

Laitner, John; Ohlsson, Henry

**Working Paper**

## Bequest Motives: A Comparison of Sweden and the United States

Working Paper, No. 1998:16

**Provided in Cooperation with:**

Department of Economics, Uppsala University

*Suggested Citation:* Laitner, John; Ohlsson, Henry (1998) : Bequest Motives: A Comparison of Sweden and the United States, Working Paper, No. 1998:16, Uppsala University, Department of Economics, Uppsala,  
<https://nbn-resolving.de/urn:nbn:se:uu:diva-2423>

This Version is available at:

<https://hdl.handle.net/10419/82843>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# Bequest Motives: A Comparison of Sweden and the United States\*

John Laitner                      Henry Ohlsson  
University of Michigan, USA      Uppsala University, Sweden

July 1998

## Abstract

This paper reviews four well-known theoretical models of private bequest behavior, notes their differing implications for public policy, and discusses a way of empirically discriminating among them. Then it implements the test with micro data from Sweden (LLS) and the U.S. (PSID). The so-called altruistic (or dynastic) model, which, among the four models, has perhaps the most wide-ranging implications for policy, receives some, though limited, support in the LLS, but not the PSID. The inter-country difference is statistically significant. There is evidence of a potential complication due to a dependence of children's education on parents financial status in the case of the U.S.

Keywords: accidental model, altruistic model, egoistic model, exchange model

JEL classifications: D64, D91

Correspondence to: Henry Ohlsson, Department of Economics, Uppsala University, Box 513, SE-751 20 Uppsala, Sweden, phone +46 18 471 10 96, fax +46 18 471 14 78, email HENRY.OHLSSON@NEK.UU.SE

\*This paper was originally prepared for the International Seminar in Public Economics conference on Bequest and Wealth Taxation 18-20 May 1998, University of Liège, Belgium. Helpful comments from our discussants, James Poterba and Anne Laferrère, and the conference participants are gratefully acknowledged. The research has been funded by the Bank of Sweden Tercentenary Foundation, grant 94-0094:01-03. Some of the work was done when Ohlsson enjoyed the hospitality of ERMES, Université Panthéon-Assas, Paris II. We owe thanks to Ming Ching Luoh for help with the PSID data.

## 1. Introduction

Bequests and inheritances are potentially important from the viewpoint of public policy. Equality is one issue: the unevenness of inheritances may increase the inequality of society's distribution of wealth, and the option of leaving an estate may increase inequality of utility among benefactors and among beneficiaries.

From the standpoint of efficiency, taxation of intergenerational transfers may be desirable. Strategic behavior on the part of heirs may be socially wasteful. Inheritances may damp the work incentives of otherwise productive people. Perhaps most intriguing, one theoretical model suggests that bequests are unintentional and might be a source of tax revenue with no corresponding deadweight loss.

Other models suggest that taxation of bequests and inheritances is less desirable. Saving to create estates may be an important source of capital in a market economy, a source which heavy taxation might jeopardize (recall Kotlikoff and Summers, 1981). In addition to financing human capital acquisition on the part of children and grandchildren (e.g., Becker and Tomes, 1979), family line transfers may provide critical startup capital for entrepreneurs (e.g., Blanchflower and Oswald, 1998; Holtz-Eakin et al., 1994; Lindh and Ohlsson, 1996). In so-called altruistic models, private transfers provide insurance — with bequests tending to flow from more to less prosperous members of family lines — which markets or public authorities may be unable efficiently to match because of moral hazard. In so-called exchange models, private intergenerational transfers may constitute payments for services rendered between members of a family line, and there may be no close substitutes for these services in impersonal markets or public programs. Bequest taxes may, of course, reduce the work incentives of potential donors as well.

Bequest behavior could have implications more generally for public policy. In Barro (1974)'s well-known analysis of the altruistic model, intergenerational transfers within dynastic family lines generate an essentially perfectly elastic supply of private wealth. The effects of public policies such as deficit spending and unfunded social security are completely negated or "neutralized." Policy changes, such as switching from income to consumption taxation, designed to increase (or decrease) life-cycle saving may become irrelevant. Taxation of the return to capital, on the other hand, should, in the dynastic framework, be avoided (e.g., Chamley, 1986; Lucas, 1990; Iori, 1997).

Evidently, different models of bequest behavior lead to quite different conclusions about public policy. It is, therefore, desirable to develop an empirical basis for assessing the validity of competing theories of bequests and inheritances. It seems fair to say that work to date has yielded ambiguous results, sometimes

seeming to support one theoretical model and sometimes others.<sup>1</sup> The purpose of the present paper is provide additional empirical evidence.

We begin with a summary of four contrasting theories, paying special attention to testable differences among them, and considering their implications for taxation. This is the topic of Section 2 below. Section 3 describes our data, which consists of panels for Sweden and the U.S. Section 4 tests the different theoretical models on each data set separately, then jointly. We pay specific attention to testing for differences between the two countries.<sup>2</sup>

Parents intentionally, and unintentionally, make transfers to their descendants in a number of ways, including (i) biological transfers of natural talents and abilities, (ii) purchases of education and other human capital, (iii) *inter vivos* gifts, and (iv) *post mortem* bequests of tangible and financial property. Our data samples do not provide information about *inter vivos* gifts received or given. Solon (1992) analyzes the relation between incomes of fathers and sons for the U.S. In his regression of log permanent income of sons on log permanent income of fathers, he finds coefficients in the range .4–.5, illustrating the importance of the first two types of transfer. Using a similar methodology, Björklund and Jäntti (1997) compare Sweden and the U.S. Although their point estimates of intergenerational correlations are lower for Sweden, they fail to reject the hypothesis that coefficients in the two countries are the same.

The present paper considers the fourth channel. Consistent with all theoretical models, we find that higher parental resources lead to larger intergenerational transfers. Turning to the problem of discriminating among models of bequest behavior, in line with other recent work cited above we find some, though quite limited, support for the altruistic or dynastic model of bequest behavior. Somewhat surprisingly, this comes from the Swedish data. There is no such support in the U.S. data — if anything, an exchange-of-services model is more consistent with the evidence there. Although our analysis points to possible econometric complications — especially in the U.S. case — in our most basic regression, for the parameter most crucial to model selection the difference between Sweden and the U.S. is statistically significant at the 5% level. We hope to confront econometric issues suggested below further in future research.

---

<sup>1</sup>Some of the empirical papers in the field are Altonji et al. (1992), Altonji et al. (1997), Arrondel and Laferrère (1998), Bernheim et al. (1985), Cox (1987), Cox and Rank (1992), Dunn and Phillips (1997), Laitner and Juster (1996), McGarry and Schoeni (1995), McGarry (1997), Poterba (1997), Wilhelm (1996). See also the surveys by Laitner (1997), Masson and Pestieau (1997), and Cnossen (1998)

<sup>2</sup>Barthold and Ito (1992) compare bequest behavior in the U.S. and Japan. Davies (1994) compares Britain and Canada, while Arrondel et al. (1997) compare France and the U.S.

## 2. Theoretical models

The existing literature suggests a number of possible theoretical models of bequest behavior. This section reviews four of the most prominent. Different models can have quite different implications for public policy.

In one model, an extension of the well-known life-cycle framework, bequests arise accidentally (e.g., Davies, 1981; Friedman and Warshawsky, 1990). If adverse selection impedes effective functioning of markets for annuities, households may self-insure against very long life. Then when a household dies young, its unused resources become an accidental bequest. (If it lives a long time, it may, of course, die with little or no estate.) Government could heavily tax estates in this case without generating deadweight losses.

In other models, bequests are voluntary. Below we examine three formulations in this vein: the altruistic model, the egoistic model, and the exchange model.

Before doing so, there are important qualifications to make. First, our simple formulations assume that the decisions of those making intergenerational transfers (parents) do not affect the behavior of those receiving transfers (children). Hence, we rule out strategic interactions between donors and donees (c.f., Cremer and Pestieau, 1996). Second, we assume price inelastic labor supply for donors and donees (e.g., Holtz-Eakin et al., 1993; Lindh and Ohlsson, 1996). Third, recent data suggests that intergenerational transfers from parents to children are roughly an order of magnitude larger than transfers in the reverse direction (e.g., Kurz, 1984; Gale and Scholz, 1994). We will not, therefore, study two-sided altruism or transfers from children to elderly parents (c.f., Laitner, 1988). Fourth, taxes or liquidity constraints might lead parents to carry out their intergenerational transfer plans prior to their death (e.g., Poterba, 1998; McGarry, 1998; Altonji et al., 1997, and others). Indeed, empirical evidence suggests that *inter vivos* transfers are large (e.g., Kurz, 1984; Gale and Scholz, 1994). Nevertheless, our data and analysis is restricted to bequests and inheritances.

### 2.1. The altruistic model

In a so-called altruistic model a parent household cares not only about its own lifetime consumption but also about the consumption of its descendants. This is the framework of Becker (1974) and Barro (1974).

Consider a parent who lives one period, period 1, and raises a single child. After period 1, the child is grown and forms a household of its own, the latter lasting one period, period 2. The parent's total earnings,  $Y^p$ , arrive, of course, in period 1; the child's,  $Y^c$ , arrive in period 2. Both earnings figures are known with certainty at time 1. The parent receives inheritance  $I^p$  at the start of period 1

(i.e., as it receives  $Y^p$ ). One period later the parent provides inheritance  $I^c$  to the child. For simplicity, the interest rate is 0.

In the altruistic model, the parent cares about its own period-1 consumption and about its child's consumption possibilities — hence, in our very simple formulation, about the child's total resources  $Y^c + I^c$ . We will think of the parent as solving

$$\max_{I^c} \{U(Y^p + I^p - I^c) + \lambda \cdot V(Y^c + I^c)\}, \quad (1)$$

$$\text{subject to: } I^c \geq 0. \quad (2)$$

The nonnegativity constraint arises because we assume that parents cannot compel their children to support them. Assume as well that  $U(\cdot)$  and  $V(\cdot)$  are concave and increasing with  $U'(0) = \infty = V'(0)$ . The price of consumption is 1. Parental lifetime consumption is  $C^p = Y^p + I^p - I^c$ , and parental saving for bequests is  $Y^p + I^p - C^p$ .  $U(\cdot)$  measures a parent's lifetime utility,  $V(\cdot)$  measures the parent's utility from his child's consumption, and  $\lambda$  is a parameter registering the strength of the parent's altruistic sentiments. Despite the simplicity of (1)–(2), its behavioral implications seem quite general.<sup>3</sup>

Let  $I^* = I^*(Y^p + I^p, Y^c, \lambda)$  be the utility-maximizing transfer to the child in the absence of constraint 2, so that  $I^c$  simultaneously solving (1)–(2) is

$$I^c = \max \{0, I^*(Y^p + I^p, Y^c, \lambda)\}. \quad (3)$$

For the latent transfer  $I^*$ , first-order conditions of utility maximization yield

$$\frac{\partial I^*}{\partial Y^p} > 0, \quad \frac{\partial I^*}{\partial Y^c} < 0, \quad \frac{\partial I^*}{\partial \lambda} > 0. \quad (4)$$

In other words, higher earnings for the parent lead to a higher desired unconstrained transfer, higher earnings for the child lead to a lower desired transfer, and higher altruism leads to a larger desired transfer. Households could differ in their  $\lambda$ 's as well as in their resources.

Although data limitations below force us to concentrate on the sign implications from (4), notice that having solved (1) for  $I^*$ , if we increase  $Y^p$  by \$1 and decrease  $Y^c$  the same amount, increasing  $I^*$  by \$1 leaves the first-order conditions for (1) satisfied; so,

$$\frac{\partial I^*}{\partial Y^p} - \frac{\partial I^*}{\partial Y^c} = 1. \quad (5)$$

---

<sup>3</sup>For more elaborate models with dynasties that last forever and general equilibrium determination of interest rates, see, for example, Becker and Tomes (1979) and Laitner (1992). Bernheim and Bagwell (1988) and Laitner (1991) consider dynasties which can overlap as children marry.

Altonji et al. (1997) are able to employ this condition; data limitations restrict our analysis to (4).

Taxing transfers will distort private behavior in this model.<sup>4</sup> However, such taxes may promote equality. Bequests tend to compensate children for low earnings, and they may do so with fewer problems from imperfect information and moral hazard than public transfers face. On the other hand, a parent with extraordinarily high earnings may “compensate” his child who has lower earnings with a large estate, but the child, while doing less well than his parent, may still earn more than most others in his generation.

## 2.2. The egoistic model

In another frequently used model (e.g., Blinder, 1974; Hurd, 1989, and others), a parent derives utility from the amount he bequeaths rather than from the amount his child can actually consume. This is sometimes called the egoistic model. Problem (1)–(2) becomes

$$\max_{I^c} \{U(Y^p + I^p - I^c) + \lambda \cdot V(I^c)\} \quad (6)$$

subject to (2). Looking at the latent variable  $I^*$  maximizing (6) alone, first-order conditions yield

$$\frac{\partial I^*}{\partial Y^p} > 0, \quad \frac{\partial I^*}{\partial Y^c} = 0, \quad \frac{\partial I^*}{\partial \lambda} > 0. \quad (7)$$

Unlike the altruistic case, an heir’s earnings have no bearing on the inheritance he receives.

The overall public policy implications of the egoistic model are quite different from the altruistic case. In particular, Barro (1974)’s famous Ricardian equivalency results do not hold. The excess burden from taxing transfers is not clear. If the spirit of the model is that the donor evaluates a transfer solely in terms of his own sacrifice in making it, the argument of  $V(\cdot)$  in (6) should be the gross-of-tax transfer, and taxes will not affect the donor’s behavior. If, on the other hand, the donor cares about the absolute amount his heir receives, the argument of  $V(\cdot)$  should be the net-of-tax transfer, and there will be a deadweight loss from estate or inheritance taxes.

## 2.3. The exchange model

Bernheim et al. (1985) and Cox (1987) present versions of the exchange model. In the exchange model, a parent is not altruistic in the sense of caring about the

---

<sup>4</sup>See Michel and Pestieau (1998) and Cremer and Pestieau (1998).

consumption possibilities of his child. Instead, a parent values attention from his child more than services purchased in anonymous markets, and the parent obtains more such attention by making a larger bequest. Let  $C^s$  be the quantity of attention (i.e., services) the parent “purchases” from his child, and let  $P$  be “price” the parent has to pay per unit of the latter. Assuming the child’s time, hence, the cost to the child of providing attention, is increasing in  $Y^c$ , we have

$$P = P(Y^c) \geq 0, \quad \frac{\partial P}{\partial Y^c} > 0. \quad (8)$$

We assume a parent solves

$$\max_{C^s} \{U(Y^p + I^p - P(Y^c) \cdot C^s) + \lambda \cdot V(C^s)\}, \quad (9)$$

$$\text{subject to: } C^s \geq 0, \quad (10)$$

where  $V(\cdot)$  measures the parent’s pleasure from the attention of his child. “Inheritance” amounts in data are to be interpreted as payments for  $C^s$ — in other words,

$$I^* = P(Y^c) \cdot C^{s*} \quad \text{and} \quad I^c = \max \{0, I^*\}, \quad (11)$$

where  $C^{s*}$  solves (9) without (10).

Assuming  $U(\cdot)$  and  $V(\cdot)$  are increasing and concave,  $C^{s*}$  is increasing in  $Y^p$ , decreasing in  $Y^c$  (recall that our utility function is additively separable), and increasing in  $\lambda$ . The effect of increasing  $Y^c$  on  $I^*$  is also unambiguous in the additively separable case (though not necessarily more generally): we have

$$\frac{\partial I^*}{\partial Y^p} > 0, \quad \frac{\partial I^*}{\partial Y^c} < 0, \quad \frac{\partial I^*}{\partial \lambda} > 0. \quad (12)$$

The tax implications resemble the altruistic model: an increase in the tax rate on bequests will raise the price for a parent of obtaining services from his child, leading to a distortion of private behavior and a corresponding deadweight loss.

## 2.4. Summing up

Table 1 summarizes implications of the different bequest models. The models all share the prediction that more resources for the parent will increase his bequest. On the other hand, they differ on their predictions of how a child’s earnings affect the bequest, and that provides a way for our empirical analysis to shed light on the question of which model is most consistent with data.



Table 1: Theoretical Determinants of Bequests and Excess Burden of Taxation.

model	parent's resources	child's earnings	excess burden of taxation
accidental model	+	0	no
altruistic model	+	—	yes
egoistic model	+	0	yes, if amount received matters no, if amount given matters
exchange model	+	+	yes

### 3. Data

We have data from two quite different industrialized countries, Sweden and the United States. In each case, we have panel data, allowing us to determine households' lifetime earnings more accurately than would be possible from a single year's cross section. The data include cumulative inheritances, extensive demographic information, and information about parents.

#### 3.1. Swedish data

Our Swedish data comes from the Level of Livings Survey (LLS) run by the Institute for Social Research at Stockholm University. The LLS consists of a panel from 1968, 1974, 1981, and 1991. As the 1991 survey omitted questions about inheritances, we employ only the first three waves. This paper's Appendix A provides details of the survey questions which we use. (See also Laitner and Ohlsson (1997).)

As the appendix shows, the LLS measures cumulative inheritance by individual in 1968, 1974, and 1981. Later inheritance figures should include earlier amounts plus increments; thus, an individual's responses should be monotone nondecreasing through time. Similarly, the date for an individual's largest inheritance should never decline. While the general intertemporal consistency of responses seems quite high, we attempt to eliminate deviant reports. Our underlying assumption is that information remembered for the shortest time is the most accurate. For example, if a respondent in 1968 lists the year of his largest inheritance as 1936 but remembers 1938 in 1974, we set both dates to 1936.

As we are not interested in incomplete inheritances or life insurance settlements for orphans, we limit our sample to child households of age 30 or more both

of whose parents are deceased. We exclude widows and widowers because they might count funds from their spouses' estates as inheritances, whereas our analysis applies exclusively to intergenerational transfers.

Table 2 shows that two-thirds of our remaining Swedish individuals have inheritances. We deflate inheritance amounts to 1984 SEK using the Swedish CPI, then divide by the 1984 exchange rate of 8.3 to convert to USD, and finally calculate the present value of an individual's total inheritance at age 50 assuming a 3% real interest rate. As stated, each wave of the LLS provides one cumulative inheritance amount for the respondent and a year of receipt for the largest component in the amount.<sup>5</sup> In deflation and present value calculations, we treat the entire 1968 amount as arriving at the year of its largest component. If the 1974 cumulative amount is larger, we treat the increment over 1968 as arriving at the date provided in 1974 — or 1971 if the new date of receipt is the same as the old one. We repeat this step for 1981. The LLS adds to its sample through time to compensate for attrition; thus, we have fewer observations for some respondents than others.

Table 2 shows that the average inherited amount for our Swedish sample is about USD 9,000, and the average amount for those with a positive inheritance is about USD 14,000.

Our models require data on an heir's lifetime earnings — a respondent's lifetime earnings correspond to Section 2's  $Y^c$ . Using LLS panel data on respondents and their spouses, we estimate a standard earnings dynamics equation (e.g., Ahlroth et al., 1997). We convert nominal figures to 1984 dollars as above. For individual  $i$  and date  $t$ , our regression's error term is  $u_i + e_{it}$  with  $u_i$  a random individual effect and  $e_{it}$  iid. We run separate regressions for men and women. We use all observations in the original data set with positive earnings (i.e., even respondents with living parents, respondents who are widows, etc.). Employing observations on each individual in this paper's sample to derive a conditional estimate of his/her  $u_i$ , we project the individual's earnings at every age to 65 from the age equaling the maximum of schooling years plus 6 and 16. As we have observations from at most three years, we assume earnings growth mimics GDP per capita at other dates. Using a 3% per year real interest rate, we discount each individual's lifetime earnings to the year that individual was age 50. Not all women (or men) work. Our procedure imputes earnings from market work for every year, nevertheless. In other words, we impute a value for each woman and man's time whether she or he works in the market or not. Before computing present values, we subtract local and national income and sales taxes from individuals' imputed yearly earnings. The tax corrections reflect statutory rates. After-tax figures are

---

<sup>5</sup>The LLS collects similar figures for the respondent's spouse; however, because there is no information on whether the spouse's parents are dead, we do not use the spousal data.

Table 2: Sample Means

	Sweden			U.S.		
	n of obs	mean	standard deviation	n of obs	mean	standard deviation
has inherited	909	0.67		490	0.35	
inherited amount, unconditional, 1984 USD	891	8,091	39,434	459	13,671	65,888
inherited amount, conditional, 1984 USD	595	12,116	47,761	138	45,470	114,266
poor when growing up	908	0.39		474	0.52	
father, high occupation	903	0.04		491	0.09	
father, middle occupation	903	0.39		491	0.26	
father, high school or college	911	0.10		456	0.20	
mother, high school or college	911	0.05		434	0.26	
lifetime earnings, net of taxes, 1984 USD	904	276,916	135,610	474	538,297	325,036
number of siblings	910	4.16	2.79	489	4.63	3.53
age, years	911	63.6	9.17	491	57.9	10.8
woman	911	0.45		491	0.38	
married	911	0.78		491	0.51	
years of education	911	8.42	3.10	488	11.61	3.30

Notes. Dummy variables when no units are given.

the most compatible with inheritance data.

Table 2 shows that mean net-of-tax Swedish lifetime earnings in present value at age 50 are about USD 292,000 for our sample. Clearly the individuals in our sample are quite old on average because of our requirement that their parents be deceased, and this leads to lower lifetime earnings than would otherwise be the case.

Unfortunately, we lack direct observations of the lifetime earnings and inheritance of respondents' parents. We use instead a set of five proxies: dummies for whether the respondent reports being poor when growing up, for whether the respondent's father belonged to a "high" occupational group (i.e., professional or managerial), for whether the respondent's father belonged to a middle occupational group (i.e., sales, self-employed, clerical, craftsman, or farmer), whether the respondent's father had a high school education or more, and whether the respondent's mother had a high school education or more.<sup>6</sup> Table 2 provides sample means for all variables.

Our remaining variables are demographic: number of siblings for the respondent, age of the respondent, whether the respondent is a woman, and whether the respondent is married.

### 3.2. U.S. data

Our U.S. data comes from the Panel Study of Income Dynamics (PSID). The PSID consists of a regular sample (i.e., the "SRC sample") and a special sample of low-income households (i.e., the "Census sample").<sup>7</sup> Excluding the Census sample makes little difference to our regressions below, so we include it. This paper's appendix provides details on the variables we use.

In 1984 the PSID collected information on cumulative inheritances, including year of arrival for the two largest component amounts. We convert amounts to 1984 dollars using the NIPA consumption deflator, and then use a 3% real interest rate to deduce the present value of the cumulate inheritance in the year the household head was age 50. One difference from the LLS is that the PSID inheritance questions refer to households, rather than separately to respondents and their spouses. For conformity with the Swedish data, we divide the household inheritance of each PSID couple by 2. To eliminate intragenerational transfers, we limit our sample to single respondents both of whose parents are deceased and to couples all four of whose parents are deceased. Household heads must be at least 30 years old, and we drop widows and widowers.

---

<sup>6</sup>The residual occupational categories for the father are operative and laborer. See Table 5 in Juhn et al. (1993) for information on earnings within different categories.

<sup>7</sup>For more information about the sample design, see [HTTP://WWW.ISR.UMICH.EDU/SRC/PSID/STDYDSGN.HTML#SAMPLE FRAME](http://www.isr.umich.edu/src/psid/stdydsgrn.html#sampleframe).

A second difference from the LLS is that PSID questions put no lower bounds on inheritance amounts to be recorded, whereas the LLS limits respondents to amounts over SEK 1,000. This should tend to bias upward the frequency of inheritances in the U.S. data relative to Sweden.

Table 2 presents averages for our U.S. sample. About one-third of our U.S. households report receipt of an inheritance, the average per capita amount received is about USD 13,000, and the average amount conditional on receiving something is about USD 46,000. (Note that some respondents saying that they had received an inheritance failed to specify the amount; therefore, the fraction of the sample providing an inheritance amount is somewhat less than one-third.)

We use annual earnings, for men and women separately, for 1967–1991 to estimate earnings dynamics equations exactly analogous to the Swedish case — using all observations in the original data set with positive earnings. Returning to Table 2’s sample, from the estimated coefficients we predict each individual’s random effect  $u_i$  and then his or her earnings at each age to 65 from the age equaling the maximum of 16 and schooling years plus 6. We calculate the present value of lifetime earnings in 1984 USD at the year the household’s head was age 50. Before calculating lifetime present values, we remove Federal income taxes using statutory rate tables for each year, and we also make a general correction for state income taxes. (See Laitner and Ohlsson (1997) for details.)

Table 2 reports the average net-of-tax lifetime earnings of about USD 477,000 for the U.S. For single people, we use the respondent’s earnings; for couples, to preserve consistency with the inheritance data, we sum the husband and wife’s net-of-tax lifetime earnings and divide by 2.

Turning to the remaining U.S. variables in Table 2, “poor when growing up” refers only to the household head’s father. For couples, father’s occupational group and education, and mother’s education refer to averages over the husband and wife’s parents. “Age”, “number of siblings,” and “years of education” refer to an average for the husband and wife.

### 3.3. Summary and comparisons

Three observations on Table 2 are as follows. (i) Inheritances are twice as prevalent in the Swedish data. Although the PSID includes a low-income sample (where inheritances are rare), if either spouse inherits in the PSID the household average inheritance is positive — tending to create an upward bias in frequency relative to the Swedish figures. Laitner and Ohlsson (1997) show these effects counter-balance one another so that our relative-prevalence result holds more generally. (ii) Inheritance amounts in Sweden are smaller in absolute terms, but they are larger relative to after-tax lifetime earnings than in the U.S. And, (iii) among

households which receive inheritances, the amount relative to earnings is larger in the U.S.

## 4. Analysis

The main purpose of this paper is to empirically distinguish the most appropriate model of bequest behavior and to see if Sweden and the U.S. are perhaps different in this regard. We work with the latent variable  $I^*$  defined in Section 2 — parents’ desired intergenerational transfer in the absence of a nonnegativity constraint — using a Tobit framework. Among Section 2’s four models, our basic results most support the accidental and egoistic formulations — although the estimated coefficient on beneficiary earnings tends to be negative for the Swedish data and positive for the U.S. The negative coefficient for Sweden becomes statistically significant in a robust regression, but it is very small in magnitude. A negative coefficient would be consistent with the altruistic model, and a positive coefficient with the exchange model.

For future reference, the form of our Tobit is

$$y = \begin{cases} y^*, & \text{if } y^* > 0, \\ 0, & \text{otherwise,} \end{cases} \quad (13)$$

where

$$y^* = X_1 \cdot \alpha + X_2 \cdot \beta + \eta, \quad (14)$$

with  $y$  the observed inheritance,  $y^*$  the parents’ (latent) intergenerational transfer in the absence of a nonnegativity constraint,  $X_1$  a vector including measures of parent and child earnings,  $X_2$  a vector of demographic variables, and  $\eta$  the regression error term, capturing measurement error in  $y$  and inter-family differences in preferences (i.e., differences in Section 2’s  $\lambda$ ).

### 4.1. Single country results

Our latent variable framework suggests a Tobit regression, and we now present such an analysis separately for Sweden and the U.S.<sup>8</sup> We also comment on OLS and robust-regression results for observations with positive inheritances.

Table 3 shows Swedish outcomes for the Tobit of (13)–(14) and corresponding probit.<sup>9</sup> The first five independent variables capture the effect of parent lifetime resources. All four of our theoretical models imply “poor when growing up” should

---

<sup>8</sup>We have used the STATA and LIMDEP packages for the estimations, see StataCorp (1997) and Greene (1995).

<sup>9</sup>See Blomquist (1979) for previous estimations of inheritance functions for Sweden.

have a negative impact on the latent inheritance  $I^*$ , while parent education and high socio-economic occupational status should have a positive effect. This is borne out: in the second column of Table 3, being “poor when growing up” implies a USD 17,000 reduction in  $I^*$ , and having a mother with a high school education or more raises  $I^*$  by about USD 20,000.<sup>10</sup> The other three parent variables have positive coefficients, though not statistically significant at the 5% level. The probit results are similar.

The critical lifetime earnings variable for the child (i.e.,  $Y^c$ ) has a negative coefficient, which would be consistent with the altruistic model. However, the estimate is not statistically different from 0. As Altonji et al. (1997) found in American data on *inter vivos* gifts, the absolute magnitude of the coefficient is very small as well: according to the point estimates, a 1 dollar increase in a child’s earnings reduces his inheritance by only 2 cents.

Among remaining variables, number of siblings and being married have a significantly negative effect on  $I^*$  in the Tobit, although the sign of the effect of being married is opposite in the probit. A child’s age and age squared are marginally significant at the 10% level in the probit.

Becker and Tomes (1979) argue that children’s inability to borrow against future earnings leaves their education dependent upon parental generosity. In the Becker–Tomes framework, children who receive an inheritance would have had parental support in reaching an efficient level of human capital investment earlier in life, but children who do not receive an inheritance might have been constrained to an inefficiently low amount of schooling. According to this reasoning, our  $Y^c$  variable could be positively correlated to parental preference parameter  $\lambda$ , hence to the regression error  $\eta$  in (14). We make a rudimentary test of this by including child’s education as a right-hand side variable in (14). If public funding, scholarships, etc., enable all children to make efficient investments in schooling, the new variable is superfluous in our regression, and it should have a 0 coefficient — in particular, in the probit. On the other hand, if the Becker–Tomes analysis applies, high education for a child and receipt of an inheritance would tend to be positively correlated, perhaps leading to a positive coefficient on child’s education in the probit — and suggesting an endogeneity problem for  $Y^c$ .

Columns 3–4 repeat the probit (and Tobit) with child’s education included as a regressor. Its coefficient is positive but only marginally significant at the 10% level, and its inclusion has little effect on other coefficient estimates. The importance of the Becker–Tomes analysis for Sweden, therefore, is not clear at

---

<sup>10</sup>It should be stressed that care must be taken when interpreting estimated Tobit coefficients as marginal effects. The estimated coefficients give the marginal effect on the expected value of the latent dependent variable, which happens to be exactly what we are interested in here — see Judge et al. (1988, p. 799).

Table 3: Frequencies and Amounts Inherited, Sweden

explanatory variable	probit	Tobit	probit	Tobit
poor when growing up	-0.53 (5.66)	-16.9 (4.50)	-0.52 (5.54)	-16.8 (4.46)
father, high occupation	0.35 (1.30)	6.7 (0.73)	0.32 (1.17)	6.0 (0.66)
father, middle occupation	0.35 (3.56)	6.6 (1.77)	0.33 (3.35)	6.4 (1.70)
father, high school or college	0.09 (0.45)	5.3 (0.81)	0.01 (0.04)	4.4 (0.66)
mother, high school or college	0.50 (1.82)	19.6 (2.43)	0.41 (1.47)	18.8 (2.28)
lifetime earnings, net of taxes, 1,000's 1984 USD	$-0.57 * 10^{-3}$ (1.16)	-0.020 (1.15)	$-0.70 * 10^{-3}$ (1.41)	-0.022 (1.22)
number of siblings	-0.034 (2.07)	-2.44 (3.66)	-0.031 (1.85)	-2.39 (3.54)
age	0.078 (1.68)	-2.26 (1.25)	0.087 (1.87)	-2.16 (1.19)
age <sup>2</sup> /100	-0.064 (1.62)	1.23 (0.80)	-0.071 (1.80)	1.15 (0.75)
woman	0.07 (0.61)	0.7 (0.15)	0.07 (0.54)	0.6 (0.13)
married	0.17 (1.57)	-9.5 (2.26)	0.17 (1.56)	-9.5 (2.26)
years of education			0.031 (1.69)	0.34 (0.50)
constant	-1.65 (1.19)	112.5 (2.10)	-2.20 (1.54)	106.8 (1.94)
standard error		47.6 (33.9)		47.6 (33.9)
n of obs	891	873	891	873
$\chi^2(21)$	89.24	89.32	92.15	89.56
pseudo $R^2$	0.08	0.013	0.08	0.014
log likelihood	-513.07	-3,281.6	-511.62	-3,281.4

Notes. Inherited amounts in 1,000's 1984 USD. Absolute  $t$ -values within parentheses.



this point, and it remains a topic for future research.

Table 7 in Appendix B presents regressions for Swedish respondents conditional on a positive inheritance. Column 1 provides OLS results (with White standard errors), column 2 results from a robust regression routine, and column 3 results from a median regression (with bootstrapped standard errors).<sup>11</sup> The OLS coefficients are similar to the Tobits' reported in Table 3. The robust and median regression yield a greater number of statistically significant coefficients. In particular, the coefficient of  $Y^c$  becomes significant at the 5% level in the robust regression and at the 10% level in the median regression. On the other hand, while remaining negative, the estimates drop an order of magnitude in absolute size from the Tobit. Being a woman begins to have a significantly negative impact — although its magnitude is small — while being married loses its statistical significance.

Table 4 turns to our U.S. sample. Note that the number of observations is less than half that of the Swedish sample, and the Tobit's standard error is over twice as large.

Among parent variables in column 2 of Table 4, having a father with the highest occupational status is strongly statistically significant, with a USD 79,000 impact on his child's inheritance. Father's education is almost significant at the 10% level, and its coefficient implies a USD 49,000 increment to a child's inheritance from having a father with a high school education or more.

The crucial  $Y^c$  variable has a small, positive coefficient in column 2. It is statistically significant at the 10% level. The coefficient implies a 5 cent bigger inheritance for each 1 dollar increase in the child's lifetime earnings. A positive coefficient is consistent with the exchange model of Section 2.

However, adding child's education as a regressor seems to make a bigger difference than in the Swedish case. Column 3 of Table 4 shows the coefficient estimate for child's education is positive and significant at the 5% level in the probit. Inclusion of the new variable substantially reduces the coefficient estimate on  $Y^c$  in the probit and Tobit without affecting its standard error; thus,  $Y^c$  loses its statistical significance in both. In the end, the Becker–Tomes analysis seems potentially important in the U.S. case.

Among demographic variables, more siblings reduces one's inheritance — the effect being USD 11–12,000 per sibling in column 2. That is the only remaining statistically significant regressor in column 2's Tobit. In column 1's probit, being married has a significantly positive impact; however, this is to be expected because a positive inheritance for either spouse makes the dependent variable of the probit 1 in the U.S. sample.

Table 8 in Appendix B studies the U.S. subsample with positive inheritances

---

<sup>11</sup>The robust and median regression routines are described in StataCorp (1997).

Table 4: Frequencies and Amounts Inherited, U.S.

explanatory variable	probit	Tobit	probit	Tobit
poor when growing up	-0.12 (0.84)	-22.4 (1.16)	-0.08 (0.57)	-17.7 (0.93)
father, high occupation	0.41 (1.68)	79.0 (2.60)	0.29 (1.18)	66.7 (2.23)
father, middle occupation	-0.03 (0.21)	-4.3 (0.20)	-0.09 (0.55)	-13.3 (0.64)
father, high school or college	0.06 (0.25)	49.1 (1.59)	-0.01 (0.04)	43.7 (1.43)
mother, high school or college	0.48 (2.37)	12.3 (0.45)	0.37 (1.73)	-14.2 (0.51)
lifetime earnings, net of taxes, 1,000's 1984 USD	$0.44 * 10^{-3}$ (1.87)	0.053 (1.70)	$0.15 * 10^{-3}$ (0.57)	0.008 (0.25)
number of siblings	-0.078 (2.99)	-11.58 (3.20)	-0.063 (2.39)	-8.87 (2.49)
age	-0.056 (1.06)	1.90 (0.26)	-0.062 (1.18)	-0.13 (0.02)
age <sup>2</sup> /100	0.047 (1.02)	-1.89 (0.30)	0.052 (1.11)	-0.18 (0.03)
woman	0.26 (1.02)	-39.3 (1.19)	0.18 (0.71)	-50.7 (1.54)
married	0.91 (3.87)	-37.4 (1.25)	0.87 (3.62)	29.7 (1.00)
years of education			0.081 (2.70)	12.7 (3.34)
constant	0.64 (0.43)	-134.3 (0.67)	0.06 (0.04)	-196.5 (1.00)
standard error		133.4 (14.4)		130.1 (14.4)
n of obs	396	369	395	368
$\chi^2(21)$	72.55	65.97	78.97	76.82
pseudo $R^2$	0.14	0.038	0.15	0.045
log likelihood	-223.30	-825.65	-219.07	-814.07

Notes. Inherited amounts in 1,000's 1984 USD. Absolute  $t$ -values within parentheses.

using robust and median regressions. The sample size, unfortunately, is only slightly above 100. The magnitude of the coefficient on  $Y^c$  shrinks and loses its statistical significance in every column. In contrast to the Swedish data, virtually no cases of newly significant coefficients emerge.

## 4.2. International comparisons

To compare the U.S. and Sweden more closely, we combine the samples and estimate a single Tobit with a complete set of variables for the two countries combined, a complete set of deviations for the U.S., and a separate variance for the U.S. observations.<sup>12</sup> Table 5 presents the coefficient estimates. The content of the model of columns 1–2 is exactly the same as column 2 of Tables 3–4; however, column 2 of the new table shows differences between Sweden and the U.S. clearly. Table 6 uses the combined regression to generate likelihood ratio tests of international differences. (All tests allow constants and variances for the two countries to differ.)

The first row of Table 6 shows that the hypothesis that all independent variables for both countries have 0 coefficients is strongly rejected; the second shows the hypothesis that all independent variables have the same coefficients in the two countries is strongly rejected; and, the third row shows the hypothesis of 0 coefficients for all five parent variables in both countries is strongly rejected. The next row shows that equivalence of the parent coefficients between countries is rejected at the 5% level — or the 10% level if child’s education is included among the regressors. However, the fifth row shows that if the coefficient on high occupational status for the father is allowed to differ between samples, equality of the remaining four parent coefficients is not rejected (p-value .66 without the child education variable, .62 with it). Recall that high occupational status for a beneficiary’s father has a much larger coefficient in the U.S.

The sixth row of Table 6 shows that jointly imposing a 0 coefficient on the  $Y^c$  regressors of both countries cannot be rejected — though it comes close to rejection at the 10% significance level in the specification without child’s education. The seventh row shows that when we include  $Y^c$ , we can reject equality of the  $Y^c$  coefficients between countries in the absence of the child–education regressor: the difference between the positive U.S. coefficient and the negative Swedish coefficient is larger than the absolute magnitude of either.

Separate likelihood ratio tests of child’s education in the international model strongly reject excluding it altogether or requiring that its coefficient be the same

---

<sup>12</sup>The LIMDEP package allows estimation of heteroscedastic Tobit models. The functional form for the standard errors is  $\sigma e^\gamma$  where  $\sigma$  is the standard error of the level and  $e^\gamma$  is the deviation for the U.S., with  $\gamma$  being the coefficient to be estimated. The U.S. standard error according to the first estimation is  $47.6 * e^{1.03}$ .

Table 5: Two-Country Tobits: Sweden and U.S.

	level	dev. for U.S.	level	dev. for U.S.
poor when growing up	-16.9 (2.75)	-5.5 (0.21)	-16.8 (2.72)	-0.8 (0.03)
father, high occupation	6.7 (0.48)	72.3 (1.74)	6.0 (0.42)	60.7 (1.45)
father, middle occupation	6.6 (1.19)	-10.9 (0.41)	6.4 (1.15)	-19.7 (0.74)
father, high school or college	5.3 (0.56)	43.8 (1.00)	4.4 (0.43)	39.2 (0.91)
mother, high school or college	19.6 (1.77)	-7.3 (0.19)	18.8 (1.67)	-32.9 (0.87)
lifetime earnings, net of taxes, 1,000's 1984 USD	-0.020 (0.75)	0.073 (1.50)	-0.022 (0.80)	0.030 (0.60)
number of siblings	-2.44 (2.29)	-9.14 (2.35)	-2.39 (2.24)	-6.48 (1.59)
age	-2.26 (0.97)	4.17 (0.43)	-2.16 (0.90)	2.03 (0.21)
age <sup>2</sup> /100	1.23 (0.59)	-3.11 (0.37)	1.15 (0.54)	-1.33 (0.16)
woman	0.7 (0.10)	-40.0 (1.04)	0.6 (0.08)	-51.3 (1.35)
married	-9.5 (1.52)	47.0 (1.24)	-9.5 (1.52)	39.2 (1.02)
years of education			0.34 (0.39)	12.4 (2.46)
constant	112.5 (1.71)	-246.8 (0.89)	106.8 (1.50)	-303.3 (1.08)
standard error	47.6 (79.7)	1.03 (18.7)	47.6 (79.1)	1.01 (19.0)
n of obs	1,242		1,241	
log likelihood	-4,107.2		-4,095.5	

Notes. Inherited amounts in 1,000's 1984 USD. Absolute  $t$ -values within parentheses.

Table 6: Likelihood Ratio Tests

restriction	without the variable years of education			with the variable years of education		
	$\chi^2$ -statistic	d.f.	$p$ -value	$\chi^2$ -statistic	d.f.	$p$ -value
no level variables and no interaction variables, except intercepts for each country	155.288	22	0.0000	166.388	24	0.0000
no interaction variables	52.596	11	0.0000	63.224	12	0.0000
no level variables and no interaction variables for parents	63.988	10	0.0000	48.500	10	0.0000
no interaction variables for parents	12.932	5	0.0240	9.638	5	0.0862
no interaction variables for parents, except high occupation for father	2.394	4	0.6637	2.664	4	0.6155
no level and interaction variables for lifetime earnings	4.260	2	0.1188	1.558	2	0.4589
no interaction variable for lifetime earnings	4.238	1	0.0395	1.280	1	0.2579

in both countries (the p-values are .0030 and .0012, respectively). Table 5 provides a reminder of the reason: child's education essentially plays no role in Swedish inheritance equation, but it has a significant, positive impact in the U.S. regression.

### 4.3. Summary

In sum, the Swedish Tobit and robust regressions yield outcomes strongly reminiscent of recent results in Altonji et al. (1997) for *inter vivos* family transfers in the U.S.: higher parent financial status leads to a larger intergenerational transfer; higher child economic status causes the opposite; but, the magnitude of these impacts — which the present paper can only assess through the regression coefficient of  $Y^c$  — is small. Signs on the estimated coefficients support the altruistic model, but most bequest activity apparently stems from other sources.

Our U.S. inheritance data yields the opposite sign on the  $Y^c$  regressor; hence, it tends to contradict the altruistic model and support the exchange theory. On the other hand, the Becker–Tomes hypothesis, leading to endogeneity of  $Y^c$ , seems potentially important to results for the U.S., and the statistical significance of the coefficient of  $Y^c$  disappears in robust regressions as well.

Our international regressions show that a high-status occupation for one's father makes more difference in the U.S. — presumably because of a wider income distribution. The coefficient estimates of  $Y^c$  are significantly different if we exclude child's education from the regression.

## 5. Conclusion

We have analyzed two data sets, one for Sweden and one for the U.S. Our results on bequest behavior seem consistent with other recent research: there is only weak evidence that a child's earnings affect its parent's bequest plans. The accidental or egoistic models therefore seem the most consistent with the majority of observations in both data sets. Somewhat surprisingly, the faint support the so-called altruistic model, in which family lines behave dynastically, receives appears in the Swedish rather than the U.S. data. (Even in the Swedish case, the evidence could only be consistent with dynastic behavior for small fraction of households.)

We close with several caveats and directions for future research. First, neither the Swedish LLS nor the U.S. PSID makes the extraordinary efforts necessary to bring in the wealthiest households (see, for example, Hurst et al., 1996; Laitner and Ohlsson, 1997), yet the very rich surely leave substantial estates and their bequest behavior may differ from that of the population at large. Second, existing work strongly suggests that survey respondents tend to understate intergenerational

transfers that they have received (e.g., Kurz, 1984; Poterba, 1998). Third, our analysis points to a possible endogeneity problem for children's earnings, especially for the U.S. data. That could bias our results. Fourth, existing work (e.g., Solon, 1992; Björklund and Jäntti, 1997) indicates that unobservable determinants of parent and children's earnings are strongly correlated. Although we have tried to measure parental resources through a set of five dummy variables, our lack of a precise measure may bias our estimates of the regression coefficient on child earnings. We hope to make further progress on both econometric problems in future research.

## Appendix A. The data

### Level of Living Survey

The LLS is collected by the Swedish Institute for Social Research, Stockholm University. The data are not directly publicly available. More information can be found in Erikson and Åberg (1987) or at [HTTP://WWW.SOFI.SU.SE /SOFI-PRESS.HTM](http://www.sofi.su.se/sofi-press.htm) . Unless otherwise indicated, the data we have used are from the 1981 wave. Our variables are:

The respondent has inherited: variable U580 (1981 wave), V605 (1974 wave) and W377 (1968 wave).

Inherited amount at age 50 of the respondent. The nominal amounts and corresponding years are given by U581 and U582. We have also used the corresponding variables V606, V607 (1974 wave) and W378, W379 (1968 wave) to adjust the data. Laitner and Ohlsson (1997) reports more on how we have computed the present value.

Respondent's parents deceased: U21=1.

Widowed respondent: U90=3.

Respondent poor when growing up: U25=1.

Respondent's father high occupation:  $U148 \geq 1$  and  $\leq 9$ .

Respondent's father middle occupation:  $U148 \geq 10$  and  $\leq 30$ .

Respondent's father secondary or college education: U22=13 or 14.

Respondent's mother secondary or college education: U23=13 or 14.

Lifetime earnings of the respondent. The earnings dynamics equations are estimated using data on annual labor income from the variables AD60 and AD74 (1968), AD227 and AD242 (1974), R326 and M326 (1981). The calculations are explained in more detail and the estimations are reported in Laitner and Ohlsson (1997).

Number of siblings of the respondent: U28.

Age of respondent: U11 gives the year of birth.



Woman respondent: U10=2.

Married, two spouses in the household: U90=4.

Years of education. U137 reports the respondent's years of education. We use the corresponding variables from the previous waves W538 (1968) and V229 (1974) to adjust the data.

### **Panel Study of Income Dynamics**

The PSID is collected by the Institute for Social Research, University of Michigan. It is an annual survey since 1968. The data can be found starting from [HTTP://WWW.ISR.UMICH.EDU/SRC/PSID/INDEX.HTML](http://www.isr.umich.edu/src/psid/index.html) . Unless otherwise indicated, the data we have used are from the 1984 family file. Our variables are:

The household has inherited: variable V10937=1.

Inherited amount at age 50 of the household head. The nominal amounts are given by the variables V10940/V10945 and the corresponding years by V10939/V10944. The amount is divided by 2 for households with two spouses.

Parents deceased. These variables come from the 1988 family file. V15810 reports year of death of head's father, V15824 head's mother, V15867 wife's father, and V15881 wife's mother. We have adjusted for possible changes in head and wife of the household between 1984 and 1988.

For households with a single head the variable "parents deceased"=1 if the years of deaths for head parents are 1984 or before. For households with two spouses the variable "parents deceased"=1 if the years of deaths for both spouses parents are 1984 or before.

Widowed head: V10426=3.

Head poor when growing up: V10988=1.

Head's father high occupation: V10971=1 or 2.

Head's father middle occupation:  $V10971 \geq 3$  and  $\leq 5$ .

Father secondary or college education. For the head  $V10989 \geq 4$  and  $\leq 8$ , for the wife  $V10960 \geq 4$  and  $\leq 8$ . We take the average for households with two spouses.

Mother secondary or college education. For the head  $V10990 \geq 4$  and  $\leq 8$ , for the wife  $V10961 \geq 4$  and  $\leq 8$ . We take the average for households with two spouses.

Lifetime earnings of the household, net of taxes. The earnings dynamics equations are estimated using data on annual labor income from the PSID 1968-1992 individual data set, the variables V30012 (1968)– V30750 (1992). The calculations are explained in more detail and the estimations are reported in Laitner and Ohlsson (1997). The amounts are divided by 2 for households with two spouses.

Number of siblings. These variables come from the 1986 family file. V13488 reports the head's number of brothers, V13494 head's n of sisters, V13552 wife's n of brothers, and V13558 wife's n of sisters. We have adjusted for possible changes in head and wife of the household between 1984 and 1986.

V10979 in the 1984 survey reports the number of siblings of the head. If the variables above yield a missing value we have used this variable.

Next the number of siblings is divided by 2 for households with two spouses.

Age. V10419 gives the year of birth of the head, V10421 the birth year of the spouse. We take the average for households with two spouses.

Woman head:  $V10420=2$ .

Married, two spouses in the household:  $V10670=1$ .

Years of education. V10996 gives the head's years of education except for postgraduate studies. If  $V11003=1$ , we have added 3 years. V10955 gives the wife's years of education except for postgraduate studies. If  $V10959=1$ , we have added 3 years. We take the average for households with two spouses.

## **Appendix B. Conditional models**

Table 7: Regressions for Positive Inherited Amounts, Sweden

explanatory variables	OLS, robust standard errors	robust regression	median regression, bootstrapped standard errors
poor when growing up	-7.5 (2.40)	-1.3 (4.58)	-1.3 (4.29)
father, high occupation	0.5 (0.08)	2.8 (4.24)	4.3 (1.44)
father, middle occupation	1.1 (0.26)	1.1 (3.87)	1.1 (3.38)
father, high school or college	3.0 (0.67)	-0.3 (0.65)	0.4 (0.42)
mother, high school or college	14.7 (2.42)	1.7 (2.98)	6.9 (1.28)
lifetime earnings, net of taxes, 1,000's 1984 USD	-0.013 (1.02)	-0.0035 (2.76)	-0.0033 (1.78)
number of siblings	-2.33 (2.68)	-0.30 (5.78)	-0.46 (6.31)
age	-5.74 (3.25)	-1.17 (8.30)	-2.33 (3.12)
age <sup>2</sup> /100	3.89 (3.01)	0.84 (6.99)	1.70 (2.96)
woman	-0.2 (0.06)	-1.1 (3.12)	-1.0 (1.92)
married	-17.1 (1.83)	0.1 (0.18)	-0.2 (0.64)
constant	243.9 (3.40)	46.3 (11.0)	85.5 (3.51)
standard error	45.8		
n of obs	589	589	589
$F(11, 577)$	4.00	31.96	
$p$ -value	0.0000	0.0000	
(pseudo) $R^2$	0.11		0.09

Notes. Inherited amounts in 1,000's 1984 USD. Absolute  $t$ -values within parentheses.

Table 8: Regressions for Positive Inherited Amounts, U.S.

explanatory variables	OLS, robust standard errors	robust regression	median regression, bootstrapped standard errors
poor when growing up	-31.1 (1.90)	-4.9 (1.35)	-10.4 (1.80)
father, high occupation	57.2 (1.22)	-3.3 (0.58)	-3.8 (0.19)
father, middle occupation	-9.0 (0.63)	-0.4 (0.11)	-1.7 (0.26)
father, high school or college	74.2 (1.52)	13.9 (2.28)	12.1 (0.92)
mother, high school or college	-46.5 (0.89)	2.2 (0.43)	1.5 (0.18)
lifetime earnings, net of taxes 1,000's 1984 USD	0.0012 (0.04)	0.0014 (0.23)	0.0003 (0.02)
number of siblings	-4.14 (1.65)	-1.85 (2.71)	-3.29 (2.59)
age	4.75 (0.70)	0.66 (0.51)	0.14 (0.06)
age <sup>2</sup> /100	-3.57 (0.62)	-0.53 (0.46)	0.20 (0.09)
woman	-140.1 (1.27)	-3.0 (0.39)	-16.7 (0.24)
married	-144.0 (1.30)	-8.2 (1.18)	-31.2 (0.45)
constant	46.3 (0.30)	7.6 (0.20)	44.7 (0.46)
standard error	112.3		
n of obs	116	115	116
$F(11, 104)$	1.03	3.03	
$p$ -value	0.4237	0.0015	
(pseudo) $R^2$	0.25		0.10

Notes. Inherited amounts in 1,000's 1984 USD. Absolute  $t$ -values within parentheses.

## References

- S. Ahlroth, A. Björklund, and A. Forslund. The output of the Swedish education sector. *Review of Income and Wealth*, 43(1):89–104, March 1997.
- J. G. Altonji, F. Hayashi, and L. J. Kotlikoff. Is the extended family altruistically linked? Direct tests using micro data. *American Economic Review*, 82(5): 1177–1198, December 1992.
- J. G. Altonji, F. Hayashi, and L. J. Kotlikoff. Parental altruism and inter vivos transfers: Theory and evidence. *Journal of Political Economy*, 105(6):1121–1166, December 1997.
- L. Arrondel and A. Laferrère. Taxation and wealth transmission in france: Some preliminary results. Paper presented at the ISPE conference on Bequest and Wealth Taxation, University of Liège, May 1998.
- L. Arrondel, A. Masson, and P. Pestieau. Bequest and inheritance: Empirical issues and France-U.S. comparison. In G. Erreygers and T. Vandevelde, editors, *Is Inheritance Legitimate? Ethical and Economic Aspects of Wealth Transfers*, chapter 4, pages 89–125. Springer Verlag, Berlin, 1997.
- R. J. Barro. Are government bonds net wealth? *Journal of Political Economy*, 82(6):1095–1117, December 1974.
- T. A. Barthold and T. Ito. Bequest taxes and accumulation of household wealth: U.S.-Japan comparison. In T. Ito and A. O. Krueger, editors, *The Political Economy of Tax Reform*, volume 1 of *NBER-East Asia Seminar on Economics*, pages 235–290. University of Chicago Press, Chicago and London, 1992.
- G. S. Becker. A theory of social interactions. *Journal of Political Economy*, 82(6):1063–1093, December 1974.
- G. S. Becker and N. Tomes. An equilibrium theory of the distribution of income and intergenerational mobility. *Journal of Political Economy*, 87(6):1153–1189, December 1979.
- B. D. Bernheim and K. Bagwell. Is everything neutral? *Journal of Political Economy*, 96(2):308–338, April 1988.
- B. D. Bernheim, A. Shleifer, and L. H. Summers. The strategic bequest motive. *Journal of Political Economy*, 93(6):1045–1076, December 1985.

- A. Björklund and M. Jäntti. Intergenerational income mobility in Sweden compared to the United States. *American Economic Review*, 87(5):1009–1018, December 1997.
- D. G. Blanchflower and A. J. Oswald. What makes an entrepreneur? *Journal of Labor Economics*, 16(1):26–60, January 1998.
- A. B. Blinder. *Toward an Economic Theory of Income Distribution*. MIT Press, Cambridge, MA, 1974.
- S. Blomquist. The inheritance function. *Journal of Public Economics*, 12(1):41–60, August 1979.
- C. Chamley. Optimal taxation of capital income in general equilibrium with infinite lives. *Econometrica*, 54(3):607–622, June 1986.
- S. Chossen. Wealth, inheritance and gift taxes in the OECD area. A survey. Paper presented at the ISPE conference on Bequest and Wealth Taxation, University of Liège, May 1998.
- D. Cox. Motives for private income transfers. *Journal of Political Economy*, 95(3):508–546, June 1987.
- D. Cox and M. R. Rank. Inter-vivos transfers and intergenerational exchange. *Review of Economics and Statistics*, 74(2):305–314, May 1992.
- H. Cremer and P. Pestieau. Bequests as heir “discipline device”. *Journal of Population Economics*, 9(4):405–414, November 1996.
- H. Cremer and P. Pestieau. Non-linear taxation of bequests, equal sharing rules and the tradeoff between intra- and inter-family inequalities. Paper presented at the ISPE conference on Bequest and Wealth Taxation, University of Liège, April 1998.
- J. B. Davies. Uncertain lifetime, consumption, and dissaving in retirement. *Journal of Political Economy*, 89(3):561–577, June 1981.
- J. B. Davies. Inheritance and the distribution of wealth in Britain and Canada. In T. Tachibanaki, editor, *Savings and Bequests*, pages 245–283. University of Michigan Press, Ann Arbor, 1994.
- T. A. Dunn and J. W. Phillips. The timing and division of parental transfers to children. *Economics Letters*, 54(2):135–137, February 1997.
- R. Erikson and R. Åberg. *Welfare in Transition*. Clarendon Press, Oxford, 1987.

- B. Friedman and M. Warshawsky. The cost of annuities: Implications for saving behavior and bequests. *Quarterly Journal of Economics*, 105(1):135–154, February 1990.
- W. G. Gale and J. K. Scholz. Intergenerational transfers and the accumulation of wealth. *Journal of Economic Perspectives*, 8(4):145–160, Fall 1994.
- W. H. Greene. *LIMDEP Version 7.0 User's Manual*. Econometric Software, Inc., Bellport, NY, 1995.
- D. Holtz-Eakin, D. Joulfaian, and H. S. Rosen. The Carnegie conjecture: Some empirical evidence. *Quarterly Journal of Economics*, 108(2):413–435, May 1993.
- D. Holtz-Eakin, D. Joulfaian, and H. S. Rosen. Sticking it out: Entrepreneurial survival and liquidity constraints. *Journal of Political Economy*, 102(1):53–75, February 1994.
- M. D. Hurd. Mortality risk and bequests. *Econometrica*, 57(4):779–814, July 1989.
- E. Hurst, M. C. Luoh, and F. P. Stafford. Wealth dynamics of American families, 1984-1994. The Panel Study of Income Dynamics, Institute for Social Research, University of Michigan, USA, August 1996.
- T. Ihori. Taxes on capital accumulation and economic growth. *Journal of Macroeconomics*, 19(3):509–522, Summer 1997.
- G. G. Judge, R. C. Hill, W. E. Griffiths, H. Lütkepohl, and T.-C. Lee. *Introduction to the Theory and Practice of Econometrics*. Wiley, New York, second edition, 1988.
- C. Juhn, K. M. Murphy, and B. Pierce. Wage inequality and the rise in returns to skill. *Journal of Political Economy*, 101(3):410–442, June 1993.
- L. J. Kotlikoff and L. H. Summers. The role of intergenerational transfers in aggregate capital accumulation. *Journal of Political Economy*, 89(4):706–732, August 1981.
- M. Kurz. Capital accumulation and the characteristics of private intergenerational transfers. *Economica*, 51(201):1–22, February 1984.
- J. Laitner. Bequests, gifts and social security. *Review of Economic Studies*, 55(2):275–299, April 1988.



- J. Laitner. Modeling marital connections along family lines. *Journal of Political Economy*, 99(6):1123–1141, December 1991.
- J. Laitner. Random earnings differences, lifetime liquidity constraints, and altruistic intergenerational transfers. *Journal of Economic Theory*, 58(2):135–170, December 1992.
- J. Laitner. Intergenerational and interhousehold economic links. In M. R. Rosenzweig and O. Stark, editors, *Handbook of Population and Family Economics*, volume 1A, chapter 5, pages 189–238. North-Holland, Amsterdam, 1997.
- J. Laitner and F. T. Juster. New evidence on altruism: A study of TIAA-CREF retirees. *American Economic Review*, 86(4):893–908, September 1996.
- J. Laitner and H. Ohlsson. Equality of opportunity and inheritances: A comparison of Sweden and the U.S. Paper presented at the conference on wealth, inheritance and intergenerational transfers, University of Essex, June 1997.
- T. Lindh and H. Ohlsson. Self-employment and windfall gains: Evidence from the Swedish lottery. *Economic Journal*, 106(439):1515–1526, November 1996.
- R. E. Lucas. Supply-side economics: An analytic overview. *Oxford Economic Papers*, 42(2):293–316, April 1990.
- A. Masson and P. Pestieau. Bequests motives and models of inheritance: A survey of the literature. In G. Erreygers and T. Vandevelde, editors, *Is Inheritance Legitimate? Ethical and Economic Aspects of Wealth Transfers*, chapter 3, pages 54–88. Springer Verlag, Berlin, 1997.
- K. McGarry. Inter vivos transfers and intended bequests. Working Paper 6345, National Bureau of Economic Research, December 1997.
- K. McGarry. The cost of equality: Unequal bequests and tax avoidance. Paper presented at the ISPE conference on Bequest and Wealth Taxation, University of Liège, March 1998.
- K. McGarry and R. F. Schoeni. Transfer behavior in the health and retirement study. measurement and the redistribution within the family. *Journal of Human Resources*, 30(Supplement):S184–S226, 1995.
- P. Michel and P. Pestieau. Fiscal policy in a growth model with both altruistic and nonaltruistic agents. *Southern Economic Journal*, 64(3):682–697, January 1998.

- J. Poterba. The estate tax and after-tax investment returns. Working Paper 6337, National Bureau of Economic Research, December 1997.
- J. Poterba. Inter vivos transfers and the incentive effects of estate and gift taxes in the United States. Paper presented at the ISPE conference on Bequest and Wealth Taxation, University of Liège, April 1998.
- G. R. Solon. Intergenerational income mobility in the United States. *American Economic Review*, 82(3):393–408, June 1992.
- StataCorp. *Stata Statistical Software: Release 5.0*. Stata Corporation, College Station, TX, 1997.
- M. O. Wilhelm. Bequest behavior and the effect of heirs' earnings: Testing the altruistic model of bequests. *American Economic Review*, 86(4):874–892, September 1996.