2} > 0,$$

and when total wealth is not given:

$$\frac{\partial^2 B^*}{\partial\gamma\partial I} = \frac{\partial^2\left(\frac{\beta(1+\gamma)(Y_p+I)+\alpha\gamma I-\alpha Y_k}{(\alpha+\beta)(1+\gamma)}\right)}{\partial\gamma\partial I} = \frac{\partial\left(\frac{\beta(1+\gamma)+\alpha\gamma}{(\alpha+\beta)(1+\gamma)}\right)}{\partial\gamma} = \frac{\alpha}{(\alpha+\beta)(1+\gamma)^2} > 0.$$

There is a possible interesting link between the family tradition model and heritability of ability. Take two individuals with the same wealth: one, W, who inherited wealth, the other, Z, who did not. Then, W has less non-inherited wealth, which could likely reflect lower ability. Assuming heritability of ability, W's child is likely to be of lower-ability than Z's child. Then even though W and Z have the same wealth, W will leave a larger bequest to his child than Z, assuming that W and Z are equally altruistic toward their children. As we move intergenerationally, a "family tradition" type of pattern will be observed with individuals who inherit more bequeathing more, holding wealth constant; except, then, that in this scenario, the income of the child, Y_k, is not held the same, a dissimilarity effect that we do not have in derivations displayed above when we control for Y_k.

A HISTORICAL CASE STUDY

If inheritance experience bears importantly on bequest behaviour, we should be able to find evidence of bequest behaviour that is in line with the inheritance experience, even when the law governing bequests changes. Indeed, if the maintenance of an inheritance tradition is all that important, we should expect the adjustment to a change in the law that governs bequests to come about largely through a change in variables other than bequest practices.

Consider an agriculture-based population in which primogeniture has been practised for generations - a population of dynasties. With a constant supply of N farms, there are N dynasties. The population is also characterized by a steady-state fertility pattern.

Under primogeniture, the children of a given family can be split into two groups: one group consists of the eldest son, *e*, who on the parent's death will receive the family's entire estate. The other group consists of all other children, *j*, none of whom will receive any of the estate. The fertility behaviour of the *j* children, who know that their own children will not inherit a farm either, can be expected to have factored in this eventuality. Child *e*, who in due course will inherit the family's entire estate, must be aware of his dynastic role as a "custodian" - recipient, holder and "transferer" - of the family's estate. The fertility behaviour of this child should also be expected to factor in the looming estate transfer.

Suppose now that new legislation is enacted, replacing the primogeniture rule with equal division of the estate among all children, and consider the fertility response of *j* and *e*. The children of *j* would not have inherited a farm under primogeniture and will not inherit a farm under equal sharing either (since *j* were not in possession of farms in the first place). The new law should not then be expected to impact on the fertility behaviour of *j* one way or the

other. Assuming that the law binds, *e* will, however, now face a daunting dilemma: either replicate the past inheritance protocol or let the farm split as many ways as the number of children (sons) that he will have. Where the replication effect is strong, an alteration in fertility behaviour can be expected: if *e* were to have only one son, then the new bequest law would not dent the dynasty's intergenerational transfer practice at all; if *e* were to reduce his (if sons only) fertility, then the impact of the law would be mitigated.

The empirically testable prediction that emanates from this line of reasoning is that (considering a period during which farming was practised widely) provinces in which the ratio of *N* to the total farming population was higher would have recorded a sharper fall in fertility on the change of the bequest law from primogeniture to equal sharing. Variation in fertility decline across provinces can be attributed to the varying extent by which the new law was binding in the provinces.

Although we were unable to marshal evidence that directly corroborates this prediction, we were able to find evidence that closely bears on it.

A series of legislative steps that started in 1793 in the French National Assembly and was followed by Napoleon's Civil Code of 1804 dramatically changed the "grid" that shaped French inheritance rules and practices in place ever since the Middle Ages: equal inheritance replaced strict impartibility. Students of the French family, especially Le Play[5] and his followers in the middle of the nineteenth century, argued that "the adoption of the Civil Code in France, which strongly restricted testamentary freedom in favor of nearly equal inheritance prescribed by law, was a decisive factor in explaining why the French birth rate was low. The argument was that when the peasant proprietor was faced with the prospect of being forced to

divide his land among several children, he practiced family limitation … . As a result a relatively high birth rate was maintained only in those areas where division was resisted." (Berkner and Mendels 1978).An empirical study drawing on the French censuses of 1856, 1876, and 1901, and confined to départements (administrative units) that were predominantly rural and agricultural during the 1856-1901 period, finds that "because stem families feared the new inheritance laws or *because of tradition* which preceded the Revolutionary laws, stem families reduce[d] fertility" (Parish and Schwartz 1972), emphasis added. (Stem families are families in which one child marries and stays within the household while the others leave, and one child inherits the land.)

Evidence supportive of the argument of Le Play's followers that "the role of the *eldest* son in a preferential inheritance system was being replaced by an *only* son in a system of equal partibility" (Berkner and Mendels 1978) seems to suggest that, as predicted by our approach, families sought to maintain inheritance traditions even in an environment that turned inhospitable to such a continuation.

Excluding the four most urban départements, thus confining attention to 82 rural départements in the first half of the nineteenth century, and assuming that the share of land-owning families in a département is closely positively correlated with the land tax per person in a département, there is evidence that marital fertility declined first and more in the "richest" départements (where richness is measured by land tax and "landed income"), while the poorest départements maintained high levels of marital fertility. Whereas "the factors stressed by demographic transition theory, primarily urbanization and industrialization, show no clear relation to fertility in the French départements at the time" (van de Walle 1978), our approach suggests an explanation for the onset and variability of the decline in fertility.

APPENDIX TABLES

Table A1: The more important questions from SHARE used in the empirical analysis

Question	Wave
Is your natural mother/father still alive?	1 & 2
How many children do you have that are still alive? Please count all natural children, fostered, adopted and stepchildren, including those of your husband/your wife/your partner.	1 & 2
Now please think of the last twelve months. Not counting any shared housing or shared food, have you or your husband/wife/partner *given* (*received*) any financial or material gift or support to any person inside or outside this household amounting to 250 euro (in local currency) or more?	1
Now please think of the time since the last interview. Not counting any shared housing or shared food, have you or your husband/wife/partner/partner *given* (*received*) any financial or material gift or support to any person inside or outside this household amounting to 250 euro (in local currency) or more?	2
About how much did *this person give* you or your husband/wife/partner (*give to this person*) altogether in the last twelve months?	1
About how much did *this person give* you or your husband/wife/partner (*give to this person*) altogether in the time since the last interview?	2
Not counting any large gift we have already talked about, have you or your husband/wife/partner ever received a gift or inherited money, goods, or property worth more than 5000 euro (in local currency)?	1 & 2
Think of the largest gift or inheritance you received. In which year did you or your husband/wife/partner receive it?	1 & 2
From whom did you or your husband/wife/partner receive this gift or inheritance?	1 & 2
How did you acquire this property? Did you... 1. Purchase or build it solely with own means 2. Purchase or build it with help from family 3. Receive it as a bequest 4. Receive it as a gift 5. Acquire it through other means.	1 & 2

Table A1: The more important questions from SHARE used in the empirical analysis (Cont'd)

Thinking about the next ten years, what are the chances that you will receive any inheritance, including property and other valuables?	1 & 2
Within the next ten years, what are the chances that you will receive an inheritance worth more than 50,000 euro (in local currency)?	1 & 2
Including property and other valuables, what are the chances that you or your husband/wife/partner will leave an inheritance totaling *50000* (*150000*) euro (in local currency) or more?	1 & 2
What are the chances that you or your husband/wife/partner will leave any inheritance?	1 & 2
Please look at card 32. Looking at this card, which, if any, of these savings and investments do you or your husband/wife/partner have? 1. Bank accounts, transaction accounts or saving accounts 2. Government or corporate bonds 3. Stocks or shares (listed or unlisted on stock market) 4. Mutual funds or managed investment accounts 5. Individual retirements accounts 6. Contractual saving for housing 7. Life insurance 96. None of these.	1
Do you or your husband/wife/partner currently have any money in *bank accounts, transaction accounts or saving accounts* (*government or corporate bonds*) (…) [and so forth analogously to the above question].	2
About how much did you or your husband/wife/partner have in *bank accounts, transaction accounts or saving accounts* (…) [and so forth] at the end of 2003?	1
About how much do you and your husband/wife/partner currently have in *bank accounts, transaction accounts, saving accounts or postal accounts* (…) [and so forth]?	2

Source: SHARE questionnaires for waves 1 and 2.

Table A2: Country-specific characteristics of SHARE countries

	Percentage of heirs in SHARE		Retirement age in 2004 men (women)		Effective inheritance tax rate			
	Panel	Cross-section	Statutory	Early	2004	2005	2006	2007
Austria	13.72	12.78	65 (65)	-	4.51	4.51	4.51	4.51
Belgium	12.26	12.77	65 (65)	60 (60)	8.00	8.00	21.90	21.90
Czech Rep.	12.70	12.70	63 (59)	60 (56)	0.00	0.00	0.00	0.00
Denmark	7.04	6.81	65 (65)	-	3.46	3.46	3.46	3.46
France	14.25	13.02	60 (60)	-	6.53	8.03	8.03	7.57
Germany	12.29	11.70	65 (65)	63 (63)	4.47	4.47	4.47	4.47
Greece	17.80	17.60	65 (65)	55 (55)	17.00	17.00	16.42	15.70
Ireland	11.92	11.92	66 (66)	65 (65)	0.00	0.00	0.00	0.00
Israel	-	5.75	-	-	0.00	0.00	0.00	0.00
Italy	17.78	17.24	65 (60)	60 (60)	0.00	0.00	0.00	0.00
Netherlands	4.34	4.90	65 (65)	60 (60)	21.27	15.62	15.53	15.41
Poland	10.46	10.46	65 (60)	60 (55)	6.99	6.99	6.99	0.00
Spain	16.85	14.92	65 (65)	60 (60)	14.53	14.53	14.53	14.53
Sweden	11.09	10.75	65 (61)	61 (61)	0.00	0.00	0.00	0.00
Switzerland	14.31	13.81	65 (64)	63 (62)	0.00	0.00	0.00	0.00

Sources: SHARE waves 1 and 2, release 2-5-0, OECD, AGN International, Amihoud Borochov Law Office, Dziennik Ustaw, Global Property Guide.

Note: For the panel research sample, the reported percentages are from wave 2. The effective tax rates are calculated for bequests consisting of a house (worth 600,000 Euros), cash (1,000,000 Euros), company quoted (300,000 Euros), and unquoted (700,000 Euros) shares left intestate to a wife and two children on January 1 for each considered year. For Poland, it is assumed that the apartment price is 2,000 Euros/sq. m., and that heirs do not own other apartments or houses. No tax is levied on the value of the apartment or house up to 110 sq. m. pursuant to Subsections 16.1-8 of Poland's Act on the Taxation of Inheritances and Donations of July 28, 1983.

Table A3: Percentages of heirs who inherited a house and percentage of house owners who inherited a house by country in the panel and in the cross-section research samples

Percentage of heirs who inherited a house	Panel	Cross-section
Austria	66.24	76.46
Belgium	39.86	45.39
Czech Republic		81.64
Denmark	18.23	15.55
France	61.94	65.39
Germany	69.04	76.34
Greece	76.50	80.84
Ireland		88.24
Israel		53.15
Italy	69.47	81.56
Netherlands	17.55	18.00
Poland		95.89
Spain	58.38	69.07
Sweden	27.73	30.81
Switzerland	49.43	52.85
All	66.94	72.99
Number of individuals	2,091	3,554

Source: SHARE waves 1 and 2, release 2-5-0.

Note: For the panel research sample, the reported values are from wave 2.

Table A4: Results of the propensity score logistic regression

Propensity score		Coeff.	S.e.	
Female		-0.080	(0.093)	
Only child		0.434	(0.142)	***
Father's lifespan		0.011	(0.004)	***
Father's last occupation:	ISCO sub-major 13	0.202	(0.252)	
	ISCO sub-major 21	0.643	(0.327)	**
	ISCO sub-major 61	0.393	(0.132)	***
	ISCO sub-major 83	0.231	(0.199)	
	ISCO sub-major 92	-0.216	(0.169)	
Mother's last occupation:	ISCO sub-major 34	-0.516	(0.534)	
	ISCO sub-major 61	-0.130	(0.338)	
	ISCO sub-major 91	-0.693	(0.520)	
	ISCO sub-major 92	0.267	(0.313)	
	Homeworker	-0.310	(0.223)	
	Inactive	-0.605	(1.003)	
Respondent's education:	ISCED level 2	0.186	(0.143)	
	ISCED level 3	0.267	(0.126)	**
	ISCED level 4	0.757	(0.248)	***
	ISCED level 5	0.714	(0.153)	***
	ISCED level 6	0.447	(0.807)	
Country:	Austria	-0.193	(0.995)	
	Belgium	-0.086	(0.416)	
	Czech Republic	0.584	(0.146)	***
	Denmark	-0.478	(0.212)	**
	France	0.072	(0.215)	**
	Germany	-0.065	(0.217)	

Table A4: Results of the propensity score logistic regression (Cont'd)

	Greece	0.202	(0.450)	
	Italy	0.221	(0.190)	
	Netherlands	-1.293	(0.339)	***
	Spain	0.457	(0.236)	*
	Sweden	-0.194	(0.258)	
	Switzerland	0.278	(0.377)	
Constant		-3.313	(0.308)	***
Wald test			149.52	***
Number of individuals			4,908	

Source: SHARE waves 1 and 2, release 2-5-0 supplemented by the unreleased data on parents' last occupation.[6]

Note: * p < 0.10. ** p < 0.05. *** p < 0.01. Coeff.: coefficient. S.e.: standard error. Ref. group: Men with ISCED education level lower than 2 living in Poland whose parents did not work in any of the International Standard Classification of Occupations (ISCO) sub-majors: 13 - general managers; 21 - physical, mathematical, and engineering science professionals (fathers only); 34 - other associate professionals (mothers); 61 - market-oriented skilled agricultural and fishery workers; 83 - drivers and mobile-plant operators (fathers); 91 - sales and services elementary occupations (mothers); or 92 - agricultural, fishery, and related laborers.

Table A5: Percentages of heirs and non-heirs who reported 100 chances of bequeathing by wealth decile groups in the cross-section research sample

Proportion of individuals declaring:	Chances to bequeath anything equal to 100		Chances to bequeath 50,000 Euros or more equal to 100		Chances to bequeath 150,000 Euros or more equal to 100	
Net wealth decile group	Heirs	Non-heirs	Heirs	Non-heirs	Heirs	Non-heirs
1	52.98	20.12	19.23	21.31	15.48	15.31
2	63.71	46.41	27.02	32.29	10.12	16.28
3	53.04	30.16	53.14	38.62	15.91	12.23
4	15.50	27.90	42.24	44.76	9.62	8.61
5	44.47	36.60	51.80	50.08	24.31	18.05
6	8.19	34.76	55.09	45.12	46.08	35.05
7	36.77	32.65	54.16	49.39	40.36	44.21
8	43.21	39.24	66.12	53.82	61.32	57.91
9	57.52	45.07	63.60	56.57	66.58	60.49
10	48.14	32.28	62.06	56.37	62.79	58.45
Number of individuals	198	1,227	1,129	5,682	930	4,467

Source: SHARE waves 1 and 2, release 2-5-0.

Table A6: Results obtained in the linear estimations of the intention to bequeath with five multiple imputations of household net wealth by region

Intention to bequeath	Panel (RE)		Cross-section		DD (FE)		PSM	
	Coeff.	S.e.	Coeff.	S.e.	Coeff.	S.e.	Coeff.	S.e.
				South				
Experience of inheriting	.347***	(.070)	.309***	(.057)	1.33	(1.85)	.249***	(.061)
Expectation of inheriting	.525***	(.065)	.475***	(.049)	.594***	(.084)	.449***	(.054)
Trans. expected net wealth	.220***	(.009)	.218***	(.013)	.232***	(.012)	.233***	(.014)
Log number of children	-.369***	(.055)	-.394***	(.057)	-.456***	(.069)	-.257***	(.064)
Inheritance tax	.008**	(.003)	.009***	(.003)	.005	(.004)	.011***	(.003)
Married	.148	(.142)	.113	(.121)	.118	(.180)	.266*	(.139)
Widowed	-.091	(.152)	-.098	(.133)	-.094	(.192)	.062	(.153)
Working	.265***	(.068)	.268***	(.067)	.229***	(.087)	.279***	(.074)
Retired	.214**	(.084)	.257***	(.073)	.224**	(.111)	.227***	(.079)
Wald/LR test	49.8***		36.7***		34.1***		30.5***	
Number of observations	4,952		5,642		3,272		4,206	
				Central				
Experience of inheriting	.371***	(.064)	.305***	(.049)	.373	(.784)	.338***	(.052)
Expectation of inheriting	.542***	(.057)	.505***	(.040)	.484***	(.083)	.495***	(.044)
Trans. expected net wealth	.207***	(.006)	.206***	(.007)	.238***	(.011)	.206***	(.008)
Log number of children	-.242***	(.047)	-.226***	(.044)	-.242***	(.069)	-.247***	(.048)
Inheritance tax	.062***	(.006)	.058***	(.005)	.026**	(.013)	.065***	(.006)
Married	.250***	(.069)	.233***	(.063)	.376***	(.103)	.173**	(.068)
Widowed	.069	(.080)	.096	(.075)	.195	(.118)	.048	(.082)
Working	.187***	(.063)	.152**	(.060)	.256***	(.091)	.116*	(.067)
Retired	.272***	(.072)	.252***	(.063)	.237**	(.108)	.181**	(.071)
Wald/LR test	100.6***		85.7***		41.8***		74.8***	

Table A6: Results obtained in the linear estimations of the intention to bequeath with five multiple imputations of household net wealth by region (Cont'd)

Number of observations	7,335		8,816		3,085		7,154	
				North				
Experience of inheriting	.373***	(.104)	.311***	(.059)	-.388	(1.783)	.243***	(.064)
Expectation of inheriting	.488***	(.066)	.360***	(.045)	.512***	(.086)	.392***	(.050)
Trans. expected net wealth	.157***	(.008)	.145***	(.012)	.151***	(.009)	.137***	(.013)
Log number of children	-.112*	(.063)	-.101*	(.053)	-.076	(.080)	-.096	(.059)
Inheritance tax	-.022***	(.003)	-.019***	(.003)	-.028***	(.004)	-.020***	(.004)
Married	.486***	(.084)	.400***	(.074)	.522***	(.109)	.407***	(.081)
Widowed	.325***	(.109)	.286***	(.096)	.265*	(.137)	.334***	(.106)
Working	.322***	(.091)	.293***	(.085)	.157	(.116)	.321***	(.096)
Retired	.351***	(.090)	.348***	(.078)	.271**	(.118)	.338***	(.088)
Wald/LR test	56.9***		47.1***		38.0***		34.4***	
Number of observations	4,035		5,615		2,656		4,388	

Source: SHARE waves 1 and 2, release 2-5-0.

Note: * p < 0.10. ** p < 0.05. *** p < 0.01. Trans: Inverse hyperbolic sine transformation (θ=1). Coeff.: coefficient. S.e.: standard error. Ref. group: The inactive or unemployed single men with at most ISCED level 1 of the least educated child, not receiving nor providing financial transfers to children. Estimations with constant term control for the receipt of financial transfers from children, the provision of financial transfers to children, 6 ISCED education levels of the least educated child, and having a daughter in all estimations. South (Greece, Italy, Spain, and Israel), Central (Austria, Belgium, the Czech Republic, Germany, France, Poland, Switzerland), and North (Denmark, the Netherlands, Sweden). Fuller results available upon request. PSM: 7 random draws.

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NOTES

1. Drawing on a two-wave panel for the US, Hurd and Smith (2001) obtained results that are in line with our conjecture: subjective probabilities to bequeath are accurate predictors of the probabilities of actual bequests. Data covering the complete life span of a cohort could be used to shed additional light on whether intended bequests gestate into actual bequests. In spite of being a longitudinal study, SHARE falls short in this regard: the subsample of deceased respondents whose actual bequests are known is small and not representative and, thus, is unsuitable for studying a link between actual bequests and intended bequests. To the best of our knowledge, other sources of comparable data for a broad set of European countries are not available.

2. For the exact wording of the questions that yielded the data used in the empirical analysis see Table A1 in the Appendix.

3. The alternatives are as follows: 1 - the intention to bequeath is equal to the chances to bequeath at least 50,000 Euros; 2 - inverse hyperbolic sine transformation of the operationalization 1; 3 - the intention to bequeath equals 1 if the chances to bequeath at least 50,000 Euros are positive or chances to bequeath anything equal 100, 0 otherwise; 4 - the intention to bequeath equals 0, 1, 2 if the chances to bequeath anything are respectively 0, from 0 to 100, 100; 3 if the chances to bequeath at least 50,000 Euros are from 0 to 100 and the chances to bequeath at least 150,000 Euros are 0; 4, 5, 6 if the chances to bequeath at least 50,000 Euros are 100 and the chances to bequeath at least 150,000 Euros are respectively 0, from 0 to 100, and 100.

4. Estimation results by region are in Table A6 in the Appendix.

5. The pioneering sociologist Le Play is described as someone “who was able to assess events more accurately than many of his contemporaries” and who, to the insights of contemporary thinkers, added “fieldwork with careful, empirically sound observations” (Parish and Schwartz, 1972).

6. The permission granted to us by SHARE team to use unreleased SHARE data on parents’ occupation is gratefully acknowledged.

REFERENCES

ABELL, A. B. (1985). Precautionary saving and accidental bequests. *American Economic Review*, **75**, 777-91.

ALESSIE, R., LUSARDI, A. and KAPTEYN, A. (1999). Saving after retirement: Evidence from three different surveys. *Labour Economics*, **6**, 277-310.

ANGELINI, V. (2007). The strategic bequest motive: Evidence from SHARE. Marco Fanno Working Paper 62.

ASHENFELTER, O. and CARD, D. (1985). Using the longitudinal structure of earnings to estimate the effect of training programs. *Review of Economics and Statistics*, **67**, 648-60.

BARRO, R. J. (1974). Are government bonds net wealth? *Journal of Political Economy*, **82**, 1095-117.

BECKER, G. S. (1974). A theory of social interactions. *Journal of Political Economy*, **82**, 1063-93.

BERKNER, L. K. and MENDELS, F. F. (1978). Inheritance systems, family structure, and demographic patterns in Western Europe, 1700-1900. In C. Tilly (ed.), *Historical Studies of Changing Fertility*. Princeton: Princeton University Press, 209-23.

BERNHEIM, D. B., SHLEIFER, A. and SUMMERS, L. H. (1985). The strategic bequest motive. *Journal of Political Economy*, **93**, 1045-76.

BERNHEIM, D. B. and STARK, O. (1988). Altruism within the family reconsidered: Do nice guys finish last? *American Economic Review*, **78**, 1034-45.

BROWN, J. R., COILE, C. C. and WEISBENNER, S. J. (2010). The effect of inheritance receipt on retirement. *Review of Economics and Statistics*, **92**, 425-34.

CHRISTELIS, D. (2011). Imputation of missing data in waves 1 and 2 of SHARE. University of Mannheim, SHARE Working Paper 01-2011.

CHRISTELIS, D., JAPPELLI, T. and PADULA, M. (2005). Wealth imputation. In A. Börsch-Supan (ed.), *Health, Ageing and Retirement in Europe. First Results from the Survey on Health, Ageing and Retirement in Europe*. Mannheim: Mannheim Research Institute for the Economics of Ageing, 358-9.

COX, D. and STARK, O. (2005a). Bequests, inheritances and family traditions. Boston College Centre for Retirement Research Working Paper 2005-09.

COX, D. and STARK, O. (2005b). On the demand for grandchildren: Tied transfers and the demonstration effect. *Journal of Public Economics*, **89**, 1665-97.

COX, D. and STARK, O. (2007). On the demand for grandchildren: Tied transfers and the demonstration effect. Revised. In L. Bruni and P. L. Porta (eds.), *Handbook on the Economics of Happiness*. Cheltenham: Edward Elgar, 365-403.

DAVIES, J. B. (1981). Uncertain lifetime, consumption, and dissaving in retirement. *Journal of Political Economy*, **89**, 561-77.

FALK, I. and STARK, O. (2001). Dynasties and destiny: On the roles of altruism and impatience in the evolution of consumption and bequests. *Economica*, **68**, 505-18.

FERNANDÉZ, R., FOGLI, A. and OLIVETTI, C. (2004). Mothers and sons: Preference formation and female labor force dynamics. *Quarterly Journal of Economics*, **119**, 1249-99.

HECKMAN, J. J. (1990). Varieties of selection bias. *American Economic Review*, **80**, 313-8.

HIRANO, K., IMBENS, G. W. and RIDDER, G. (2003). Efficient estimation of average treatment effects using the estimated propensity score. *Econometrica*, **71**, 1161-89.

HURD, M. D. (1997). The economics of individual aging. In M. R. Rosenzweig and O. Stark (eds.), *Handbook of Population and Family Economics*. Vol. 1B. Amsterdam: Elsevier, 891-966.

HURD, M. D. and SMITH, J. P. (2001). Anticipated and actual bequests. In D. A. Wise (ed.), *Themes in the Economics of Aging*. Chicago: National Bureau of Economic Research, University of Chicago Press, 357-91.

IMBENS, G. W. and ANGRIST, J. D. (1994). Identification and estimation of local average treatment effects. *Econometrica*, **62**, 467-75.

IMBENS, G. W. and WOOLDRIDGE, J. M. (2009a). Difference-in-differences estimation. In G. W. Imbens and J. M. Wooldridge (eds.), *New Developments in Econometrics. Lecture Notes*. London: Centre for Microdata Methods and Practice, 283-312.

IMBENS, G. W. and WOOLDRIDGE, J. M. (2009b). Estimation of average treatment effects under unconfoundedness. Part I. In G. W. Imbens and J. M. Wooldridge (eds.), *New Developments in Econometrics. Lecture Notes*. London: Centre for Microdata Methods and Practice, 1-32.

JUSTER, T. F. and SMITH, J. P. (1997). Improving the quality of economic data: Lessons from HRS and AHEAD. *Journal of the American Statistical Association*, **92**, 1268-78.

KESSLER, D. and MASSON, A. (1989). Bequest and wealth accumulation: Are some pieces of the puzzle missing? *Journal of Economic Perspectives*, **3**, 141-52.

KOLM, S.-C. (2006). Reciprocity: its scope, rationales and consequences. In S.-C. Kolm, and J. M. Ythier (eds.), *Handbook of the Economics of Giving, Altruism and Reciprocity*. Amsterdam: Elsevier, 371-541.

LIGHT, A. and MCGARRY, K. (2004). Parents play favorites: Explanations for unequal bequests. *American Economic Review*, **94**, 1669-81.

LITTLE, R. E. and RUBIN, D. B. (2002). *Statistical Analysis of Missing Data*. New York: John Wiley & Sons.

LUNDHOLM, M. and OHLSSON, H. (2000). Post mortem reputation, compensatory gifts and equal bequests. *Economics Letters*, **68**, 165-71.

MANSKI, C. F. (2004). Measuring expectations. *Econometrica*, **72**, 1329-76.

MCGARRY, K. (1999). Inter vivos transfers and intended bequests. *Journal of Public Economics*, **73**, 321-51.

MENCHIK, P. L. (1980). Primogeniture, equal sharing, and the U.S. distribution of wealth. *Quarterly Journal of Economics*, **94**, 299-316.

MENCHIK, P. L. and JIANAKOPLOS, N. J. (1998). The economics of inheritance. In R. K. Jr. Miller and S. J McNamee (eds.), *Inheritance and Wealth in America*. New York: Plenum Press, 45-60.

MODIGLIANI, F. (1988). Measuring the contribution of intergenerational transfers to total wealth: Conceptual issues and empirical findings. In D. Kessler and A. Masson (eds.), *Modelling the Accumulation and Distribution of Wealth*. Oxford: Oxford University Press, 21-52.

PAGE, B. R. (2003). Bequest taxes, inter vivos gifts, and the bequest motive. *Journal of Public Economics*, **87**, 1219-29.

PARISH, W. L. and SCHWARTZ, M. (1972). Household complexity in nineteenth century France. *American Sociological Review*, **37**, 154-73.

PEROZEK, M: G. (1998). A reexamination of the strategic bequest motive. *Journal of Political Economy*, **106**, 423-45.

ROSENBAUM, P. R. and Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, **70**, 41-55.

RUBIN, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. *Journal of Educational Psychology*, **66**, 688-701.

RUBIN, D. B. (1990). Formal modes of statistical inference for causal effects. *Journal of Statistical Planning*, **25**, 279-92.

STARK, O. (1999). Siblings, strangers, and the surge of altruism. *Economics Letters*, **65**, 135-42.

STARK, O. and ZHANG, J. (2002). Counter-compensatory inter-vivos transfers and parental altruism: Compatibility or orthogonality? *Journal of Economic Behavior and Organization*, **47**, 19-25.

TOMES, N. (1981). The family, inheritance, and the intergenerational transmission of inequality. *Journal of Political Economy*, **89**, 928-58.

VAN BURREN, S., BRAND, J. P. L., GROOTHUIS -OUDSHOORN, C. G. M. and RUBIN, D. B. (2006). Fully conditional specification in multivariate imputation. *Journal of Statistical Computation and Simulation*, **76**, 1049-64.

VAN DE WALLE, E. (1978). Alone in Europe: The French fertility decline until 1850. In C. Tilly (ed.), *Historical Studies of Changing Fertility*. Princeton: Princeton University Press, 257-88.

WILHELM, M. O. (1996). Bequest behavior and the effect of heirs' earnings: Testing the altruistic model of bequests. *American Economic Review*, **86**, 874-92.

WOOLDRIDGE, J. M. (2002). Estimating average treatment effects. In J. M. Wooldridge (ed.), *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: Massachusetts Institute of Technology Press, 603-44.

WOOLDRIDGE, J. M. (2005). Fixed effects and related estimators for correlated random-coefficient and treatment-effect panel data models. *Review of Economics and Statistics*, **87**, 385-90.