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ON THE INTERGENERATIONAL SAVINGS
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by
Nigel Tones

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ON THE INTERGENERATIONAL SAVINGS FUNCTION *

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ABSTRACT

The income elasticity of bequests is an important parameter for intragenerational inequality and social mobility. The larger is this parameter the lower is the inequality in consumption corresponding to any given income distribution and the lower is observed social mobility. Further, if bequests are a luxury a mean-preserving equalizing redistribution of income will increase aggregate consumption.

In this paper I develop a model in which wealth is transmitted across the generations via investment in the human capital of one's children, or by bequests of material wealth--which represent lifetime saving. Households are assumed to differ in their ability to generate human capital for their children. In this context there are two important parameters--the income elasticity of bequests and the elasticity of bequests with respect to parental efficiency in human capital production.

Empirical results imply that bequests are a luxury, with an income elasticity of 1.5 - 2.5 depending on the measure of bequests. Holding income constant, an increase in parental efficiency--measured by parents' education--reduces intergenerational transfers of material wealth as human capital investment is substituted for bequests of financial wealth.

ON THE INTERGENERATIONAL SAVINGS FUNCTION

Nigel Tomes

1. INTRODUCTION

The elasticity of saving with respect to lifetime wealth is a crucial parameter in the determination of inequality and social mobility. The larger is this parameter the smaller will be the inequality in consumption associated with a given distribution of wealth and the greater (*ceteris paribus*) will be the correlation between the wealth of parents and children, assuming savings are transmitted to children as gifts or bequests. In addition Blinder (1975) has demonstrated that if the elasticity of bequests (lifetime-saving) with respect to wealth exceeds unity, a mean-preserving redistribution of income towards greater equality will increase aggregate consumption. The value of this parameter is therefore of importance to investigators of inequality and the intergenerational transmission of economic status.

Despite the relevance of the wealth elasticity of lifetime saving to inequality and intergenerational mobility, few reliable estimates of this parameter exist.¹ This paper presents estimates of this parameter based upon micro data relating to inheritance. In order to derive predictions concerning this and other parameters, I develop a model of lifetime consumption and intergenerational transfers. The model is more general than those presented previously in that several forms of intergenerational transfer are considered. Parent-child transfers may take the form of bequests--which constitute intergenerational savings--or investment in human capital which represents an item of consumer expenditure. Parental income and efficiency (education) are predicted to have independent and contrasting effects on parental consumption, investment and saving.

The next section presents the model and derives predictions concerning the effects of parental income and education on transfers of material wealth both across the generations and within a generation from the decedent to the surviving spouse. In section 3 these predictions are subjected to empirical test using a set of micro data which provides detailed information on the characteristics of the decedent, surviving spouse and heirs. Section 4 provides a summary and conclusions.

2. THEORETICAL MODEL

Assume, following Becker (1974) that the behavior of the "typical" family can be characterized in terms of the utility function of the family "head" who is altruistic towards the members of his immediate family, in that their lifetime consumption enters the preference function of the head. Abstracting from intra-lifecycle considerations, let this utility function be:

$$U = U(z_1, z_2, Z_c) = U(z_1, z_2, nz_c) \quad (1)$$

where z_1 is the head's own consumption and z_2 is the consumption of his spouse. Z_c is the aggregate consumption of the next generation heirs; the product of the exogenous number of heirs (n) and their per capita consumption (z_c). Neglecting the transmission of resources from children to the third, and subsequent generations, the intergenerational transmission of resources is determined by the income-generating function:

$$z_c = i_c = e + k + a = e + \beta h(x)x + a \quad h_x < 0 \quad (2)$$

The left-hand-side of (2) is the child's income-expenditure constraint. The right-hand-side expresses the per capita income of children (i_c) in terms of its proximate determinants. The "endowed" income (e) represents the income which would accrue to the child in the absence of parental transfers. For

simplicity I shall assume that this income endowment is zero; k is the child's income from human capital acquired during the parents' lifetime and a represents the income from material wealth inherited from parents. Following the extensive literature on human capital investment, parental inputs (x) in the production of children's human capital are assumed subject to diminishing returns (i.e., $h_x < 0$). The parameter β reflects differences in non-market efficiency across families in their ability to produce human capital for the next generation. Thus greater parental "efficiency" is associated with a larger per capita income of children for given parental inputs.² Human capital investment is assumed to be financed internally to the family and asset transfers must be non negative--that is parents cannot bequeath debts to their children.

The parental income-expenditure constraint is:

$$I_p = z_1 + p_2 z_2 + pX + p_a A = z_1 + p_2 z_2 + pnx + p_a na \quad (3)$$

where I_p is the lifetime income of parents, z_1 is the numeraire good, p_2 is the price of the spouse's consumption, p is the price of human capital inputs and p_a is the cost of generating \$1 of asset income for the heirs.³ The upper case letters represent aggregates-- pX represents parental expenditures on the human capital of all second-generation heirs and $p_a A$ represents the donor's bequest to children. If heirs are identical in all respects these aggregates are the product of the number of heirs and per capita expenditures by parents on human capital and asset transfers (i.e., $pX = pnx$ etc.).

Maximizing the objective function (1) subject to (2) and (3) given n , yields the first order conditions for an interior maximum:

$$\frac{U_1}{\phi} = 1 \equiv \pi_1 ; \frac{U_2}{\phi} = p_2 \equiv \pi_2 ; \frac{U_c}{\phi} = \frac{p}{\beta h(x)(1-\epsilon)} = p_a \equiv \pi_c \quad (4)$$

where U_j is the marginal utility with respect to the consumption of the j^{th}

individual, ϕ is the marginal utility of parental income and $\epsilon = -h_x x/h(x)$, $0 < \epsilon < 1$. The first order conditions define the marginal cost of consumption by the j^{th} individual (π_j). The marginal rate of substitution between the consumption of heirs and parental income is equated to the marginal cost of the heir's consumption π_c . Given an interior solution, this marginal cost is equal to both the marginal cost of asset transfers p_a and the marginal cost of human capital transfers. Since the marginal cost of human capital investment is increasing,⁵ while that of financial transfers is constant, the level of human capital investment is determined by the condition that the marginal costs of both types of transfer be equalized. Given perfect financial markets and positive bequests, the optimum level of human capital investment depends only on the relative prices of the two types of transfer, and parental efficiency and is independent of parental income. An increase in parental efficiency, since it lowers the marginal cost of human capital transfers, is predicted to raise the child's income from human capital.

The marginal costs defined by the first order conditions (4) can be used to define a resource constraint in terms of the arguments which enter the objective function (1). This constraint, which we shall call "household resources" is defined as the value of all commodities priced at marginal cost:

$$R = \sum_j \pi_j z_j = \pi_1 z_1 + \pi_2 z_2 + \pi_c z_c = I_p + \epsilon p^* n x \quad (5)$$

where: $p^* = p/(1-\epsilon)$

Household resources exceed parental income by the return (net of cost) on intramarginal units of human capital investment. This difference could be sizeable if the return on initial parental investment exceeds the marginal cost by a substantial margin. The level of household resources in real terms

depends on (real) parental income and parental efficiency. An increase in parental efficiency in non-market activities, increases the opportunity set (with income held constant), because the increased ability of parents to produce human capital for their children implies that a given level of the next generation's income can be achieved with reduced expenditures. An increase in (real) household resources, due to an increase in parental income or efficiency, with prices (p_i 's) held constant, will increase the consumption of parents and children by amounts which depend on their respective income elasticities. An increased demand for the consumption of children implies a change in transfers of financial wealth. In particular since $dA = dZ_c - dK$ (where $K = nk$) then:

$$d \ln A = \frac{1}{B} d \ln Z_c - \frac{C}{B} d \ln K \quad (6)$$

where $C = k/i_c$, $B = a/i_c = 1 - C$.

The demand for bequests therefore represents an excess demand for the next generation's consumption given the optimum level of human capital investment.

Given constant prices, it is shown in the appendix that the demand functions for bequests and the consumption of parents can be written in log derivative form as:

$$d \ln A = B^{-1} \{ b_p \eta_c d \ln I_p + C \epsilon' [b_c \eta_c - 1] d \ln \beta - C d \ln n \} \quad (7)$$

$$d \ln z_i = b_p \eta_i d \ln I_p + b_K \eta_i \epsilon' d \ln \beta \quad i = 1, 2 \quad (8)$$

where $b_K = \frac{\pi_K}{R}$, $b_p = I_p/R$, $b_c = \frac{\pi_c Z_c}{R}$, $\epsilon' = 1/\epsilon$, η_i is the income elasticity of consumption of the i^{th} parent and η_c is the income elasticity of children's consumption.

The income (wealth) elasticity of intergenerational saving is given by the first term in equation (7) and is proportional to the income elasticity of the next generation's consumption. Because the demand for bequests represents an excess demand for children's consumption, a 1% increase in the demand for children's consumption implies a greater than 1% increase in bequests; hence this factor of proportionality is expected to exceed unity. For plausible parameter values there is therefore a presumption that the income elasticity of intergenerational saving exceeds unity. For example, if $b_c = 0.1$ (children receive 10% of household resources) $\epsilon = 1/2$ (returns to scale in the production of human capital = $1/2$)⁶ and $B = 0.2$ (bequests are 20% of the next generation's income) the income elasticity of bequests will exceed unity if $\eta_c > 0.21$. If the income elasticity of the next generation's consumption equaled unity, the income elasticity of intergenerational saving would equal 4.8--so this income elasticity could be sizeable. In contrast, a 1% increase in parental income increases household resources by less than 1%, because the net return on human capital investment is unchanged. The income elasticity of parental lifetime consumption could therefore fall short of unity. However, for the above parameter values the difference between the elasticity of parental consumption with respect to parental income and the underlying elasticity with respect to household resources (η_i) is not great, since the factor of proportionality: $b_p = 0.96 \approx 1.0$.⁷ If the share of heirs' consumption in household resources is minor the income elasticity of intergenerational saving could be sizeable, while at the same time the income elasticity of parental consumption is only slightly below unity.

The elasticity of intergenerational saving with respect to parental efficiency (holding parental income constant) is given by the expression

$$\eta_{AB} = \frac{C}{B} \epsilon' [b_c \eta_c - 1] = - \frac{C}{B} \epsilon' [b_1 \eta_1 + b_2 \eta_2] < 0 \quad (9)$$

This expression is negative if the lifetime consumption of parents is not inferior (i.e., the marginal propensity to save of parents: $b_c \eta_c$ does not exceed unity). This inverse relationship exists because increased parental efficiency lowers the marginal cost of human capital investment and leads to the substitution of human capital investment for bequests of material wealth, thereby reducing life-saving. Since in the present model parents are assumed to determine optimally the cost minimizing mode of intergenerational transfers, human capital investment and bequests of material wealth are not independent--an increase in the non-market efficiency of parents is predicted to increase intergenerational transfers in the form of human capital and to reduce material wealth transfers. Since the productivity of parents in the market and in the home is expected to be positively correlated this further implies that estimates of the intergenerational savings function which omit measures of non-market efficiency are likely to result in downward-biased estimates of the income elasticity of intergenerational savings.

An increase in parental efficiency is predicted to raise the consumption of both parents as a result of the increase in household resources. Finally, an exogenous increase in the number of heirs is predicted to lower intergenerational saving. This occurs because an increase in the number of heirs reduces the level of per capita income required to obtain a given level of aggregate consumption for the next generation as a whole; hence bequests will decline.

It is worth pausing for a moment to place these predictions in the context of the typical family lifecycle in which both spouses do not die simultaneously. The intergenerational transmission of material wealth, via inheritance is then a two-stage process in which, when the first spouse dies wealth is bequeathed both to the surviving spouse and to the next generation. Subsequently, at the decease of the widow (widower) children receive an

additional inheritance. In the following section I attempt to distinguish between intergenerational savings; the total material wealth transfers from parents to children; and transfers to the surviving spouse. The latter represents in part the demand by the decedent for the consumption of the surviving spouse and in part a transmission of material wealth (via the spouse) to the next generation. If the component of interspouse transfers that represent a demand for the consumption of the surviving spouse are a fraction: δ of the spouse's lifetime consumption, and a constant proportion: ψ of material wealth transfers to children are made via the surviving spouse,⁸ then total transfers to the surviving spouse (denoted A_{12}) will be:

$$A_{12} = \delta p_2 z_2 + \psi p_a A \quad 0 \leq \delta, \psi \leq 1 \quad (10)$$

Substituting (7) and (8) into (10) gives the relationship of total interspouse transfers to the decedent's income and efficiency:

$$d \ln A_{12} = b_{A_{12}}^{-1} \{ (\delta b_2 \eta_2 + \psi b_c \eta_c) b_p d \ln I_p + [\delta b_2 \eta_2 + \psi (b_c \eta_c - 1)] b_K \epsilon' d \ln \beta - b_K \psi d \ln n \} \quad (11)$$

where $b_{A_{12}} = A_{12}/R$ and parent 1 is assumed to be the first decedent.

Since an increase in parental income raises the demand for the consumption of both the spouse and children (assuming both are superior) interspouse transfers will increase with parental income. The larger are the income elasticities of the consumption of spouse and children, the greater the fraction of the spouse's consumption occurs after the first parent's decease and the larger the proportion of intergenerational transfers made via the spouse, the greater will be the income elasticity of interspouse transfers. Since the consumption of the spouse is independent of the number of heirs, while the bequest to the next generation is negatively related to

the number of heirs, interspouse transfers are predicted to be inversely related to the number of heirs (if $\psi > 0$).

The elasticity of interspouse transfers with respect to parental efficiency is given by the expression:

$$\eta_{A_{12}\beta} = b_{A_{12}}^{-1} [\delta b_2 \eta_2 + \psi (b_c \eta_c - 1)] b_K \epsilon' = b_{A_{12}}^{-1} [(\delta - \psi) b_2 \eta_2 - \psi b_1 \eta_1] b_K \epsilon' > 0$$

$$\text{if } \delta > \psi \text{ and } \frac{p_2^{\text{mpc}}}{\text{mpc}_1} = \frac{b_2 \eta_2}{b_1 \eta_1} > \frac{\psi}{(\delta - \psi)} ; < 0 \text{ otherwise.} \quad (12)$$

Since the consumption of the spouse is positively related to parental efficiency, while bequests of material wealth to children are inversely related to parental efficiency, the relationship of interspouse transfers to parental efficiency is ambiguous a priori. If all interspouse transfers constitute a demand for the surviving spouse's consumption (i.e., $\psi=0$) this relationship is unambiguously positive. Further, if the share of transfers to the next generation made via the surviving spouse exceeds the fraction of the spouse's lifetime consumption that takes place after the first spouse's decease (i.e., $\psi > \delta$), this expression is unambiguously negative. For plausible parameter values this case seems empirically relevant. If the parental "lifetime" represents the period from marriage to the decease of the second spouse this may represent a 45 year period. If the surviving spouse outlives the decedent spouse by 10 years and chose a flat age consumption profile this would imply $\delta < .25$. Therefore, if $\geq 25\%$ of intergenerational transfers were made via the surviving spouse, the expression (12) would be negative. However, even this condition is too strong; equation (12) indicates that if the donor is sufficiently altruistic at the margin to equate the marginal propensities to consume of the spouse to that of the donor (i.e., $p_2^{\text{mpc}} = \text{mpc}_1$) the expression (12) will be negative if $\psi > \frac{1}{2} \delta$. For the above parameter values

this would require that the share of material wealth transfers made via the spouse exceed 12%--clearly well within the bounds of possibility. I conclude that there is a presumption that interspouse transfers will be negatively related to the level of parental efficiency.

In the next section I present estimates of the intergenerational savings function and the bequest to the surviving spouse.

3. EMPIRICAL SPECIFICATION AND RESULTS

The data used in this study derive from a 5% random sample of 659 estates probated in the Cleveland, Ohio area in 1964-5 [Sussman et al (1970)]. Surviving kin and other heirs to these estates provided additional information, so that data are available not only on the gross estate and other characteristics of the decedent, but also on the bequest to, and characteristics of the surviving spouse, in the event that the decedent left a widow (or widower). No direct measure of the annual or lifetime income of the decedent is available. However, information on the family income and "permanent" characteristics of the recipients is available. For the sample of sons and daughters of the decedents these variables were used to estimate an equation predicting the annual family income of recipients (see Table 1). The estimated coefficients and the corresponding permanent characteristics of the decedent were then used to predict the decedent's family income at age 55--this constructed variable is taken as a measure of the decedent's lifetime income. If there was a surviving spouse her (his) reported family income is also available. The education of the decedent and the education of the surviving spouse (if one exists) were used as proxy variables to measure parental efficiency. When measures of parental income (and hence "market efficiency") are held constant a higher level of parental education is interpreted as implying a greater level of non-market efficiency. The

total number of kin was separated into the number of children and the number of other kin to allow these components of the total number of kin to have separate effects. Table 1 describes these measures and other control variables.

The measure of intergenerational saving was constructed from the total gross estate of the decedent in the following way: The sample of decedents was divided into two subsamples according to the presence or absence of a surviving spouse, and for each of these subsamples a regression was run of the decedent's gross estate against his (her) characteristics. For the first decedent we know the total estate and the inheritance received by the surviving spouse; however we do not know the gross estate that will be left by the surviving spouse at decease. The regression for gross estate of widows and widowers was used, together with the surviving spouse's characteristics, to predict the gross estate that would be ultimately left by the spouse. In generating this prediction it was assumed that the surviving spouse would outlive the decedent by nine years--the difference between the mean ages of the two subsamples of decedents. The measure of the intergenerational saving (IGS) of both parents was then constructed, for the decedents who were survived by their spouse as:

$$\text{IGS} = (\text{Gross Estate of Decedent}) + (\text{Predicted Gross Estate of decedent's spouse}) - (\text{Inheritance received by Surviving Spouse}) \quad (13)$$

Table 2 reports regressions where the dependent variable is the (log of the) decedent's gross estate.⁹ Two results are of interest. First, the income elasticity of the decedent's gross estate is less unity for both groups of decedents--a result that may stem from the fact that a constructed income variable is used, rather than the true variable. In addition, since the incomes of spouses are positively correlated, a 1% increase in the income of

TABLE 1: DEFINITION OF VARIABLES

GREST [†]	Gross Estate of Decedent from probate records (\$000's)
IST	: Interspouse transfers--Inheritance received by the surviving spouse (\$000's)
IGS2	: Predicted Gross Estate of surviving spouse (see text for explanation) (\$000's)
IGS1	= GREST - IST Gross Estate of Decedent less transfers to surviving spouse (\$000's)
IGS	= GREST + IGS2 - IST The intergenerational savings of both parents (\$000's)
INCOME [†]	{ For Decedent--constructed measure of lifetime Income (\$00's) { For Surviving spouse--reported family Income. ² (\$00's)
ED	Years of Schooling
ED·SEX	Interaction term between years of schooling and Sex (Female = 1, Male = 0)
NKIDS	Number of children of decedent
OTHERKIN	Number of other kin (excluding decedents' children)
SEX	Sex (Female = 2, Male = 1)
RACE	Race (white = 2, Nonwhite = 1)
AGE	Age in years
AGESQ	Age squared
AGE·ED	Interaction term between Age and years of schooling
ORIGINUS	Born in US = 1, born outside US = 0
RELIGION DUMMIES	{ CATH: Catholic = 1, PROT: Protestant = 1, JEW: Jewish = 1 { excluded category: No religion or Eastern Orthodox
NUEMPL	Number of employed individuals in family. ³

Notes To Table 1 :

1. [†] denotes variable entered in natural log.
2. The INCOME variables were constructed as follows: first the reported monthly family income of recipients, which is coded in intervals, was transformed into annual family income, using interval midpoints and estimating the mean of the open-ended interval by fitting a Pareto distribution. This variable--reported by the surviving spouse--was his(or her) income.⁴

To obtain a measure for decedents the sample of sons or daughters of the decedent, reporting positive family income was used. The sons' (daughters)

family income was regressed on their permanent characteristics. The estimated regression coefficients were:

$$\begin{aligned} \text{INCOME}^{\dagger} = & 3.915 - 0.325 \text{ED} + 0.494 \text{ORIGINWE} + 0.627 \text{RACE} + 0.320 \text{ORIGINEE} \\ & + 1.278 \text{JEW} + 0.302 \text{NUEMPL} + 0.0002 \text{AGESQ} + 0.668 \text{PROT} - 0.093 \text{SEX} \\ & + 0.266 \text{OCC} + 0.539 \text{CATH} + 0.658 \text{ORIGINUS} + 0.01 \text{AGE} \cdot \text{ED} - 0.104 \text{AGE} \\ R^2 = & 0.216 \quad n = 618 \end{aligned}$$

where the additional variables, not previously defined are ORIGINWE origin (birthplace) Western Europe, ORIGINEE origin Eastern Europe (excluded category other areas Asia, Africa etc.)

OCC: seven category occupation variable (1: unskilled, 7: executive)

These coefficients were used together with the corresponding characteristics of the decedent to construct the measure of the decedent's income. In each case the number of family members employed was set equal to one and age was set equal to 55.

3. This information is only available for the surviving spouse and other recipients.
4. Since in the regressions including the INCOME of the surviving spouse the AGE AND NUEMPLS reported by the surviving were also included (when significant) this variable may also be interpreted as a permanent measure.

TABLE 1A: MEANS OF VARIABLES

Variable	A. Decedent (survived by spouse) (n = 343)	B. Decedent (widowed) (n = 164)	C. Surviving Spouse (n = 189)
GREST (\$000's)	11.65	12.77	-
IST (\$000's)	-	-	18.17
IGS1 (\$000's)	3.97	-	-
IGS2 (\$000's)	-	-	16.87
IGS (\$000's)	-	-	20.84
INCOME (\$00's)	81.53	42.10	52.72
ED	10.16	8.86	10.83
NKIDS	1.50	2.18	1.12
OTHERKIN	2.07	1.34	2.01
SEX (% male)	72	37	30
RACE (% white)	93	95	93
AGE	64.57	74.57	59.08
ORIGINUS (%)	69	55	76
CATH (%)	38	37	37
PROT (%)	48	49	51
JEW (%)	5	6	5
NUEMPL			1.25

one parent would be associated with a larger total estate of both parents at decease. For example, if the incomes of parents were perfectly correlated and proportion of the first decedent's estate bequeathed to surviving spouse is constant, these results imply that a 1% increase in parental income would produce a 1% increase in intergenerational savings.¹⁰ Second, at the sample mean, the gross estate left by the deceased is inversely related to parental education.¹¹

While the results reported in Table 2 are of interest, they are biased estimates of the intergenerational savings function since they omit the characteristics of the other spouse. In order to estimate the structural equations of the model it is necessary to analyze the transfers of both parents, which in the present context requires us to restrict our attention to the decedents who were survived by a spouse. For this sample estimates of the intergenerational savings function are presented in Table 3. In lines 1-3 the independent variables are separated into the characteristics of the decedent and those of the surviving spouse.¹² In line 1 both income variables enter significantly. The implied income elasticities (at the sample mean) are 1.3 with respect to the income of the surviving spouse--an estimate that is significantly above unity and 0.58 with respect to the decedent's income. This difference may occur because the use of a constructed measure of the decedent's income results in a downward biased estimate of the true income elasticity of intergenerational saving. Lines 2 and 3 show that the constructed income variable is sensitive to the inclusion of other variables. When either the sex of the decedent or a dummy variable for Jewish religious affiliation is introduced, the coefficient on the decedent's income becomes significant at conventional levels.

TABLE 2: INHERITANCE REGRESSIONS

Dependent Variable: log of Decedents' Gross Estate (\$000's)

A. Surviving Spouse (i.e., decedent married or divorced at time of decease) n = 680

Reg. No.	INCOME†	ED	ED·SEX	NKIDS	OTHER KIN	SEX	RACE	AGE	AGESQ	AGE·ED	ORIGIN US	CATH	PROT	JEW	R ²
1.	0.440* [5.641]	-0.032 [1.143]	0.022* [2.444]	. .	0.027* [6.750]	. .	0.788* [4.834]	. .	0.0001* [2.046]	. .	-0.343* [4.035]	-0.401* [3.713]	-0.449* [4.119]		.288
2.	0.462* [5.848]	-0.161* [2.147]	-0.025 [0.921]	-0.013 [0.591]	0.025* [6.250]	0.512** [1.869]	0.785* [4.816]	-0.060** [1.935]	0.0004** [1.715]	0.002** [1.854]	-0.356* [4.140]	-0.384* [3.459]	-0.445 [4.083]		.298
B. No Surviving Spouse (i.e., decedent widowed) n= 437															
3.	0.528* [3.568]	-0.199* [3.159]	0.138* [2.816]	-0.047 [1.306]	0.090* [8.182]	-0.608 [1.391]	-0.123 [0.411]	0.030* [4.688]	. .	. .	-0.285** [1.863]	. .	-0.431* [3.241]	-1.334* [4.553]	.292
4.	0.503* [3.376]	0.204 [0.927]	0.120* [2.400]	-0.056 [1.556]	0.087* [7.909]	-0.478 [1.086]	-0.147 [0.493]	0.192* [2.430]	-0.0008 [1.600]	-0.005** [1.955]	-0.282** [1.855]	. .	-0.413* [3.105]	-1.339* [4.554]	.302

Notes: 1. All variables are characteristics of the decedent

2. The absolute value of the t-statistic is reported in parentheses beneath each coefficient (see also footnote 9.)

3. * indicates significant at the 5% confidence level

** significant at the 10% level

4. All equations included a constant term (not reported)

5. † indicates variable entered in natural log form

TABLE 3: ESTIMATES OF THE INTERGENERATIONAL SAVINGS FUNCTION

Dependent Variable: Intergenerational Savings: IGS defined in equation (13) (\$000's). n = 189																
Reg. No.	Surviving Spouse's Characteristics						Decedents' Characteristics									
	INCOME†	ED	AGE	AGESQ	NUEMPL	SEX	INCOME†	ED	AGE	AGESQ	ORIGIN US	RACE	NKIDS	OTHER KIN	JEW	R ²
1.	27.100* [12.301]	-3.358* [2.334]	3.648 [1.607]	-0.031 [1.632]	-6.527 [1.126]	..	12.086* [2.071]	-2.482 [1.092]	-4.046 [1.601]	-0.041* [2.010]	-21.227* [2.602]	-34.149* [2.677]	-2.258 [0.919]	-2.700 [0.990]	..	.515
2.	27.586* [12.250]	-3.266* [2.265]	3.596 [1.584]	-0.029 [1.526]	-6.409 [1.105]	-9.237 [1.034]	8.325 [1.211]	-1.337 [0.529]	-4.187** [1.655]	-0.041* [2.000]	-20.844* [2.553]	-31.307* [2.399]	-2.213 [0.901]	-2.666 [0.978]	..	.518
3.	25.762* [12.118]	-3.401* [2.134]	0.123 [0.262]	..	..	..	7.287 [1.218]	-0.830 [0.364]	0.938** [1.930]	..	-16.862* [2.013]	-30.862* [2.425]	-2.113 [0.869]	-2.130 [0.800]	36.261* [2.423]	.514
Mother's Characteristics Father's Characteristics Other Characteristics																
ORIGIN US NKIDS RACE CATH PROT JEW R ²																
4.	32.122* [8.810]	-2.371 [1.471]	0.882** [1.768]	22.497* [8.889]	-7.084* [4.989]	0.247 [0.489]	-41.316* [3.363]	..	-21.178* [2.595]	-10.892** [1.806]	-2.324 [0.955]	-0.303 [0.113]	..	..	28.437** [1.940]	.519
5.	32.511* [8.718]	-2.616 [1.599]	0.996* [1.976]	23.105* [8.983]	-7.094* [4.968]	0.121 [0.234]	-43.377* [3.399]	2.910 [0.435]	-19.800 [2.390]	-11.481** [1.899]	-1.721 [0.679]	-0.376 [0.140]	-19.110 [1.447]	-20.481 [1.616]	10.312 [0.558]	.526

Notes: 1. The absolute value of the t-static is reported in parentheses beneath each coefficient.

2. * indicates coefficient significant at the 5% confidence level.
 ** indicates significant at 10% level.

3. All equations included a constant term (not reported)

4. Sample restricted to decedents who were survived by a spouse, with information on spouse's characteristics. (n = 189)

5. † indicates variable entered in natural log form.

Of the parental education variables only the education of the surviving spouse is significant. This variable enters with a negative coefficient--a result consistent with the prediction that greater parental efficiency results in the substitution of human capital investment for transfers of material wealth. Neither of the two variables measuring the number of heirs--the number of children (NKIDS) and the number of other kin (OTHERKIN)--enter significantly as determinants of intergenerational savings, although both enter with the predicted negative sign.

In lines 4 and 5 the independent variables are distinguished according to characteristics of father and mother instead of the decedent/survivor status.¹² In these regressions the point estimates of the income elasticity of savings exceed unity, being 1.08 for father's income and 1.54 for mother's income. The latter of these estimates differs significantly from unity at the 5% level. Since both these estimates are expected to be biased downwards because of the use of the constructed measure of decedent's income, this is impressive evidence that the income elasticity of intergenerational savings exceeds unity.

Both the parental education variables enter with a negative coefficient--as predicted, however only the education of the father is significant. Taken together these coefficients imply that an additional year of schooling by both parents reduces intergenerational transfers of material wealth by approximately \$10,000.¹⁴ Finally, being white, being born in the US and being non-Jewish are all associated with reduced intergenerational savings and the magnitude of these differences is quite large.^{14b}

Table 4 presents the results of an analysis of the determinants of interspouse transfers from the decedent to the surviving spouse. Interspouse

transfers are independent of the characteristics of the surviving spouse. However, the magnitude of such transfers is positively related to the decedent's income and inversely related to the decedent's education. The estimated income elasticity of interspouse transfers is 0.85-0.93, at the sample mean values not significantly different from unity.

The finding that the inheritance received by the surviving spouse is inversely related to the decedent's education is consistent with the theoretical model provided that interspouse transfers do not represent for the most part a demand for the consumption of the surviving spouse. Since in this sample, transfers to the surviving spouse are 93% of the size of her (his) predicted intergenerational transfers (at the sample means) this finding appears consistent with the data.¹⁵

Table 5 reports the results of some further tests of the empirical model. The dependent variable in the earlier regressions was the measure of intergenerational savings given in equation (13). If this specification is correct it implies that in a regression in which the decedent's gross estate is the dependent variable, interspouse transfers and the predicted estate of the surviving spouse should enter with coefficients of 1 and -1 respectively. When this test of model specification was performed, the coefficient on interspouse transfers was not significantly different from unity. However the coefficient on the predicted estate of the surviving spouse differed from -1. In the light of this result Table 5 reports regressions in which the dependent variable (IGS1) is the gross estate of the decedent minus interspouse transfers--that is the intergenerational saving of the first decedent parent. The predicted intergenerational saving of the surviving spouse (IGS2) was entered, as an additional regressor.

TABLE 4: INTERSPOUSE TRANSFERS

Dependent Variable: Inheritance received by surviving spouse (\$000's) N=189

Reg. No.	Surviving Spouse's Characteristics			Decedents' Characteristics							JEW	PROT	CATH	OTHER KIN	R ²
	INCOME [†]	ED	AGE	INCOME [†]	ED	AGE	RACE	US ORIGIN	NKIDS	OTHER KIN					
1	..	0.467 [0.463]	0.344 [0.977]	15.453* [3.416]	-3.024** [1.801]	-0.347 [0.928]	3.935 [0.425]	2.499 [0.411]	0.575 [0.314]	1.100 [0.578]	-22.531 [1.615]	-9.041 [0.933]	-0.566 [0.057]	1.100 [0.578]	.139
2	1.930 [1.244]	0.195 [0.189]	0.333 [0.946]	16.882* [3.622]	-3.427* [2.008]	-0.344 [0.922]	0.420 [0.043]	1.588 [0.260]	0.589 [0.322]	0.755 [0.389]	-25.764** [1.818]	-10.404 [1.068]	-1.439 [0.145]	0.755 [0.389]	.147

Notes: See Table 3.

TABLE 5: ADDITIONAL RESULTS

Dependent Variables: IGS1 = (Gross Estate of Decedent)-(Interspouse Transfers) (\$000's)
 IST = Interspouse Transfers - inheritance received by the Surviving Spouse (\$000's)

Reg.No. Dependent Variable	Mother's Characteristics										Father's Characteristics										OTHER		OLS/ SUR R ²
	IGS2	INCOME†	ED	AGE	INCOME†	ED	AGE	RACE	SEX	ORIGIN US	NUEMPL	NKIDS	KIN	CATH	PROT	JEW							
1.	-0.176**	10.305*	0.198	0.078	9.430*	-2.619**	0.452	-19.386**	5.108	-14.089**	-9.344**	.	-1.824	.	.	41.977*	.226						
IGS1	[1.676]	[2.431]	[1.388]	[0.178]	[3.433]	[1.939]	[1.032]	[1.773]	[0.890]	[1.983]	[1.791]	.	[0.785]	.	.	[3.303]							
2.	-0.185**	10.637*	-0.036	0.134	9.681*	-2.691*	0.367	-18.505	5.738	-14.291*	-9.540**	.	-1.713	-9.348	-6.329	34.626*	.229						
IGS1	[1.729]	[2.454]	[0.025]	[0.298]	[3.415]	[1.979]	[0.816]	[1.626]	[0.988]	[1.981]	[1.819]	.	[0.732]	[0.833]	[0.571]	[2.120]							
3.	-0.188**	10.177*	0.263	0.067	10.102*	-2.919*	0.484	-19.667**	5.122	-13.934*	-10.108*	-0.410	-1.794	.	.	41.084*							
IGS1	[1.883]	[2.520]	[0.197]	[0.156]	[3.799]	[2.227]	[1.149]	[1.793]	[0.919]	[1.958]	[2.071]	[0.193]	[0.772]	.	.	[3.209]							
Surviving Spouse's Characteristics																							
4.	Dependent's Characteristics										Decedent's Characteristics										OTHER		OLS/ SUR R ²
	IGS2	INCOME†	ED	AGE	INCOME†	ED	AGE	RACE	SEX	ORIGIN US	NUEMPL	NKIDS	KIN	CATH	PROT	JEW							
IST	1.805	0.210	14.377*	-2.388	-0.209	2.475	2.156	0.718	0.673	-2.075	-10.167	-24.733**											
	[1.200]	[0.626]	[3.208]	[1.505]	[0.588]	[0.259]	[0.355]	[0.395]	[0.352]	[0.225]	[1.120]	[1.799]											

Notes: 1. IGS2: the predicted Gross Estate of the Surviving Spouse.

2. OLS: Ordinary Least Squares; SUR: Seemingly Unrelated Regression.

3. The absolute value of the t-statistic is reported in parentheses beneath each coefficient.

4. * indicates coefficient significant at the 5% confidence level.

** indicates significant at 10% level.

5. All equations included a constant term (not reported).

6. Sample: decedents survived by a spouse n = 189

7. † indicates variable entered in natural log form.

These results reported in Table 5 imply that, holding constant the material wealth transfer of the surviving spouse, a 1% increase in the income of either parent will result in a 2.5% increase in the intergenerational savings. In the case of father's income the estimated income elasticity is significantly different from unity at the 5% level. Although this estimate of the income elasticity of intergenerational saving is larger than those reported in Table 3, it is in close agreement with the corrected estimates reported by Menchik (1978).¹⁶ As in the previous regressions an increase in father's education is found to decrease parent-child transfers of material wealth.

Since the dependent variable (IGS1) depends on interspouse transfers (IST) this suggests that if there are omitted variables, efficiency can be gained by estimating the intergenerational savings function and the equation for interspouse transfers simultaneously by Seemingly Unrelated Regression (SUR) techniques. The results of this procedure are reported in lines 3 and 4 of Table 5. As expected the coefficients are largely unaffected, while the t-statistics are increased for the most part, as compared to the OLS results. The estimated income elasticity of intergenerational saving is 2.55 at the sample mean, while the 95% confidence interval on the elasticity with respect to father's income is 1.23-3.86,¹⁷ a result that is consistent with the predictions of the theoretical model.

In the IST regression only the decedent's income is significant at the 5% level. The estimated coefficient implies an income elasticity of interspouse transfers of 0.79 at the sample mean, slightly below the values reported in Table 4. In addition, the decedent's education which entered significantly in the OLS results, is no longer significant in the SUR equation,

so the finding of an inverse relationship between decedent's education and interspouse transfers must be viewed as tentative.

4. CONCLUSIONS

In this paper I have presented a model of intergenerational saving and lifetime consumption, which emphasizes both parental income and education as causal factors in the intergenerational transmission of inequality. Empirical tests of the model confirmed the principal predictions-- that the income elasticity of intergenerational savings exceeds unity, and that (*ceteris paribus*) greater parental education will be associated with lower bequests of material wealth. Predictions concerning the effect of the number of heirs on intergenerational saving, received little support.

These findings have a number of implications for income inequality and social mobility. First, since savings are found to be income elastic, this implies that within a generation inequality in consumption is less than the inequality of lifetime income, and that an equalizing redistribution of income (which leaves mean income unchanged) will increase aggregate consumption.^{17b}

The result that intergenerational saving is negatively related to parental education (holding income constant) implies that income inequality due to differences across individuals in human capital stocks will be associated with a more equal distribution of material wealth, than an equal amount of income inequality that results from differences in non-human capital. Inequality in inherited material wealth is therefore a more important determinant of inequality in the amounts of material wealth bequeathed to future generations, than inequality in human capital. Since parental education affects both market efficiency (and therefore parental income) and non-market efficiency, the total effect of parental education on intergenerational savings is ambiguous a priori.¹⁸ If the substitution effect

of increased non-market efficiency exceeds the income effect of increased market efficiency, material wealth transfers would be negatively correlated with parental education. Given a positive relationship between the education of parents and children this would imply that the inheritance received by children is negatively related to their education and consequently their human wealth. In this situation inequality in either material wealth or human wealth may exceed the inequality in total wealth, which includes both components. However, in the present data for father's education the income and substitution effects are approximately equal so that the total effect of father's schooling on intergenerational saving is zero. In contrast the income effect of mother's schooling is found to exceed the substitution effect resulting in a positive total effect on intergenerational saving.¹⁹ Since in these data the income of children is positively related to mother's schooling, material wealth and human wealth appear to be positively correlated.

FOOTNOTES

¹See Blinder (1976) for a survey and critique of previous studies, and also Menchik (1978) and Adams (1978). Blinder (1975) sought to investigate the relationship between consumption and income inequality using U.S. time series aggregate consumption data (1947-72) and found--contrary to expectations--that "a rise in income inequality, disposable income held constant, would either have no effect on consumption or actually increase it" (p. 449), suggesting an income elasticity of saving below unity. One explanation suggested for this result is that observed changes in measured income inequality reflect the changing age/sex composition of the labour force rather than "true" changes in inequality. Second, if the Lorenz curves for income inequality in different time periods cross, the direction of movement in income inequality is dependent on the particular measure of inequality chosen (I am grateful to Jim Davies for this point). Third, Blinder's other results also suggest that "the long-run MPC (which...is smaller than the APC) is 0.81, evaluated at the mean value of r [rate of interest]" (1976 p. 459).

²This formulation is consistent with the empirical finding that the education of parents, and of the mother in particular, is an important determinant of the ability and completed schooling of children and consequently of their earnings. See for example Leibowitz (1974).

³In the absence of taxation $P_a = (1+r)^{-1}$ where, in the presence of overlapping generations, r is the half-generation rate of return on assets.

⁴Given perfect financial markets material wealth transfers during the donor's lifetime are equivalent to an appropriately appreciated bequest at the donor's death. Hence in the theoretical model all wealth transfers are treated as bequests.

⁵The marginal cost of human capital investment is the ratio of the price of parental inputs to the marginal product of parental inputs. Diminishing marginal productivity ($h_x < 0$) implies an increasing marginal cost of such investment. A necessary condition for non-zero human capital investment is that $P_a > p/\beta h(0)(1-\epsilon)$.

$$\text{Since } b_c = \frac{\pi \frac{Z_c}{c}}{R} = \frac{nZ_c}{(1+r)R} \quad (\text{see footnote 3})$$

If parents chose to equalize parental and children's consumption (i.e., $nZ_c = \frac{1}{2}R$) an annual rate of interest of 8% would imply a half generation interest rate of 400% if generations were separated by 20 years, implying $b_c \approx 0.1$. Catsiapis and Robinson (1978) provide some empirical support for this parameter value. Heckman (1976) reports estimates of returns to scale in the production of human capital in the region of 1/2 (Table 3A p. S36).

⁷In contrast, if $b_c = 1/2$ with the other assumed parameter values $b_p = 0.8$ and the income elasticity of parental consumption would fall short of unity if $\eta_1 < 1.25$.

⁸In the present context the parameters δ and ψ are taken as exogenously given, although in a more general context these parameters would be choice variables depending on such factors as the age of the spouse, rates of return, etc.

⁹In the regressions reported in Table 2 the number of observations corresponds to the number of recipients, hence estates with multiple recipients enter more than once. In the absence of measurement error this results in upward biased estimates of the t-ratios. Since each decedent's estate appears approximately twice, this suggests that a t-ratio of about 3.00 approximates the 5% confidence interval. In the remaining tables the number of observations corresponds to the actual number of cases. [Since this draft was

written I have re-estimated the equations and the predicted gross estate of the surviving spouse using the appropriate number of observations. None of the substantive results of Tables 2-5 are affected, as the above discussion suggests.]

¹⁰In these data the correlation between the (constructed) log family income of the decedent and the reported log family income of the surviving spouse is 0.21, lower than that between their education levels (0.65) and ages (0.87).

¹¹In addition to the variables entered in line 4 of Table 2 in predicting the gross estate of the surviving spouse the CATH variable and a dummy variable denoting western European origin were also introduced.

¹²Since the race, origin and religion of the decedent and surviving spouse were highly correlated only the characteristics of the decedent were introduced.

¹³Further, this bias is expected to be greater in the coefficient on father's income since 70% of decedents in this subsample are male.

¹⁴Consistent with the interpretation of this coefficient as reflecting the substitution of human capital investment for material wealth transfers, I have found in other work that each additional year of father's schooling is associated with an additional 2.6 months of completed schooling by the children of decedents (t-statistic = 2.08).

^{14b}Both the white/non-white and US-born differences may seem counter-intuitive. It should be noted first that the racial difference is based on a small number of non-white decedents and may not be representative of the non-white population as a whole. Second, discrimination in the labour market may cause non-whites to substitute non-human (financial) wealth for

human wealth. Similarly the US-born decedents may be more efficient in the production of income-earning skills.

¹⁵ Since inter spouse transfers are lower for Jewish decedents, this implies that some portion of the positive impact of the Jewish dummy variable on intergenerational saving reported in Table 3 represents a substitution of intergenerational transfers for intragenerational transfers to the surviving spouse. However, this substitution is unexplained in the context of the model.

¹⁶ Menchik (1978) reports an elasticity of intergenerational saving (defined equivalently to equation (13)) with respect to the inheritance received by parents of 0.33-0.38 which, after correction for omitted variable bias, imply wealth elasticities of 2.36-2.75. In view of the substantial impact of the correction procedure these estimates should be viewed as tentative. The close agreement between the estimates presented in Table 5 and Menchik's conclusions, is therefore reassuring.

¹⁷ The corresponding 95% confidence interval for the elasticity with respect to mother's income is: 0.57-4.56.

^{17b} From a policy viewpoint this would seem to be of relevance only if the number of instruments for policy is less than the number of targets and both increased aggregate consumption and reduced inequality are desirable.

¹⁸ The regressions I have estimated are of the form:

$$(i) \quad IGS = \alpha_0 + \alpha_1 \ln I_p + \alpha_2 S_p + u$$

where I_p and S_p are parental income and schooling, respectively. If

parental income depends on parental schooling and other factors (ϵ):

$$(ii) \ln I_p = \beta_0 + r S_p + \epsilon$$

where r is the "rate of return" on parental schooling. The total effect of parental schooling on intergenerational saving is given by:

$$(iii) IGS = (\alpha_0 + \alpha_1 \beta_0) + (\alpha_1 r + \alpha_2) S_p + (u + \alpha_1 \epsilon)$$

Since $\hat{\alpha}_1 > 0$ $\hat{\alpha}_2 < 0$ the total effect of parental schooling on intergenerational saving is positive or negative as $\alpha_1 r \gtrless |\alpha_2|$

¹⁹In a regression of IGS on the education levels of parents and other variables, excluding the parental income variables the education coefficients were -1.186 ($t = 0.701$) for father's schooling and 3.650 ($t = 1.846$) for mother's schooling. When father's schooling was also excluded the coefficient on mother's schooling was 2.953 ($t = 1.868$).

APPENDIX

In this appendix I derive the demand functions for intergenerational savings and lifetime consumption. The donor's allocation problem is to maximize (A1)

$$U = U(z_1, z_2, z_c) = U(z_1, z_2, n z_c) \quad (A1)$$

subject to the constraints:

$$I_1 = z_1 + p_2 z_2 + p_n x + p_a n a \quad (A2)$$

$$n = \bar{n} \quad (A3)$$

$$z_c = i_c = k + a = \beta h(x) + a \quad h_x < 0 \quad (A4)$$

The first order conditions for an interior maximum are:

$$\frac{U_{z_1}}{\phi} = 1 \equiv \pi_1 ; \frac{U_{z_2}}{\phi} = p_2 \equiv \pi_2 ; \frac{U_{z_c}}{\phi} = \frac{p}{\beta h(x)(1-\epsilon)} = p_a \equiv \pi_c \quad (A5)$$

where ϕ is the marginal utility of parental income and

$$\epsilon = \frac{-h_x x}{h(x)}, \quad 0 < \epsilon < 1$$

We define household resources (R) as

$$R = \sum_j \pi_j j = z_1 + p_2 z_2 + p_a n a + \frac{p n k}{\beta h(x)(1-\epsilon)} = I_1 + \epsilon p^* n x \quad (A6)$$

where $p^* = p/(1-\epsilon)$.

Household resources exceed parental income by the return (net of cost) on intramarginal units of human capital investment.

Given the optimum level of human capital investment determined by (A5) the level of real resources (R_r); defined as nominal resources (A6) deflated by an expenditure-weighted index of prices (π'_i s); is related to parental income (I_1) and efficiency (β), by the following relation (assuming market prices (p'_i s) are constant) :

$$d \ln R_r = b_p \quad d \ln I_1 + \epsilon' b_k \quad d \ln \beta \quad (A7)$$

where $b_p = I_1/R = 1 - \epsilon b_k$, $b_k = \frac{\pi_{nk}}{R}$, and $\epsilon' = 1/\epsilon$.

The demand functions for the lifetime consumption of parents (z_1, z_2) and the aggregate consumption of children (z_c) can be written in log derivative form as:

$$\left. \begin{aligned} d \ln z_1 &= \eta_1 d \ln R_r - (1-b_1)\bar{\sigma}_1 d \ln \pi_1 + b_2 \sigma_{12} d \ln \pi_2 + b_c \sigma_{1c} d \ln \pi_c \\ d \ln z_2 &= \eta_2 d \ln R_r + b_1 \sigma_{12} d \ln \pi_1 - (1-b_2)\bar{\sigma}_2 d \ln \pi_2 + b_c \sigma_{2c} d \ln \pi_c \\ d \ln z_c &= \eta_c d \ln R_r + b_1 \sigma_{1c} d \ln \pi_1 + b_2 \sigma_{2c} d \ln \pi_2 - (1-b_c)\bar{\sigma}_c d \ln \pi_c \end{aligned} \right\} \quad (A8)$$

where $b_j = \pi_{jj}/R$, η_j is the income elasticity of demand for j with respect to household resources, σ_{ij} is the Hicks-Allen elasticity of substitution between z_i and z_j and the compensated own-price elasticities are defined as:

$$(1-b_1)\bar{\sigma}_1 \equiv b_2 \sigma_{12} + b_c \sigma_{1c} ; (1-b_2)\bar{\sigma}_2 \equiv b_1 \sigma_{12} + b_c \sigma_{2c} ; (1-b_c)\bar{\sigma}_c \equiv b_1 \sigma_{1c} + b_2 \sigma_{2c} .$$

Substituting (A7) into (A8) and assuming market prices (p_1^s) are constant, we obtain:

$$\left. \begin{aligned} d \ln z_1 &= b_p \eta_1 d \ln I_1 + \epsilon' b_k \eta_1 d \ln \beta \\ d \ln z_2 &= b_p \eta_2 d \ln I_1 + \epsilon' b_k \eta_2 d \ln \beta \\ d \ln z_c &= b_p \eta_c d \ln I_1 + \epsilon' b_k \eta_c d \ln \beta \end{aligned} \right\} \quad (A9)$$

The demand for transfer of material wealth can be derived from (A9) by recognizing that $a = i_c - k = z_c - k$ and therefore:

$$d \ln a = \frac{1}{B} d \ln z_c - \frac{C}{B} d \ln k \quad (A10)$$

where $C = k/i_c$ and $B = a/i_c = (1-C)$.

Further, the first order condition (A5) implies that $p = p_a \beta h(x)(1-\epsilon)$ and therefore:

$$d \ln k = \epsilon' d \ln \beta - (\epsilon' - 1) [d \ln p - d \ln P_a] \quad (A11)$$

where $\epsilon' > 1$.

Assuming prices (p_i 's) are constant and substituting (A11) into (A10) and recognizing that $Z_c = n z_c$ and $A = n a$, gives:

$$d \ln A = B^{-1} \{ b_p \eta_c d \ln I_1 + C \epsilon' [b_c \eta_c - 1] d \ln \beta - C d \ln n \} \quad (A12)$$

This is equation (7) in the text.

Finally, the equations relating to interspouse transfers (10)-(11) can be derived from the definition: $A_{12} = \delta p_2 z_2 + \psi p_a A$ and therefore

$$d \ln A_{12} = b_{A_{12}}^{-1} [\delta b_2 d \ln z_2 + \psi b_A d \ln A] \quad (A13)$$

Substituting the expressions from (A9) and (A12) into (A13) and using the relationships $b_A = b_c B$ and $b_k = b_c C$ give equations (10)-(11) in the text.

REFERENCES

- Adams, James D., "Human and Material Inheritance Within and Between Families," paper presented at the American Economic Association Meetings, Chicago, August 1978.
- Becker, Gary S., "A Theory of Social Interactions," Journal of Political Economy Vol 82 No. 6 (Nov./Dec. 1974) pp. 1063-94.
- Blinder, Alan S., "Distribution Effects and the Aggregate Consumption Function," Journal of Political Economy Vol 83 No. 3 (June 1975) pp. 447-476.
- Blinder, Alan S., "Intergenerational Transfers and Life Cycle Consumption," American Economic Review Papers and Proceedings Vol 66 (July 1976) pp. 87-93.
- Catsiapis, George and Chris. Robinson, "The Theory of the Family and Intergenerational Mobility: An Empirical Test," Research Report No. 7830 Department of Economics, University of Western Ontario (October 1978).
- Heckman, James J., "A Life-Cycle Model of Earnings, Learning and Consumption," Journal of Political Economy Vol 84, No. 4, part 2 (August 1976) pp. S11-44.
- Leibowitz, Arleen, "Home Investments in Children" Journal of Political Economy Vol 82, No. 2, Part 2 (March/April 1974) pp. S111-131.
- Menchik, Paul L., "Unequal Material Inheritance, Intergenerational Mobility and Intragenerational Equality," paper presented at the American Economic Association Meetings, Chicago, August 1978.
- Sussman, Marvin B., Judith N. Cates and David T. Smith, The Family and Inheritance, Russell Sage Foundation, New York, 1970.