

Family Behavior as Maximization

A Treatise on the Family. GARY S. BECKER. Harvard University Press, Cambridge, Mass., 1981. xvi, 288 pp. \$20.

Among Gary Becker's numerous important contributions to economic science are substantial improvements in our understanding of behavior regarding educational attainment, discrimination against minorities, participation in illegal activities, and the use of time. The depth and breadth of Becker's work on the family sets it apart even from his past research, distinguished as that is. *A Treatise on the Family* is destined to have a significant impact on a number of different disciplines, including economics, sociology, psychology, anthropology, history, demography, epidemiology, and biology. But lest you be tempted at this point to run out and buy the book to see how it relates to your discipline, let me warn you that it is technical economic analysis virtually cover to cover. People without any background in economics are not likely to find it easy reading.

A Treatise on the Family is a thoroughgoing application of economic methodology to the study of the family. This is not to imply that it is a study of economic aspects of family life narrowly defined. Quite the contrary, Becker uses economic analysis to study such topics as the division of labor within families, marriage structures, such as polygamy and monogamy, patterns of assortative mating, marital fertility, the relationship between family background and the opportunities of children, the persistence of intergenerational income inequality, altruism in the family, the family in nonhuman species, divorce and the changing nature of the stigma associated with it, and the evolution of the structure of the family. The strength of the *Treatise* lies in its treatment of all these complex matters in a unified and consistent theoretical framework.

In turning to the contents of the *Treatise* a word of caution is appropriate. Recasting mathematical arguments into ordinary language makes the account inherently incomplete because the technical details themselves are part of the book's contribution. Chapter 1 presents the basic time allocation framework that is used throughout the volume. This framework, invented by Becker in 1965,

derives implications for behavior from the assumption that people act as if they maximized an objective function defined in terms of what Becker calls "commodities." Becker writes: "These commodities cannot be purchased in the marketplace but are produced as well as consumed by households using market purchases, own time and various environmental factors. These commodities include children, prestige and esteem, health, altruism, envy, and pleasure of the senses" (pp. 7-8). People are constrained in how much of these commodities they can consume by limitations of their time, the productivity of their time in the labor market, and the productivity of their time at home. The basic framework allows people to spend resources at one date to upgrade their future productivity in the labor market and at home. This process of investing in activities that will increase future productivity is called human capital acquisition in general, market capital acquisition if it refers only to activities that increase productivity in the labor market, and household capital acquisition if it refers only to activities that increase productivity at home.

Chapter 2 applies the basic time allocation framework to the division of labor within the family. An assumption made here is that family members behave efficiently in the sense that they obtain as much of the "commodities" as they can, given their constraints. Theorem 2.3 contains a good deal of the essence of the argument in that chapter. It states, "At most one member of an efficient household would invest in both market and household capital and would allocate time to both sectors" (p. 18). In other words, efficiency implies a strong tendency for there to be some specialization in household and market activities. One result of the analysis is particularly intriguing. Becker writes, "Specialization in the allocation of time and in the accumulation of human capital would be extensive in an efficient family even if all members were biologically identical; indeed . . . biological differences probably have *weakened* the degree of specialization" (p. 14). Chapter 2 ends with a discussion of the implications of shirking and malfeasance on the distribution of household sizes.

Chapter 3 deals mainly with polygamy. The key concept here concerns the division of the household-produced "commodities" between the spouses. Becker assumes here that the division of this output is flexible and is influenced, in part, by outputs attainable by single males and females because two people will marry one another only if they both expect to be better off when married than when single. Competition over shares in that output, according to Becker, eventually results in a set of stable allocations that depend upon the productive characteristics of the spouses, the characteristics of the household production processes, and the relative availabilities of spouses of different characteristics. Under certain conditions relating to these factors polygamy is more efficient and under some conditions less efficient. Becker is dubious about explanations of the decline of polygamy based on the spread of Christianity or on the greater recognition of women's rights. Instead, he shows that polygamy has become less efficient over time and attributes its declining prevalence to this cause.

Chapter 4 deals with the topic of assortative mating. The framework is basically the same as in chapter 3 with the addition of the concept of "the optimal sorting." Given a group of marriageable males and females, "the optimal sorting must have the property that persons not married to each other could not marry without making at least one of them worse off" (p. 68). Given this framework, Becker shows that with regard to a given trait likes marry likes if the effects of the spouses' traits on commodity output reinforce one another. "Intelligence" is a good example of such a trait, and, as Becker notes, the correlation between spouses by intelligence is as high as it is between siblings.

Chapter 5 is an analysis of fertility behavior. The chapter contains an argument, based on historical examples and mathematical demography, that fertility control with primitive contraceptive techniques was possible even in the remote past. The main cause of fertility fluctuations, Becker believes, is variation in the number of children couples want. The analytic heart of the chapter is the analysis of the interaction between "quantity" and "quality." The "quantity" of children refers to their number; the "quality" of children refers to the average parental expenditure on children. As parents grow wealthier, it is assumed, other things being equal, that they would like to increase both their level of consumption and their children's level of consumption. In this way as

parental income increases children become more expensive. Under some circumstances the response to this increased cost can be so great that fertility falls when parental income increases. The implications that are derived from the analysis are used to explain a wide variety of fertility behavior.

Chapter 6 concerns the relationship between family background and the opportunities of children. Parents are assumed to have an objective function that takes into account not only their own material standard of living but also the standard of living their children will be able to achieve in the future. The latter is seen as depending on the extent to which the parents invest in a child's skills, the amount of direct monetary transfers from the parents to the child, the child's luck, and the child's "endowment." Concerning the notion of "endowment" Becker writes, "Children are assumed to receive endowments of capital that are determined by the reputation and 'connections' of their families; the contribution of the genetic constitutions of parents to the ability, race, and other characteristics of children; and the learning skills, and goals acquired through belonging to a particular family culture" (p. 117).

The analysis has a number of implications, some of which are discussed in a fascinating section entitled "compensation and reinforcement of differences among children." That section contains the most politically potent result in the book, an explanation of why public compensatory education programs are likely to appear to fail. The result may be simply stated. Public expenditures on some children in poor families "induce parents concerned with equity to redistribute time and other expenditures away from these children" (p. 125), and the resulting redistribution could largely offset the program's benefits for the enrolled child.

Chapter 7 builds on the material presented in the previous chapter to provide a theory of the distribution of income that "incorporates the effects of luck, family background, assortative mating, and cultural, biological, and financial inheritance of the distribution of income" (p. 166). The approach presented unifies the theory of income distribution within a generation and the theory of intergenerational income mobility.

Chapter 8 provides a theory of altruistic family behavior. A person is said to be "altruistic" if his or her well-being depends on the well-being of other people. The chapter contains a number of interesting theorems on altruism and

envy. Perhaps the most remarkable is one called the "rotten kid theorem," which relates the behavior of the altruistic person, called "benefactor," and the behavior of possibly selfish people, called "beneficiaries," whom the benefactor cares about. The theorem states: "Each beneficiary, no matter how selfish, maximizes the family income of his benefactor and thereby internalizes [read "takes into account"] all effects of his actions on other beneficiaries" (p. 183). This intriguing theorem implies that in households with an altruistic head there will be little conflict over the strategies for acquiring family income, although there may well be substantial conflict over the distribution of income within the family. The chapter ends with a discussion of why altruism is a common mode of behavior within families but selfishness appears to be the norm in market behavior.

Chapter 9 deals with variations across nonhuman species in reproductive patterns and in mating systems. It is assumed here that natural selection leads to a process where genetic fitness, which is assumed to depend upon both the quantity of offspring and the reproductive value of each offspring (quality), is maximized. The constraints on fitness are specific to each species, but certain regularities can be found. The analysis has implications that provide some insight into the biological underpinnings of variations in reproductive patterns (for example, *r*-strategists and *K*-strategists). The chapter also discusses the relationship between mating systems and reproductive patterns. One finding here is that "monogamy would be common when males contribute significantly to child care if differences between males were not large" (p. 211).

Chapter 10 deals with "imperfect information, marriage, and divorce" (p. 219). It adds a new dimension to the prior analysis by considering the effects of imperfect information on marital behavior. With respect to marriage, the chapter concerns the acquisition of better information through a search process. The analysis of divorce focuses on a concept called the "gain from divorce." An implication of the analysis here is that, other things being held constant, women with higher earnings should be more prone to divorce than those with lower earnings—an implication that is indeed supported by empirical evidence. The analysis is applied to a number of different cases, most important from my perspective the differences in divorce rate between white and black couples in the United States. Becker's formulation

provides a sort of insight here that is unique and potentially important for the development of social policy.

The final chapter of the book is entitled "The evolution of the family." It is a nontechnical discussion of some of the implications of the theory for an understanding of the evolution of the family from the form it took in more traditional societies to its present form and to its possible future forms. It is substantive, provocative, and easily accessible to the lay reader. It is worth reading, and I will not give away the punch lines here.

Becker's book is quite controversial. There are those who believe that the family is too complex an institution to be studied with formal mathematical models, and there are others who believe that the sort of economic methodology used by Becker is inappropriate for the study of the family. Yet Becker's volume is to be judged ultimately not on whether people believe in its appropriateness but on the extent to which the theoretical implications are borne out by observation. I suspect we will be reading about the results of various tests of those implications for many years to come.

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Threatened Plants

The Biological Aspects of Rare Plant Conservation. Proceedings of a conference, Cambridge, England, July 1980. HUGH SYNGE, Ed. Wiley-Interscience, New York, 1981. xxviii, 558 pp., illus. \$71.50.

This collection of 42 papers approaches the subject of plant conservation in a variety of ways. The papers range from reports of restricted local studies, such as that of a reserve of a fourth of an acre for single species of *Ranunculus* in England, to presentation of broad generalizations about the fate of the world's tropical forests. There are subjects pertaining to temperate and tropical countries treated by authors with various geographical experience.

The papers are grouped into six sections, the first of which includes 11 papers on survey and assessment of rare and threatened species. After a general paper on the work of the Threatened Plant Committee of the International Union for Conservation of Nature and Natural Resources (IUCN) by G. Lucas and H. Synge, examples are given from the United States, India, the Soviet