Wealth Inequality and Altruistic Bequests

By JOHN LAITNER*

This paper examines the role of bequests and inter vivos gifts in the U.S. economy, considering their importance for the economy's (i) aggregate capital stock, (ii) distribution of private net worth, and (iii) public policy options. It focuses on several recent calibrated simulations.

There is a long-standing debate in the economics literature about the relative empirical importance of life-cycle and bequest-motivated saving (e.g., Franco Modigliani, 1988). Similarly, simulations of purely life-cycle models sometimes have difficulty explaining the full magnitude of aggregative U.S. wealth (e.g., Alan Auerbach and Laurence Kotlikoff, 1987 Ch. 11).

There is little disagreement that the U.S. distribution of private net worth is highly concentrated (e.g., Edward Wolff, 1996). In the 1995 *Survey of Consumer Finances,* the top 5 percent of wealth-holders account for 56 percent of private U.S. net worth, and the top 1 percent alone hold 35 percent. Even after adjusting for private pensions and consumer durables (see Laitner, 2001), the shares are 48 percent and 28 percent, respectively. Mean net worth per household (in the original data) is \$212,000, but the median is only \$57,000. It almost seems that a complete model of saving needs two types of households: a few with enormous net worth, and many with very little.

The potentially different policy implications of the life-cycle and dynastic models are well-known: in the former, national debt and unfunded social security tend to crowd out private capital accumulation; in Robert Barro's (1974) representative-agent dynastic model, on the other hand, debt and social security tend to have no such effect at all.

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This paper reviews three models with bequests. Then it describes several recent calibration studies.

I. Framework

The framework is very stylized. It has a closed economy with an aggregate production function. I focus on steady-state equilibria. Households are born with differing earning abilities (the distribution of the latter being exogenous and stationary), but they have the same preference ordering.

Each household lives at most two periods, supplying one unit of labor in the first, and zero in the second. A household has one adult, and he raises one child. The child leaves home as the parent retires. If a household's consumption is c_1 in youth, the corresponding utility flow is $U(c_1)$; similarly for $U(c_2)$ in old age. A household's probability of being alive in old age is q. Consider a steady state with constant wage w and interest rate r.

There are a number of possible ways to incorporate private intergenerational transfers. In one, annuities markets do not exist. Then a household born with earning ability z and inheritance i solves

$$(1)\quad \max_{s \geq 0} \{U(i + zw - s) + qU(s[1 + r])\}.$$

If the household remains alive in its second period of life, its bequest is 0; if it dies, its heir inherits $s(1 + r)$.

Suppose estates pass from parents to their children. Solution of (1) yields a function $s = S(i, z)$. This and mortality determine a Markov process over contemporaneous pairs (i, z). Provided the process has a stationary distribution, one can determine aggregate household net worth. This is the model of Jagadeesh Gokhale et al. (2001). Call it the "accidental bequest" model.

Figure 1 provides a graphical representation of the overall economy. With a Cobb-Douglas

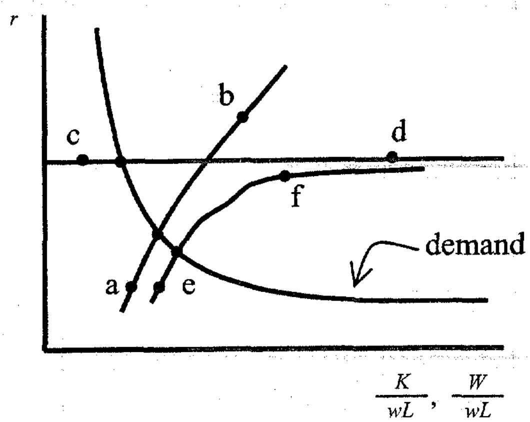

FIGURE 1. THE DEMAND AND SUPPLY OF CAPITAL

aggregate production function, the ratio of factor shares is constant; hence, the capital stock divided by the wage bill, say, $K/(wL)$, must be proportional to the reciprocal of the interest rate. That sets the "demand for capital" curve. At each prospective steady state r, suppose (1) determines household net worth divided by the wage bill, say, $W/(wL)$. That defines the steady-state "supply of capital" curve, say, ab. An intersection of the curves determines a steady-state equilibrium. An upward-sloping supply curve, as illustrated, would be typical in this case.

In a second model, from his bequest, say, b, a parent derives utility $F(b)$. Assume annuities. A parent with ability z and inheritance i solves

$$(2)\quad \max_{s,b\geq 0} \{U(i + zw - s - b) + F(b[1 + r]) + qU(s[1 + r]/q)\}.$$

Maximization determines the child's inheritance, $b(1 + r)$, as a function of i and z. Again, the result is a Markov process on pairs (i, z), and one can hope to generate a supply curve for Figure 1. There is no reason not to expect a shape resembling ab. David Altig et al. (2001) is a recent simulation study in this vein. Call this the "joy of giving" model.

In a third model, a parent cares about his descendants' utility. Let V be a young parent's total utility, summing his lifetime utility with weight $\xi \in (0, 1]$ times his child's lifetime utility, with ξ^2 times his grandchild's lifetime utility, and so forth. Assume that nature reveals each person's earning ability when he is a child. Then the result is a Bellman equation: for a parent with ability z and inheritance i,

$$(3)\quad V(i, z) = E_{z'}[\max_{s,b\geq 0} \{U(i + zw - s - b) + \xi V(b[1 + r], z') + qU(s[1 + r]/q)\}]$$

where z' is the child's ability. Letting the child's inheritance be i', maximization determines a function $i' = I(i, z, z')$. Given exogenous distributions for z and z', one can define a Markov process on pairs (i, z). Laitner (2001) shows that the process generates a unique stationary distribution. If the distribution of earnings is collapsed to a point, the result is Barro's model. Its supply curve in Figure 1 is well known to be a horizontal line, say, cd. Laitner (2001) shows that, with a distribution of abilities, Figure 1's supply curve resembles ef, bounded above by cd, and asymptotic to it. Call this the "altruistic" model.

I will now turn to comparisons of the models. It is known that roughly half of U.S. households ultimately inherit (see e.g., John Laitner and Henry Ohlsson, 2001). Model (1) can be consistent with this: only parents dying young bequeath. Model (3) is consistent as well: parents with high inheritances or earnings bequeath; low-resource parents choose $b = 0$. For the empirical outcome, model (2), on the other hand, will generally require a very specialized F.

Survey evidence implies that inter vivos gifts are substantial. For consistency with this, model (2) will require separate utility functions for bequests and gifts. It is difficult to see how the accidental model would ever explain gifts, which are certainly intentional. Altruistic parents, however, might well transfer both gifts and bequests (see e.g., Laitner, 2001).

A lack of annuity markets is a key assumption of the accidental model. A conventional explanation is that adverse selection makes such securities unattractive. However, as noted in the Introduction, a miniscule group of wealthy households noticeably affects total U.S. net worth, and it seems likely that insurers could offer customized annuities to such households, administering health examinations to circumvent adverse selection.

Existing evidence on the division of estates within families shows a tendency toward equal shares, regardless of siblings' relative earnings (see e.g., Laitner, 1997). This is contrary to the altruistic model, but not to the other two. For consistency with altruism, one might have to argue that social norms compel equal division of estates, or that estates, which are public, tend to be more equal than inter vivos gifts, which can be private.

If government confiscates accidental estates, donors should not care. The latter seems inconsistent with the estate-planning which wealthy individuals often undertake.

Finally, regression results in Laitner and F. Thomas Juster (1996), Joseph Altonji et al. (1997), and Laitner and Ohlsson (2001) display sign patterns consistent with the altruistic model but not the other two. Nevertheless, Altonji et al. develop a quantitative parameter restriction consequent to altruism, and their data reject it by a wide margin (Laitner and Ohlsson [2001] also reject it). In the end, the evidence seems ambiguous. One possible problem is that most surveys have a thin sample of rich households—the very group for whom bequest incentives may be most powerful.

II. Simulation Studies

Calibrated versions of the models of Altig et al. (2001), Gokhale et al. (2001), and Laitner (2001), each combining bequests with life-cycle saving, all explain aggregate U.S. net worth without difficulty. The first and third assess the fraction due to life-cycle saving alone, finding, respectively, 0.70 and 0.67.

Two of the models simulate the distribution of wealth. Gokhale et al.'s (2001) accidental-bequest framework includes realistic life spans, lifetime earnings profiles, mortality tables, fertility patterns, and social security. The flow utility function is isoelastic, $U(c) = c^{\gamma}/\gamma$, and the model is very tractable since the authors set $\gamma = -\infty$. The paper focuses on the distribution of wealth for households aged 60–69. Empirical concentration in that range is not very different from the overall distribution, and in the best simulation, the shares of the top 5 and 1 percent are 49 and 33 percent, respectively.

Laitner (2001) has altruistic bequests. The demographic framework is simpler than in Gokhale et al. but otherwise similar. Flow utility is again isoelastic, and the paper jointly calibrates γ and the intergenerational weight ξ. In the ultimate simulation, $\xi = 0.82$ and $\gamma = 0.70$. Thus, parents care almost as much about their grown children as about themselves, and households are surprisingly tolerant of risk. Again, the model is up to the challenge of matching the concentration of the empirical distribution of wealth: over all ages, the simulated shares of the top 5 and 1 percent are, respectively, 43 and 25 percent.

Long-run policy implications depend on the shape of Figure 1's supply curve. Think about models (1) and (2), with curve ab. Add a perpetual national debt D. Then it becomes necessary to move to a higher steady-state interest rate, the one at which household net worth exceeds the business sector's demand for capital exactly by D. In Barro's (1974) representative-agent dynastic model, with supply cd, the same logic shows that no change in the equilibrium interest rate is necessary.

With altruism and heterogeneous earning abilities, on the other hand, the supply curve resembles ef. Ricardian results follow if equilibrium lies in the horizontal part of the curve, whereas crowding-out results apply if equilibrium lies in the steeper section to the left. Surprisingly, the best calibration in Laitner (2001) points to an equilibrium in the former region.

III. Conclusion

A number of models of bequest behavior seem able to account for U.S. aggregate wealth. Perhaps more interesting, several recent models are able to replicate the extreme concentration of the empirical distribution of wealth among households. Furthermore, in one of the models, private transfer behavior is capable of generating dramatic policy implications.

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