Game theory concepts are used to develop effective competitive strategies for setting prices, the level of product quality, research and development, advertising, and other forms of nonprice competition in oligopoly markets. Game theory concepts have also been used to set public policy for currency market intervention in emerging markets and auction strategies for broadcast spectrum in the telecommunications industry. This brief introduction shows how managers can use a simple understanding of game theory concepts to make better managerial decisions.

Prisoner's Dilemma

Game theory is a general framework to help decision making when firm payoffs depend on actions taken by other firms. Because decision interdependence is a prime characteristic of oligopoly markets, game theory concepts have a wide variety of applications in the study of oligopoly. In a simultaneous-move game, each decision maker makes choices without specific knowledge of competitor counter moves. In a sequential-move game, decision makers make their move after observing competitor moves. If two firms set prices without knowledge of each other's decisions, it is a simultaneous-move game. If one firm sets its price only after observing its rival's price, the firm is said to be involved in a sequential-move game. In a oneshot game, the underlying interaction between competitors occurs only once; in a repeat game, there is an ongoing interaction between competitors.

A game theory strategy is a decision rule that describes the action taken by a decision maker at any point in time. Asimple introduction to game theory strategy is provided by perhaps the most famous of all simultaneous-move one-shot games: The so-called Prisoner's Dilemma.

Suppose two suspects, Bonnie and Clyde, are jointly accused of committing a specific crime, say inside trading. Furthermore, assume that the conviction of either suspect cannot be secured without a signed confession by one or both suspects. As shown in Table, if neither Bonnie nor Clyde confesses, the prosecutor will be unable to obtain a conviction, and both will be set free. If only one suspect confesses, turns state's evidence and implicates the other, then the one confessing will get the relatively light penalty of a having to pay a fine and serving probation, and the implicated party will receive the harsh sentence of 5 years in prison. If both suspects confess, then each will receive a stiff 2-year sentence. If both suspects are held in isolation, neither knows what the other will do, and a classic conflict-of-interest situation is created. Although each suspect can control the range of sentencing outcomes, neither can control the ultimate outcome. In this situation, there is no dominant strategy that results in the best result for either suspect regardless of the action taken by the other. Both would be better off if they could be assured that the other would not confess, because if neither confesses both are set free. However, in failing to confess, each is exposed to the risk that the other will confess. By not confessing, they would then receive the harsh sentence of 5 years in prison. This uncertainty creates the Prisoner's Dilemma. To confess, or not to confess—that is the question.

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