
BARGAINING

Bargaining is an everyday activity that pervades all social life and, arguably, is the most important mode by which political decisions are made. It summarizes all social activities in which individuals or corporate actors have a common interest in working together but disagree on how they should cooperate. Bargaining is therefore a voluntary process through which negotiators try to distribute among themselves a mutual benefit. In politics, the mixture between cooperation and conflict that characterizes bargaining situations becomes apparent at all levels of decision making. An example of a recurrent, difficult bargaining process is the distribution of the taxed income of a polity between competing interest groups who advance contradicting claims to bolster their demand for a large share. Below, major game theoretical solutions to bargaining problems and their possible applications in political science are discussed.

In the simplest political bargaining problem, two negotiators disagree over how to divide a pie worth one unit of a fictitious currency (eurodollar). Any outcome in the “bargaining zone,” which is delimited by the minimal individual payoffs the actors expect, can result from the negotiations. Trivially, no bargain is feasible if the minimal expectations do not overlap or, in other words, if the set containing the possible outcomes is empty. If the minimal expectation—technically often called the “reservation price”—of one player is zero, an extreme solution in which one side cashes in 1 eurodollar while the other side leaves the negotiation table empty-handed can occur, since the unlucky negotiator is assumed to be indifferent to the lack of a reward and the failure of negotiations. The “fair solution,” in the absence of any power imbalance or neediness of a negotiator, is a

50:50 deal that splits the eurodollar into equal shares.

In many bargaining situations, actors demand a disproportional division of the spoils. The other negotiators then have to judge whether a credible claim that negotiations would fail without a concession from the other side supports the request. If they reject this demand, bargaining stops or is interrupted. Another suboptimal outcome materializes when negotiators accept a disproportional division and fail to call the bluff by the other side that the negotiations would break down if no concession were granted. The fate of a claim depends on the ability of the negotiators to communicate credibly that their claims are sincere. This creates in return an incentive to bolster the credibility of a specific position through strategic moves.

Social scientists who try to understand bargaining belong to either one of two camps. The first approach stems largely from social psychology and is, by and large, empirical. It tries to assess the importance of cognitive failures and other psychological features based on the performance of individual negotiators. In political science, the strategic theory of bargaining, as it was developed by Francis Edgeworth, Arthur Bowley, Frederik Zeuthen, and John Nash, is more influential as it takes into account that negotiation outcomes result from the interaction of at least two forward-looking actors. Technically, the strategic theory of bargaining is based on game theory. Its applications pertain to any subfield within political science and cover a wide variety of issues, ranging from the analysis of interstate war to delegation problems in public bureaucracies.

Bargaining games are answers to what is known as the “bargaining problem”: Is it possible to predict the equilibrium outcome of a social negotiation in which all participating actors expect an individual gain? It took the genius of Nobel Prize winner John F. Nash to predict a unique equilibrium—that is, a single point—to the bargaining problem. In the Nash bargaining solution (NBS), this outcome represents the maximal product of the differences between the utility a negotiator attaches to his or her share x and the utility of the reservation price q .

By way of illustration, imagine a bilateral bargain in which the reservation price of two equally skilful negotiators is 0 so that actor i receives x and

its counterpart j receives $1 - x = y$. We obtain the equilibrium prediction through the maximization of the Nash product $x(1 - x)$. Setting the differentiated equation to zero ($1 - 2x = 0$), $x = 1/2$ and $y = 1/2$ result. A power-free bargain situation entices, in other words, a fair division.

As bargaining power has many facets, it can enter the calculus of the social outcome in various ways. One possibility is to equate power with capabilities c_i that enter as an exponential weight the utility function of the individual actor, where the sum of the capabilities add up to 1 within a society. Hence, if negotiator i is twice as powerful as counterpart j , the maximization problem in the bilateral case reduces to $x^2(1 - x)$. Differentiating $x^2 - x^3$ and setting the result $2x - 3x^2 = 0$. If we disregard the outcome $x = 0$, actor i 's share amounts to $2/3$.

A further aspect of power at the center of the strategic theory of bargaining stems from the attractiveness of a so-called outside option. This outcome is equivalent to what an individual negotiator could reach if the negotiations fail or if they are stalled for some time. Another Nobel Prize winner, Thomas Schelling, made this point through the counterintuitive "paradox of weakness," according to which the less flexible negotiator possesses a bargaining advantage. Generally, the presence of an attractive outside option helps negotiators in their attempt to commit themselves credibly to a more beneficial bargaining position. Robert D. Putnam has used this insight in his "two-level games" metaphor, which stands for negotiations between governments that have to care about domestic pivot players. In such negotiations, governments who face a strong, isolationist opposition and a supramajoritarian ratification hurdle back home can convince a more cooperation-minded negotiation partner that only a minimal agreement is feasible. The commitment of such constrained governments is more credible precisely because they cannot get an agreement ratified that does not find the support of certain sections of the opposition. A treaty that is too close to the bargaining position of the foreign government is consequently doomed to fail in the negotiations or at the ratification stage.

The "Schelling conjecture" that the seemingly weak is in real life the strong actor can be illustrated within the NBS framework through the

assumption that one of the actors can be committed to a disagreement point of 0.5 in the bargain over a pie of unit size. This credible claim lets the "zone of agreement" shrink and alters the maximization problem to $(x - 0.5)(1 - x)$, which leads after differentiation to a division of $x = 0.75$ and $y = 0.25$.

Criticisms of the NBS deal with its static nature, its axiomatic foundations, and its reliance on cooperative game theory. The first objection answers to the observation that most (but not all) negotiations consist of lengthy haggling. The second and the third of the perceived problems respond to the general criteria (axioms) that a bargaining solution has, in Nash's view, to fulfill in order to qualify as a socially rational outcome of a negotiation. His model, in particular, assumes in line with cooperative game theory that the negotiators agree on certain rules of the game and do not try to outsmart each other through unilateral moves.

A response to these objections is the development of noncooperative bargaining models that are dynamic and include relevant one-sided actions. Noncooperative bargaining models also often study the impact of information deficits on the bargaining outcomes. The most prominent analytical framework that assumes, in its most basic form, fully informed actors is the Ståhl-Rubinstein bargaining model. This sequential game introduces a strict bargaining *protocol* (a term standing for the order in which the actors are allowed to move) where the right to make an offer moves back and forth between two players. One version of this analytical framework assumes that actors discount the future with the factor δ_i ($0 < \delta_i \leq 1$). Hence, the longer the bargaining goes on, the less attractive it becomes. The model predicts again a unique outcome that is largely driven by the size of the discount parameters and hence by the patience of the negotiators. In general, the more patient an actor is, the larger is the share of the pie that she or he can bring home. If the intervals between the negotiation rounds converge toward zero, the Ståhl-Rubinstein bargaining model coincides with NBS.

The Ståhl-Rubinstein framework of analysis has been extended to negotiations among n actors. To make sensible equilibrium predictions in such a context, some additional assumptions about the bargaining protocol and the feasibility of certain strategies are necessary. The Baron-Ferejohn model

of legislative bargaining, for instance, assumes that one member of parliament is randomly recognized as an agenda setter who can make equilibrium proposals to a majority of other legislators.

Generalizations of Schelling's insight that credible commitments are a key prerequisite to bargaining success incorporate models in which some negotiators are assumed to be imperfectly informed. Such "asymmetric information" pertains in the bargaining context most often to the credibility of a negotiator's claim that an outside option is more attractive than the proposal made by the badly informed negotiator. The better informed side tries in such a situation to improve the credibility of its claim through what is called "costly signals"; this is why such bargaining games belong to the category of "signaling games." In an interstate crisis, for instance, a costly signal can consist of a public warning or the mobilization of the troops. Signaling games have been successfully developed to understand conventional and nuclear deterrence; crisis behavior of this sort belongs to what is known as tacit bargaining, where actors use nonverbal means of communication to bolster their claims for a specific division of the spoils. The disadvantage of limited-information models, as games with asymmetric information are also called, is the plethora of possible equilibrium solutions. Oddly, this oversupply of predictions can only be trimmed down at the cost of asking the model agents to behave even more rationally.

The empirical evidence in favor of the equilibrium predictions that can be derived from bargaining models is mixed. In comparison with other decision-making modes such as voting or delegation, bargaining models predict outcomes more accurately. However, the extreme 100/0 division that some bargaining games suggest as a rational strategy hardly finds any support. Both laboratory and field experiments have shown that privileged negotiators often propose fair divisions against their own self-interest. The theoretical merit of these findings remains, however, controversial, although some powerful causal mechanisms that account for such seemingly irrational behavior have been proposed.

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See also Experiments, Laboratory; Game Theory; Rational Choice

Further Readings

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