



How fully do people exploit their bargaining position? The effects of bargaining institution and the 50–50 norm[☆]



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ABSTRACT

A recurring puzzle in bargaining experiments is that individuals under-exploit their bargaining position, compared to theoretical predictions. We conduct an experiment using two institutions: Nash demand game (NDG) and unstructured bargaining game (UBG). Unlike most previous experiments, disagreement payoffs are *earned* rather than assigned, and about one-fourth of the time, one bargainer's disagreement payoff is more than half the cake size ("dominant bargaining power"), so that equal splits are not individually rational.

Subjects under-respond to their bargaining position most severely in the NDG without dominant bargaining power. Responsiveness increases in the UBG, but is still lower than predicted; the same is true for the NDG with dominant bargaining power. Only in the UBG with dominant bargaining power – the combination of a bargaining institution with low strategic uncertainty and elimination of the 50–50 "security blanket" – do subjects approximately fully exploit their bargaining position.

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1. Background

Bargaining is pervasive. Its role in determining prices is well known: even in Western societies, where haggling over small purchases has been de-emphasised, large goods (e.g., new and used cars, houses) are often sold by bargaining. Bargaining is frequently used to set employees' compensation packages and other working conditions, at either the group level (for unionised jobs) or the individual level (in many professional labour markets).¹ Collective decision making in politics is often modelled using a bargaining framework (e.g., [Baron and Ferejohn, 1989](#) use a multi-player version of the Nash demand game to investigate the behaviour of legislatures). Bargaining settings are also used to understand pre-trial behaviour in legal disputes ([Daughety, 2000](#); [Spier, 2007](#)) and international treaty negotiations (see, e.g., [Fisher and Ury's \(1981\)](#) discussion

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¹ Indeed, many researchers have suggested that male–female wage gaps are at least partly due to sex differences in willingness or ability to bargain; see, e.g., [Stuhlmacher and Walters \(1999\)](#), [Small et al. \(2007\)](#) and [Fortin \(2008\)](#).

of the role of bargaining during the 1973–1982 Third United Nations Conference on the Law of the Sea). Thomas Schelling was not exaggerating when he famously noted that “[t]o study the strategy of conflict is to take the view that most conflict situations are essentially bargaining situations” (Schelling, 1960, p. 5).

A fundamental principle of bargaining is that outcomes depend on bargaining power. Even before bargaining settings were thought of as leading to precise predictions, it was generally understood that the division of surplus would depend on the two parties’ relative bargaining positions (Edgeworth, 1881). Later axiomatic bargaining solution concepts (e.g., Nash, 1950; Kalai and Smorodinsky, 1975) formalised this dependence and quantified it by specifying a precise outcome – the bargaining solution – based on the most important features of the environment. Even non-cooperative game-theoretic approaches, which may yield a multiplicity of theoretical predictions, can narrow these down to a unique prediction with minor additional assumptions. With a unique prediction comes a well-defined comparative-static relationship between specific features of the environment – in particular, the bargaining position of one player relative to the other – and that prediction.

Whether these theoretical implications are seen in real bargaining is an empirical question. Previous research (see Section 3) suggests that bargainers are actually less responsive to changes in bargaining position than predicted, and in particular, the social norm of 50–50 splits of the “cake” (the amount being bargained over) seems to exert a powerful pull on outcomes.² While the extent of this under-responsiveness varies widely across studies, there has been surprisingly little systematic examination of the factors associated with it: in what settings do people tend to exploit their bargaining power to a greater or lesser degree, how much impact do individual aspects of the bargaining setting have, and are there any settings where theoretically predicted levels of exploitation should be expected?

The goal of the current paper is to improve understanding of how bargaining outcomes are shaped by players’ bargaining positions. We use a laboratory experiment, allowing us to maintain, in two important ways, a high degree of control over the environment relative to observational studies from the field. First, we are able to standardise the rules under which bargaining takes place, in contrast to field studies that must aggregate bargaining outcomes from heterogeneous and perhaps imperfectly understood bargaining institutions. Second, we give the subjects complete information about the cake size and *disagreement payoffs* (the amounts they get if bargaining is unsuccessful), so that we know, and the subjects had enough information to compute, the theoretical prediction for any particular bargaining pair.

We implement differences in bargaining position via the disagreement outcome, so that it can vary nearly continuously over a wide range of possible levels, in contrast to many earlier studies that varied bargaining power in lumpier ways (e.g., first- vs. second-mover, number of bargaining stages, endogenous vs. random breakdown). Bargaining theory displays remarkable consensus regarding the predicted effect of the disagreement outcome. All of the most common axiomatic bargaining solutions – as well as those non-cooperative techniques that yield unique solutions – have exactly the same implication for this setting: a unit increase in one’s own disagreement payoff implies a one-half unit increase in one’s own payoff as a result of bargaining, while a unit increase in one’s opponent’s disagreement payoff implies a corresponding one-half unit decrease. We call these the *own-disagreement-payoff effect* and *opponent-disagreement-payoff effect*, and their sum – a measure of overall responsiveness to bargaining position – the *combined [disagreement-payoff] effect*.

Subjects in our experiment bargain under one of two bargaining institutions, both widespread in bargaining experiments and in theoretical modelling of the bargaining process. In the *Nash demand game* (NDG), bargaining consists of a single pair of simultaneous demands. If these total the cake size or less, then each bargainer receives the amount demanded; otherwise they receive their disagreement payoffs. In the *unstructured bargaining game* (UBG), bargainers are given a known time interval, during which either one can make proposals for splitting the cake. If no proposal is accepted before the time runs out, the bargainers receive their disagreement payoffs.

Although the distribution of bargaining power in our experiment is typically asymmetric due to the bargainers having different disagreement payoffs, the two institutions themselves are symmetric in the sense that neither bargainer is given a structural advantage (in contrast, for example, to the ultimatum game or Rubinstein (1982) bargaining, both of which favour the first mover). However, the two institutions have markedly different levels of strategic uncertainty, resulting in a much more severe coordination problem in the NDG than the UBG; previous research (Feltovich and Swierzbinski, 2011) has found this not only leads to fewer agreements in the NDG, but for agreements to gravitate toward 50–50 splits of the cake. Because of this, we hypothesise that subjects will be less responsive to changes in their bargaining power in that game than in the UBG. That is, disagreement-payoff effects should be *higher in the UBG than in the NDG*.

Our variation of the disagreement outcome gives rise to another set of hypotheses involving the 50–50 split. About one-fourth of the time, one of the bargainers has a disagreement payoff more than half of the cake size; we call this *dominant bargaining power*. When an individual has dominant bargaining power, agreeing to a 50–50 split involves an actual monetary sacrifice, making it substantially less attractive compared to situations where neither bargainer has dominant bargaining power (in which case a 50–50 split may mean accepting a smaller gain relative to the disagreement payoff than one’s co-

² In this paper, we are agnostic about the reasons behind deviations from the standard theoretical predictions. Two plausible, not mutually-exclusive, reasons are focal points and fairness preferences. Both have long been proposed as explanations for bargaining results, with the importance of focal points noted by Schelling (1960), and fairness explanations dating back at least to Hoffman and Spitzer (1982). Our own previous work has examined the ability of both of these to explain specifically under-responsiveness to changes in bargaining position (see Anbarci and Feltovich, 2013, 2016 for fairness and focal points respectively).

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