

A Game Theoretic Approach to Conciliation-Adjudication Model

Shubhabrata Basu

This paper revisits the effectiveness of the conciliation mechanism used to resolve industrial disputes in India. The conciliation mechanism in its current form is replete with delays and is generally ineffective in resolving disputes. This often results in the reference of the disputes to adjudication, which is, even more time consuming. The aggregate delay in justice is akin to the same being denied. This raises questions on the effectiveness of conciliation mechanism and its relevance at the broader policy level. This paper considered a combination of the conciliation and adjudication and proposed a model using game theoretic approach for the more efficient disposal of industrial disputes.

Shubhabrata Basu is Assistant Professor, Strategic Management Area, Indian Institute of Management – Indore. E-Mail: sbasu@iimdr.ac.in

Introduction

The second half of the twentieth century in general and its last two decades in particular witnessed a concerted effort by firms to achieve operational effectiveness (Porter 1996). This effort, mostly as a response to Japanese competition, had resulted in the trading off of one factor of production (Labour) for another (Capital). That had resulted in the subservience of the human component in the production process. As firms continued to progress along the productivity frontier through progressive capital investment, an equivalent amount of jobs were rationalized. A direct consequence of this was an increase in labour unrest (mainly in the organised sector) leading to strikes and lockouts, and an apparent waning of faith (Philips 1956) in the Conciliation Mechanism, set up to deal with such crises. Conciliation Mechanism is a legacy of the British administrative and judicial procedure and hence prevalent predominantly in the former colonies of the British Empire. It has its foundations in the principle of *Safety Valve* where the build-up of industrial tension is vented, in a civilized manner, before the conciliation officer.

The said officer endeavours, through prolonged and protracted negotiations, to induce¹ the disputing parties to come to an amicable settlement. It may be noted that conciliation is an art of consistent persuasion and has little to do with passing judgements to expedite the process. In fact by the provisions of the Industrial Disputes Act, 1947 (IDA), a conciliation officer ideally cannot act as an arbitrator. However, if she fails to induce the parties to a mutually amicable situation through mutual adjustments, she may make a reference (under section 12.4 of the IDA) to the appropriate government for adjudication by the Labour Courts/Industrial Tribunals/High Court. This delaying strategy, through protracted and consistent persuasion, though initially successful, had become increasingly inconsistent post economic liberalization in 1991. Its effectiveness had been increasingly questioned by both the owners of capital and labour. In fact in Canada, it is been considered as a delaying impediment with no worthwhile positive contribution towards settlement of dispute (Philips 1956).

Conciliation is an art of consistent persuasion and has little to do with passing judgements to expedite the process.

Relevance of Conciliation

Consequent to the aforementioned developments, there had been an increas-

ing tendency amongst disputants to raise a token mandatory industrial dispute before the conciliation officer with the purpose of obtaining a reference for a summary judgement. The implications of these actions are summarized below.

The reciprocal tendency of the conciliators to pass on a dispute application to the judiciary has resulted in the steady build-up of undisposed cases before the adjudicators. In the beginning of the year 2010, the Central Administrative Tribunal had around 12,464² cases. Subsequently it received around 392 cases up to August 2010. In the same year, the total number of disputes raised before the conciliation mechanism was 425 (provisional figures). This implies that the difference i.e. only 33 cases were resolved before the conciliation mechanism yielding a gross disposal rate of 7.76%. It may be noted that disposal does not necessarily mean amicable settlement of disputes. A conciliation officer, on due hearing, may consider a dispute application as frivolous and may dispose it without invoking the conciliation process. Considering such cases, the actual success rate would fall even below the above percentage.

Disposal does not necessarily mean amicable settlement of disputes.

In terms of financial losses, in 2008, out of the 421 disputes involving 1,579,000

1. Section 12 of the Industrial Disputes Act, 1947 of the Republic of India

2. India Stat.com data – Position of Institutions, Disposal and Pendency of Cases in Central Administrative Tribunal in India.

workers, a total of 17,432,000 man-days were lost. In terms of lost wages, the above figure translates into Rs.97.16 crores while in terms of loss of production the same is around Rs.302.8 crores. Successful conciliations could minimize these losses by a big margin. It may however be noted that there is a general decrease in the number of disputes raised before the conciliation mechanism and a corresponding decrease in production loss. To contrast, in 1998, there were 1,097 disputes involving a wage loss of Rs.103.06 crores and a production loss of Rs.694.32 crores. The above figures reveal two important facets. First, failure of successful conciliation can be extremely heavy on the economy in terms of production and wage losses. Second, disputants seeking relief through conciliation is decreasing leading to building up of industrial tension which may prove harmful for the economy as a whole.

In contrast, to the Indian scenario, the American system accommodates for bargaining post arbitration. For instance, in the U.S. Major League Baseball, about 80% of the salary negotiations that would go for arbitration would instead end in a bargained agreement (Gerchak et al 2006). Thus, the very prospect of bargained agreement, post arbitration, eminently points towards the flexibility on the part of the disputants. Therefore the onus lies with the mediator to induce the parties to the point of agreement.

Given the facts above, let us assume that the fast changing competitive scenario, post globalization, has shifted the focus towards operational effectiveness

and has resulted in easy transmission of factors of production. This in turn has facilitated the transfer of the factors of production so that through outsourcing and contracting outs, the bargaining power of the workers has decreased. Consequently, the conciliator's protracted strategies have also lost much of relevance. The employers would simply seek a reference for the court to adjudicate, with status quo being default imposed on sub-judice matters. The worker being the weaker party suffers or quits.

Despite the actions of conciliator, conciliation process has not lost relevance in the knowledge era.

But at the same time, globalization has leapfrogged the emerging economies like India into the tertiary or services sector. In the tertiary sector, man has once again become the central figure as the *knowledge worker*. The apparent quarrels between Lakshmi (financial capital) and Saraswati (human knowledge capital) have been reconciled with the firm, devising ways and means, to cut back the employee attrition rate. Then, given the reverse swing of the pendulum, conciliation should also regain its lost relevance. The modus operandi, albeit, may (or may not) undergo a change under the new circumstances. The instances of post arbitral bargaining in the Major League Baseball in the United States may be argued out in this line. Therefore despite the actions of conciliator, conciliation process has not lost relevance in the knowledge era. I intend to prove the same using a Game Theoretic approach.

Role of the Conciliation Officer

In India, industrial disputes are not settled through arbitration but are routed through the conciliation machineries of the Central and/or the state governments. The modus operandi of dispute resolution is to raise a dispute before the conciliation officer who must endeavour to resolve the dispute thus raised within 14 days from the date of raising the dispute (for industries falling under the definition of Public Utility Services as per the Industrial Disputes Act, 1947) or till such time as a report under section (u/s) 12.3 or 12.4 of the aforesaid act is sent to the appropriate government. Thus on receipt of a dispute, the conciliation officer, who is typically also an official of the Labour Ministry/Directorate entrusted with the duty of maintaining industrial peace and harmony under her jurisdiction, can adopt, inter alia, the following set of actions:

1. Investigate the cause of dispute through her existing machinery.
2. Convene separate conferences with the disputants to ascertain the causes of the dispute and search for possible leads of an amicable solution.
3. Convene a *joint conference* to ascertain the causes of dispute but in doing so runs the risk of commencing the conciliation proceedings.
4. Having initiated the conciliation proceedings attempt to bring the disputants to a common platform where they can negotiate to a bipartite agreement.
5. Through adoption of various persuasive techniques, coax both parties to soften their stands and come to an amicable settlement through a binding tripartite memorandum of settlement u/s 12.3.
6. Where she senses that the dispute is a result of ego conflict of some heavy weight public figure and can only be resolved through ego-satisfaction at a higher level, she can refer/pass on the case for settlement to her superiors.
7. Where she is convinced that the dispute merits an infinite extension depending upon the socio-political compulsions so that it stands a fair chance of self-resolution with intermittent interference from her side, she would convene meetings at very large intervals so that the disputants lose the urge to follow up.
8. Where in spite of her sincere efforts, an amicable solution is not reached, for whatever reasons; she may refer the case for adjudication to the appropriate government u/s 12.4 of the IDA. If the appropriate government feels that the case merits reference, it may forward the same to industrial tribunal or labour courts (depending upon the nature of dispute) for adjudication. A salient feature of adjudication through reference is that, the court or the adjudicator deliberates only on the issues framed by the conciliation officer and would not open the case afresh or go into the merit of the case. That right is solely reserved by the High Court & above.

9. She may sit on the dispute and let it snowball till the internal dynamics of the dispute becomes such that the disputants willingly come to her for a settlement and a possible way out.
10. Last but not the least; she may simply reject the application for the dispute if she feels it to be a frivolous dispute lacking merit for considerations.

Intent of the Disputants

Given that the disputant knows, from prior experience, the possible set of options (therefore the game) available to the conciliation officer they may raise the dispute within the following set of options:

1. Raise a dispute if the unions fail to reach a working understanding with the employer for whatever reason.
2. If there exists a genuine mismatch between the receiving expectations of the workers & unions and the giving capacity of the employer.
3. The employer or the employee union intends to utilise the office of the conciliation officer for a protracted legal battle with the other side.
4. A newly formed, unrecognised trade union is attempting to establish itself by championing any & every worker's grievances before the conciliation officer.
5. Unions wanting to demonstrate an inter-union trial of strength.
6. If the employer/union intend to preempt industrial tensions building up

in their organisation through the legislative means.

7. There is a felt need on the part of the dominant union (may be out of political compulsions) to use the conciliation officer to legitimise an understanding between the employer and the employee union.
8. One of the disputants is simply buying time by going through the legislative route with its inherent bureaucratic delays.
9. Socio-political compulsions leave no choice for mutual bargaining and a binary solution through adjudication is sought by formally raising the dispute before the conciliation officer.
10. Anyone, mistakenly or otherwise, has raised a dispute, not necessarily an industrial one, thinking that office to be the panacea for all dispute resolutions.

Therefore, we look at a game form where the disputants having failed to resolve their disputes are trying their best to gain mileage over the other by leveraging the constitutional office of the conciliation officer, who, being charged with the ultimate responsibility of maintaining industrial peace and harmony under her jurisdiction, is trying her best to resolve the dispute and maintaining the aforesaid.

Literature Review

The present literature in Game Theory on Third Party Dispute Resolution is replete with Final Offer Arbitrations (FOA) as well as Tri-period and

other forms of arbitration. FOA was formalised by the path breaking works of Farber (1980). However, he did not show that the disputants' strategies led to an equilibrium outcome. Also his discussion, on the effect of increased risk aversion by one of the parties to the dispute, was proved mathematically inconsistent by Crawford (1982). Chatterjee (1981) independently developed similar models that posit a two person game of incomplete information. The parties were assumed to know the probability distribution of the arbitrator's fair settlements and make bids in an infinite strategy space, maximizing the expected payoffs. Chatterjee (1981) also permitted differential information for the parties and obtained equilibrium strategies for special cases. He noted the tendency under FOA towards divergence in contrast to conventional arbitration. Brams & Merrill (1983), unlike their predecessors, assumed a zero-sum game throughout and focused on the degree of convergence or lack of it in terms of the different assumptions about the arbitrator's preferences (i.e. the probability distribution), and their effects on the existence and nature of equilibrium of the two parties. They provided necessary and sufficient conditions for both local and global pure strategy Nash Equilibria and also necessary conditions for two-point mixed strategies, given a symmetric condition. Donald Wittman (1986) provided conditions for equilibrium to exist in a FOA game when there are "k" issues, the probability function is not specified, and the disputants are either risk averse or risk neutral. Also the players may have differing beliefs about the arbitrator's prob-

ability functions. He demonstrated that increased risk aversion by one of the parties would result in both the parties choosing positions further away from the more risk-averse party. He also found the effect of bias (as well as effect of increased sensitivity) by the arbitrator on the positions taken by the players.

The next important point of departure was proposed again by Brams & Merrill (1986) when they brought in a combination of Binding Arbitration (BA) & FOA for settling dispute. Unlike either of the two procedures, this combined arbitration (CA) induces the two parties to converge in making their final offers. To elaborate, under BA, the arbitrator's settlement is binding on both the parties while under FOA the arbitrator chooses the final offer of the parties closer to what she considers a fair settlement. Under CA, FOA is used if the arbitrator's notion of a fair settlement falls between the final offers or if the final offers converge or cross hair; otherwise, BA is used. When this was modelled as a two person, zero-sum game of imperfect information, in which the two parties make final offers to maximise their expected payoffs, based on their perception of the arbitrator's probability distribution of fair settlements – a median convergence with a global equilibrium resulted if the probability distribution is continuous, unimodal and symmetric about the median. When the distribution is not symmetric and the two parties have different distributions, alternative solutions were derived. One of them was based on the parties being within a "critical distance" from each other.

The next departure was proposed by Ashenfelter et al (1992) where the authors considered the amount of objectivity uncertainty faced by the bargainers as fixed, and with the same assumption of the arbitrator's underlying distribution, for a fair award. They did an empirical study on a control group using different arbitration system namely conventional arbitration, FOA and Tri-offer arbitration. The three important findings from their work suggested that:

- (i) Dispute rates were inversely related to the monetary cost of dispute
- (ii) Dispute rates were significantly higher in FOA compared to conventional arbitration and dispute rates were inversely related to the uncertainty cost of the dispute.
- (iii) Dispute rates were lower in conventional arbitration where variance of arbitration awards are higher and imposed greater cost to risk averse negotiators.

More recent studies on FOA have tried to look into incentive effects of FOA (Dickinson 2006). Several studies have been made on the police unions pay rises and job performance after an unfavourable award under FOA (Alexandre 2006), and the studies on Major League Baseball (Farmer et. al 2004). It is all too apparent that the literature has not adequately addressed alternative dispute resolution through mediation or conciliation which is essentially a win-win situation for both the disputants unlike arbitration. The usage of proper conciliation machinery in resolution of industrial disputes and hence its

appropriate reference in literature is virtually absent.

Arbitration and conciliation are both forms of Alternative Dispute Resolutions through neutral and independent third party mediation. Arbitration is a more authoritarian approach of enforcement of the will of the adjudicator/arbitrator. On the other hand conciliation is more subtle where the conciliator through infinite patience and tact, persuades the disputants to reach an amicable solution/settlement to a dispute. She employs the principles of *give some, get some* to ensure a win-win situation for both the parties. An arbitrator generally decides after a contest between the parties while in the case of conciliation, the final result depends on the will of the parties. Therefore, at the end of the proceedings, emotional harmony between the parties may not suffer much, in the case of conciliation (Rao 2001). Failure at the level of the conciliator ensures adjudication through Labour Courts/Industrial Tribunal or High Courts.

Arbitration and conciliation are both forms of Alternative Dispute Resolutions through neutral and independent third party mediation.

Research Question

Given the conciliation – adjudication setup, how effective will conciliation be in resolving industrial disputes? It is assumed that conciliation at the margin involves minimal or no cost while adjudication involves a very large marginal

cost. It is further assumed that all the actors (the two disputants & the conciliator) are playing their equilibrium strategies.

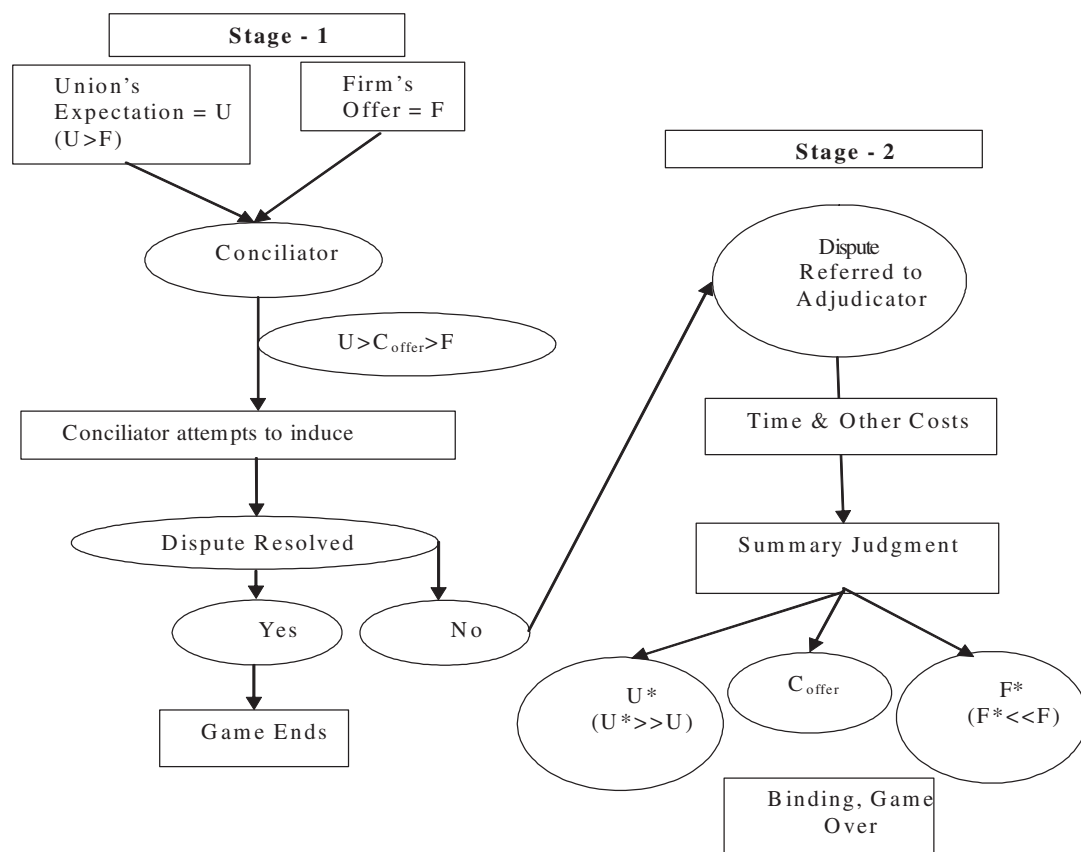
Model

We consider, for the sake of simplicity and without any major loss of generality, a real life scenario of a true dispute over festival Bonus (under Payment of Bonus Act, 1965) raised by the sole bargaining Union (U) against a reasonably profit making PSU firm (F). It is a two stage game in which the dispute is first handled by the conciliator. The two parties have their declared wage offers as W_u (Union) & W_f (Firm) while they have confided to the conciliator their lower and higher limits respectively as W_u^* & W_f^* .

This information is only known to the conciliator and not to either of the parties. The conciliator like FOA game has an *ideal settlement wage* (W) which the parties interpolate as a normal distribution with $F(\cdot)$ as the standard normal cumulative distribution function. The conciliator tries to induce the parties to accept the offer which if the parties accept would end the game.

However, if the parties do not accept, then the conciliator would refer the case for adjudication and the adjudicating authority, like an arbitrator, can select the offer of the firm or the union or in accordance with the conciliator's reference, deliver an award that is bracketed by W_u & W_u or add cost to W_u thus the award is much more than either of the offers or can reject all the offers such that it is

Fig.1 Game Form



less than all the offer. And the adjudicator's award is binding on all the parties. The model is thus akin to tri-offer arbitration.

Assumptions

1. Bonus dispute is a recurring yearly phenomenon and both the Firm and Union have an incentive to resolve the dispute early as there is carryover cost in terms of employee dissatisfaction.
2. Both the Firm & the Union are risk neutral as the representatives of both the parties are negotiating for others' causes.
3. As per the Payment of Bonus Act 1965, there is a lower ceiling of 8.33% of annual wage & upper ceiling of 20% beyond which, excepting High Court exercising penal provisions, none of the parties including the conciliator can negotiate.
4. Giving bonus is considered mandatory given that the firm has made net profits.
5. The time and cost of a court battle can be exorbitantly high compared to conciliation which comes as a service to the citizens.
6. The conciliator tries to induce both the parties to soften their stands and unlike the arbitrator does not choose from two final offers.
7. Within the constitutional limits, the conciliator's choice follows a normal distribution and can actually coincide with the offers of either party. His

recommendation also follows the same distribution. However the adjudicator can modify it bringing in the time factored costs.

8. The parties cannot change their offers before the court – i.e. after the conciliator has made the reference for adjudication.
9. The conciliator has all the necessary information required for conducting conciliation while the parties do not have all the necessary information. Also the parties have faith in the neutrality of the conciliator.

Testing of the Model

Stage – 1 (When the conciliator can settle on either of the offers or her own): Since the ideal settlement wage (W) has a normal distribution, for the Firm, W should ideally be a decreasing function, while for the Union it is an increasing function & the probability that the conciliator chooses the Firm's offer is

$$P(W_f) = F\left(\frac{W - W_{av}}{\sigma}\right) = 1 - P(W_u) \quad \text{---(1)}$$

Where F(.) is the standard normal cumulative distribution function and W_{av} is the average of the offers W_u & W_f . Given risk neutrality of the parties, the Union wants to maximise and Firm wants to minimise.

$$E(W) = P(W_f) \cdot W_f + P(W_u) \cdot W_u = F\left(\frac{W - W_{av}}{\sigma}\right) \cdot W_f + [1 - F\left(\frac{W - W_{av}}{\sigma}\right)] \cdot W_u \quad \text{---(2)}$$

The Nash Equilibrium pair of final offers are derived by finding the W_u that maximises E(W) and the W_f that

minimises $E(W)$. The first order conditions are solved simultaneously for W_f & W_u yielding

$$[1 - F([W_{av} -]/)] - (1/2) \cdot F([W_{av} -]/) \cdot (W_u - W_f) = 0 \quad \text{---(3)}$$

$$F([W_{av} -]/) - (1/2) \cdot F([W_{av} -]/) \cdot (W_u - W_f) = 0 \quad \text{---(4)}$$

Where $F(.)$ is the standard normal distribution function.

Now it is easy to show that the equilibrium probability that either party's offer is selected is 50% so that $W_{av} = .$ Substituting into either of the equations yields the equilibrium difference between the offers as:

$$(W_u - W_f) = /F(0). \quad \text{---(5)}$$

Given that the average offer must be equal to $.$, the Nash Equilibrium offers are:

$$W_f = - 0.5 /F(0) \text{ (for Firm)} \quad \text{---(6)}$$

$$W_u = + 0.5 /F(0) \text{ (for Union)} \quad \text{---(7)}$$

The conciliator hence can settle for W_{av} or any of the two offers with the dispersion limited between 8.33% and 20% of the wages (as per statute).

At this point, the conciliator has got not much leeway and any of the parties not satisfied with the induced offers can spoil the conciliation proceedings. Hence she can now exercise two options namely, to conclude the conciliation proceedings and sent a report for reference

under section 12.4 of the I.D. Act (1947) or issue a credible threat to both the parties citing the consequences of a reference. Either way, the consequences would be similar as shown in Stage -2.

Stage – 2 (When a reference is made and the adjudicator can consider a Tri-Offer Arbitration): The adjudicator has to choose amongst three alternatives namely the final offers of the two parties as per the report of the conciliator and her recommendations as a fact finder. Hence the Nash Equilibrium also depends on the recommendations of the conciliator as a fact finder. Hence,

$$E(W) = P(W_f) \cdot W_f + P(W_u) \cdot W_u + P(W_c) \cdot W_c \quad \text{---(8)}$$

where W_c is the recommendation of the conciliator. The three possible configurations of the fact finder and offers are:

- $W_f < W_c < W_u$ – i.e. the conciliator's offer is bracketed by the final offers.
- $W_c \gg W_u$ (assuming $W_u > W_f$) – i.e. indicating a penal provision exercised by the adjudicator in favour of the unions taking into consideration the recommendations of the conciliator.
- $W_c \ll W_f$ (assuming $W_u > W_f$) – i.e. indicating that the adjudicator, like the conciliator, has not found merit in the case and had either disposed it or at a cost to the Union.

Let P_u , P_f & P_c be the probabilities that the adjudicator selects Union's, Firm's or the conciliator's offers. Hence

choice probabilities for each of the three configurations are:

$$W_f < W_c < W_u \text{ if } \hat{w} - 1.32 \sigma < W < \hat{w} + 1.32 \sigma \quad \text{---(18)}$$

When $W_f < W_c < W_u$,

$$W_c < W_f < W_u \text{ if } W < \hat{w} - 1.32 \sigma \quad \text{---(19)}$$

$$P_u = 1 - G[(W_c + W_u)/2] \quad \text{---(9)}$$

$$W_f < W_u < W_c \text{ if } W > \hat{w} + 1.32 \sigma \quad \text{---(20)}$$

$$P_f = G[(W_c + W_f)/2] \quad \text{---(10)}$$

$$P_c = G[(W_c + W_u)/2] - G[(W_c + W_f)/2] \quad \text{---(11)}$$

When $W_c < W_f < W_u$

Assuming that W_c is drawn from the same normal distribution as W , then the offers would bracket the conciliator's recommendations in 80% of the cases while the other two extreme cases would occur in 10% of the instances.

$$P_u = 1 - G[(W_f + W_u)/2] \quad \text{---(12)}$$

Now with this information available, the conciliator can impose a credible threat to the disputing parties on the ground that if they take her intermediate (bracketed) offer, then:

$$P_f = G[(W_u + W_f)/2] - G[(W_c + W_f)/2] \quad \text{---(13)}$$

$$P_c = G[(W_c + W_f)/2] \quad \text{---(14)}$$

When $W_f < W_u < W_c$

(i) They would not have to incur costs of further litigation especially considering the fact that the average time of disposal of cases in India is more than 10 years (Rao 2001).

$$P_u = G[(W_c + W_u)/2] - G[(W_u + W_f)/2] \quad \text{---(15)}$$

$$P_f = G[(W_u + W_f)/2] \quad \text{---(16)}$$

(ii) Even after litigation/adjudication, the results in 80% of the cases would be same as her offer.

$$P_c = 1 - G[(W_c + W_u)/2] \quad \text{---(17)}$$

(iii) There is a 10% chance that either of the parties may loss out to an unacceptable extent.

A pair of Nash Equilibrium offers can be derived from each of the three configurations conditional on the conciliator's recommendations. These offers define expected utilities for each party in each configuration.

Hence rational players would like to minimize losses and should converge on the conciliator induced settlements.

As per the experimental results derived by Ashenfelter et al (1992), the optimal offer would be of configuration:

Conclusion & Policy Implications

The conciliator with prior knowledge of outcomes of similar disputes can induce the parties to dispute to converge

at her desired offer. Since, the outcomes are based on *give some and get some* principles and minimizing further losses, both parties to the dispute are in a win – win situation.

Since, the outcomes are based on *give some and get some* principles and minimizing further losses, both parties to the dispute are in a win –win situation.

It is advisable on the part of the conciliator to maintain and update herself on adjudication outcomes so that the passive transmission of such outcomes to the disputing parties can positively influence the outcomes of new disputes and may lead to amicable settlements.

Consequently, the government should also ensure that sufficient resources and relevant information are made available to the conciliation officer so that she may pass on the same to the disputants. As such during the course of conciliation proceedings it should be made mandatory to record the information transmittals to the parties in writing. Such procedures may lessen the shirking efforts of some conciliators to pass the bucks to the adjudicators and increase the hurdles for all the parties concerned

Limitations

The choice of the bonus dispute restricts the flexibility of the disputants to certain extent as it is a yearly recurring phenomenon and either of the parties cannot afford to pile up cases before the

court. Also bonus disputes are more or less reconcilable given that the minimum bonus rate is fixed by statute and is bound by a range. The model also excludes the ego satisfactionists who would break but not bend before the demands of the Union and vice versa. They would prefer to fight a never ending court battle and incur higher legal and transaction cost than to settle for a lesser remuneration. The model assumed that the trade unions and or the workers can fight the battle in court and has the financial wherewithal to do so and that the firm cannot exhaust it out. This however is not always the case with individual disputes where the applicant often gives up the protracted court battles.

Acknowledgement

The author gratefully acknowledges the contribution of Professor Bibek Banerjee (of IIM Ahmedabad) who introduced the author to the concepts of Game Theory.

References

- Alexandre, M. (2006), Pay, Reference Points and Police Performance, National Bureau of Economic research Inc. Working Papers: 12202.
- Ashenfelter, O., Currie, J., Farber, H.S., & Spiegel, M. (1992), “An Experimental Comparison of Dispute Rates in Alternative Arbitration Systems”, *Econometrica*, 60(6): 1407-33.
- Brams, S. J. & Merrill, S. (1983), “Equilibrium Strategies for Final Offer Arbitration: There Is No Median Convergence”, *Management Science*, 29(8): 927-41.
- Brams, S. J. & Merrill, S. (1986), “Binding versus Final Offer Arbitration: a Combination

- Is Best”, *Management Science*, 32(10): 1346-56.
- Chatterjee, K. (1981), “Comparison of Arbitration Procedures: Models with Complete and Incomplete Information”, *IEEE Trans. Systems, Man, Cybernet.*, SMC-11 (Feb): 101-09.
- Crawford, V.P. (1982), “A Comment on Farber’s Analysis of Final Offer Arbitration”, *Journal of Conflict Resolution*, 26: 157-60
- Dickinson, D.L. (2006), “The Chilling Effect of Optimism: the Case of Final Offer Arbitration”, *Journal of Socio-Economics*, 35(1): 17-30.
- Farber, H. S. (1980), “An Analysis of Final Offer Arbitration”, *Journal of Conflict Resolution*, 24: 683-705.
- Farmer, A., Pecorino, P. & Stango, V. (2004), “The Causes of Bargaining Failure: Evidence from Major League Baseball”, *Journal of Law and Economics*, 47(2): 543-68.
- Hanany, E., Kilgour D.M., & Gerchak, Y. (2006), “How the Prospect of Final-Offer Arbitration Affects Bargaining”, *Management Science*, Link: <http://www.eng.tau.ac.il/~ygerchak/publications.html> dated 20.08.06.
- Indiastat.com: Source : Rajya Sabha Unstarred Question No.585, dated 27.07.2000 & Lok Sabha Unstarred Question No. 3238, dated 05.08.2002.
- Phillips, W. G. (1956), “Government Conciliation in Labour Disputes: Some Recent Experience in Ontario”, *Revue Canadienne d’Economie et de Science Politique*, 22(4): 523-34.
- Porter, M. E. (1996), “What is Strategy?” *Harvard Business Review*, Nov-Dec : 61-78.
- Rao, G.S. (2001), “Arbitration & Conciliation Law in India - A Review”, retrieved on 22.08.06 link: <http://www.ficci.com/icanet/quterli/oct-dec2001/OCT4.htm>
- Wittman, D. (1986), “Final Offer Arbitration”, *Management Science*, 32(12): 1551-61.