Negotiation Strategies under Sigmoid Preferences

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ABSTRACT

The diminishing returns concept undergirds many economic theories and has led to the common assumption of concave preferences in the negotiation literature. Realizing that in practice negotiating parties are often confronted with very steep disagreements, negotiation researchers have investigated the impact of convex preferences on compromise and logrolling bargaining strategies. This article extends the previous work to the case of sigmoid preferences and examines the resulting possible shapes of the efficient frontier curve in two-party multi-issue negotiations. The implications for compromise and logrolling negotiation strategies are discussed.

KEYWORDS

Compromising, Logrolling, Negotiation Analysis, Negotiation Strategy, Preference Structures, Sigmoid Functions

INTRODUCTION

Negotiation analysis has a rich and varied foundation and it has been studied from different perspectives and contexts (Li, Tost, & Wade-Benzoni, 2007; Tomlinson & Lewicki, 2015). This study takes what Raiffa (1982) characterized as a “prescriptive-descriptive” perspective by investigating how the preferences of the parties impact the effectiveness of their negotiation strategies. The authors are motivated by decades of research that demonstrated that the same strategy can produce very different outcomes for the bargaining parties depending on the structure of the negotiation problem (e.g., Raiffa, Ibid; Mumpower, 1991; Raiffa, Richardson & Metcalfe, 2002; Vetschera, Filzmoser & Mitterhofer, 2014). Yet negotiators often fail to get good deals. The common misbelief that the negotiators achieve optimal solutions is well-captured in the words of Sebenius (1992, p. 21):

[D]espite a world peppered with needless deadlocks, poor agreements, soured relationships, strikes, and wars, many classically trained economists (still) react with incredulity that ‘rational’ bargainers might walk away from unrealized joint gains. By contrast, most negotiation analysts anticipate the likelihood of ex post Pareto inefficient agreements, and devote considerable effort at helping the parties to ‘expand the pie’.

Approximately twelve years later, Mumpower and colleagues still noted that “(n)egotiators either do not settle at all, or they agree to inefficient settlements, failing to find Pareto optimal agreements” (Mumpower et al., 2004, p. 260). In 2016, the same challenges are still relevant and require careful investigation. What strategies should a negotiator adopt in order to achieve the most desirable settlement? Does compromise result in the better outcomes regardless of the shape of the
parties’ preference structures (i.e., utility functions)? If the effectiveness of a strategy depends on the negotiation structure, how can parties assess each other’s preferences in order to devise an effective strategy?

The pioneering works of Raiffa (1982) and Mumpower (1991) have greatly advanced our understanding of the structure of a negotiation problem, the characteristics of settlement spaces, and the shape and location of the efficient frontiers. Raiffa introduced the concept of post-settlement settlement in the context of improvement-based negotiations. Following the common assumption of diminishing returns, he only considered the case of concave preferences (Raiffa, 1982; Raiffa, Richardson & Metcalfe, 2002). Mumpower (1991) extended the analysis to different combinations of preferences (linear-linear, concave-concave, convex-convex, linear-concave, linear-convex, and concave-convex structures) and examined their implications for different negotiation strategies. His seminal contribution is that different combinations of the parties’ preferences determine the underlying structure of negotiation problem, that is, the shape of the efficient frontier curve. The use of a compromise strategy or of a logrolling strategy (also referred to as horse-trading) has opposite outcomes depending on the shape of the frontier curve. For example, a compromise strategy may result in optimal agreements when the frontier curve is concave, but it cannot produce the same result in non-concave, irregular shaped settlement spaces. Mumpower et al. (2004) further examined the behavior of negotiating parties under five different negotiation structures (concave and non-concave) which were categorized as highly integrative, integrative, fixed sum, distributive, and highly distributive.

Northcraft et al. (1995, 1998) examined the relationship between shapes of the parties’ marginal utility functions and the outcomes of negotiation and found that with convex utility functions negotiators have greater difficulty in reaching agreement. Vetschera (2005) examined the effect of the strategic manipulation of preference information by parties on the negotiation outcome. Building on Mumpower et al. (Ibid), Vetschera (2006) also studied the behavior of negotiators when confronting different combinations of concave and convex utility functions and found that in 20-55% of the cases studied the utility functions of negotiators are convex. He also found that it is harder to achieve an agreement when utility functions are convex but that negotiators with convex preferences for an attribute variable achieve better outcomes in that attribute than negotiators who have linear or concave utility functions. Neves & Nakhai (2008, 2011) examined different cases of non-concave preferences and proposed a method for optimizing post-settlement settlements.

Although prior studies have made fundamental contributions to our understanding of the effect of negotiation preferences structure on the negotiators’ strategies, the focus of the extant research has been on concave and convex preferences. Interestingly, even in recent normative studies of negotiation, the authors restrict their analyses to the case of concave preferences and concave settlement spaces (e.g., Weiss, 2012; Vetschera, 2013; Vetschera et al., 2014; Tomlinson & Lewicki, 2015). This article investigates the effect of a wider variety of negotiation structures including concave, convex, sigmoid, and inverse sigmoid preferences. The remainder of this article is organized as follows: First, the article examines why two negotiators will always confront reversed preferences; next, compromise and logrolling strategies are defined, followed by an analysis of the effectiveness of these strategies under concave and convex preferences. The article then examines the effectiveness of compromise and logrolling strategies under sigmoid and inverse sigmoid preferences. Finally, the implications for compromise and logrolling strategies are discussed and areas for future research are identified in conclusion.
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