

Lecture 14: Bargaining

(see McMillan Ch. 5)

Topics:

1. **A Bargaining Game**
2. **Forming Beliefs**
3. **Focal Points**
4. **Commitment**
5. **Settlement Escrows**
6. **Summary**

Whence Bargaining Strength?

To say that you did well in a negotiation because you were in a strong bargaining position is not to say anything very informative.

The interesting question is:

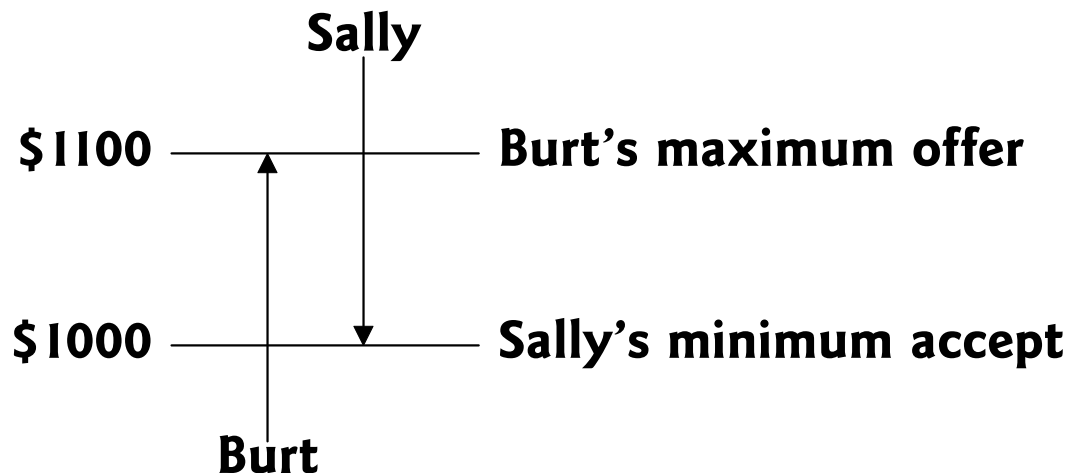
What are the sources of bargaining strength?

I. A Bargaining Game

In the simplest business deal, the buyer (Burt) and the seller (Sally) bargain over the price of an object, such as a used car.

Similar to labour/management negotiations, in essence.

e.g. If Sally knows the most Burt would be willing to pay (\$1100) and Burt knows the value to Sally of keeping the car (\$1000), then a deal is struck (efficient outcome) if the final price is in the range \$1000–\$1100



Dividing the money.

The bargaining is over how to divide the \$100.

- There is an *inefficient outcome*: no agreement and hence no increase in total value.
- There are also many *efficient outcomes*: any agreement to divide the \$100 results in an increase of total value of \$100, divided between Burt and Sally.

Sally must conjecture what the highest price Burt will pay is; *and*

Burt must conjecture what the lowest price Sally will accept is (her reserve price).

Beliefs matter.

The outcome depends crucially on each negotiator's belief about what price his or her opponent will find acceptable.

e.g. What if Sally asks for, say, \$73.21 (i.e., \$1073.21)?

- If Burt believes that this is the lowest Sally will ever go (a take-it-or-leave-it), then it is rational for Burt to accept immediately: the most he will get is the remainder from the gains to trade, \$26.79.**
- Is it rational for Sally to start with \$73.21?**
- If Sally believes that Burt believes that Sally will not settle for less (a take-it-or-leave-it), then Yes.**
- . . .But we can't predict the price.**

Bargaining power.

The seller is in a strong bargaining position if:

- **the buyer believes the seller will refuse to settle for anything less than a large share of the \$100, and**
- **the seller knows the buyer believes this.**

So the question:

How much bargaining power does each of the bargainers have?

becomes:

What does each bargainer believe about the other's willingness to settle, and about the other's beliefs?

So the question has become:

What determines the bargainers' beliefs (or expectations) about their rivals' thinking?

I.1 Negotiating with a Deadline

Players and game:

Mortimer and Hotspur are to divide \$100 between themselves. The game structure is common knowledge.

Stage 1:

- **Mortimer offers Hotspur an amount $\$X$ of the \$100. Then**
- **either Hotspur *accepts* $\$X$, and Mortimer receives the remainder of the \$100, and the game ends;**
- **or Hotspur *rejects* $\$X$, and the game continues to**
...

Mortimer & Hotspur, with a decaying total

Stage 2:

- The sum to be divided has now shrunk to \$90.
- Hotspur offers Mortimer an amount $\$y$ of the \$90. Then
- *either* Mortimer **accepts** $\$y$ and Hotspur gets the remainder ($\$90 - y$);
- *or* Mortimer **rejects** $\$y$, and each receives nothing and the game ends.

What will Mortimer offer $\$x$ at the first stage?

What is the least Mortimer can induce Hotspur to accept?

The other's shoes.

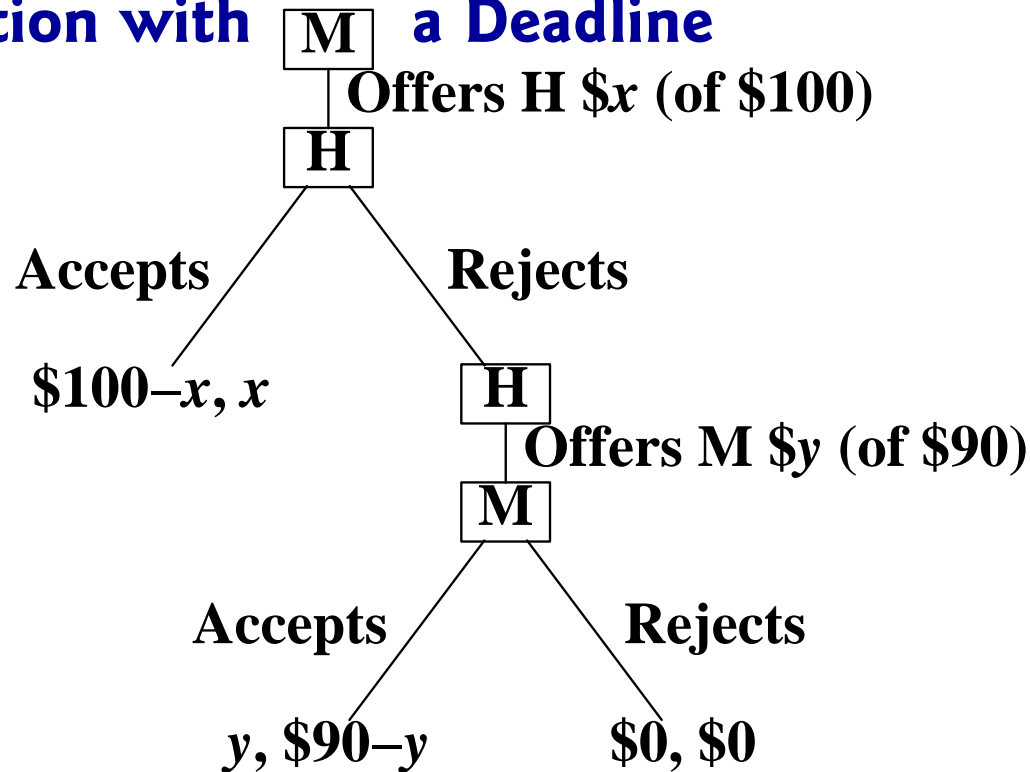
Mortimer puts himself in Hotspur's shoes, and imagines that the game has reached the second period. Hotspur is now in a strong position. Why? What will Hotspur propose for division of the \$90?

∴ from the perspective of the first stage, Mortimer can predict what Hotspur will do.

Mortimer knows that Hotspur knows that Hotspur can assure himself of (close to) \$90 if he, Hotspur, **rejects Mortimer's first-stage offer.**

∴ Mortimer knows that the least Hotspur will accept in the first round is \$90; the best Mortimer can do is demand \$10 for himself.

Negotiation with a Deadline



An extensive-form, sequential game (M, H).

What does M. believe?

**Introduce: putting oneself in the other's shoes, *second-mover advantage*, reputation.
(Strictly, a *last-mover advantage*.)**

Good bargainers.

When both players have gone through this line of reasoning, the actual play of the game is straightforward. Shows the power of a *deadline*.

In reality the rules of the game rarely specify the order of offers (think of the dollar auction). If you get your offer in just before the deadline, then your bargaining partner may have no choice but to accept.

Good bargainers:

- look several moves ahead, by putting themselves in the other's shoes.**
- Each bargainer thinks through what he believes is the other's rational responses to all possible contingencies.**

2. Forming Beliefs

2.1 Fallback Positions (BATNAs)

A good negotiator looks forward and reasons backwards: what is likely to happen if I reject the current offer?

The answer will depend on the *fallback positions* of the negotiators: the more attractive a bargainer's alternative opportunities, the better the negotiated outcome for that bargainer.

Sometimes known as BATNAs: *Best Alternative To a Negotiated Agreement*.

The alternative opportunities affect each bargainer's beliefs of what the other will settle for.

Example: credibility.

e.g. If Sally has a firm offer from someone else of \$1040, and if Burt knows of an equally good car available for \$1090, and if each knows of the other's alternative fallback, then the effective gains from trade are now \$50 instead of \$100.

The alternative opportunities have reduced the range to be bargained over, and the shrinkage has been asymmetric: the range of possible agreements has moved in Sally's favour, reflecting the fact that her fallback is more attractive than Burt's.

The *credibility* of the bargaining positions is key.

A lower price?

It is credible to Sally that Burt will hold out for a lower price when:

- **either Sally knows that Burt has a tempting alternative opportunity (or BATNA), or**
- **Burt knows that Sally knows that Burt has a tempting alternative opportunity (or BATNA).**

Search for better BATNAs:

“Necessity never made a good bargain” — Ben Franklin.

- **seeking alternative potential negotiating partners, or**
- **thinking about what you could do if the negotiations fail.**

Even if none of the potential alternatives (or BATNAs) is directly used, their existence can improve your negotiating position.

(See Variable-Threat Bargaining, pp. 573–577 in D&Sk)

A good fallback.

Developing competing negotiating partners is a good fallback.

Since your bargaining power is inversely related to how good your opponent's BATNAs are, it's very valuable to know these; an aggressive bargainer might even try to worsen his opponent's BATNAs.

e.g. coal & Japan

e.g. ?

2.2 Costs of Delay

As well as the bargainers' alternative opportunities (or BATNAs), the *relative cost of delay* of the bargainers is a determinant of their bargaining powers. *Time is money.*

- **Sally is forgoing interest on the proceeds from the sale; (or other returns from the capital)**
- **Burt is paying taxi fares or car rental bills until he has a car.**
- **In a strike, workers forgo their wages and the firm forgoes profits and market share:
so what's the size of the union's strike fund, the level of the firm's inventories, its alternative production facilities?**

The relative costs of delay.

The *relative costs of delay* shape the terms of the agreement, since they shape each bargainer's expectations of what the other will agree to.

The more impatient your opponent is to settle, the better for you is the agreement you can push for.

The lower Sally's cost of waiting (and the higher Burt's cost of waiting), the higher her share in the gains from trade.

Patient bargainers benefit.

e.g. Hotspur and Mortimer?

- Can you increase your opponent's impatience?**
- Can you reduce your own by taking actions beforehand?**

3. Focal Points

Often there are many possible points of agreement.

Sally and Burt bargain over the \$100 with no alternative opportunities and no cost of delay, but a fixed deadline from outside: if there is no agreement by the deadline, then neither bargainer gets anything.

Not enough structure in this game to pin down which beliefs of Sally's and Burt's are rational: no unique outcome from game theory.

Agreement is reached when bargainers' expectations converge:

when they share mutually consistent beliefs about what the other will agree to.

Focus?

Is there anything about the bargaining situation that serves to highlight a particular outcome?

Is there a *focal point* upon which an agreement can coalesce?

Focal points are vague. Possible determinants of focal points: (think of the Battle of the Sexes)

- precedent (always here before)**
- convention (take turns)**
- arithmetical symmetry (fifty-fifty)**
- fairness (fifty-fifty)**
- suggestion from an impartial party**

Al Roth's Harvard Experiments:

- **Undergraduates in simulated negotiating sessions,**
- **bargaining for tokens, (essentially lottery tickets),**
- **paid \$\$ at the end (\propto the # of tokens held)**
- **via linked computer terminals: anonymously, no side deals.**
- **Experimenters could make the tokens worth more to one bargainer than to another by offering each different-sized prizes.**
- **A fixed time to reach agreement; nothing earned if no agreement (Inefficient).**

Four experiments

Simplest: *equally valued tokens*. Students almost always agreed on 50–50 split. **Arithmetical symmetry? Fairness?**

Four-to-one values and informed: agreements tended to cluster around two points – either real equal division of values (80–20 in tokens), or nominal equal division (50–50 in tokens). During negotiation, both players argued for the focal point that most favoured them, but one had to give in for agreement. Then . . .

Four-to-one values continued

Relentless bargaining: Examine the choice between the two focal points: against a computer programmed relentlessly to demand one of the focal points — in some cases the nominal, in other cases the real. Eventually the human bargainers went for whichever division the computer had led them to expect: these expectations established through experience.

Ignorance of opponent's values: Neither told his opponent's values for the tokens: most of the agreements divided the tokens equally. But only a nominal equal-division focus: the real equal-division focus was destroyed because none knew where it was, since none knew how his/her opponents valued the tokens.

Experimental data.

Bargaining experiments: bargainers are anonymous and given the same number of tokens each, which have different values for each of the bargainers.

Reveal the marked tendency for settlement on a nominal 50–50 split, even though the values of the tokens are arbitrary → the value split was seldom 50–50.

Absent a unique bargaining equilibrium, a powerful tendency to settle for “equal shares”, although *equal’s* definition seems not to matter much, so long as there is a commonly agreed way of keeping score.

No agreement (i.e. inefficient) in about 20% of the experiments: surprisingly high?

Lessons?

Conclude: exact, true division of the “pie” is less important to the negotiators than the fact that the negotiations don’t break down: any division is better than none.

∴ the appearance of equal division may be sufficient, even if it’s “phony precision”.

Conclusion: it’s a good strategy to look for some way to define a focal point on which agreement can coalesce, thus avoiding breakdown.

Avoid regret over breakdown.

4. Commitment

One of the bargainers manipulates his/her rival's expectations.

e.g. Suppose Sally, making the first offer, announces that Burt must take or leave her offer, saying that if Burt rejects her offer she will refuse to bargain further and neither will get the \$100.

Sally is able to convince Burt she means it.

What does she demand?

All of the \$100 minus a few cents.

Faced with a choice of nothing or some cents, Burt accedes rationally.

The importance of commitment.

Sally's commitment to take-it-or-leave-it shapes Burt's expectations of what she'll settle for.

Of course, most of us in Burt's position would reject Sally's insulting offer, *but Burt's pride has a price*: if he prefers getting \$5 and feeling aggrieved to getting zilch, then Sally rationally demands \$95 and Burt accepts.

The best strategy, then, is to refuse to bargain: “the paradox that the power to constrain an adversary depends on the power to bind oneself” – Schelling.

Being able to constrain yourself when your opponent can't is *bargaining power*.

Good to have flexibility *before* negotiations begin, but to be inflexible *during* the negotiation.

Partial commitment and partial pregnancy?

Commitment must be all or nothing.

Sally must convince Burt that she's fair dinkum.

If Burt believes that Sally might be willing to bargain (if no agreement is in sight, say), then it's not rational for Burt to accept the pittance offered.

If Burt replies with a counter-offer, then Sally's situation has changed: she's now faced with zip if she persists with her threat, or some share of \$100 if she bargains.

After the deed, it's in Sally's interest to renege (and make a counter-offer), but the ability to renege eliminates the gains from commitment.

Sally's move (take-it-or-leave-it) is a *strategic move*, and must be credible, lest it is ineffective.

Credible commitments?

See the ten-fold path to credibility in Lecture 11.

- 1. Leaving outcome beyond your control**
- 2. Mandated negotiating agents**
- 3. Burning your bridges**
- 4. Cutting off communication**
- 5. Reputation**
- 6. Moving in steps (salami)**
- 7. Teamwork (“I’m on your side, but ...”)**
- 8. Rational irrationality (method in one’s madness)**
- 9. Contracts**
- 10. Brinkmanship**

Further considerations.

Preempt your opponent's commitments: leave him an escape route, literally or metaphorically.

Check how firm your opponent's commitment is: are prices subject to negotiation?

If both negotiators have the power to commit, then they may commit to mutually incompatible demands.

Commitment is risky: possible high payoff, possible lack of agreement.

e.g. General Electric's take-it-or-leave-it offer led to union counter-responses.

If you can commit and your opponent can't, then commit before negotiations begin so as to receive most of the gains from trade.

5. A New Negotiation Tool: Settlement Escrows

(Rob Gertner and Geoffrey Miller) A better tool for negotiation – some ingenious rules that enable people to behave reasonably without having their lunch eaten.

Called *Settlement Escrows*.

Here's how they work:

- Burt and Sally agree to a neutral mediator.**
- Sally tells the mediator, in private, a price at which she'd be willing to sell.**
- Likewise, Burt lets the mediator know, also in private, a price at which he'd be willing to buy.**

Settlement Escrows

- **The mediator checks whether the two prices cross: whether Burt's offer exceeds Sally's reserve:**
 - **Yes:** the mediator calculates the mid-point price (between Sally's stated price and Burt's higher stated price), which Sally and Burt have already agree in advance to would be their transaction price.
 - **No:** the mediator doesn't reveal either price, announcing only that the prices didn't cross. Neither side learns the other's bid, and the two parties can go on negotiating without prejudice.

How does S.E. work?

Why does Settlement Escrow allow you to be much more honest without getting burnt?

Let's take a case where Sally is truly willing to sell the item at \$120, but she doesn't want to give it away at \$120 if Burt is willing to pay much more.

Under the new scheme, it's now much safer for Sally to ask for \$120:

- If Burt asks for a price above \$120 (say, \$160), then the deal is done at the midway price (\$140), which is fine by Sally, who gets more than she asked for.**

And while Burt now knows Sally asked for \$120, and may be kicking himself for not offering a lower price, it's too late for him to do anything about it. The game is over. Those are the rules. As the seller, Sally is protected.

Thinking it through.

- **What if Burt asks for a price below \$120, say \$110? Then the deal doesn't go through.**

True, Sally and Burt will have to try some other way to reach an agreement. But in making a reasonable opening demand, Sally hasn't compromised her position in any subsequent negotiations.

All the go-between reveals is that the prices didn't cross (i.e. Burt's < Sally's).

∴ Burt now knows that Sally asked for a price above \$110, but that's all he knows.

Since Burt doesn't have the information he'd need to box Sally in, she is still protected.

Doesn't reveal information.

Settlement Escrows allow people to negotiate from behind a veil.

Ordinarily, when you negotiate, you reveal your hand.

Now, you can say what you really want without giving away much information.

When the parties in a negotiation feel safe enough to make reasonable demands, they're much more likely to reach an agreement, and less likely to make unreasonable ambit claims.

There's a much better chance that whenever there's a mutually beneficial deal to be made, it will be made.

Origins of Settlement Escrows.

Settlement Escrows were conceived of as an aid to pre-trial negotiations: you may be willing to pay \$100,000 to settle the matter, but you may not want the other side to know that – unless they're willing to settle here and now.

If they're not, then revealing the fact that you're willing to settle for \$100,000 may be what tips the other side into deciding to go to court rather than to continue negotiations.

The solution is for both parties to agree, at the outset, to use a settlement escrow.

Applications.

Settlement Escrows could be used in a wide range of situations:

- **to settle on the sale price of a house,**
- **to agree on an employee's salary,**
- **to agree on the price of a parcel of land,**
- **to agree on the price of a patent.**

The employee might be willing to work for very little, the landholder anxious to sell, or the inventor keen to see his idea commercialized, but none wants to tip their hands, either.

In all these cases, use of a settlement escrow would maintain a veil over the negotiations, allowing both parties to negotiate in good faith.

6. Summary of Bargaining

Bargaining: coordinating bargainers' expectations.

Internal logic: fallback options (BATNAs) and impatience.

Outside forces.

Arithmetical symmetry and fairness of the 50–50 split a focal point.

Ability to commit strengthens one's bargaining position.

Look forward and reason back.

Advice? Look forward and reason back. Several components:

- 1. If possible, manoeuvre yourself into making an all-or-nothing offer — a *commitment*.**
- 2. The relatively more attractive your *fallback alternatives (or BATNAs)* to agreement, the better your outcome: invest in development of alternatives.**
- 3. Estimate your and your opponent's *degrees of impatience* and costs of waiting: if his is higher than yours, you have an edge.**
- 4. Find a way of defining a *focal point* which benefits you, using phony precision if necessary, especially if there is a deadline for agreement.**

Threefold Summary

More generally:

- **Know yourself**
- **Know the other(s)**
- **Know the situation.**

(See Murnighan in the Readings.)