

WHY DO PEOPLE LEAVE INHERITANCE?

A NOTE

by

Reuven Brenner

New York University

No. 79-24

September 1979

Why Do People Leave Inheritance?

A Note

Reuven Brenner
New York University

Introduction

Not much attention has been paid in the economic literature to the institution of inheritance. One of the justifications given is that risk-aversion would justify leaving an inheritance to our offsprings. But even if we leave out the fact that risk-aversion is an arbitrary assumption, the argument does not take into consideration that the maximization problems solved are not those of individuals, but of families which do include children. Indeed several recent researches analyze the consequences of the assumption that families rather than its individual members are the decision makers, and in particular they take into consideration the well-being of future generations.¹ If this is the case again arises the question of why do the parents leave inheritance? They could instead transfer their wealth during their lifetime to their children and eventually when they retire their children could support them until their death. If the parents give away their wealth during their lifetime rather than constrain the transfer to one particular point in time (i.e. their death), the family (they and their children) could be better off since the opportunity set the family faces is enlarged. But from the remote past inheritance at death is one of the characteristic features of many societies.² How to explain this phenomena by maintaining the assumption that parents are rational utility maximizers, but not risk-averse, is the purpose of this note.

The Prisoner's Dilemma and the
Question of Trust

The issue of inheritance will be examined within the framework of the well-known non-zero-sum-game called the Prisoner's Dilemma. The game is characterized by the following type of payoff matrix:³

$$(1) \quad \begin{array}{c} \text{Player 1} \\ \alpha_1 \\ \alpha_2 \end{array} \quad \begin{array}{cc} \text{Player 2} \\ \beta_1 & \beta_2 \\ \left[\begin{array}{cc} (5,5) & (-4,6) \\ (6,-4) & (-3,3) \end{array} \right] \end{array}$$

The lines and the columns represent the payoffs in monetary terms (which can be transformed without any loss of generality to represent utilities) for the two strategies $\alpha_i, \beta_i, i=1,2$ that each prisoner may choose. The conditions of the game are such that each prisoner chooses his strategy without knowing what strategy is being played by the other. However both players are rational: they both know what the payoffs of the game are, and the set of strategies each may choose. It is then shown that if the players expect this game to be played just once, the outcome of rational utility maximization are the strategies α_2, β_2 and the equilibrium outcome of the game is the $(-3,-3)$ payoff.⁴

Inheritance is a game that can be played just once: as soon as the parents transfer their wealth to their children they no longer control it and expect to depend on the good-will of their children in the future, would they need assistance. Further clarification of the conditions of the game for my purpose is useful : the game refers to situations where one player,

the parents, face information costs in discovering the strategy (or intentions) chosen by the other player, the children. The meaning of the payoff matrix for the analysis becomes this: the outcome (5,5) could be obtained if parents trusted their children in playing the α_1 strategy and so they would chose the β_1 strategy. This is the case where the parents' wealth is transferred during their lifetime to their children, and the opportunity set the family faces being enlarged, both children and parents benefit from this information capital called 'trust'. The outcome (6,-4) results when the parents transferred their wealth during their lifetime, playing the α_1 strategy, but their children choose to play β_2 . The children are better off, the parents worse off (in comparison to inheritance at death) and Shakespeare's King Lear as well as Balzac's Père Goriot warn parents against this outcome. (-4,6) would result if children behaved nicely, supporting their parents until their death only to find themselves disinherited when the parents chose to leave all their wealth for charity, for example. The high information costs in discovering the individuals' intentions lead therefore in this game to the stable (-3,-3) payoff, i.e. inheritance at death. It is useful to notice that the conditions of the game fulfill all the ordinary assumptions of economic theory: the result is the outcome of rational utility maximization of parents, taking into consideration the high information costs in discovering their children's intentions.⁵ Also notice that the utility function may be linear in the monetary payoffs (so no risk-aversion is assumed here) and that the word "rational" is used in the same sense as defined by Muth (1961): the players of the game derive their expectations from the game which describes the behavior in the economy and

they adjust their behavior to its expected outcome.

This game explains in fact slightly more: it also shows why during their lifetime a 'nice' behavior between parents and children may result. Luce and Raiffa show that if the game defined in (1) is expected to be repeated many times in the future then if (a) the discount rate of future games is not too small (so that the sum of payoffs converges) or (b) the repeat probability of facing the same game in the future is not too small, then the equilibrium pair is the repeated use of the first strategies by both players and the outcome of the game is then (5,5). The meaning of this supergame and its outcome is this: parents transfer gifts, or help their children through loans until their death. The children know that would they spend the money "unwisely" (on drugs, or gambling for example), i.e. the outcome of the game being (6, -4) '6' for them and '-4' for their parents, they cannot expect the game to be repeated in the future.⁶ Thus instead of the (5,5) equilibrium we would arrive again at the (-3,3) equilibrium, the 'trust' between parents and children being lost. In other words, the 'nice' behavior between parents and children disappears and how long it takes to rebuild this information capital called 'trust' is an open question.

Luce and Raiffa also note that there is an alternative strategy for the supergame: if one player does not know how to arrive at the equilibrium of the repeated game it is profitable for the other player to teach him. In this way while one player is continuously playing the first strategy the other player may play the second strategy for a while, obtain temporarily some transfers from the other player and only in the long-run the game converges to the (5,5) type outcome. This strategy may shed light on the incentives of parents to educate their children in the direction of their

own tastes: teaching them their religion, classical music, sports and so forth, activities which are not necessarily related to the children's future income. But clearly in the long-run parents benefit when their children share their tastes.

Conclusions

A simple point was made in this note: both inheritance at death and 'nice' (altruistic) behavior between parents and children can be explained by rational utility maximization without assuming either risk-aversion or that somebody's well-being enters someone else's utility function.⁷ Inheritance at death was explained by the fact that parents are aware of the various strategies their children may play, would they rely on them for assistance. The same model sheds light on the altruistic behavior between parents and children, which stems from the fact that both sides expect to carry out many transactions in the future.

Does the model accurately describe human behavior? The model's major assumption is that a positive probability exists for children to neglect their parents once they got their inheritance. In addition to King Lear and Père Goriot, a large fraction of the victims in detective novels fit the game when they innocently⁸ played α_1 , but their relatives played β_2 once they knew the contents of wills. Unfortunately no data exists on actual cases where parents bring their children to court trying to recoup part of the wealth they transferred to their children. The model makes a prediction which should be emphasized: legislation effecting inheritance will effect human behavior, in particular the attitude of children toward their parents, or among relatives. For example, if the law would prevent

parents from disinheriting their children, children could neglect more their parents than in an economy where parents can dispose of their wealth freely. The murders in the Medieval royal families may not be accidental. This and other applications of the model for the relationship between law and economics (or laws and human behavior) will be subject for further research.

REFERENCES

- Becker, Gary S. "The Demand for Children", working paper, Department of Economics, University of Chicago, December 1978.
- _____, and Nigel Tomes "A Theory of the Distribution of Income and Intergenerational Mobility", working paper, Department of Economics, University of Chicago, November 1977.
- Brenner, Reuven "Why Do People Discriminate?" working, Department of Economics, University of Chicago, 1979a.
- _____ "Long-Term Contracts, the Prisoner's Dilemma and X-Efficiency", working paper, Department of Economics, University of Chicago, 1979b.
- _____ "Human Capital in Primitive Societies and Development", working paper, Department of Economics, University of Chicago, 1979c.
- Davis, Morton, D. Game Theory New York: Basic Books, 1973.
- Luce, Duncan R and Howard Raiffa Games and Decisions New York: John Wiley, 1966.
- Muth, J. F. "Rational Expectations and the Theory of Price Movements" Econometrica, Vol. 29, July 1961: 315-335.

FOOTNOTES

- 1) See Becker (1978) and Becker and Tomes (1977) for example.
- 2) There were primitive societies where no inheritance was left. An attempt toward explaining such a pattern also relying on the assumption of rational utility maximization, is made in Brenner (1979c).
- 3) See Luce and Raiffa (1966), pp. 94-102, Davis (1973), pp. 93-103 for further information on the game and its applications.
- 4) It is useful to point out that when the game is expected to be played many times the outcome (5,5) will result under certain conditions. For several applications of this supergame see Brenner (1979 a, b, c). In Brenner (1979a) the game is applied to discuss the subject of discrimination, in Brenner (1979b) to analyze long-term contracts and the concept of X-efficiency, and in Brenner (1979c) to analyze the structure of markets in primitive societies.
- 5) We do not have (yet) professional mind readers.
- 6) These are the short-run outcomes in monetary terms, or in terms of utility.
- 7) It is enough that there are many expected transactions to be carried out in the future with members of the family, for someone to behave altruistically toward them.
- 8) Innocence and ignorance can be easily confounded.

C.V. STARR CENTER FOR APPLIED ECONOMICS
Department of Economics
New York University
8 Washington Place, Room 700
New York, New York 10003

DISCUSSION PAPER SERIES

1977-1979

1977

D.P. NO.

- 77-01 A. Cukierman. THE EFFECTS OF WAGE INDEXATION ON MACROECONOMIC FLUCTUATIONS: A GENERALIZATION
- 77-02 D. Fischer and A. Schotter. THE INEVITABILITY OF THE "PARADOX OF REDISTRIBUTION" IN THE ALLOCATION OF VOTING WEIGHTS
- 77-03 M. Rizzo. TIME PREFERENCE, SITUATIONAL DETERMINISM AND CRIME
- 77-04 J. Orodver. SOME IMPLICATIONS OF COSTLY LITIGATION IN THE MODEL OF SINGLE ACTIVITY ACCIDENTS
- 77-05 W. Haines. THE TRAGEDY OF THE COMMON AND PRIVATE PROPERTY
- 77-06 A. Birati and A. Cukierman. TAXATION OF MONETARY GAINS: INDEXATION VERSUS THE REPLACEMENT PRINCIPLE
- 77-07 M. Krauss and W. Baumol. GUEST WORKERS AND SOCIAL PROGRAMS FINANCED BY HOST GOVERNMENTS
- 77-08 B. Stein. FIXED PERIOD WELFARE BENEFITS AND WORK INCENTIVES
- 77-09 E. Wolff. THE RATE OF SURPLUS VALUE, THE ORGANIC COMPOSITION AND THE GENERAL RATE OF PROFIT IN THE U.S. ECONOMY 1947-67
- 77-10 D. Gately and J. Kyle. STRATEGIES FOR OPEC'S PRICING DECISIONS
- 77-11 D. Fischer. EXTERNALITIES WHICH CAUSE UNEMPLOYMENT AND RETARD ECONOMIC DEVELOPMENT
- 77-12 A. Cukierman. STABILIZING POWERS OF PERFECTLY ANTICIPATED MONETARY POLICY WITH DEPRECIATION OF CAPITAL AT HISTORICAL COSTS
- 77-13 A. Schotter and Y. Braunstein. AN EXPERIMENTAL STUDY OF THE PROBLEM OF "THEORY ABSORPTION" IN N-PERSON BARGAINING SITUATIONS OR GAMES
- 77-14 I. Kirzner. THE ENTREPRENEURIAL ROLE IN MENGER'S SYSTEM
- 77-15 Andrew Schotter. FAIR HOUSING LAWS AND THE URBAN TAX BASE: A GAME THEORETICAL ANALYSIS
- 77-16 Solomon Fabricant. ACCOUNTING FOR BUSINESS INCOME UNDER INFLATION: CURRENT ISSUES AND VIEWS IN THE UNITED STATES
- 77-17 William J. Baumol and Dietrich Fischer. OPTIMAL LAGS IN A SCHUMPETERIAN INNOVATION PROCESS
- 77-18 Melvyn B. Krauss. INTERNATIONAL CAPITAL MOBILITY AND THE CORPORATION INCOME TAX
- 77-19 M. Ishaq Nadiri. THE CONTRIBUTION OF RESEARCH AND DEVELOPMENT TO ECONOMIC GROWTH
- 77-20 William J. Baumol. QUASI OPTIMALITY: THE PRICE WE MUST PAY FOR A PRICE SYSTEM

- 77-21 William J. Baumol. THE PUBLIC-GOOD ATTRIBUTE AS INDEPENDENT JUSTIFICATION FOR SUBSIDY
- 77-22 Alex Cukierman and Paul Wachtel. DIFFERENTIAL INFLATIONARY EXPECTATIONS AND THE VARIABILITY OF THE RATE OF INFLATION: SOME THEORY AND EVIDENCE
- 77-23 Edward N. Wolff and Dennis M. Bushe. LIFE-CYCLE PATTERNS OF INCOME AND CONSUMPTION
- 77-24 William J. Baumol. THEORY OF EQUITY IN PRICING FOR RESOURCE CONSERVATION
- 77-25 Andrew Schotter. THE EFFECTS OF PRECEDENT ON BINDING AND SELF POLICING ARBITRATION: A New View of Arbitration
- 77-26 Melvyn B. Krauss. TAXES ON CAPITAL IN A SPECIFIC FACTOR MODEL WITH INTERNATIONAL CAPITAL MOBILITY
- 77-27 Stephen Kagann and Kenneth W. Leeson. MAJOR JOURNALS IN ECONOMICS: A USER STUDY

Discussion Paper Series - 1978

- 78-01 Fritz Machlup and Stephen Kagann. THE CHANGING STRUCTURE OF THE KNOWLEDGE-PRODUCING LABOR FORCE
- 78-02 Mario Rizzo. UNCERTAINTY, SUBJECTIVITY AND THE ECONOMIC ANALYSIS OF LAW
- 78-03 Alex Cukierman. VARIABLE INFORMATION STRUCTURES AND RATIONAL EXPECTATIONS or RATIONAL EXPECTATIONS AND THE ROLE OF MONETARY POLICY: A GENERALIZATION
- 78-04 Mario Rizzo. THE COST OF CRIME TO VICTIMS: AN EMPIRICAL ANALYSIS
- 78-05 Dietrich Fischer. INTERMEDIATE TECHNOLOGY, EMPLOYMENT AND ECONOMIC GROWTH
- 78-06 Jacob Dreyer and Andrew Schotter. POWER RELATIONSHIPS IN THE INTERNATIONAL MONETARY FUND: THE CONSEQUENCES OF QUOTA CHANGES
- 78-07 Dermot Gately. THE POSSIBILITY OF MAJOR, ABRUPT INCREASES IN WORLD OIL PRICES BY 1990
- 78-08 James B. Ramsey. FEDERAL OFF-SHORE LEASE SALES AND A THEORETICAL ANALYSIS OF ALTERNATIVE BIDDING PROCEDURES
- 78-09 Dermot Gately. OPEC PRICING AND OUTPUT DECISIONS A Partition Function Approach to OPEC Stability
- 78-10 Jonas Prager. REGULATORY REFORM IN BANKING or TAKING THE BULL BY THE HORNS
- 78-11 Alex Cukierman. THE RELATIONSHIP BETWEEN RELATIVE PRICES AND THE GENERAL PRICE LEVEL A Suggested Interpretation
- 78-12 Alex Cukierman. INFLATION, TAX DEDUCTIBILITY OF DEPRECIATION AT HISTORICAL COSTS, THE LONGEVITY OF CAPITAL AND THE REAL ECONOMY
- 78-13 Ariel Pakes and M.A. Schankerman. THE RATE OF OBSOLESCENCE OF KNOWLEDGE, RESEARCH GESTATION LAGS, AND THE PRIVATE RATE OF RETURN TO RESEARCH RESOURCES
- 78-14 Mario J. Rizzo. KNIGHT'S THEORY OF UNCERTAINTY: A RECONSIDERATION
- 78-15 Gerald P. O'Driscoll, Jr. RATIONAL EXPECTATIONS AND ENTREPRENEURSHIP
- 78-16 Andrew Schotter and Gerald P. O'Driscoll, Jr. WHY RATIONAL EXPECTATIONS MAY BE IMPOSSIBLE: AN APPLICATION OF NEWCOMB'S PARADOX

Discussion Paper Series - 1979

- 79-01 Andrew Schotter and Simeon M. Berman. SUPERGAMES AND DIFFUSION PROCESSES: A THEORY OF NORM AND INSTITUTION ASSISTED SUPERGAMES
- 79-02 Janusz A. Ordover and John C. Panzar. ON THE NONEXISTENCE OF PARETO SUPERIOR OUTLAY SCHEDULES
- 79-03 M. Manove and Janusz Ordover. I WAIVE MY RIGHT TO READ THIS RECOMMENDATION: AN ANALYSIS OF THE BUCKLEY AMENDMENT
- 79-04 Roman Fydman. EFFICIENT ESTIMATION OF NONLINEAR REGRESSION MODELS WITH AUTOCORRELATED ERRORS
- 79-05 Janusz A. Ordover. PRODUCTS LIABILITY IN MARKETS WITH HETEROGENEOUS CONSUMERS
- 79-06 Bernard Wasow and Gilberto Arroyo. JOBS, WAGES AND THE LABOR SUPPLY: A MODEL OF EQUILIBRIUM UNEMPLOYMENT IN PUERTO RICO
- 79-07 Roman Frydman. SLUGGISH PRICE ADJUSTMENTS AND THE EFFECTIVENESS OF MONETARY POLICY UNDER RATIONAL EXPECTATIONS
- 79-08 Andrew Schotter. EVOLUTIONARILY STABLE MARKET EQUILIBRIA
- 79-09 J. A. Ordover and E.S. Phelps. ON THE CONCEPT OF OPTIMAL TAXATION IN AN OVERLAPPING-GENERATIONS MODEL OF EFFICIENT GROWTH
- 79-10 Mario J. Rizzo and Frank S. Arnold. THE TENDENCY TOWARD EFFICIENCY IN THE COMMON LAW
- 79-11 Mario J. Rizzo. ECONOMIC COSTS, MORAL COSTS OR RETRIBUTIVE JUSTICE: THE RATIONALE OF CRIMINAL LAW
- 79-12 J. A. Ordover and R.D. Willig. THE ROLE OF INFORMATION IN DESIGNING SOCIAL POLICY TOWARDS EXTERNALITIES
- 79-13 Walter W. Haines. HUMAN MOTIVATION AND ECONOMIC GROWTH
- 79-14 M. Ishaq Nadiri and M.A. Schankerman. THE STRUCTURE OF PRODUCTION, TECHNOLOGICAL CHANGE AND THE RATE OF GROWTH OF TOTAL FACTOR PRODUCTIVITY IN THE BELL SYSTEM
- 79-15 Edward N. Wolff. LIFE-CYCLE PATTERNS IN THE HOUSEHOLD ACCUMULATION OF WEALTH
- 79-16 M. Ishaq Nadiri. CONTRIBUTIONS AND DETERMINANTS OF RESEARCH AND DEVELOPMENT EXPENDITURES IN THE U.S. MANUFACTURING INDUSTRIES
- 79-17 Sebastian Arango and M. Ishaq Nadiri. PRICE EXPECTATIONS, FOREIGN EXCHANGE AND INTEREST RATES AND DEMAND FOR MONEY IN AN OPEN ECONOMY
- 79-18 W. J. Baumol, Dietrich Fischer, and M. Ishaq Nadiri. FORMS FOR EMPIRICAL COST FUNCTIONS TO EVALUATE EFFICIENCY OF INDUSTRY STRUCTURE
- 79-19 Andrew Schotter. THE ECONOMICS OF TIPPING AND GRATUITIES: AN ESSAY IN INSTITUTION ASSISTED MICRO-ECONOMICS
- 79-20 Andrew Schotter and Yale Braunstein. OPTIMAL ECONOMIC SEARCH: AN EXPERIMENTAL STUDY
- 79-21 J. A. Ordover. REDISTRIBUTING INCOMES: EX ANTE OR EX POST
- 79-22 Yale Braunstein and Andrew Schotter. OPTIMAL ECONOMIC SEARCH AND LABOR MARKET POLICY: AN EXPERIMENTAL STUDY

Discussion Paper Series -- continued.

- 79-23 Reuven Brenner. HUMAN CAPITAL AND CHANGING CIRCUMSTANCES
- 79-24 Reuven Brenner. WHY DO PEOPLE LEAVE INHERITANCE? A NOTE
- 79-25 Reuven Brenner. WHY DO PEOPLE DISCRIMINATE?
- 79-26 Reuven Brenner. LONG-TERM CONTRACTS, THE PRISONER'S DILEMMA AND X-EFFICIENCY
- 79-27 Fritz Machlup EXPLAINING CHANGES IN BALANCES OF PAYMENTS AND FOREIGN-EXCHANGE RATES: A POLEMIC WITHOUT GRAPHS, ALGEBRA, AND CITATIONS