Extract from

Human Capital and the Rise and Fall of Families

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I. Introduction

$$I_{t+1} = a + bI_t + \varepsilon_{t+1}, \quad (1)$$

- I_t = the income of parents
- I_{t+1} = the income of children
- $\varepsilon_{t+1} \perp\!\!\!\perp I_t$

Inequality in income will continue to grow over time if b is greater than or equal to unity, while inequality in income will approach a constant level if b is smaller than unity in absolute value. Clearly, the size of b also measures whether children of richer parents tend to be less rich than their parents and whether children of poorer parents tend to be better off than their parents. This example implies that, even in rigid and caste-dominated societies, many of the elite and underprivileged families would change places over generations unless inequality continued to grow over time ($b \geq 1$).

II. Earnings and Human Capital

A. Perfect Capital Markets

- Some children have an advantage because they are born into families with greater ability, greater emphasis on childhood learning, and other favorable cultural and genetic attributes.
- Both biology and culture are transmitted from parents to children, one encoded in DNA and the other in a family's culture.
- Much less is known about the transmission of cultural attributes than of biological ones, and even less is known about the relative contributions of biology and culture to the distinctive endowment of each family.
- We do not need to separate cultural from genetic endowments, and we will not try to specify the exact mechanism of cultural transmission.

$$E_t^i = \alpha_t + hE_{t-1}^i + v_t^i, \quad (2)$$

- where $E_t^i =$ the endowment (or vector of endowments) of the *i*th family in the *i*th generation,

- $h =$ the degree (or vector of degrees) of “inheritability” of these endowments,

- and $v_t^i =$ measures unsystematic components or luck in the transmission process.

- We assume that parents cannot invest in children’s endowment.

The term α_t can be interpreted as the social endowment common to all members of a given cohort in the same society. If the social endowment were constant over time, and if $h < 1$, the average endowment would eventually equal $1/(1 - h)$ times the social endowment (i.e., $\lim \bar{E}_t = \alpha/[1 - h]$). However, α may not be constant because, for example, governments invest in the social endowment.

Practically all formal models of the distribution of income that consider wages and abilities assume that abilities automatically translate into earnings, mediated sometimes by demands for different kinds of capital of children and other variables. Since earnings are practically the sole income for most persons, parents influence the economic welfare of their children primarily by influencing their potential earnings.

To analyze these influences in a simple way, assume 2 periods of life, childhood and adulthood, and that adult earnings depend on human capital (H), partly perhaps as a measure of credentials, and market luck (ℓ):

$$Y_t = \gamma(T_t, f_t)H_t + \ell_t. \tag{3}$$

The earnings of 1 unit of human capital (γ) is determined by equilibrium in factor markets. It depends positively on technological knowledge (T) and negatively on the ratio of the amount of human capital to nonhuman capital in the economy (f). Since we are concerned with differences among families, the exact value of γ is not usually important because that is common to all families. Therefore, we assume that the measurement of H is chosen so that $\gamma = 1$.

Although human capital takes many forms, including skills and abilities, personality, appearance, reputation, and appropriate credentials, we further simplify by assuming that it is homogeneous and the same "stuff" in different families. Since much research demonstrates that investments during childhood are crucial to later development (see, e.g., Bloom 1976), we assume also that the total amount of human capital accumulated, including on-the-job training, is proportional to the amount accumulated during childhood. Then adult human capital and expected earnings are determined by endowments inherited from parents and by parental (x) and public expenditures (s) on his or her development:

$$H_t = \psi(x_{t-1}, s_{t-1}, E_t), \qquad \text{with} \qquad \psi_j > 0, \qquad j = x, s, E. \tag{4}$$

Ability, early learning, and other aspects of a family's cultural and genetic "infrastructure" usually raise the marginal effect of family and public expenditures on the production of human capital; that is,

$$\frac{\partial^2 H_t}{\partial j_{t-1} \partial E_t} = \psi_{jE} > 0, \qquad j = x, s. \tag{5}$$

The marginal rate of return on parental expenditures (r_m) is defined by the equation

$$\frac{\partial Y_t}{\partial x_{t-1}} = \frac{\partial H_t}{\partial x_{t-1}} = \psi_x = 1 + r_m(x_{t-1}, s_{t-1}, E_t), \tag{6}$$

where $\partial r_m/\partial E > 0$ by inequality (5).

Much of the endowed luck of children (v_t) is revealed to parents prior to most of their investment in children. Therefore, we assume that rates of return on these investments are fully known to parents (as long as the social environment [α_t] and public expenditures [s_{t-1}] are known). Parents must decide how to allocate their total "bequest" to children between human capital and assets. We assume initially that parents can borrow at the asset interest rate to finance expenditures on children and that this debt can become the obligation of children when they are adults.

Parents are assumed to maximize the welfare of children when no reduction in their own consumption or leisure is entailed. Then parents borrow whatever is necessary to maximize the net income (earnings minus debt) of their children, which requires that expenditures on the human capital of children equate the marginal rate of return to the interest rate:

$$r_m = r_t, \qquad \text{or} \qquad \hat{x}_{t-1} = g(E_t, s_{t-1}, r_t), \tag{7}$$

$$\text{with } g_E > 0 \text{ (by eq. [6])}, \qquad g_r < 0, \qquad \text{and also with } g_s < 0 \tag{8}$$

if public and private expenditures are substitutes. Parents can separate investments in children (an example of the separation theorem) from their own resources and altruism toward children because borrowed funds can be made the children's obligation.

The optimal investment is given in figure 1 by the intersection of the horizontal "supply curve of funds," rr, with a negatively inclined demand curve (HH or $H'H'$). This figure clearly shows that better-endowed children accumulate more human capital; those with the endowment E accumulate ON units of expenditure, while those with $E' > E$ accumulate $ON' > ON$. Therefore, better-endowed children would have higher expected earnings because equation (3) converts human capital into expected adult earnings. The total effect of endowments on earnings, and the inequality and skewness in earnings relative to that in endowments, is raised by the positive relation between endowments and expenditures.

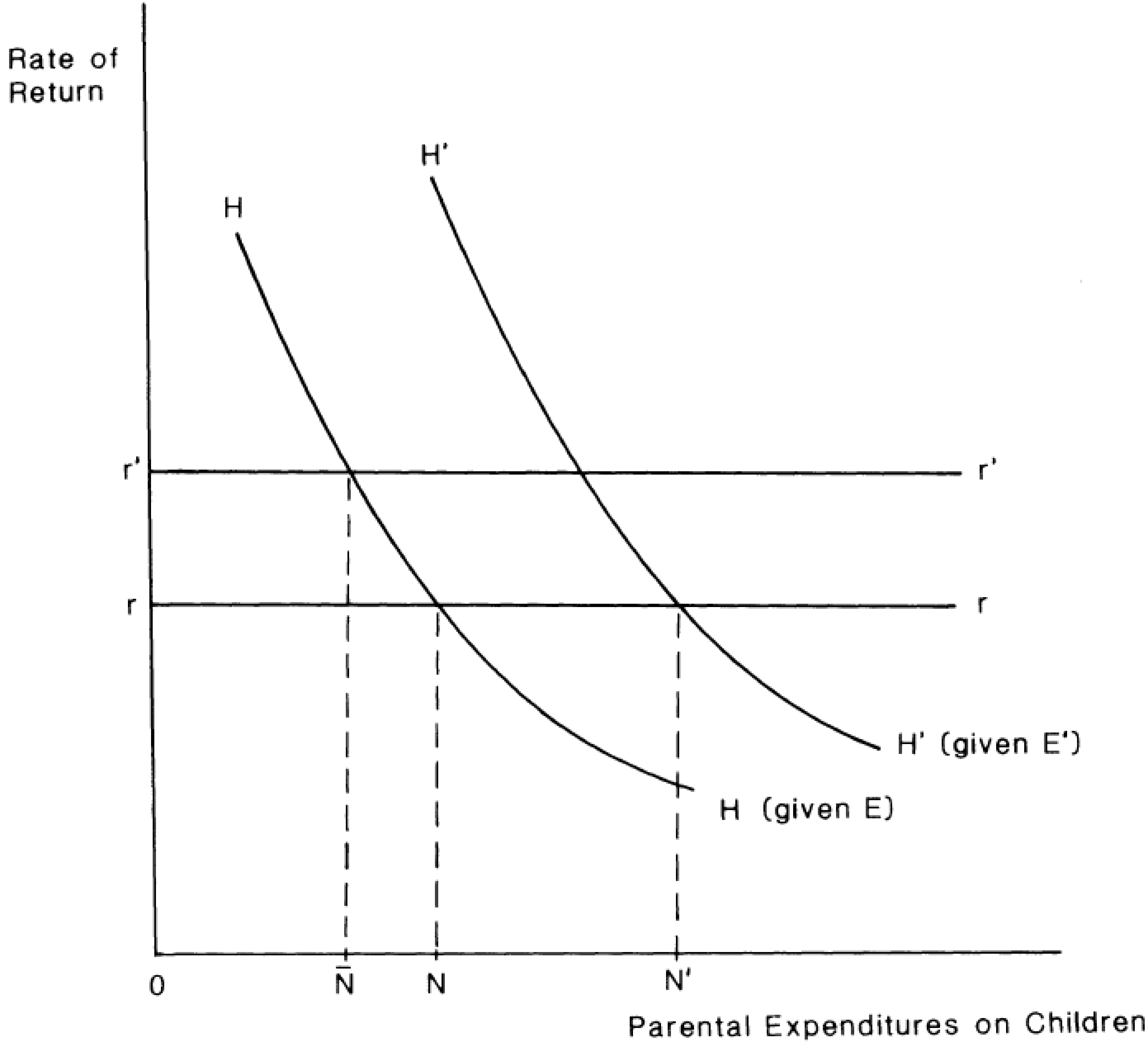

FIG. 1.—Rates of return on parental expenditures on children

Clearly, an increase in the rate of interest reduces the investment in human capital and, hence, earnings. Compare ON and $O\bar{N}$ in figure 1. The effect of an increase in public expenditures is less clear. If public expenditures are perfect substitutes dollar for dollar for private expenditures, the production of human capital would be determined by their sum $(x + s)$ and by E; an increase in public expenditures would then induce an equal decrease in private (parental) expenditures, and the accumulation of human capital would be unchanged. Even then, a sufficiently large increase in public expenditures would raise the accumulation of human capital because private expenditures cannot be negative.

Although the earnings and human capital of children would not be directly related to parents' earnings and wealth, they would be indirectly related through the inheritability of endowments. The greater the degree of inheritability, the more closely related would be the human capital and earnings of parents and children. To derive the relation between the earnings of parents and children, substitute the optimal level of x given by equation (7) into the earnings-generating equation (3) to get

$$Y_t = \psi[g(E_t, s_{t-1}, r_t), s_{t-1}, E_t] + \ell_t = \phi(E_t, s_{t-1}, r_t) + \ell_t,$$
$$\text{where } \phi_E = \psi_g g_E + \psi_E = \left(\frac{\partial Y}{\partial x}\right)\left(\frac{\partial x}{\partial E}\right) + \frac{\partial Y}{\partial E} > 0. \tag{9}$$

Since this equation relates E to Y, ℓ, g, and r, E_t can be replaced by E_{t-1} from (2) and then Y_t can be related to Y_{t-1}, ℓ_t, v_t, ℓ_{t-1}, and other variables:

$$Y_t = F(Y_{t-1}, \ell_{t-1}, v_t, h, s_{t-1}, s_{t-2}, r_t, r_{t-1}, \alpha_t) + \ell_t. \tag{10}$$

Not surprisingly, the earnings of parents and children are more closely related when endowments are more inheritable (h). However, the relation between their earnings also depends on the total effect of endowments on earnings (ϕ_E). If this effect is independent of the level of endowments ($\phi_{EE} = 0$), then

$$\begin{aligned} &Y_t = c_t + \alpha_t \phi_E + hY_{t-1} + \ell_t^*, \\ &\text{where } \ell_t^* = \ell_t - h\ell_{t-1} + \phi_E v_t \\ &\text{and } c_t = c(s_{t-1}, s_{t-2}, h, r_t, r_{t-1}). \end{aligned} \tag{11}$$

The intercept c_t would differ among families if government expenditures (s_{t-1}, s_{t-2}) differed among them. The stochastic term ℓ_t^* is negatively related to the market luck of parents.

If the luck of adults and children (ℓ^*) is held constant, the earnings of children would regress to the mean at the rate of $1 - h$. However, the coefficient is biased downward by the "transitory" component of lifetime earnings of parents (ℓ_{t-1}) in OLS regressions of the actual lifetime earnings of children on the actual lifetime earnings of parents (Y_t on Y_{t-1}). If c_t is the same for all families, the expected value of the regression coefficient would equal

$$b_{t,t-1} = h\left(1 - \frac{\sigma_\ell^2}{\sigma_y^2}\right), \tag{12}$$

where σ_ℓ^2 and σ_y^2 are the variances of ℓ_t and Y_t. This coefficient is closer to the degree of inheritability when the inequality in the transitory component of lifetime earnings is a smaller fraction of the total inequality in lifetime earnings.

B. Imperfect Access to Capital

Therefore, expenditures on children by parents without assets depend not only on endowments of children and public expenditures, as in equation (7), but also on earnings of parents (Y_{t-1}), their generosity toward children (w), and perhaps now also on the uncertainty (ε_{t-1}) about the luck of children and later descendants, as in

$$\hat{x}_{t-1} = g^*(E_t, s_{t-1}, Y_{t-1}, \varepsilon_{t-1}, w), \qquad \text{with} \qquad g^*_Y > 0. \tag{13}$$

Public and private expenditures would not be perfect substitutes if public expenditures affected rates of return on private expenditures, as when tuition is subsidized. However, if they are perfect substitutes, g^* would depend simply on the sum of s_{t-1} and Y_{t-1}: an increase in public expenditures is then equivalent to an equal increase in parental earnings. The effect of children's endowments on investments is now ambiguous ($g_E^* \gtreqless 0$) because an increase in their endowments raises the resources of children as well as the productivity of investments in their human capital. Expenditures on children are discouraged when children are expected to be richer because that lowers the marginal utility to parents of additional expenditures on children.

The demand curves for expenditures in figure 2 are similar to those in figure 1 and are higher in families with better-endowed children. The cost of funds to a family is no longer constant or the same to all families. Increased expenditures on children lower the consumption by parents, which raises their subjective discount rates (the shadow cost of funds). These discount rates are smaller to parents with higher earnings or more poorly endowed children. Expenditures on children in each family are determined by the intersection of supply and demand curves. An increase in parental earnings shifts the supply curve to the right and induces greater expenditures on children (compare S_1 and S'_1 in fig. 2). The distribution of intersection points determines the distribution of investments and rates of return and, hence, as shown in Becker (1967, 1975), the inequality and skewness in the distribution of earnings.

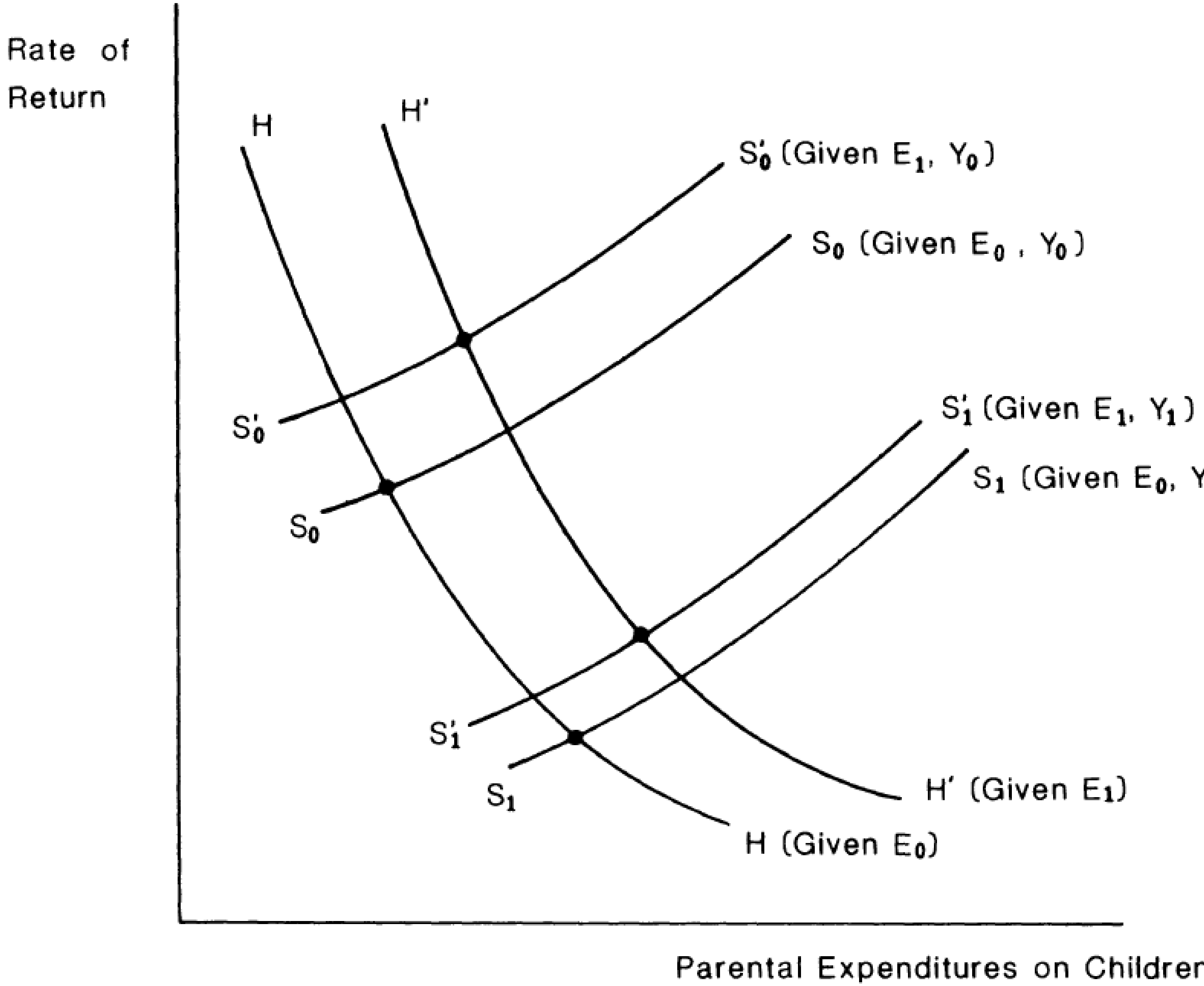

FIG. 2.—Parental expenditures on children, with capital constraints

By substituting equation (13) into the earnings-generating equations (3) and (4), we get

$$\begin{aligned} Y_t &= \psi[g^*(E_t, Y_{t-1}, k_{t-1}), s_{t-1}, E_t] + \ell_t \\ &= \phi^*(E_t, Y_{t-1}, k_{t-1}) + \ell_t, \end{aligned} \tag{14}$$

where k_{t-1} includes w, s_{t-1}, and ε_{t-1}. Earnings of children now depend directly on the earnings of parents as well as indirectly through the transmission of endowments. Some authors (e.g., Bowles 1972; Meade 1976; Atkinson 1983) argue for a direct effect because "contacts" of parents are said to raise the opportunities of children; others argue for a direct effect because parents are said to receive utility directly from the human capital of children. Fortunately, the effects of parent earnings on access to capital can be distinguished analytically from its effects on "contacts" and "utility."

The indirect effect of parents' earnings on the earnings of children operates through the transmission of endowments and can be found by substituting E_{t-1} for E_t and then using equation (14) for E_{t-1}:

$$Y_t = F(Y_{t-1}, Y_{t-2}, \ell_{t-1}, v_t, h, \alpha_t, k_{t-1}, k_{t-2}) + \ell_t. \tag{15}$$

The sum of both the direct and the indirect effects of parents' earnings is

$$\frac{\partial Y_t}{\partial Y_{t-1}} = \phi^*_{Y_{t-1}} + \frac{h\phi^*_{E_t}}{\phi^*_{E_{t-1}}} > 0. \tag{16}$$

The indirect effect of grandparents' earnings, holding parents' earnings constant, is

$$\frac{\partial Y_t}{\partial Y_{t-2}} = -h\phi^*_{Y_{t-2}}\left(\frac{\phi^*_{E_t}}{\phi^*_{E_{t-1}}}\right) < 0. \tag{17}$$

If Y_t were approximately linearly related to E_t and Y_{t-1}, then[4]

$$Y_t \approxeq c'_t + (\beta^* + h)Y_{t-1} - \beta^* h Y_{t-2} + \ell^*_t, \qquad \text{with} \qquad \beta^* = \phi^*_Y. \quad (18)$$

The coefficient of parents' earnings exceeds the degree of inheritability by the marginal propensity to invest in the human capital of children (β^*). As in equation (12), OLS estimates of the coefficient of Y_{t-1} are biased downward by the transitory component of lifetime earnings. Ordinary least squares estimates of the relation between Y_t and Y_{t-1} tend toward[5]

$$\beta^* < b^*_{t,t-1} = \frac{b^*_{t,t-1 \cdot t-2}}{1 + h\beta^*} \leq \min(1, \beta^* + h, b^*_{t,t-1 \cdot t-2}), \qquad (19)$$

where $b^*_{t,t-1 \cdot t-2}$ is the partial regression coefficient between Y_t and Y_{t-1}. Therefore, both partial and simple regression coefficients between the lifetime earnings of parents and children provide upper limits of the effect of capital market constraints on the propensity to invest in children. The biases in these OLS estimates can sometimes be overcome by the use of instruments for the lifetime earnings of parents, such as the lifetime earnings of uncles or of greatgrandparents (see Goldberger 1979; Behrman and Taubman 1985).

Becker and Tomes's (1979) discussion implies that, because β^* and h enter symmetrically, even knowledge of the true values of the coefficients attached to parents' and grandparents' incomes in an equation such as (18) could not identify β^* and h without other information, such as which coefficient is larger. Earnings in rich families not subject to capital constraints are related by the simple equation (11), which does not include β^*. Therefore, h would be known if the coefficient on parents' earnings in rich families is known. Then β^* and h could be distinguished in equation (18) by using this information on h.

In earlier drafts of the present paper we unwisely denote β^* by β, although β in Becker and Tomes (1979) refers to a different concept. Since the coefficient β^* measures the marginal propensity to invest in the human capital of children by capital constrained parents who are prevented from making the wealth-maximizing investment in their children, β^* does not enter the earnings-generating equation for richer families (eq. [11]) who are not so constrained. Put differently, β^* is zero in richer families. There is no general presumption about the size of β^* relative to h even in low-income families because β^* depends on public transfers to children, incomes, and other variables.

The coefficient β in our earlier work (see, e.g., Becker and Tomes 1979) measures the marginal propensity to bequeath wealth to children when parents can leave debt to children and when human wealth is not distinguished from other wealth. Our earlier work and Section III of the present paper show that this propensity depends on the generosity of parents toward children and may not be sensitive to the level of income. However, it is likely to be large in most families (see Sec. III). Such a presumption motivated the assumption in our earlier work that $\beta > h$, an assumption used to identify β and h from the coefficients in an equation such as (18).

Goldberger (1985, pp. 19–20) correctly states that we did not provide an independent way to evaluate this assumption. The present paper makes progress toward the goal of identification because h can be determined from knowledge of the coefficients in the equation for the earnings of parents and children in (richer) families who leave positive bequests to children. Given h, β^* (or a more general relation between β^* and parents' earnings) can be determined from knowledge of the coefficients on parents' or on grandparents' earnings in the earnings equation for poorer families who are capital constrained. Even β—the marginal propensity of parents to bequeath wealth to children—might be determined from information on the relation between the consumption of parents and children in richer families (see the next section).

Larger public expenditures on the human capital of children in families subject to capital constraints raise the total amount invested in these children even when public and private expenditures are perfect substitutes. The reason is that public expenditures increase the total resources of a family if taxes are imposed on other families. An increase in family resources in capital constrained families is shared between parents and investments in children in a ratio determined by the marginal propensity to invest (β^*). If public and private expenditures are perfect substitutes, the fraction $1 - \beta^*$ of government expenditures on children is offset by compensatory responses of their parents. That is, to further equity toward other family members, even constrained parents redistribute some time and expenditures away from children who benefit from government expenditures to siblings and themselves. Compensatory responses of parents apparently greatly weaken the effects of public health programs, food supplements to poorer pregnant women, some Head Start programs, and social security programs (see the discussion in Becker [1981, pp. 125–26, 251–53]).

III. Assets and Consumption

Suppose that the utility function of parents is additively separable in their own consumption and in various characteristics of children. Most of our analysis does not depend on a specific measure of these characteristics as long as they are positively related to the total resources of children. However, we can simplify the relation between the consumption by parents and children by assuming that parents' utility depends on the utility of children (U_c), as in

$$U_t = u(Z_t) + \delta U_{t+1}, \tag{20}$$

where Z_t is the consumption of parents and δ is a constant that measures the altruism of parents.

If the preference function given by equation (20) is the same for all generations and if consumption during childhood is ignored, then the utility of the parent indirectly would equal the discounted sum of the utilities from the consumption of all descendants:

$$U_t = \sum_{i=0}^{\infty} \delta^i u(Z_{t+i}). \tag{21}$$

The utility of parents depends directly only on the utility of children, but it depends indirectly on all descendants because children are concerned about their descendants.

With perfect certainty about rates of return and incomes in all generations, the first-order conditions to maximize utility are the usual ones. For example, with a constant elasticity of substitution in consumption,

$$u'(Z) = Z^{-\sigma}, \tag{22}$$

where $\sigma > 0$, and

$$\ln Z_{t+1} = \frac{1}{\sigma} \ln(1 + r_{t+1})\delta + \ln Z_t, \tag{23}$$

where r_{t+1} measures the marginal rate of return to investments in children in period t. With an exponential utility function,

$$u'(Z) = e^{-pZ}, \qquad p > 0, \tag{24}$$

and

$$Z_{t+1} = \frac{1}{p} \ln(1 + r_{t+1})\delta + Z_t. \tag{25}$$

If parents could finance expenditures on their children with debt that becomes the obligation of children, the marginal cost of funds would equal the rate on assets in all families. Then equation (23) or equation (25) implies that the relative or absolute change in consumption between generations would be the same in all families that are equally altruistic (δ) and that have equal degrees of substitution (σ or p). Each family would maintain its relative or absolute consumption position over generations, and consumption would not regress to the mean. Stated differently, any degree of relative or absolute inequality in consumption in the parents' generation would then be fully transmitted to the children's generation.

Our analysis of consumption has assumed perfect certainty, although uncertainty about much of the luck of future generations is not fully insurable or diversifiable. If each generation knows the yields on investments in the human capital of children and in bequests to children, but may not have perfect certainty about the earnings of children and is still more uncertain about subsequent generations, then the first-order condition for maximization of expected utility is

$$\varepsilon_t u'(Z_{t+1}) = \left(\frac{\delta^{-1}}{1 + r_{t+1}}\right) u'(Z_t), \tag{26}$$

where ε_t refers to expectations taken at generation t before any new information about earnings and other wealth of descendants is acquired between t and $t + 1$.

With the exponential function, this first-order condition becomes

$$Z_{t+1} = c + \frac{1}{p} \ln(1 + r_{t+1})\delta + Z_t + n_{t+1}, \tag{27}$$

where c is a positive constant and where n_{t+1}, the distribution of fluctuations in Z_{t+1} around $\hat{Z}_{t+1}$, does not depend on Z_t. If the capital market permitted all families to finance the wealth-maximizing investments in their children, $r_{t+1} = r_a$ in all families, where r_a is the asset rate. Then equation (27) implies that the growth in consumption follows a random walk with drift (Kotlikoff, Shoven, and Spivak [in this issue] derive a similar result when the length of life is uncertain). More generally, equation (27) shows that, if the utility function is exponential, uncertainty adds a random term to consumption but does not basically change the implications of our analysis concerning the degree of regression to the mean in consumption.

IV. Fertility and Marriage

Regression toward the mean in marriage and the positive effect of wealth on fertility help explain why differences in consumption and total resources among richer families do not persist indefinitely into future generations. Here we only sketch out an analysis. The implications of fertility and marriage for consumption and bequests are also discussed in Becker and Tomes (1984) and Becker and Barro (1985).

Let us first drop the assumption that all parents have only one child and generalize the utility function in equation (20) to

$$U_p = u(Z_p) + a(n)nU_c, \tag{28}$$

with $a' < 0$, where U_c is the utility of each of the n identical children and $a(n)$ is the degree of altruism per child. The first-order condition for the optimal number of children is that the marginal utility and marginal cost of children are equal. The marginal cost of children to parents equals net expenditures on children, including any bequests and other gifts. The marginal costs are determined by the circumstances and decisions of parents.

V. Empirical Studies

Table 1 has evidence on the earnings or incomes of sons and fathers from three studies based on separate data sets for the United States and one study each for England, Sweden, Switzerland, and Norway.[8] Although the average age of fathers and sons is quite different except in the Geneva study, both Atkinson (1981) and Behrman and Taubman (1983) present evidence that such differences in age do not greatly affect the estimated degree of regression to the mean.

Table 1
Regressions of Son's Income or Earnings on Father's Income or Earnings in Linear, Semilog, and Log-linear Form

Location and Son's Year	Father's Year	Variables: Dependent	Variables: Independent	Variables: Other	Coefficient	t	R^2	N	ε	Author
Wisconsin:										
1965–67	1957–60	*E*	*IP*	None	.15	8.5	.03	2069	.13	Hauser, Sewell, and Lutterman (1975)
*	1957–60	Log *E*	*IP*	None	.0006	10.6	.05	N.A.	.09	Hauser (in press)†
1974	1957–60	Log *E*	Log *IP*	None	.28‡	15.7	.09	2493	.28	Tsai (1983)†
United States, 1981–82	1981–82	Log *E*§	Log *E*§	None	.18	3.7	.02	722	.18	Behrman and Taubman (1983)
United States:										
1969 (young white)	When son was 14	Log *H*	Log *I3*	‖	.16	3.2	...	1607	.16	Freeman (1981)
1966 (older white)	When son was 14	Log *H*	Log *I3*	‖	.22	7.3	...	2131	.22	Freeman (1981)
1969 (young black)	When son was 14	Log *H*	Log *I3*	‖	.17	1.9	...	634	.17	Freeman (1981)
1966 (older black)	When son was 14	Log *H*	Log *I3*	‖	.02	0.4	...	947	.02	Freeman (1981)
York, England:										
1975–78	1950	Log *H*	Log *W*	None	.44	3.4	.06	198	.44	Atkinson (1981)
1975–78	1950	Log *W*	Log *W*	None	.36	3.3	.03	307	.36	Atkinson (1981)
Malmö, Sweden, 1963	1938	Log *I*	*ICD*	None	.08	1.8	.19	545	.17#	de Wolff and van Slijpe (1973)
					.12	2.4	.19	545	.13	
					.69	10.9	.19	545	.79	
Geneva, Switzerland, 1980	1950	*IHH*	*IHH*	None	.31	4.1	.02	801	.13	Girod (1984)
Sarpsborg, Norway, 1960	1960	Log *I*	Log *I*	None	.14	1.2	.01	115	.14	Soltow (1965)

NOTE.—ε = elasticity of son's income or earnings with respect to father's income or earnings; *E* = earnings; *H* = hourly earnings; *I* = income; *I3* = income in three-digit occupation; *ICD* = income-class dummy; *IHH* = household income; *IP* = parents' income; *W* = weekly earnings.

* First 5 years in the labor force.

† Also Robert M. Hauser (personal communication, October 2, 1984).

‡ Adjusted for response variability.

§ Adjusted for work experience. Sons with work experience of 4 years or less were excluded. The regression was weighted so that each father had equal weight.

‖ Work experience, three dummies for region of residence at age 14, five dummies for type of place of residence at age 14, and a dummy for living in one parent/female home at age 14.

\# The elasticities are values between pairs of income classes.

The evidence in table 1 suggests that neither the inheritability of endowments by sons (h) nor the propensity to invest in children's human capital because of capital constraints (β^*) is large. For example, if the regression coefficient between the lifetime earnings of fathers and sons is $\leq .4$ and if the transitory variance in lifetime earnings is less than one-third of the variance in total lifetime earnings, then both h and β^* would be less than .28 if $h = \beta^*$; moreover, $h \leq .6$ if $\beta^* = 0$, and $h \leq 0$ if $\beta^* \geq .4$ (see n. 4).

Goldberger points out (1985, pp. 29–30) that our earlier work uses much higher illustrative values for β than the values of β^* suggested by the empirical evidence in this section. But β and β^* are different: to repeat, β refers to the propensity to bequeath wealth to children by families who are not capital constrained. Therefore, low β^*'s are not inconsistent with high β's. A low β^* combined with a low h does imply sizable intergenerational mobility in earnings, whereas a high β implies low intergenerational mobility in wealth and consumption among families that bequeath wealth to their children (we ignore the distinction between the wealth and consumption of children and the wealth and consumption per child; see Secs. III and IV).

We readily admit (see Sec. I) that the distinction in the present paper between earnings, wealth, and consumption as well as our attention to intergenerational capital constraints and fertility behavior have greatly clarified our thinking about intergenerational mobility. However, since a low β^* is not inconsistent with a high β, we see no reason why the empirical evidence of a low β^* "would occasion the tearing of [our] hair and the gnashing of [our] teeth" (Goldberger 1985, pp. 29–30). Moreover, aside from fertility and marriage, we still expect high values for β (see Sec. III).

Table 2 presents evidence from three studies for the United States and Great Britain on the relation between the wealth of parents and children. Harbury and Hitchens (1979) and Menchik (1979) use probates of wealthy estates, while Wahl (1985) uses data on wealth from the 1860 and 1870 censuses. The estimated elasticity between the assets of fathers and sons is about .7 in the United States for probated assets in recent years but is less both for assets of living persons in the nineteenth century and for probated assets in Britain.

Table 2
Regressions of Son's Wealth on Father's and Grandfather's Wealth

Location and Son's Year	Father's Year	Notes	Coefficient for Father's Wealth	Coefficient for Grandfather's Wealth	R^2	N	Author
United States:							
Up to 1976	1930–46	*,†	.69 (7.5)	...	.29	173	Menchik (1979)
		†	.76	...	.25	199	Menchik (1979)
1860	1860	‡§	.21 (1.6)	.05 (2.0)	.46	45	Wahl (1985)
1860	1860	‖,§	.26 (2.1)	−.008 (−1.6)	.14	106	Wahl (1985)
1870	1870	‡§	.30 (5.5)	.05 (2.4)	.27	46	Wahl (1985)
1870	1870	‖,§	.46 (2.1)	−.03 (−1.6)	.10	125	Wahl (1985)
Great Britain:							
1934, 1956–57	1902, 1924–26	†	.48 (3.7)	...	...	...	Harbury and Hitchens (1979)
1956–57, 1965	1916, 1928	†	.48 (5.3)	...	...	...	Harbury and Hitchens (1979)
1973	1936	†	.59 (8.4)	...	...	...	Harbury and Hitchens (1979)

NOTE.—*t*-statistics are in parentheses.
* Menchik also includes the following as explanatory variables: number of years between death of parents and child, number of child's siblings (plus one), and stepchild dummy.
† Log-linear regression.
‡ Wahl uses an instrument for parent's wealth. The following variables are used to create the instrument: age of household head (and age squared), occupational and regional dummies, residence farm/nonfarm, and whether parent is bloodline. Grandparent's wealth is actual wealth.
§ Wahl uses data for parents and maternal grandparents instead of for fathers and grandfathers.
‖ Wahl uses instruments for both parent's and grandparent's wealth. She creates the instruments by using the list given in the daggered note above.

VI. Summary and Discussion

1. Earnings regress more rapidly to the mean in richer than in poorer families. Moreover, even though endowments of children and earnings of parents are positively related, a small redistribution of investment in human capital from richer to poorer families would tend to raise the overall efficiency of investments. The reason is that investments by poorer families are constrained by limited access to funds.

2. Unlike earnings, consumption would regress more rapidly to the mean in poorer than in richer families if fertility is not related to parents' wealth. Indeed, consumption then would not tend to regress at all among rich families who leave gifts and bequests to their children.

3. However, our analysis also implies that fertility is positively related to the wealth of parents. This dilutes the wealth that can be left to each child and induces a regression to the mean among rich families in the relation between consumption per child and the consumption of parents.