Spillovers and conflict in wage bargaining: Experimental evidence☆

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ABSTRACT

We investigate how information spillovers from other negotiations affect conflict in bargaining. Two theoretical mechanisms are studied: (1) social comparisons, which are hypothesized to increase conflict due to self-serving biases, and (2) rational learning, which is hypothesized to decrease conflict by reducing information asymmetries. Our experimental design allows for an interactive bargaining process and offers full control over the information available to negotiators. Consistent with studies of one-shot games, we find that spillovers resulting from social comparisons increase conflict; however, the bargaining process mitigates this effect. In bargaining situations in which spillovers also allow for rational learning, the conflict-increasing effects of spillovers are prevented.

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1. Introduction

Conflicts that arise during wage bargaining in firms are influenced by information about negotiations in other firms (Babcock et al. 1996; Babcock et al. 2005; Kuhn and Gu, 1999). We refer to this influence as "spillovers." The economics literature proposes two mechanisms that explain spillovers: *social comparisons*— which stem from fairness and equity considerations (Babcock et al., 1996; Babcock et al., 2005), and *rational learning* —which results from the revelation of private information about the firm's ability to pay (Kuhn and Gu, 1998, 1999). Social comparisons are thought to increase the level of conflict in wage bargaining whereas rational learning is thought to reduce the level of conflict.

Experimental research offers valuable insights into spillovers in bargaining (c.f. Falk and Fehr, 2003; Charness and Kuhn, 2011) because it allows the researcher to manipulate the availability of information to bargaining parties in order to isolate spillover effects.[1] Existing experimental studies predominantly model wage bargaining as a "take-it-or-leave-it" (ultimatum) game. Such a representation does not allow negotiators to actively coordinate and, consequently, may overstate the influence of spillovers. To overcome this shortcoming we implement an experimental design that allows two subjects (a trade union negotiator and a firm negotiator) to exchange proposals; a representation which more closely mimics real world wage bargaining contexts.

Our experimental design contrasts a control condition (bargaining without spillovers) with two treatment conditions allowing for spillovers. One treatment condition provides information about the outcomes of other negotiations but does not reveal the other firm's ability to pay (stimulating subjects to make social comparisons). The second treatment condition provides information about the outcomes of other negotiations and reveals the other firm's ability to pay to be identical (allowing subjects to rationally learn). We study the impact of spillovers on conflict in an interactive bargaining process by analyzing: (1) trade union negotiators' initial demands, (2) the level of divergence between trade union negotiators' and firm negotiators' proposals during the bargaining process, and (3) the likelihood of reaching no agreement.

2. Theory

The two theoretical mechanisms that explain spillovers in wage bargaining, social comparisons (c.f. Festinger, 1954) and rational learning (Kuhn and Gu, 1999; Burgess, 1988), both predict that demands are affected by information about (observed)

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[1] In natural data the isolation of 'true' influences is often problematic, due to spurious correlations and the measurement of appropriate reference points (Mitchell, 1982; Manski, 1993).

outcomes of other negotiations. However, the two mechanisms produce competing predictions about the level of conflict resulting from spillovers.

The core assumption in the social comparisons mechanism is that labor relations are affected by concerns for fairness and equity (c.f Adams, 1963; Frank, 1984; Akerlof and Yellen, 1990; Rees, 1993). Specifically, it assumes that the preferences of negotiators (and the individuals that they represent) are influenced by the incomes and relative standings of others (e.g. Babcock et al., 2005). Consequently, the outcomes of other negotiations may become reference points for demands. Given that many other negotiations take place, all producing outcomes, a key question is which of these outcomes will be taken as a reference point (c.f. Clark and Senik, 2010). Studies show that the choice for a particular reference point is often subject to self-serving biases (Babcock et al. 1995, 1996; c.f. Rees, 1993). Hence, trade unions will formulate their wage demands on the basis of relatively high wages negotiated elsewhere, while firms will formulate their wage offers on the basis of relatively low wages negotiated elsewhere. Consequently, spillovers that arise from social comparisons will increase the level of conflict between union negotiators and firm negotiators, as reflected in their proposals.

Kuhn and Gu (1998, 1999) propose rational learning as an alternative explanatory mechanism for spillovers in wage bargaining. This mechanism is based on the assumption that the firm has private information about its ability to pay wages. Costly conflicts, such as strikes, serve as devices to reveal a firm's true ability to pay (e.g Hayes, 1984; Kennan and Wilson, 1989; McConnell, 1989; Card, 1990; c.f. Cramton and Tracy, 2003) . Kuhn and Gu (1999) furthermore assume that the abilities to pay are correlated between specific firms, for instance when they operate in the same sector and are subject to similar product market conditions and technological shocks. Kuhn and Gu (1999) develop a two-state bargaining model in which firms know their state (either "good" or "bad"), and unions know the state of a firm only with some probability. Based on this probability, a union will make either a high or a low wage demand, which a firm can either accept or reject. Low wage demands will never result in a loss for the firm. High wage demands will leave firms in a "bad" state with a loss exceeding the costs of a strike, while firms in a "good" state are better off accepting the high demand. Hence, a firm negotiator will always accept a low demand and will accept a high demand only when the firm is in a "good" state.

Kuhn and Gu (1999) show that union negotiators are able to learn by observing other negotiations. On the basis of these observations union negotiators update their prior belief that their own (similar) firm is in a "good" state and adjust their demands accordingly. A crucial, but implicit assumption of the model of Kuhn and Gu (1999: 122) is that union negotiators are strictly rational in their evaluation of reference points, meaning that they only take into account other wage bargaining events that reduce uncertainties about the state of the firm. Spillovers resulting from rational learning thus reduce the information asymmetries which cause the conflicts in wage bargaining to arise. Hence, contrary to the prediction of the social comparison mechanism, the rational leaning mechanism predicts that spillover reduces the level of conflict in wage bargaining.

3. Evidence

Empirical evidence on the basis of natural data provides mixed evidence. A study of social comparisons in wage bargaining by Babcock et al. (1996) reports increasing strike probabilities with an increasing distance between negotiators' reference points—providing support for the social comparisons mechanisms. By contrast, Kuhn and Gu (1999) report decreasing strike probabilities with an increasing number of observable negotiations in an industry—providing support for the rational learning mechanism.

Experimental studies provide support for the social comparisons mechanism: it is sufficient to induce spillovers (Knez and Camerer, 1995; Alewell and Nicklisch, 2009) and, in conjunction with self-serving biases, indeed increases the level of conflict (c.f. McDonald et al. 2013). Experimental studies provide less conclusive evidence about rational learning. An experimental test of Kuhn and Gu's (1999) bargaining model by Tounadre and Villeval (2004) finds limited evidence for the predicted conflict-decreasing effects of rational learning[2]. It appears that the mechanism of social comparisons offsets the effects of rational learning. Bohnet and Zeckhauser (2004) experimentally study effects of information about the average offer in repeated ultimatum bargaining with asymmetric information and a fixed pie size. Their study suggests that social comparisons increase conflict and that social comparisons are reinforced when rational learning is possible. To our knowledge, no experimental study exists which isolates the impact of rational learning on bargaining from social comparisons[3].

4. The model

We model wage bargaining as a two-player unstructured bargaining game, where the firm player has private information about the value of a common surplus that is to be divided. The union player only knows a set of possible values of the common surplus. In this way, we capture the asymmetric information between the union- and firm negotiator about the firm's ability to pay. The value of the common surplus for each negotiation is drawn randomly from a set of possible values, reflecting that the firm's ability to pay varies with economic circumstances. The union player is the first mover; (s)he makes an initial proposal that starts a time-limited bargaining process. This is analogue to the common practice of starting negotiations with union wage demands. During the bargaining process, each player can make an unlimited number of proposals or accept the other player's most recent proposal. Proposals are discrete, positive numbers with a maximum value restricted to the highest possible value of the common surplus, representing the union player's pay-off if accepted (i.e. the potential wage rate). The firm player's pay-off is determined by subtracting the accepted proposal from the value of the common surplus. Proposals that exceed the value of the common surplus, and hence leave the firm player with a loss, are possible.

If no proposal is accepted, both players receive a non-agreement payoff, which is zero points. This fall-back position is common knowledge. The non-agreement payoff may be interpreted as the cost of not reaching an agreement. In real wage bargaining, such cost would arise from strikes, lock-outs or termination of the bargaining unit. The time-limited bargaining structure reflects that wage bargaining is an interdependent concession process wherein the unions and firms try to find a mutually

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[2] Evidence for conflict decreasing learning is found only with the introduction of additional information about the first union's beliefs about the size of the pie. Unions were otherwise unable to distinguish between outcomes in other negotiations that signal that the firm is in a bad state and outcomes resulting from a violation of social preferences.

[3] It is relatively straightforward to isolate social comparisons from rational learning by studying the impact of information about outcomes of other negotiations that do not have correlated private information. However, if private information is known to be correlated, i.e. if learning is possible, it cannot be ruled out that information about other negotiation outcomes also triggers social comparisons. The impact of learning must therefore be inferred from observed difference between situations that only allow for social comparisons and situations that allow for both mechanisms to operate. Note however that this corresponds to real world bargaining situations where every potential reference point could induce spillover via social comparisons.