

Recap: The Bargaining Model of War¹

POLISCI 101: Introduction to International Relations

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Why do States go to War?

This question is not only one of the central questions in the international relations discipline. It is also one of grave normative importance. It's hard to quantify the amount of human suffering that war causes. Not only are combatant and civilian lives lost during war, there are millions who are injured, displaced from their homes, left impoverished, and face deadly disease. In fact, war is so costly that it has led some to claim that asking who won a given war is like asking who won the San Francisco earthquake – that in wars, there is no victory but only varying degrees of defeat (Walt 1959).

Let's start with bargaining theory, which uses the fact that war is so costly to motivate its puzzle about why wars occur.

Question: Why is war puzzling from the perspective of bargaining theory? States disagree over policies all the time, yet war is relatively rare. Why aren't conflicting preferences sufficient to explain war?

Answer: Because war is so costly, there should exist a range of deals that both states prefer to war. This range of mutually-preferable deals is called the "bargaining range." From the perspective of bargaining theory, it is not sufficient to just explain that states have conflict preferences because the bargaining range should still exist. To explain war, you need to explain why states with disagreements are unable to reach one of these mutually preferable deals that would allow them to avoid the costs of war.

Remember the example game from lecture about two players dividing \$100, where they could fight for it or split it peacefully. If they fought, both players would have to pay a \$20 cost of fighting. As Professor Tomz showed, there were many divisions of the \$100 that were preferable, even those we wouldn't typically think of as fair (i.e. a 70-30 division).

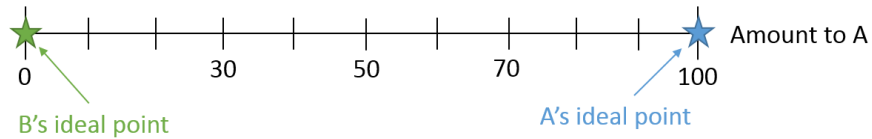
The Bargaining Range

The bargaining range is the set of deals that both parties prefer to war. It's a lot easier to wrap your head around the bargaining range if you visualize it. So, let's imagine that there are two countries fighting—Country A and Country B—over some territory. For the rest of this exercise,

¹ Please do not circulate without permission.

let's assume that the value of this territory is "100" utils (*Note: Utils are an imaginary unit with no inherent value. In economics and political science, we simply use utils to denote how a single actor values some good, where monetary value may not be the best or most obvious measure. There are a lot more details about using utils as a unit, but it is really not important for this class*). For this example, let's assume that both countries have a 50% chance of winning the war, and that their cost of fighting is "20" utils each. So, how do we visualize the bargaining range for this example?

Step 1: Draw a number line, from 0 to 100, representing the amount going to Country A, and locate Country A's and Country B's "ideal points" on this line.



- A country's "ideal point" is the division of the "100" that they would most prefer. Unsurprisingly, Country A would prefer if all 100 would go to it.
- Country B would also prefer if it received all 100, but where is that located on this line? Well, for Country B to receive 100, it must be the case that Country A receives 0. So, Country B's ideal point on this line is at "0."

Step 2: Calculate Country A's and Country B's war value.

A country's **war value** is the amount the country can expect to get by going to war. Here's the general formula for determining a country's war value:

$$\text{War Value} = [\text{Prob. of winning}] \times [\text{Value of what is being fought over}] - [\text{costs of war}]$$

So, with our example, what is country A's and country B's war value?

$$\text{A's War Value is } (0.5 \times 100) - 20 = 30.$$

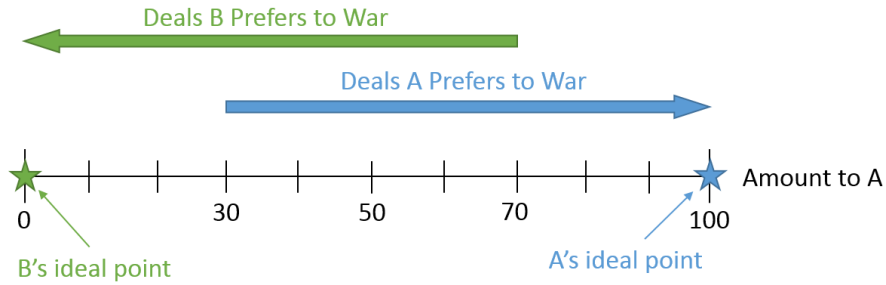
$$\text{B's War Value is } (0.5 \times 100) - 20 = 30.$$

Step 3: Locate Country A & Country B's war value on the number line.

We want to figure out all the possible divisions of 100 that Country A will prefer to war. So, since country A can expect "30" by going to war, it should prefer any division of the 100 that gives it at least 30. Let's put that one the line.

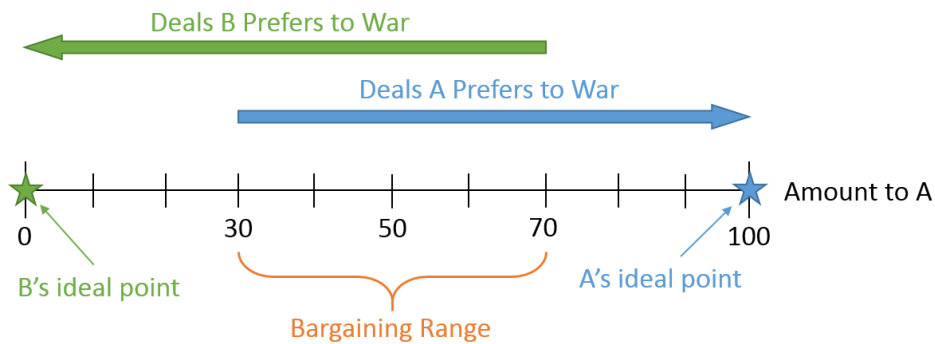
Now, Country B can also expect at least "30" by going to war, but again, how do we visualize this on the line? Well, for a division of the 100 to give Country B 30, it must give Country A 70.

So, Country B will prefer any division of the 100 that gives Country A 70 or less. Let's add that to the line.



Step 4: Determine the set of agreements both countries prefer to war.

You've found the bargaining range! Visually, where the two arrows overlap on the line is the set of agreements both countries prefer to war. So, let's label the bargaining range.

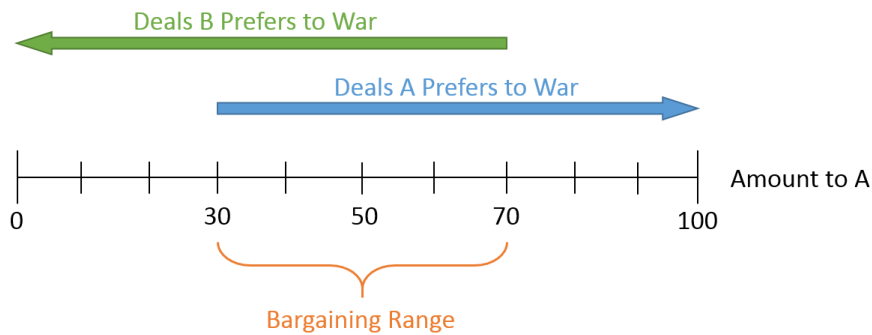


How the Bargaining Range Changes with Key Parameters

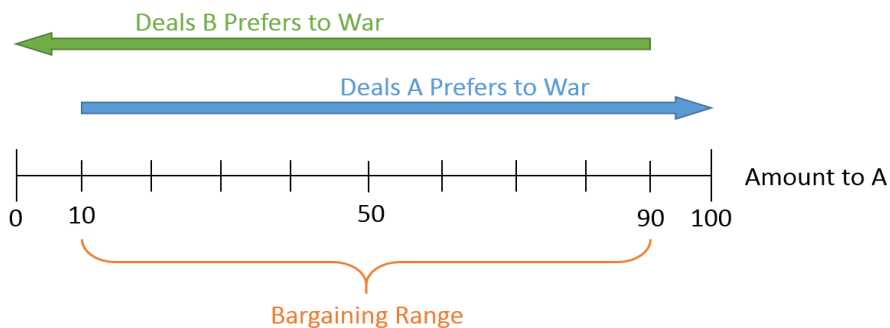
So, how does the bargaining range change with the costs of war or the balance of power? To summarize, the bargaining range becomes larger as the costs of war increase, while changing the balance of power (i.e. the probability one side wins a war) shifts the bargaining range.

The Costs of War

Let's start with our example we used above. Imagine that State A and State B are bargaining over some issue that they value at 100 utils. For now, let's say that both have a 50% chance of winning the war, and both have a 20 util cost of war. Let's depict the bargaining range below:



Here, States A and B prefer deals that give between 30 and 70 utils to State A. But how does the bargaining range change with the cost of war? Assume everything remains the same, except now the **cost of war for both players is 40**. Let's depict the new bargaining range:



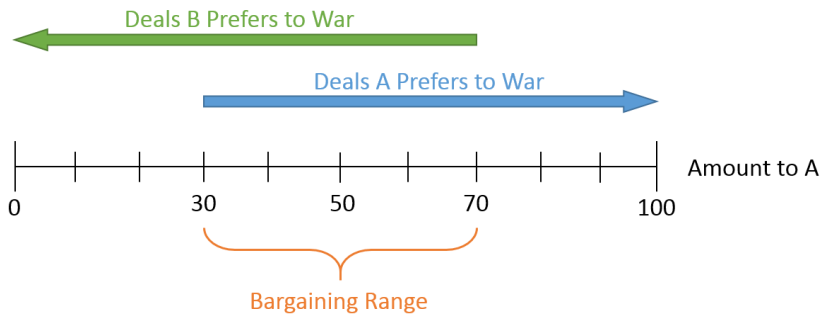
The bargaining range is now larger! State A and State B both prefer any division that gives State A between 10 and 90 utils. Thus, the size of the bargaining range increases with the cost of war. It will also decrease as the cost of war decrease.

The Balance of Power

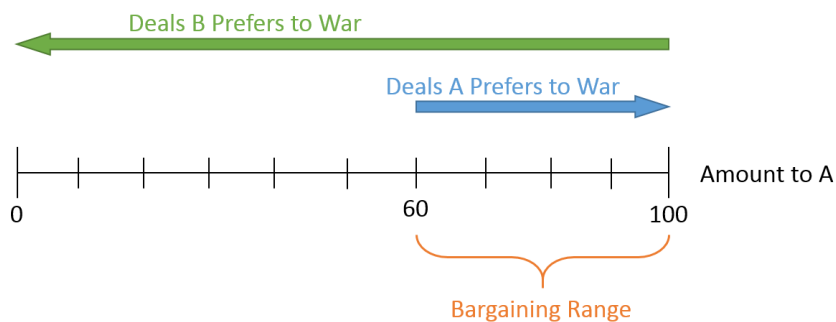
We can think of the “balance of power” as the probability State A wins the war. When both State A and State B are equally strong, they both would have a 50% chance of winning. By contrast, if we said that State A had a 80% chance of winning the war, that would mean that there is an *imbalance* of power between the two states. In particular, State A is quite strong while State B is quite weak.

So, how does the bargaining range change with the probability that State A wins the war?

Let's go back to our original example. State A and State B are bargaining over some issue that they value at 100 utils, there's a 50% chance that State A will win a war, and both states face a 20 util cost of war. This was our bargaining range:



Now, let's imagine that State A has an 80% chance of winning the war. The new bargaining range is:



Do you see how the new bargaining range has changed? It's shifted towards the right. State A and B now both prefer deals that give State A between 60 and 100 utils. You should also notice that the bargaining range here does not shrink: the range is still spans 40 utils. It has just shifted to the right. Thus, changes in the probability of one side winning (or an imbalance of power) does not necessarily shrink the bargaining range. Instead, it simply shifts the range to the right and to the left.

Causes of Bargaining Failure

There are three main classes of explanations for bargaining failure that we will consider in this class:

1. **Issue Indivisibility** – In theory, most things should be divisible, but in reality, dividing things (like religious sites) can be pretty difficult. If an issue is not perfectly divisible, then there might not be a range of feasible deals that both sides prefer to war. Jerusalem in the Israel-Palestine conflict appears to be an example of an “issue” that isn't perfectly divisible. Since it is a city of enormous importance to a number of religions, trying to split up the territory would likely diminish the value of the city itself.
2. **Information Problems** – States generally know their own military capabilities, their costs of fighting, and their general resolve (or willingness to fight on an issue overall), but they don't necessarily know this kind of “private information” for their adversaries. Because states don't really know what their likelihood of winning a war over their adversary or if their adversary is willing to fight at all, it makes it difficult for them to

locate where the bargaining range is, nonetheless agree over a specific deal within that range.

This seems like a simple problem to solve, right? Given that war is costly, shouldn't both sides just tell each other their private information so that they can find a deal that would allow them to avoid war? Well, it turns out each state has a strategic incentive to lie or "bluff" in order to get a better deal in bargaining. Since both states know that the other faces this incentive to bluff, they can't resolve this information problem to find the bargaining range.

3. **Commitment Problems** – The third reason why states may end up at war is because one or both sides are not able to commit to abide by the terms of the agreement that would allow them to avoid war. Unlike with information problems, the issue here is not that states cannot find agreements that both would prefer to war, they just cannot commit to abiding to those agreements if the other side cooperated. For example, one of Israel's conditions for granting Palestine its own state is that Palestine must fully disarm. But, do you think there would be peace if Palestine disarmed? No, probably not. If Palestine disarmed, Israel would have an incentive to invade and annex their entire territory. Because Israel cannot credibly commit not to invade Palestine, Palestine will not disarm.

There are two specific types of wars that result from commitment problems that we covered in lecture:

- a. Preventive Wars – If one state is expected to have much more power in the future (as a result of a high economic growth rate, pursuit of nuclear weapons, etc.), it might be difficult for it and its opponent to avoid war at present. While the two states could find a deal that both prefer to war today, the rising power will want to demand a more favorable deal to it once it is stronger in the future. The declining power thus faces an incentive to go to war now to prevent, or significantly delay, its adversary's ascent to power to avoid making more concessions in the future. This dilemma is a commitment problem in the sense that if the rising power could credibly commit not to revise the current deal in the future when it is more powerful, war could be avoided.
- b. Preemptive Wars – Preemptive wars occur when there are large military advantages to striking first, causing one or both sides to believe an attack is imminent. To put it another way, there is a "first-strike advantage" when attacking first dramatically increases the probability of winning the war. Bargaining breaks down because each state is confident that it can get a better payoff by attacking first than by accepting a deal through negotiation. This dilemma is a "commitment problem" because war could be avoided if both sides could credibly commit not to strike first.

Here are the instructions for the three games we played in class, each of which illustrates the logic of one of these causes of bargaining failure. Feel free to play them with each other as you study for the midterm!

Game #1: Information Problems	Game #2: Issue Indivisibility	Game #3: Commitment Problems
<ul style="list-style-type: none"> • Leland Stanford is giving you \$100 to divide up between you and your partner. • P1 will write down a division of the \$100, e.g. (P1 Amount, P2 Amount). • P2 looks at the proposed division and writes “yes” or “no.” • If “Yes,” you split the \$100 as proposed. • If “No,” <ul style="list-style-type: none"> ○ I will flip a coin. If heads, P1 wins the \$100. ○ Both will pay me a “war cost.” Your war cost will be the day of the month you were born times 2. (For example, I was born June 14th so my war cost is \$28). • Do no talk to each other outside of making an offer and accepting or rejecting it. (Bonus: Would it matter if you could talk? Why or why not?) 	<ul style="list-style-type: none"> • Leland Stanford is still giving you \$100, but he only has a \$100 bill and you cannot make change or break it into smaller bills. • P1 will write down a division of the \$100 bill (i.e. \$100 for P1 or \$100 for P2). • P2 looks at the proposed division and writes “yes” or “no.” • If “Yes,” you split the \$100 as proposed. • If “No,” <ul style="list-style-type: none"> ○ I will flip a coin. If heads, P1 wins the \$100. ○ Both will pay me a \$25 war cost. 	<ul style="list-style-type: none"> • Leland Stanford is still giving you \$100, but now... • P2 makes the first decision: to fight or not to fight. • If “Fight,” I flip a coin. Heads means P1 wins. Both pay a \$25 war cost. • If “Not Fight,” P1 decides how to divide the \$100. P1 can choose any division of the \$100, and that division will be final.