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THE ULTIMATUM GAME AND THE LAW OF DEMAND*

L. G. Telser

This note shows that experimental results of the ultimatum game are consistent with and can be explained by the Law of Demand. Salaries of major league baseball players and estimates of their net marginal revenue while the reserve clause was in effect impressively confirm this assertion.

Experimental results for the ultimatum game have been interpreted as contradicting some implications of accepted economic theory.[1] A common version of the ultimatum game goes like this. A sum of $10 is available for distribution on just this one occasion to two people, *A* and *B*, strangers to each other, provided they can reach an agreement on how to share it. Many experiments prevent *A* and *B* from having any means of identifying each other before, during or after the game. *A* can make only one offer to *B* of any amount between 0 and $10. If *B* accepts the offer then they can share the $10 according to their agreement. If *B* rejects the offer then each gets zero. The claim is that accepted economic theory asserts it is optimal for *A* to offer *B* as little as possible, say one penny, and that *B* should accept this offer because even one penny is better than nothing. However, most experiments show that *A* offers *B* $5. This result is said to contradict standard economic theory.[2]

Imagine an experiment in which the sum is $10 million instead of only $10. Give the two parties some time to think things over. If *A* offers *B* $1,000, so the percentage is the same as one penny is to $10, it is likely that *B* would accept. If acceptance still seems unlikely then raise the amount to $100 million or to $1 billion, and, if you like, consider a smaller albeit substantial offer from *A* to *B*. Will there not be a stage when *B* will get an offer too good to reject? The point is this. When a sizable amount of money is in question, the subjects will focus their attention more and more narrowly on the money and everything else will fade away. The standard theory predicts that the split should approach extreme inequality, the larger is the total. The question is why and the law of demand is the answer.

The typical ultimatum experiment involves modest sums. The action of each subject depends on many things. It is the same as when someone derives utility

* I am grateful to Robert Frank, Vernon Smith and an anonymous referee for comments on an earlier draft. Mine is the responsibility for all remaining errors.

[1] The first extensive experiments on the ultimatum game were done by Guth *et al.* (1982). Perhaps only the Prisoners' Dilemma has generated more interest among economists and game theorists than their results. Since 1982, many articles have reported experiments that attempt to isolate the crucial factors responsible for what is regarded as a major anomaly for both economics and game theory. Gale *et al.* (1995) is a recent example with an extensive bibliography.

[2] A leading proponent of the position that these experiments contradict standard economic theory is Robert H. Frank (1988, pp. 170–4). Frank *et al.* (1993) give a somewhat related argument. However, Frank later seems to recognise implicitly the effect of the law of demand when he states 'At some point, of course, concerns about fairness are likely to give way to concerns about the absolute gain itself. It would be surprising indeed if the receiver rejected a proposal that he gets 10 percent of, say, $1 million.' (Frank, 1992, p. 200).

from many different commodities. Normally, the quantity demanded of a commodity varies inversely with its price relative to the prices of other commodities and with real income or wealth. In the ultimatum game, what a subject does depends on the many factors that affect his utility. If you interpret fairness as a commodity so that the closer the split to equality, the larger is the amount of fairness, then it is consistent with standard theory to find that the demand for fairness varies inversely with its price. The larger the total amount of money, the higher is the relative price of fairness and the lower is the demand for it. However, the income elasticity of the demand for fairness is unclear *a priori*.

The same is true for most other commodities. The individual's demand for things as a member of society depends on many factors other than the direct usefulness of the commodity to the individual. It depends on the desire for esteem, prevailing customs, what is seemly and proper, religious views and more. All these have a price, perhaps not explicit or out in the open but surely there underneath. At the optimum, the marginal rates of substitution equal the pertinent price ratios and the law of demand applies. It is no different in the ultimatum game. More detailed investigations of the ultimatum game can bring to light more of the factors that affect the outcome than we now know. The larger the total amount to be divided, the higher is the relative prices of these factors. Therefore, as a consequence of the standard law of demand, the larger the total amount to be divided, the closer is the split to the extreme in favour of A.[3]

Testing this explanation requires division of large sums far beyond the resources available to laboratory experimenters. However, convincing evidence conforming to the predictions of the law of demand is available for major league baseball players.[4] Scully (1974) provides estimates of the net marginal revenue product (NMRP) and salaries for hitters and pitchers for the period when the reserve clause was in force for three classes; class 1, he calls mediocre (sic), class 2, average, and class 3, stars. Recall that under the reserve clause an owner of a major league baseball team could present an ultimatum to a player in the shape of a final salary offer. A player who rejects the final offer removes himself from professional baseball and the owner loses his services to the team.

Admittedly, there are several aspects of the bargaining process between a player and the owner absent from carefully designed experiments on the ultimatum game. Among the more important of these is that the salary is decided before either side knows the NMRP for the forthcoming season. It goes almost without saying that the NMRP, being a concept of economic theory, is not consciously present in the minds of either party. We employ the fiction that the bargainers behave as if they are guided by their estimates of NMRP. In most ultimatum experiments the two parties are told how much there is to

[3] Vernon Smith correctly criticises 'the convenient nihilist belief that all recalcitrant observations must be due to inadequate payoff opportunity cost. (Of course, this argument raises the unanswered question of why there exists validating results with low opportunity cost).' (1994, p. 127). I hope my argument is not interpreted as being nihilistic. I believe it does answer Smith's question.

[4] I am very grateful to Alan Sanderson for bringing this study to my attention.

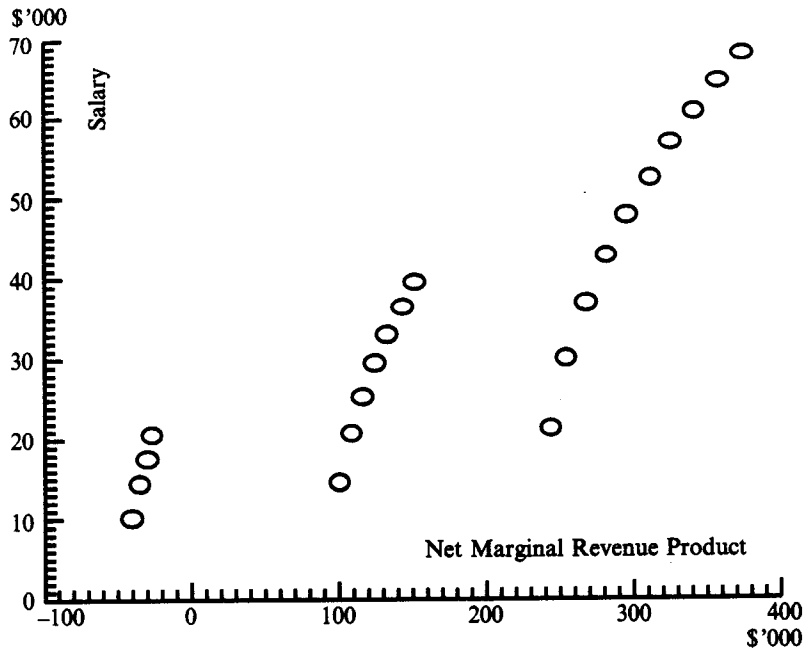

Fig. 1. Hitters.

divide so that they do know what is equivalent to the NMRP. The *ex ante* NMRP is subject to much uncertainty and it is the *ex post* NMRP that is perforce used in the empirical study. If players have more risk aversion than owners, then the uncertainty could push the split of NMRP in favour of the owner. In contrast to most experiments, the two parties not only know each other but also may expect to deal with each other in the future. This may move the split closer to equality. Although the owner makes the first offer, the player can reject it and then make a counter-offer. Negotiations typically go through several rounds before reaching a conclusion. This feature may lead to a more symmetric outcome. The owner negotiates with all prospective team members at about the same time but, owing to the reserve clause, a player has only one bidder for his services, the team owner. This confers more bargaining power on the owner and should move the result in his favour. In addition, the result of one bargain, should it become known to the other players who have not yet settled, may influence the terms of their contracts as well. This may harden the owner's position and make him less willing to offer concessions to those with whom he negotiates earlier. The owner's strategy presumably includes deciding the order of the different players in the bargaining sequence. It seems likely that he will begin with the better players and then go on to the weaker players. There may be complementarities or substitutabilities among the players so that the owner may not treat his negotiations with each player as an isolated event. Although collusion among some players on the same team is possible and could tip the balance in their favour, there is no evidence of this. The data do not give the players' team affiliations so that some interesting avenues of research cannot be pursued. However, it seems plausible that the better players seek

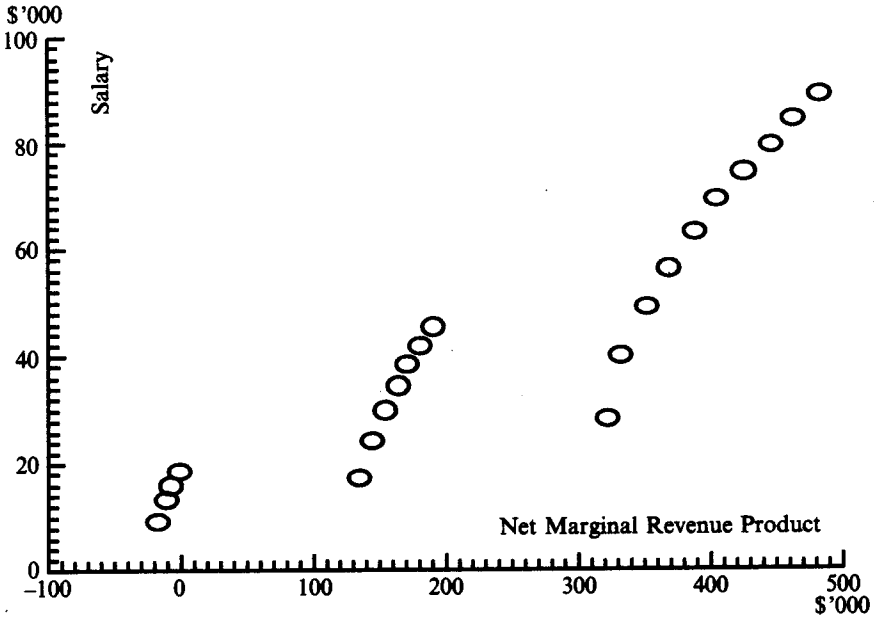

Fig. 2. Pitchers.

only their own interest without much concern for the effects on the poorer players.

All these considerations can affect the outcome, some favouring the players and some the owner. Their combined effect introduces a random variable that enshrouds the relation we wish to uncover. The salient point must not be overlooked. Most of these factors affect the negotiations between the owner and every player. Yet the empirical results will show that there is a systematic relation between the share of the player and the size of the net marginal revenue product. As the NMRP goes up, the share of the player goes down. All these complications notwithstanding, the correspondence between the professional baseball players' situation and the model of the ultimatum game is close enough to deserve attention as a way of testing the law of demand for a range of payment well beyond the resources of the laboratory experiments.

Figs. 1 and 2 show the results graphically. Salary is on the vertical axis and the net marginal revenue product on the horizontal axis, all in 1974 dollars. Note that at the upper end, NMRP reaches nearly $500,000 for pitchers and $400,000 for hitters. NMRP estimates the incremental contribution of the player to the team after deducting certain costs as described by Scully (see pp. 922–3).[5] The figures show that while salary is an increasing function of NMRP, it goes up less rapidly. Hence the bigger is the player's NMRP, the smaller his share. Table 1 presents the results of an analysis of variance of the ratio of salary to NMRP by player class. The first and most obvious point is that the ratio is

[5] Scully's estimate of NMRP is negative for the class 1 players. For this class my estimate of the salary ratio is the salary divided by the sum of the absolute value of NMRP plus the salary. This makes the left-hand end of the range equal to the estimated NMRP. However, even if we ignore the class 1 results and use only the class 2 and 3 results, it is still true that the ratio decreases with the size of the NMRP.

Table 1

Ratio of Salaries to Net Marginal Revenue Product

		Hitters		Pitchers	
Class	Number	Mean	S.E.	Mean	S.E.
1	4	0·3223	0·0268	0·5228	0·0426
2	7	0·2116	0·0202	0·1948	0·0322
3	10	0·1483	0·0169	0·1508	0·0269
	F-Ratio	15·258		28·532	

lower for baseball players, where the stakes are high, than it is in the laboratory experiments, where the stakes are low. Second, the ratio is lower, the higher the class of the player. The results are highly significant in the direction predicted by the theory, the standard law of demand.

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REFERENCES

Frank, Robert H. (1988). *Passions within Reason: the Strategic Role of the Emotions*. New York: Norton.

Frank, Robert H. (1992). *Microeconomics in Behavior*. 2d ed. New York: McGraw-Hill.

Frank, Robert H., Gilovich, Thomas and Regan, Denis T. (1993). 'Does studying economics inhibit cooperation?' *Journal of Economic Perspectives*, vol. 7, pp. 159–72.

Gale, John, Binmore, Kenneth G. and Samuelson, Larry. (1995). 'Learning to be imperfect: the ultimatum game.' *Games and Economic Behavior*, vol. 8, pp. 56–90.

Guth, Werner, Schmittberger, Rolf and Schwarze, Bernd. (1982). 'An experimental analysis of ultimatum bargaining.' *Journal of Economic Behavior and Organization*, vol. 3, pp. 367–88.

Scully, G. W. (1974). 'Pay and performance in major league baseball.' *American Economic Review*, vol. 64, pp. 915–30.

Smith, Vernon. (1994). 'Economics in the laboratory.' *Journal of Economic Perspectives*, vol. 8, pp. 113–31.

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AN ECONOMIC HISTORIAN'S ECONOMIST: REMEMBERING SIMON KUZNETS*

Vibha Kapuria-Foreman and Mark Perlman

A great teacher affects eternity; he can never tell where his influence stops.
(Henry B. Adams, *The Education of Henry Adams.*)

Simon Smith Kuznets (1901–1985) has been dead for more than a decade. To some that length of time may deprive him of significance, but to others at least a decade is required to really begin to appreciate a man's historical significance. Arthur Koestler held that any rational author would eagerly trade 100 readers the year that a book appeared for 10 readers 10 years later, and one reader a century after the book's initial appearance. So it is we think with great historical figures; at the time of their death they are remembered for who they were, it is later that they are remembered for what they really did.

While it could be argued that the influence of Simon Kuznets on governmental policy and on the economic history of the world was for fortuitous reasons the greatest of any economist (Joseph, the son of Jacob, was a political scientist, not an economist), in all the past, we will not make that claim. Rather we will describe him principally as the *exemplar economic empiricist* of the century and possibly of all previous centuries. He was a man born with some qualities of greatness, he achieved through his imaginative hard work greatness as one of the architects of the national accounts and conceptualisers of the measurement of capital formation, and had greatness forced upon him when he and his one-time student and later colleague (Robert Nathan) reorganised the method of material procurement during World War II; in four short years the percentage of Gross National Product going to the purchase of material rose from a mere 4% to a mighty 48%. What we hope to achieve is to leave our readers with an appreciation of this amazing, imaginative, ambitious, and kindly man – the scholar with indomitable energy, stern self-discipline and a fragile voice.

Perhaps strange,[1] the reason for Kuznets's 1971 Nobel Award was not the aforementioned achievement (which still remains all but unknown), but was essentially for a variation or even a reprise of the orchestrated thinking of his earlier work. The Committee's comparatively slight delay[2] in recognising his

* We wish to thank numerous readers whose suggestions we have true reason to appreciate and which we generally took. These include Kenneth Arrow, Richard A. Easterlin, Scott A. Foreman, Milton Friedman, Geoffrey Harcourt, Paul Kuznets, Charles R. McCann, Don Patinkin, and Naomi Perlman.

[1] The Nobel Award seems generally to have been given for abstract achievement; for some the quick wartime conversion of the world's greatest economy lies outside the pale of science. *Chacun à son gôut.*

[2] The initial award, shared by Frisch and Tinbergen, was given very quickly – purportedly before the eventual procedures had been formalised. The second award, given to Paul A. Samuelson, apparently disappointed Erik Lundberg (a key figure on the Nobel Committee recommending the award), who had

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