Regulation, Mediation, and Negotiation: Finding Win-Win Policies

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Regulators have a number of techniques available for obtaining information and implementing policies. One framework involves using formal hearings, in which the regulatory commission reaches a decision based on facts presented by opposing parties. As the issues become more complicated and stakeholder positions depend on a bundle of decisions, agencies might consider alternative dispute resolution procedures for addressing some issues. A commission representative could be a participant in negotiations. Alternatively, the commission can assist contending parties in settling their differences.

The sector regulator is a stakeholder in negotiations, but also has an interest in ensuring that the agreement is efficient: that participants obtain substantial benefits from the agreement. Thus, the regulator can function as a pure mediator, with sector efficiency, corporate financial sustainability, and consumer acceptance as goals. Alternatively, the regulator can be a stakeholder, with an interest in efficiency (because it creates more surplus to be shared), but the regulator might place greater weight on the welfare of a particular party in the negotiation.

The purpose of this note is to provide an overview of issues a mediator must consider. If a regulator is to be effective, he or she must understand the role of "deal killers," how narrow interests lead to coalitions, how procedural issues affect outcomes, and ways to improve negotiating positions. The technical appendix provides illustrations of how the alternatives to a negotiated agreement place bounds on the distribution of benefits from a particular decision.

Deal Killers

In many negotiation situations, there is a party whose Best Available Alternative to a Negotiated Agreement (BATNA) is higher than any value derived from an agreement. That is, he is better off if no agreement exists. The role of the opposing party in many real-world situations is also to retain as much value as possible by assigning value to delays in reaching an agreement (or killing it entirely). Their purpose in this situation would be to stall the agreement for as long as possible to retain cash flows that will be lost if rivals are allowed to enter the market.

Narrow Interests

Special interest groups with narrow objectives also influence many bargaining situations. They are concerned only with the outcome of one particular issue, and will acquiesce to the agreement only if their interests are satisfied. Special interest groups are sometimes the origin of coalitions that form during negotiation. Because their interests are so narrow, they can collude (cooperate) with others who have high stakes in other areas,

since by agreeing among a few players they can substantially increase their bargaining power. Coalitions often form among players with similar interests in the negotiation.

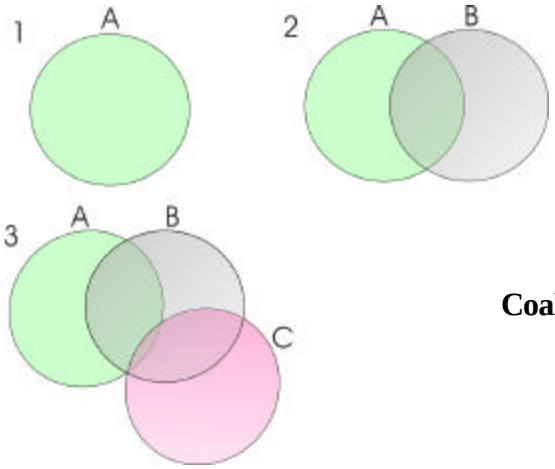

Figure 1
Coalition Formation

Figure 1 illustrates the evolution of such a coalition.

The coalition in Figure 1 begins with a common interest between two players, A and B. The second player to join has common interests with a third player, who does not necessarily have strong common interests with the first, but nonetheless has a strong enough incentive to join.

Procedural Issues

A number of procedural issues also affect the range of bargaining and the outcome: secret negotiations vs. transparency, agenda control, logrolling, voting rules, and adherence to schedules.

Bargaining in the Sunshine is a term applied to discussions that are in the open--where other interested parties can listen to what is going on. Government-in-the-Sunshine Laws prohibit unannounced meetings involving Commissioners on issues before a regulatory commission. The intention of such laws is to promote transparency in the decision processes. The down-side from such process rules is the inability to privately explore possible "deals" that are mutually beneficial. The press can misinterpret issues or prematurely announce features of a plan that is still under negotiation.

Agenda control is crucial in determining outcomes. If there are three policy options, and three people (who rank order the options differently) voting on the "best" policy, the individual who controls the agenda of pair-wise votes controls the outcome.

Logrolling represents a mechanism for participants in a multi-dimensional negotiation to "trade" votes with one another. Such a method for coalition creation is "politics as usual" but it cannot ignored in the context of negotiation. It increases the likelihood that traders win on the issues they place the greatest priority. Of course, those "left out" can be much worse off.

Voting rules are closely related to agenda issues. Does each participant have an equal vote? Do particular groups have veto power over proposed outcomes? Who determines when a "vote" on a "potential agreement" is in order?

Schedules can also influence outcomes. To the extent that speed is of the essence, simple majority votes (rather than consensus) can be appropriate for multi-party negotiations (where the participants have equal "power"). Of course, time constraints affect the ability of negotiators to verify information supplied by various parties.

Many other procedural issues could be discussed. However, we will focus on the importance of BATNAs for providing constraints on the range of possible outcomes, and on strategies for improving BATNAs.

Knowing and Improving Your BATNA

It is imperative that before you enter into negotiation with other groups that you first identify your interests and BATNA. If your BATNA is weak, you then must also consider way in which you can improve its position. It is also important to estimate through research the BATNAs of other representatives involved in the negotiation. Without a knowledge of the priorities of others, you will be less effective in achieving your own objectives.

In real-world negotiations, the regulator can dramatically affect many aspects of the payoff to all parties in the negotiation. Regulators can, for example, mandate a specific technology to be used for production that reduces environmental impact, but unduly increases the costs of other parties in the agreement. She could also mandate that a party in the negotiation be permitted to purchase output as less than cost. Also, by establishing particular pricing principles (or other constraints) the regulator can control and restrict the formation of coalitions in the negotiation, restricting the bargaining position of opposition and special interest groups.

Real-world negotiations are particularly complex, since parties have to choose their own priorities and identify their own BATNAs. Negotiations are further complicated because priorities are sometimes dynamic and can be affected by new information revealed during the course of negotiations.

Appendix: Finding a Range of Mutual Benefits

An advantage of the cooperative game formulation depicted below is the separation of questions of equity (fairness) and efficiency (least cost supply). An optimum network infrastructure system can be determined independent of the payment (or cost-allocation) system. However, while the notion of the "core" can determine a range of acceptable solutions, the combination of small numbers and differential bargaining power has a significant impact on outcomes.

The following material is somewhat technical, but some will find the framework helpful in understanding how savings might be shared or burdens borne in coalitions. In a cost-sharing game, the participant's objective is to minimize its cost. In the examples below, the cost might be viewed as a mandated environmental program that has some scale economies—creating an incentive for cooperation. However, participants must have full information about the cost structures, or else the negotiation takes on the characteristics of a "lying contest."

Two Person Cost-Sharing Game

Consider a situation in which there are only two parties in the negotiation. In this simple example, if person A operates alone, his cost of operation is 2. If person B operates alone, his cost of operation is 4. If A and B cooperate, their joint cost of operation is 5. There are scale economies in this setting:

$$c(A) = 2 \qquad c(B) = 4 \qquad c(AB) = 5$$

Therefore, the efficient outcome in this situation is for A and B to cooperate. ($c(A) + c(B) > c(AB)$). Player A would incur a cost of 2 units were he to operate alone. In order to increase his utility, A's cost associated with collaborating with player B must be less than the cost of A operating alone, called his *Best Alternative to a Negotiated Agreement*, or *BATNA*.

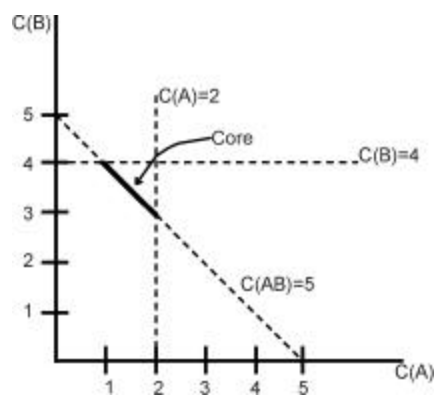

Figure 1
Two Player Cost-Sharing Game

Figure 1 depicts a "Two Player Cost-Sharing Game." Clearly, Party "A" would be unwilling to join with B at any point on c(AB)=5 that leaves it worse off than with its *BATNA*, c(A)=2. In Figure 1, the equilibrium outcome is illustrated as the bold portion of the diagonal line, or the *core* of the game. Any point on that line outside of the core

would be inefficient (too costly) for one of the players; any outcome in the core is efficient (beneficial) for both players. If an agreement is reached during this negotiation, that agreement dictates which combination of costs on the core line will be incurred.

Three Person Cost Sharing Game

That same analysis can be extended to the case in which there are three players negotiating. Consider the following example involving players A, B, and C:

$$c(A) = 2 \qquad c(B) = 4 \qquad c(C) = 6$$
$$c(AB) = 5 \qquad c(AC) = 6 \qquad c(BC) = 6$$
$$c(ABC) = 7$$

In this example, A's BATNA (by itself) is equal to 2; therefore, A will enter into an agreement so long as the cost incurred in the agreement is less than 2. If only A and B cooperate, then their joint cost is 5 (which becomes *their* BATNA). Therefore, A and B will only cooperate with C as long as the costs that A and B are jointly allocated are less than 5. By similar reasoning, the conditions for agreement in this example are:

c(A)					?	2
		c(B)			?	4
				c(C)	?	6
c(A)	+	c(B)			?	5
c(A)			+	c(C)	?	6
		c(B)	+	c(C)	?	6
c(A)	+	c(B)	+	c(C)	?	7

Considering these conditions jointly and using some arithmetic, we can derive ranges for each player with both upper and lower bounds. For example, if we know that c(B) + c(C) ? 6, then by the last equation listed we know that c(A) ? 1. By the first equation listed, we know that c(A) ? 2, so therefore the bounds for player A are:

$$1 \ ? \ c(A) \ ? \ 2.$$

Similarly, the bounds for B and C are:

$$1 \ ? \ c(B) \ ? \ 4$$
$$2 \ ? \ c(C) \ ? \ 6$$

Using triangular coordinates, these ranges can be graphed as in the two-player situation. To graph in triangular coordinates, consider the side to the immediate left of each player's vertex as an axis, with the next counterclockwise vertex as its zero. This coordinate system is created by plotting the base plane (with intercepts at the 3-person participation total cost of 7) in three dimensions, and projecting axes onto each side of the triangle created (see Figure 2).

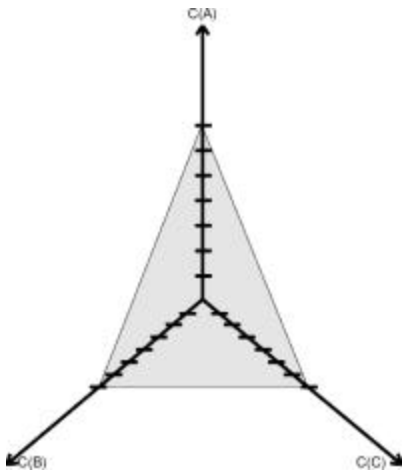

Figure 2
Total Cost of Grand Coalition

Figure 3 shows that c(A) ? 2, where "A" will be unwilling to bear (or be allocated costs greater than 2.

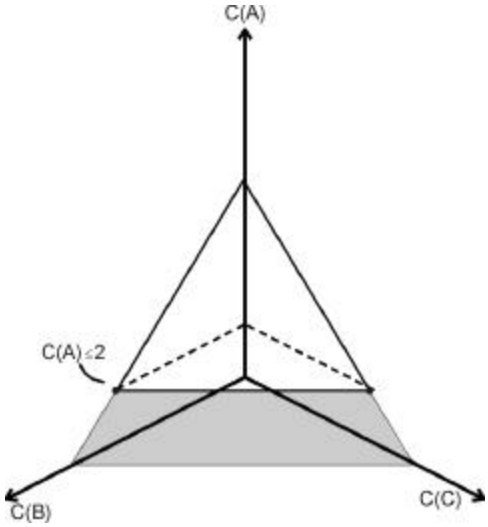

Figure 3
Cost to A Alone

In terms of the entire 3 player system, the range of efficient outcomes for player A is plotted in Figure 4:

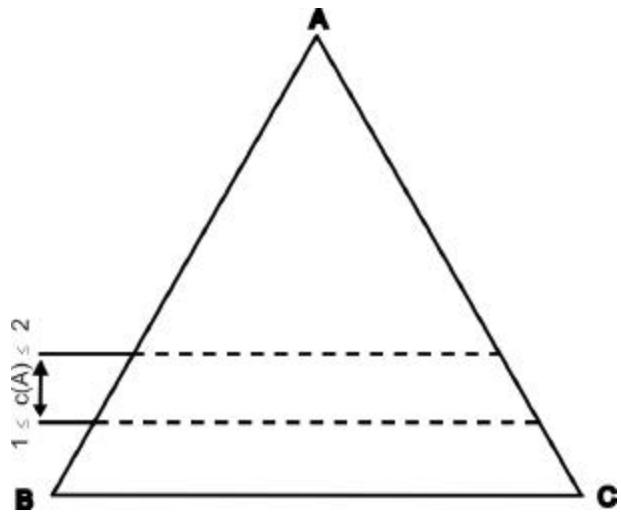

Figure 4
Participant A's Range of Possibilities (if B and C can be forced to participate)

If we add player B to the graph, we see that the range of possibilities facing A is restricted. Player B is unwilling to join in the Grand Coalition (which yields the total cost of 7) if it is allocated more than a $4 charge.

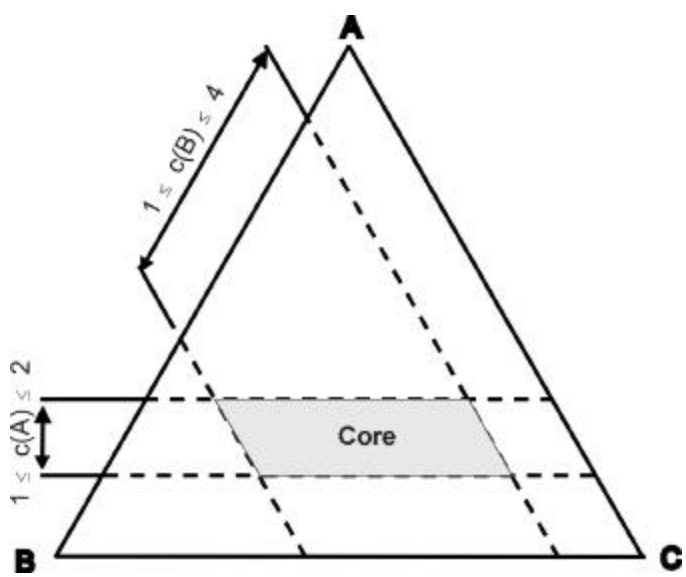

Figure 5
Range of Possibilities for A and B (if C can be forced to participate)

When we add Player B to the graph, a core is created for their negotiation. Note that the range of cost allocations implied in Figure 5 includes Player "C" paying more than 6 or less than 2. Obviously, neither of these outcomes is sustainable. Thus, the core area is

restricted further when we give the third player the opportunity to opt out of the Grand Coalition or allow it to form two-participant coalitions (see Figure 6).

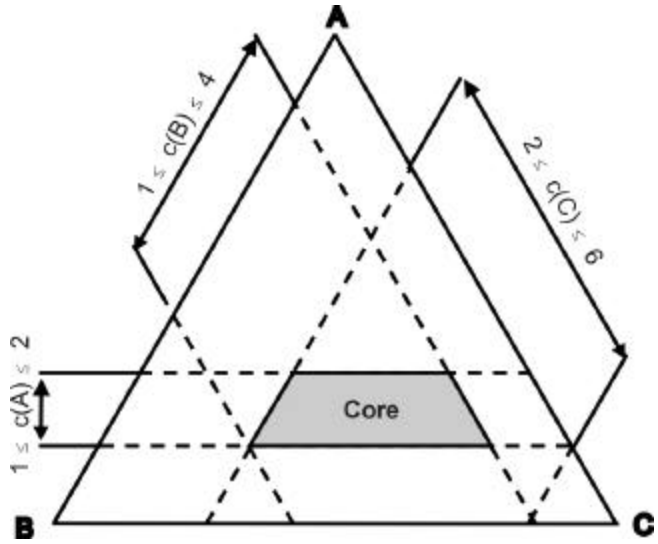

Figure 6
The Participant Core

In a situation in which a player's BATNA is decreased, the player gains bargaining power. Suppose, for example, that Player B discovers a new technology that decreases his costs of operating alone from 4 to 2. This restricts the core area in B's favor; that is, all of the points at which B's costs would be greater than 2 are now no longer possible agreements. Figure 7 depicts the shift:

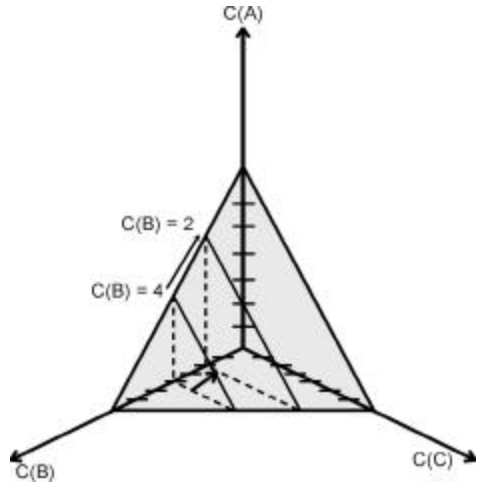

Figure 7
Reduced Cost for B

This shift is depicted in triangular coordinates in Figure 8 below.

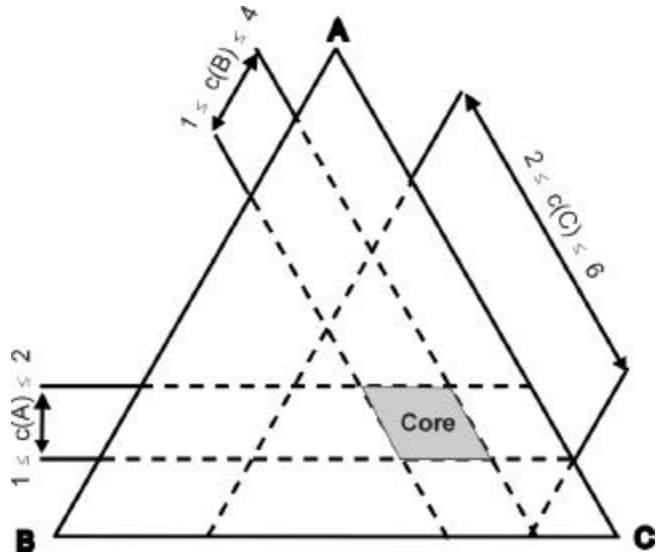

Figure 8
Reduced Size of the Core (Bargaining Area)

In Figure 8, the core area is restricted in Player B's favor, and thus reflects B's increase in bargaining power.

Now consider a situation in which the cost of A and B operating jointly decreases to 4 and the cost of A and C working together decreases to 5. Since c(AB) = 4 and c(AC) = 5, the new ranges for agreement are:

1 ? c(A) ? 2,
2 ? c(B) ? 4, and
3 ? c(C) ? 6.

Graphically, the core area is significantly decreased as depicted in Figure 9:

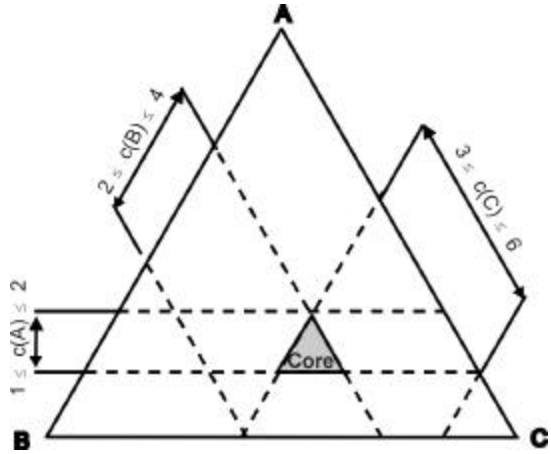

Figure 9
New Bargaining Area

At some point, it is possible that the costs of a player or combination of players in the negotiation decreases sufficiently to reduce the core area of intersection to zero. At this point, a natural monopoly no longer exists, since the most efficient operating situation is not one in which all firms in the negotiation cooperate.

Concluding Observations

If Players A, B, and C are firms in the market, and are negotiating on whether or not to self-provide energy or to collaborate on energy production, then the role of the regulator in this game might be to facilitate negotiations by validating data (cost estimates) or helping parties understand their true options. An efficiency-oriented regulator (who desires least cost) wants the Grand Coalition to form and an agreement reached.

Note, there is a vast literature on solutions for cooperative and non-cooperative games. For example, the *Shapley Value* provides an approach to attaining a solution that accounts for relative power (or the value of subcoalitions) in a game. Another concept is the *nucleolus* which chooses the solution (payoffs or cost allocations) that minimizes the maximum objection to the outcome. Other criteria (with different features) have also been developed. The fundamental point is that once inside the core, the final acceptable solution will depend on the rules developed for sharing the gains—which ultimately depend on negotiation. The regulator might be tempted to designate in which portion of the core area the agreement should lie, and which firms will benefit most from the negotiated agreement. However, by "taking sides", the regulator opens herself up to charges of favoritism.

Similar illustrations could be developed in the context of sharing benefits. However, the main point of introducing the geometry of the core is not to admire its mathematics, but to gain an appreciation for how BATNAs affect the bargaining region. Thus, the numerical examples demonstrate the value of identifying and improving one's Best Alternative to a Negotiated Agreement.

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