

# DISTRIBUTION OF ESTATE WEALTH AND ITS RELATIONSHIP TO INTERGENERATIONAL TRANSFERS\*

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## 1. INTRODUCTION--DEFINITIONS AND ISSUES

The transfer of assets from the dead to the living excites curiosity and speculation. The process invites research because it is one of the rare opportunities that economists have to observe the net wealth of individuals, and observations of that wealth provide a basis for inferring wealth distribution. Economists would also like to draw inferences about life-time saving and the inter-generational transmission of net wealth from the transfers at death. The profession is closer to such inferences because we have collected data from probated estates of a random sample of Wisconsin taxpayers and are able to distribute the value of the estate to several types of beneficiaries.

The interpretation of estate wealth and its relation to income earned during the lifetime of the decedent pose issues that have not been carefully addressed by the profession. In this paper we attempt to make a beginning by presenting data on pairs of estates--the husbands and wives of couples who married only once during their lifetimes. It appears necessary to consider the joint distribution of estates by husbands and wives because the motives for transferring wealth differ between the predeceasing spouse and the surviving spouse. The former has a desire to provide the spouse with continuing consumption; both may have motives to endow persons outside the household with wealth, particularly their own children. This appears to make it necessary to divide the estate into three categories; inter-spousal transfers, bequests to children, and bequests to others. In aggregating over couples, only bequests to children and others can be considered a transfer of wealth from one decision-making unit to another.

Not only do motives differ between the marriage partners, the sources of lifetime income differ as well. The couple is likely to include a dominant earner who determines the labor market in which the couple offers services; the secondary earner is likely to accept some compromises to a career in exchange for sharing the earnings within the marriage. This poses problems for the measurement of lifetime income.

By focusing on couples and their transfers to children and others (household bequests) we can finesse both the problem of motivation and the problem of lifetime earnings measurement, at least to some extent.

It is less clear whether one can interpret household bequests as net lifetime saving. First, one would like to subtract inheritance received from the wealth transferred at death. The relationship of household bequests to traditionally observed net estates of individuals is explored in Section 2. The final section of the paper applies a slightly modified version of an individual bequest model (Menchik and David, 1979) to the behavior of household.

## 2. HOUSEHOLD BEQUESTS

Two features of the analysis that follows distinguish it from earlier work: (1) The measures of

bequests that we study are net of interspousal transfers; (2) the data are a sample of couples with exactly one marriage. Both features require some discussion.

### The Aggregate Household Bequest

For each individual we may define a lifetime wealth constraint as

$$I_i + S_j + E_i = C_i + B_i + S_i \quad \begin{matrix} i=1,2 \\ j=3-i \end{matrix} \quad (1)$$

where  $I_i$  is inheritances received from outside the marital unit,  $S_j$  is the interspousal transfer received from the predeceasing spouse,  $E_i$  is the lifetime earnings of the person,  $C_i$  is lifetime consumption,  $B_i$  is wealth transfers outside the marital unit; and  $S_i$  is the interspousal transfer. All quantities are discounted to a common point in time. The constraint illuminates the limitations of our data. Information on  $I_i$  and  $C_i$  is lacking, and our measure of assets transferred at death is a lower bound to the value of inter-household transfers of wealth.

When the lifetime wealth constraint is aggregated over husband and wife, (1) becomes

$$I_1 + I_2 + E_1 + E_2 = C_1 + C_2 + B_1 + B_2 \quad (2)$$

since the interspousal transfer of the predeceasing spouse is the transfer received by the surviving spouse. This aggregation makes clear that the household bequest to persons other than the partners to marriage is less than the sum of the net estates of husband and wife by the amount of interspousal transfers. Equation (2) also makes clear that if a theory of consumption behavior relates to marital units as the decision-making unit it is the aggregate household bequest that is the choice variable. One more definition is needed: Intergenerational bequests are the portion of household bequests allocated to children.

The aggregation of individual wealth constraints to a household constraint requires the choice of a common origin for the discounting consumption. We discount it two ways. In the tables that follow household bequests are discounted to the date of death of the predeceasing spouse; in the regressions in Section 4, both earnings and household bequests are discounted the year in which the husband is age 65. The former relates household bequests to an important real date in the household's life; the latter relates bequests to an age that may be considered significant for ex ante retirement planning.

### The Universe under Study

The population of decedents can be partitioned into three sets; those who never marry, those who married more than once, and those who marry exactly once. The data that follow report on household bequests only for those couples in which both husband and wife were married only once. Limiting the universe of study in this fashion makes it possible to delete interspousal transfers from the

aggregation in (2). It also sharpens the inferences about bequests to children, since both marriage partners have the same children as potential beneficiaries of wealth transfers.<sup>1</sup>

If household bequests can be demonstrated to be large relative to interspousal transfers for the population of once-married couples, the bequest motive in allocation of lifetime wealth would appear to be clearly substantiated. Understanding the more complex behavior of persons with several marriages is clearly important, but beyond this paper.

We confine our attention to couples in which both persons died in the State of Wisconsin, giving us a sample of 557 couples. This additional restriction of the universe biases the results because those who move out of state are probably wealthier, but allows us to impute wealth information in cases where estates were not probated.

#### Wealth Data Available

Table 1 makes clear the nature of the wealth data available for once married couples. Probate data are complete for slightly over half of the couples. In the remaining cases the estate of one (or both) of the marriage partners was too small to require the filing of a probate. Prior to 1973 the filing requirement was a gross estate of \$3000 or more; thereafter filing of probate was required for estates of \$10,000 or more. Thus it is possible to place definite bounds on the net wealth of persons for whom no probate report is available.

Table 2 shows the distribution by size of the net estate of husbands and wives in the sample. Most of the cases where no estate is observed would fall in the second column because of the filing requirements. The third and fourth rows of the table suggest that it is possible to gain

TABLE 1: PROBABILITY OF OBSERVING PROBATED ESTATES (Percentages)

Husband's Estate Probated	Wife's Estate Probated		Total
	yes	no	
Yes	51.5%	19.4%	70.9%
No	12.9	16.2	29.1
Total	64.4	35.6	100.0

a better understanding of the bequest process by organizing estate information according to the marital status of the decedent--those married at death predecease their spouse, those not married are the survivors. The estates of surviving spouses are characterized by greater variance than those of predeceasing spouses.

Table 3 displays the joint distribution of interspousal transfers and household bequests. Entries above the diagonal reflect dissaving out of the interspousal transfer by the surviving spouse. Entries below the diagonal connote some degree of bequest motive to provide wealth to others outside the household. The relatively small number of households who report no household bequest or dissaving out of the interspousal transfer attests to the strength of the bequest motive.

More insight can be obtained by concentrating on bequests to children (i.e., intergenerational bequests). The process by which intergenerational bequests are made to the children of a couple is illustrated by Table 4. A portion of the predeceasing spouse's estate is committed to the interspousal transfer. The level of such transfers is higher for men, reflecting both legal titles to the assets of the couple and larger amounts of insurance. The number of predeceasing spouses who allocate a portion of their estate to children is small; as a consequence, the average amount of

TABLE 2: SIZE DISTRIBUTION OF NET ESTATES

Variables	No Estate Observed <sup>a</sup>	Negative	\$0-5,000	\$5,000-10,000	\$10,000-20,000	\$20,000-50,000	\$50,000 or More	Total
Husband's net estate	29.1%	1.3%	11.3%	14.0%	20.6%	15.1%	8.6%	100.0%
Wife's net estate	35.5	0.9%	12.7	13.5	15.4	15.1	6.6	99.8
Predeceasing spouse	31.6	1.3	11.3	17.6	21.5	11.0	5.7	100.0
Surviving spouse	33.0	0.9	12.8	9.9	14.5	19.2	9.5	99.8

<sup>a</sup> The filing requirement is on gross estates before the payment of claims. See text.

TABLE 3: JOINT DISTRIBUTION OF HOUSEHOLD BEQUESTS AND INTERSPOUSAL TRANSFERS OF WEALTH

Household Bequest	No Probate Data	0	Interspousal Transfers					Total
			\$1-5,000	\$5,000-10,000	\$10,000-20,000	\$20,000-30,000	\$30,000 or More	
No probate data	16.2%	--	--	--	--	--	--	16.2%
Interspousal transfer	.5	1.1	3.8	4.7	3.3	.2	.4	13.8
\$1-5,000	3.9	.9	3.8	3.2	1.1	.4	0	13.3
\$5,000-10,000	3.1	.2	2.2	3.4	1.4	.2	0	10.4
\$10,000-20,000	3.8	.5	2.3	2.8	4.1	.2	.4	15.1
\$20,000-30,000	1.6	.7	.2	1.4	5.0	.2	.5	9.7
\$30,000 or more	2.3	1.3	.4	.5	5.2	5.0	6.6	21.4
Total	31.4	4.6	12.6	17.1	20.1	6.1	7.9	100.0*
Mean household bequest	17,000	59,210	6,395	8,089	22,010	69,060	285,900	46,400**

<sup>a</sup> Less than 0.5 percent

\* N=557

\*\* N=467 (at least 1 probate record available).

such bequests is small and the ratio of bequests to children to the intra-spousal transfer is extremely small. The evidence supports the hypothesis that the primary objective of the predeceasing spouse is to provide for his/her mate. When that obligation is no longer present for the surviving spouse, amounts of wealth that are large in comparison to interspousal transfers are bequeathed to children.

Table 5 gives a summary of what we have learned about household and intergenerational bequests. Three-quarters of all couples have some household bequest. Comparison of columns 2 and 3 indicates that about 60% of bequests are intergenerational bequests, both for those with large and for those with small household bequests. The amount of interspousal transfer is less than intergenerational transfers, on average, reflecting either an unwillingness or an inability to consume wealth during the lifetime of the household.

### 3. A MODEL OF BEQUESTS

In earlier work we developed a model of the net estates of men (Menchik and David, 1979). The most salient feature of the model is that increasing elasticity of bequests with respect to changes in lifetime earnings should be observed as the level of earnings rises. That hypothesis was strongly confirmed for a cohort of men born 1890-1924. As the earlier result encompasses both saving for interspousal transfers and motivation for transfers of wealth outside the household, we felt it would

be useful to extend the model and apply it to household and intergenerational bequests. The principal extension that is necessary is to incorporate the wife's earned income as an explanatory variable. Unfortunately that extension is not conceptually straightforward. As Gronau (1973) has observed, the contribution of a woman to the total income of a family may be either larger or smaller than what is implied by earnings during years of participation in the labor market. It is larger if home production during periods of less than full-time effort yields greater value per hour than the wage rate; it is smaller if periods of less than full-time effort are involuntary underemployment or unemployment.

Because of this ambiguity, it is not clear how to use observations on earnings for the wife. We adopt a pragmatic approach, in which the marginal propensity to bequeath may differ between husband and wife even though identical measures of average annual earnings are derived from the income tax data available for each person. In addition we retain women who report no taxable earnings in the period 1947-64 in the sample by assigning them zero earnings and a dummy variable,  $N=1$ .

Observations on men born 1890-1924 must be subsampled from the couples shown in tables 1-5 to parallel our earlier findings. 171 couples were defined by that selection and the use of a preliminary data set; 101 include probate data on both spouses. This sub-group is the sample for regression analysis. To correct for the potentially

TABLE 4: SIZE OF INTERSPOUSAL TRANSFER BY SEX OF PREDECEASING SPOUSE

Sex of Predeceasing Spouse	Missing	Interspousal Transfers						Total
		Missing or 0	\$1-5,000	\$5,000-10,000	\$10,000-20,000	\$20,000-50,000	\$30,000 or More	
A. Percentage of Total								
Husband	32	3	11%	16%	22%	6%	10%	100%
Wife	31	7	15	19	18	6	4	100
All	31.6	4.6	12.6	17.1	20.1	6.1	7.9	100.0
B. Predeceasing Spouse: Amount of bequest to children, $\bar{x}_1$								
Husband	--	\$6,284	\$1,050	\$ 885	\$1,790	\$29,400	\$61,000	\$ 8,840
Wife	--	13,857	1,230	365	1,250	a	a	5,260
(Bequest to children)/Interspousal transfer), $\bar{x}_1/\bar{s}$								
Husband	--	b	.41	.12	.12	1.18	.49	.38
Wife	--	b	.48	.05	.087	a	a	.23
C. Surviving Spouse: Amount of bequest to children, $\bar{x}_2$								
Husband	4,570	\$ 2,266	\$2,900	\$4,860	\$12,100	\$34,400	\$77,800	\$15,200
Wife	7,700	43,256	3,940	7,750	18,730	28,100	a	17,700
(Bequest to children)/(Interspousal transfer), $\bar{x}_2/\bar{s}$								
Husband	--	b	1.14	.65	.84	1.39	.63	.66
Wife	--	b	1.55	1.03	1.30	1.13	a	.77

aLess than 15 cases.

bMean interpersonal bequest is \$-256, reflecting estates with net liabilities.

TABLE 5: ALLOCATION OF HOUSEHOLD WEALTH AT DEATH

Size of Household Bequest	Percentage of Households	Mean Inter-generational Bequests	Mean Household Bequest	Mean Interspousal Transfer
Missing	16.2%	0	0	0
0 or neg	13.8%	-4,940	-158.0	\$ 7,718
\$1-5,000	13.3	1,996	2,556	4,207
\$5,000-10,000	10.4	4,805	7,341	5,539
\$10,000-20,000	15.1	10,940	14,830	7,379
\$20,000-50,000	9.7	15,170	25,050	10,980
\$50,000 or more	21.4	92,140	155,200	53,270
All	100.0	23,570	38,910	15,760

large selection bias, we adopt the procedure advocated by Heckman (1976), estimating the Mill's ratio from a side equation in which membership in the selected sample is determined by a probit function.

Results are reported in two regression models (Tables 6 and 7). Each model is tested for both household bequests and intergenerational bequests and for both linear and semi-logarithmic versions of the model. The linear version of the model tests for increasing elasticity of bequests by the use of a spline on the earnings of the husband. The semi-logarithmic form automatically generates an increasing elasticity, and has the conceptual advantage of describing a world in which the stochastic processes generating household bequests have a lognormal distribution.

The first of the regression models contains only earnings data for the husband. The second includes three earnings variables for the wife - the dummy mentioned earlier and separate coefficients for couples in which the husband's earnings exceed the spline point and the couples in which the husband's earnings do not exceed the spline point. One finding is common to both regression models and both forms of the dependent variable. The number of dependents reported on income tax records is negatively associated with household bequests and positively associated with intergenerational bequests. The difference in sign is significant. Having more dependents appears to increase the proportion of lifetime wealth that is consumed and transferred to children as lifetime gifts, at the same time that it creates a greater priority for the distribution of wealth to children at death in preference to distribution to others.

For both linear regression models the effect of husband's earnings is much higher in the top quintile. The slope for household bequests is about 50% larger than the slope observed for the net es-

tates of men in the earnings quintile in our earlier work; the slope for intergenerational bequests is about 80% for the value observed for the net estates of men (cf. table 8). This is a confirmation of the fact that little of the interspousal transfer is consumed by persons in the top earnings quintile.

For the semi-logarithmic model, the effect of husband's earnings is less clear. For household bequests the slope is smaller than the slope observed for the net estate of men in earlier work, while for intergenerational bequests the slope is larger. The results are indicative of an increasing ratio of intergenerational to household bequests as earnings rise.

The inclusion of measures of earnings of the wife does not contribute significantly to the explanation. We are still struggling for a better conceptualization of the lifetime earnings of the household, and hope to improve upon the average earnings measure that we have included.

#### 4. CONCLUSIONS

The evidence from this small sample of couples confirms relationships derived earlier for the net estate of men. While the small size of the sample necessarily makes such a conclusion tentative, it suggests that a large portion of interspousal transfers is not consumed by the surviving spouse and is subsequently transferred outside of the household. When that evidence is added to the tendency for equal division of estates--which appears to be the rule in allocation of estate wealth to children--a strong case is made for substantial bequest motives. A substantial portion of estate wealth appears to be intentional lifetime saving, and this evidence is consistent with an increasing elasticity to bequeath with increasing earnings.

TABLE 6: REGRESSION ANALYSIS OF HOUSEHOLD BEQUESTS AND INTERGENERATIONAL BEQUESTS  
(Couples with One Marriage and Complete Wisconsin Probate Data)

Variable	Linear		Semi-Logarithmic	
	Household	Intergenerational	Household	Intergenerational
HE <sub>1</sub>	1.489 (0.71)	.922 (0.66)	.0001028 (1.67)	.0001631 (1.53)
HE <sub>2</sub>	14.67 (17.1)	7.74 (13.6)		
Z	5000 (0.43)	7920 (1.02)	-.429 (0.48)	.819 (.052)
DS	3440 (0.40)	2140 (0.32)	.871 (1.23)	1.469 (1.20)
λ	3590 (0.25)	10770 (1.16)	-1.603 (1.48)	1.244 (1.87)
Dependents	-5690 (2.38)	2870 (1.80)	-.0512 (0.26)	1.070 (3.19)
Constant	24640 (1.43)	-10210 (0.88)	9.461 (8.34)	1.278 (0.65)
R <sup>2</sup>	.79	.70	.08	.13

Description of Variables:

HE<sub>1</sub> = Amounts of husband's average earnings up to the 80th percentile of earnings, adjusted for the birth year of the husband.

HE<sub>2</sub> = Amount of husband's average earnings in excess of the 80th percentile of earnings.

Z = Share of total earnings from husband's self-employment income.

DS = 1, if husband has any self-employment income.

λ = The Heckman correction for sample selectivity.

Dependents = The largest number of dependents reported on tax returns reported during 1947-64.

TABLE 7: REGRESSION ANALYSIS OF HOUSEHOLD BEQUESTS AND INTERGENERATIONAL BEQUESTS  
(Couples with 1 Marriage and Complete Wisconsin Probate Data)

Variables	Linear Model		Semi-Logarithmic Model	
	Household	Intergenerational	Household	Intergenerational
HE <sub>1</sub>	1.877 (.088)	1.287 (0.90)	.0001158 (1.89)	.0001473 (1.37)
HE <sub>2</sub>	14.819 (17.1)	7.630 (13.1)		
Z	10920 (0.88)	10070 (1.20)	-.3300 (0.35)	.6500 (0.40)
DS	1920 (0.22)	1030 (0.17)	.8963 (1.24)	1.469 (1.17)
N	-7570 (1.02)	-4720 (0.94)	.08513 (0.15)	.01618 (0.02)
WE <sub>1</sub>	5.593 (1.05)	-3.635 (1.01)	-.0003977 (1.76)	-.0004523 (1.15)
WE <sub>2</sub>	1.905 (0.62)	-.378 (0.18)		
λ	11040 (0.72)	12390 (1.20)	-1.620 (1.44)	1.198 (0.61)
Dependents	-5120 (2.13)	2830 (1.75)	-.003938 (0.02)	1.012 (2.98)
Constant	17240 (0.98)	-10280 (0.87)	8.913 (7.68)	1.913 (0.94)
R <sup>2</sup>	.79	.70	.09	.13

Definitions of variables (see also Table 6); Note: Numbers in parentheses are t-ratios.  
 N = 1, if the wife reports less than 3 years of tax returns.  
 WE<sub>1</sub> = Amount of wife's earnings if the husband's earnings all fall below the 80th percentile  
 WE<sub>2</sub> = Amount of wife's earnings if the husband's earnings exceed the 80th percentile.

TABLE 8: COMPARISONS OF NET ESTATE AND HOUSEHOLD BEQUEST REGRESSIONS

Variables	Linear Model		Semi-Logarithmic	
	Household Bequest	Net Estate	Household Bequest	Net Estate
HE <sub>1</sub>	3.03 (1.33)	2.404 (3.78)	.000130 (2.06)	.0001416 (11.24)
HE <sub>2</sub>	14.9 (17.2)	9.357 (19.3)		
Z	19800 (1.46)	12392 (3.37)	.073 (0.07)	.5034 (3.61)
DS	266 (0.03)	2435 (0.81)	.599 (0.79)	.1956 (1.71)
Cohort	1060 (1.26)	660.0 (2.97)	.0201 (0.29)	.0478 (5.66)
A <sub>1</sub>	1040 (0.77)	734.2 (2.89)	--	.03890 (3.99)
A <sub>2</sub>	1220 (1.30)	83.54 (0.31)	--	.03078 (2.95)
λ	25200 (1.37)	-3429 (1.20)	-.467 (0.36)	.6131 (5.57)
Dependents	-5430 (1.97)	-1057 (1.67)	.212 (0.94)	-.1310 (5.24)
Dependents N.A.	--	-1539 (0.12)	--	-.525 (1.07)
Diff	-90.2 (0.15)	--	-.020 (0.42)	--
N	12500 (1.55)	--	-.0947 (0.15)	--
WE <sub>1</sub>	6.06 (1.11)	--	.000395 (1.69)	--
WE <sub>2</sub>	.0106 (0.03)	--		
Constant	75700 (0.76)	-42990 (2.51)	-5.02 (0.63)	6.021 (9.13)
R <sup>2</sup>	.789	.322	.097	.174
N	101	1064	101	1064
σ <sub>e</sub>	28430	35310	2.346	1.37

Note: Numbers in parentheses are t-ratios.  
 Definition of variables (see also Tables 6 and 7):  
 A<sub>1</sub> = Age at death, up to 64 years.  
 A<sub>2</sub> = Excess of age at death over 64, if husband died at a later age, zero otherwise.  
 Dependent N.A. = No data on tax return dependents = 1; zero otherwise.  
 Cohort = Birth year less 1899.  
 Diff = Birth year of husband less birth year of wife.

#### NOTES

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1 When one of the marriage partners has been married more than once, the possibilities arise for multiple interspousal transfers, for differences in the natural children of each partner, and for transfers of lifetime wealth through child support and alimony.

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