PSC/IR 106: The Bargaining Model of War

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Outline

- War in the Court
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
- Ultimatum Game
- Preventive War
- Information Problems
- Issue Indivisibility
- Preemptive War
- Understanding War
- Measuring Power
- Militarized Interstate Disputes
- Correlates of War and the Long Peace

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Why do states fight costly wars?

Parallel: Lawsuit

- A man trips and falls in your store and sues you for negligence

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- A man trips and falls in your store and sues you for negligence
- Your lawyer and his lawyer agree on the following:
  - There is a 60% chance the lawsuit will be successful
  - If he wins, you will have to pay him $40,000
  - Going to court will cost each of you $10,000 in lawyers fees

Possible Resolutions

1. Either you or him concede immediately
2. You reach an out-of-court settlement
3. You let the court decide the matter

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   - How should we expect this matter to be resolved?

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Possible Resolutions

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   - Your expected payoff:
     - (-$40,000)(.6) – $10,000 = -$34,000

Possible Resolutions

1. Either you or him concede immediately
2. You reach an out-of-court settlement
3. You let the court decide the matter
   - Your expected payoff:
     - (-$40,000)(.6) – $10,000 = -$34,000
   - His expected payoff:
     - ($40,000)(.6) – $10,000 = $14,000

Possible Resolutions

1. Either you or him concede immediately
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Possible Resolutions

1. Either you or him concede immediately
   - If you concede, you lose $40,000
   - If he concedes, he receives nothing
2. You reach an out-of-court settlement
3. You let the court decide the matter

Possible Resolutions

1. Either you or him concede immediately
   - If you concede, you lose $40,000
   - If he concedes, he receives nothing
     - Each would rather go to court than concede
2. You reach an out-of-court settlement
3. You let the court decide the matter

Possible Resolutions

2. You reach an out-of-court settlement
3. You let the court decide the matter

Possible Resolutions

2. You reach an out-of-court settlement.
   - A settlement x is better for you than court if $x < \$34{,}000$
   - A settlement x is better for him than court if $x > \$14{,}000$
   - Therefore, any settlement offer between $14,000 and $34,000 is better for both parties!
3. You let the court decide the matter

Conclusion

- Settlement should be the result!

But This Is Just Like War…

- Wars produce a winner and a loser, perhaps probabilistically
- Fighting is costly because it kills people and destroys things
- So why can't two states settle matters off the battlefield?
  - We call such a reason a "rationalist explanation for war"

Game Plan

Part 1: The Research Question

- Assumptions
- War's inefficiency puzzle
  - Algebraic
  - Geometric
  - Game theoretic

Part 2: The Answers

- Preventive war
- Asymmetric information and incentives to misrepresent
- Issue indivisibility
- Preemptive war

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Big question: Can two perfectly intelligent, perfectly unbiased leaders fight a war against each other?

The Unitary Actor Assumption

- Assume that states are a single entity, and their leaders are only interested in maximizing the overall welfare of the state

Our Recipe

1. Create some assumptions
2. Do some math
3. Reach logically valid conclusions

The Unitary Actor Assumption

- Assume that states are a single entity, and their leaders are only interested in maximizing the overall welfare of the state
  - Is this true all of the time?
    - No
  - Is this true some of the time?
    - Maybe
- Leaders justify wars using the unitary actor assumption

Things You Will Never Hear a Leader Say

- I really suck at running our domestic economy, so I’m going to fight a war to distract you from that

Things You Will Never Hear a Leader Say

- I really suck at running our domestic economy, so I'm going to fight a war to distract you from that
- The media is too interested in a sex scandal involving some intern I never slept with, so I'm going to bomb some countries you've never heard of

Things You Will Hear a Leader Say

- This war is in the best interest of *our* national security

Things You Will Hear a Leader Say

- This war is in the best interest of *our* national security
- *We* have a moral obligation to intervene

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- Stabilizing the region will secure *our* economic interests

Things You Will Hear a Leader Say

- This war is in the best interest of *our* national security
- *We* have a moral obligation to intervene
- Stabilizing the region will secure *our* economic interests
- In sum: It's about *we*, not me

Justifying the Unitary Actor

- The unitary actor assumption allows us to analyze the validity of these explanations

Justifying the Unitary Actor

- The unitary actor assumption allows us to analyze the validity of these explanations
- The war dynamics we will discuss also affect states that aren't unitary actors
  - But it will be easier to isolate these factors without those domestic cleavages

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Can war be mutually beneficial?

Crisis!

- Venezuela discovers an oil deposit worth $80 billion

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- But Colombia hears about this and declares the oil deposit to be on its side of the border

Crisis!

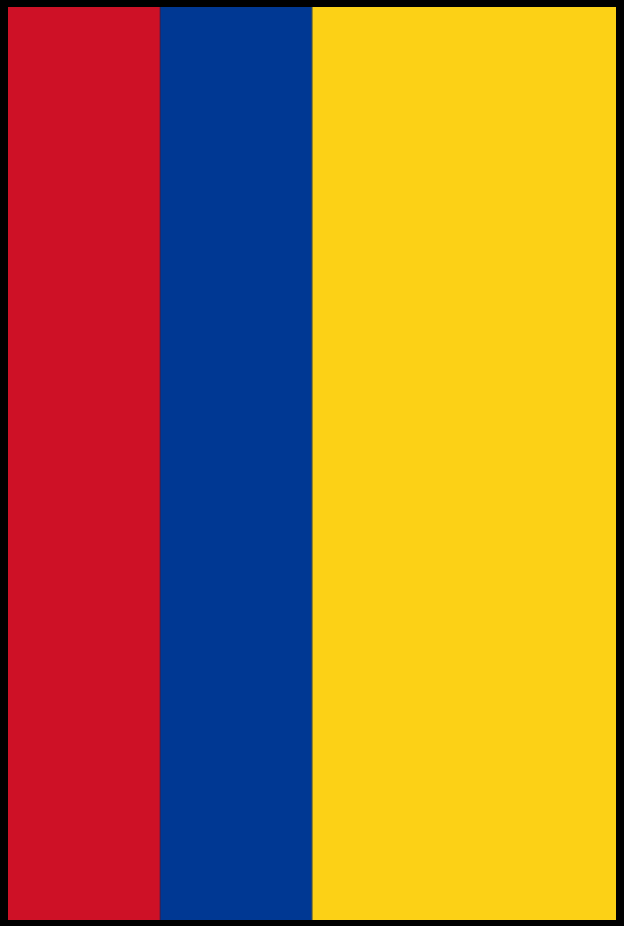
- Venezuela discovers an oil deposit worth $80 billion
- But Colombia hears about this and declares the oil deposit to be on its side of the border
- The sides call in their militaries and prepare for war

Venezuela's Perspective

- Venezuela will win the war (and $80 billion in oil) 60% of the time
- Cost of death, destruction, and lost oil: $15 billion

Colombia's Perspective

- Colombia will win the war (and $80 billion in oil) 40% of the time
- Cost of death, destruction, and lost oil: $12 billion



Interactive Question

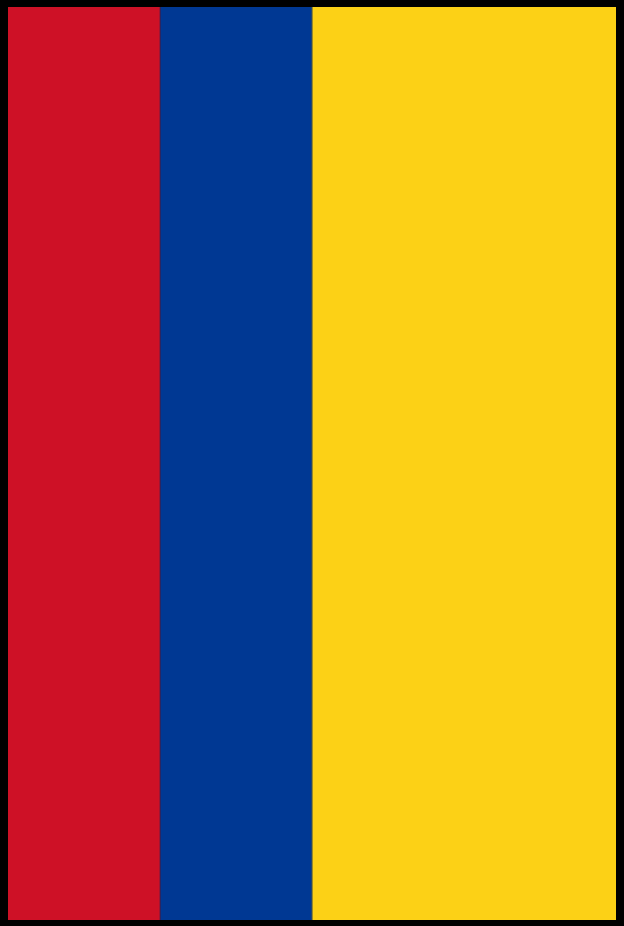
- Is war inevitable between these two countries?

Venezuela's Needs

- Expected payoff from war:
  (80)(.6) – 12 = 36
- Venezuela must receive $36 billion to be satisfied

Colombia's Needs

- Expected payoff from war:
  (80)(.4) – 15 = 17
- Colombia must receive $17 billion to be satisfied



A Rationalist Explanation for War?

- Both countries have positive expected payoffs from fighting
  - So war is rational for both parties

A Rationalist Explanation for War?

- Both countries have positive expected payoffs from fighting
  - So war is rational for both parties. Right?

Bargaining

- War is not rational here
- Venezuela's and Colombia's demands sum to $53 billion
  - But there's $80 billion in oil revenue to go around!
  - Where did the other $27 billion go?

Bargaining

- War is not rational here
- Venezuela's and Colombia's demands sum to $53 billion
  - But there's $80 billion in oil revenue to go around!
  - Where did the other $27 billion go?
    - The costs of war ($15 billion and $12 billion) ate it up

A Better Resolution

- Let x be Venezuela's share of the settlement
- Then x satisfies Venezuela if $x > 36$
- Then x satisfies Colombia if $80 - x > 17$, or $x < 63$

A Better Resolution

- Let x be Venezuela's share of the settlement
- Then x satisfies Venezuela if $x > 36$
- Then x satisfies Colombia if $80 - x > 17$, or $x < 63$
  - Therefore, x is mutually satisfactory if

$$36 < x < 63$$

Conclusion

- Any settlement that gives $36 billion but no more than $63 billion to Venezuela is mutually preferable to war
  - Such settlements exist
  - Bargaining is mutually preferable to war

War's Inefficiency Puzzle

- Why do states sometimes choose to resolve their differences with inefficient fighting when bargaining, in theory, leaves both better off?

War's Inefficiency Puzzle

- Was this a quirk with the payoffs for Venezuela and Colombia?

The Model

- Two states: A and B

The Model

- Two states: A and B
- Bargain over an object worth 1
  - This 1 is 100% of the good—whether it is $80 billion in oil, 16 square miles of land, or whatever
  - Object is infinitely divisible

The Model

- Two states: A and B
- Bargain over an object worth 1
- p_A is the probability A wins a war
- p_B is the probability B wins a war
  - No draws, so $p_A + p_B = 1$

The Model

- If the states fight a war, they pay costs $c_A > 0$ and $c_B > 0$
  - These costs reflect absolute costs (how many people will die) and “resolve” (how much the state cares about the issue)

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- If the states fight a war, they pay costs $c_A > 0$ and $c_B > 0$
  - These costs reflect absolute costs (how many people will die) and "resolve" (how much the state cares about the issue)
  - The costs can take any functional form, as long as they are positive

The Model

- If the states fight a war, they pay costs $c_A > 0$ and $c_B > 0$
- Question: Is bargaining always an effective means of resolving the dispute?

A's Peace Constraint

- Let x be A's share of the bargained settlement
- A is satisfied if:

$$x \geq p_A(1) - c_A$$

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$$x \geq p_A - c_A$$

B's Peace Constraint

- 1 – x is B's share of a peaceful settlement
- B is satisfied if:

$$1 - x \geq p_B(1) - c_B$$

B's Peace Constraint

- 1 – x is B's share of a peaceful settlement
- B is satisfied if:

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$$1 - x \geq p_B - c_B$$

$$x \leq 1 - p_B + c_B$$

Is Peace Possible?

- A is satisfied if: $x \geq p_A - c_A$
- B is satisfied if: $x \leq 1 - p_B + c_B$

Is Peace Possible?

- A is satisfied if: $x \geq p_A - c_A$
- B is satisfied if: $x \leq 1 - p_B + c_B$
- x is mutually satisfactory if:

$$p_A - c_A \leq x \leq 1 - p_B + c_B$$

Is Peace Possible?

- A is satisfied if: $x \geq p_A - c_A$
- B is satisfied if: $x \leq 1 - p_B + c_B$
- x is mutually satisfactory if:

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- Such an x exists if:

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- x is mutually satisfactory if:

  $p_A - c_A \leq x \leq 1 - p_B + c_B$
- Such an x exists if:

  $p_A - c_A \leq 1 - p_B + c_B$
  - $p_A + p_B = 1$
  - $p_B = 1 - p_A$

Is Peace Possible?

- A is satisfied if: $x \geq p_A - c_A$
- B is satisfied if: $x \leq 1 - p_B + c_B$
- x is mutually satisfactory if:

  $$p_A - c_A \leq x \leq 1 - p_B + c_B$$

- Such an x exists if:

  $$p_A - c_A \leq 1 - (1 - p_A) + c_B$$

Is Peace Possible?

- A is satisfied if: $x \geq p_A - c_A$
- B is satisfied if: $x \leq 1 - p_B + c_B$
- x is mutually satisfactory if:

  $p_A - c_A \leq x \leq 1 - p_B + c_B$
- Such an x exists if:

  $p_A - c_A \leq 1 - (1 - p_A) + c_B$

  $p_A - c_A \leq p_A + c_B$

  $c_A + c_B \geq 0$

Conclusions

- Peace is possible
- But how do we interpret this result?
  - Geometric model will help us understand what's going on here

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- Two states: A and B

A's Capital

B's Capital

The Model

- Two states: A and B
- Bargain over an object worth 1

0

A's Capital

1

B's Capital

The Model

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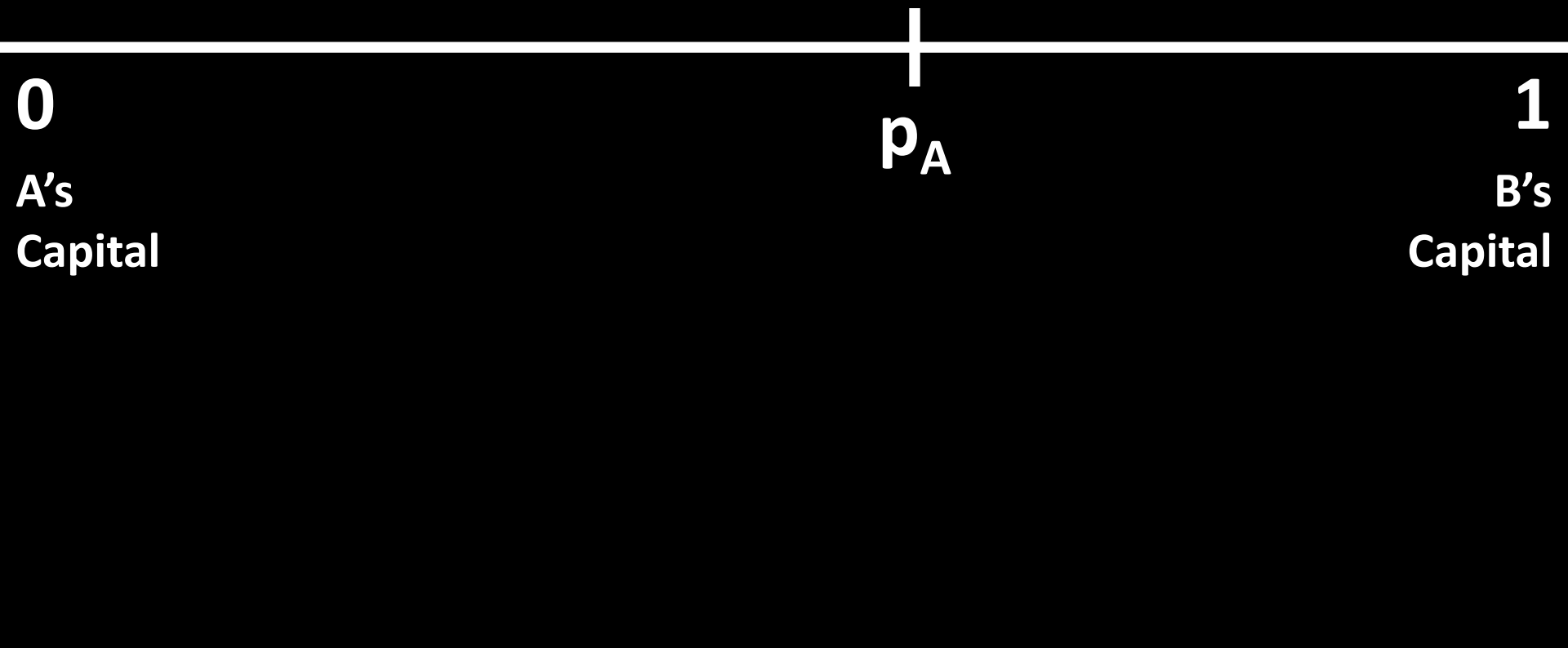
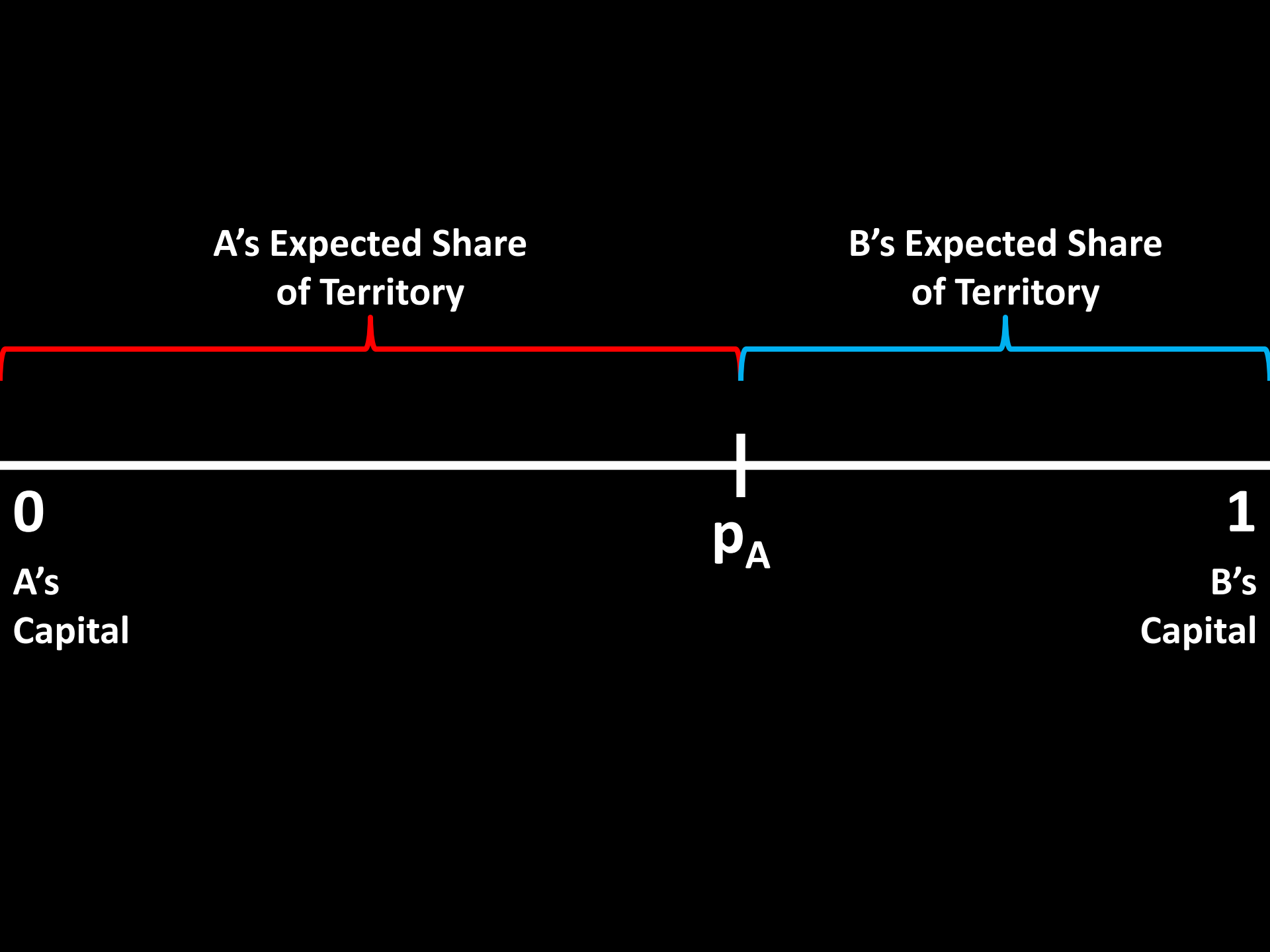
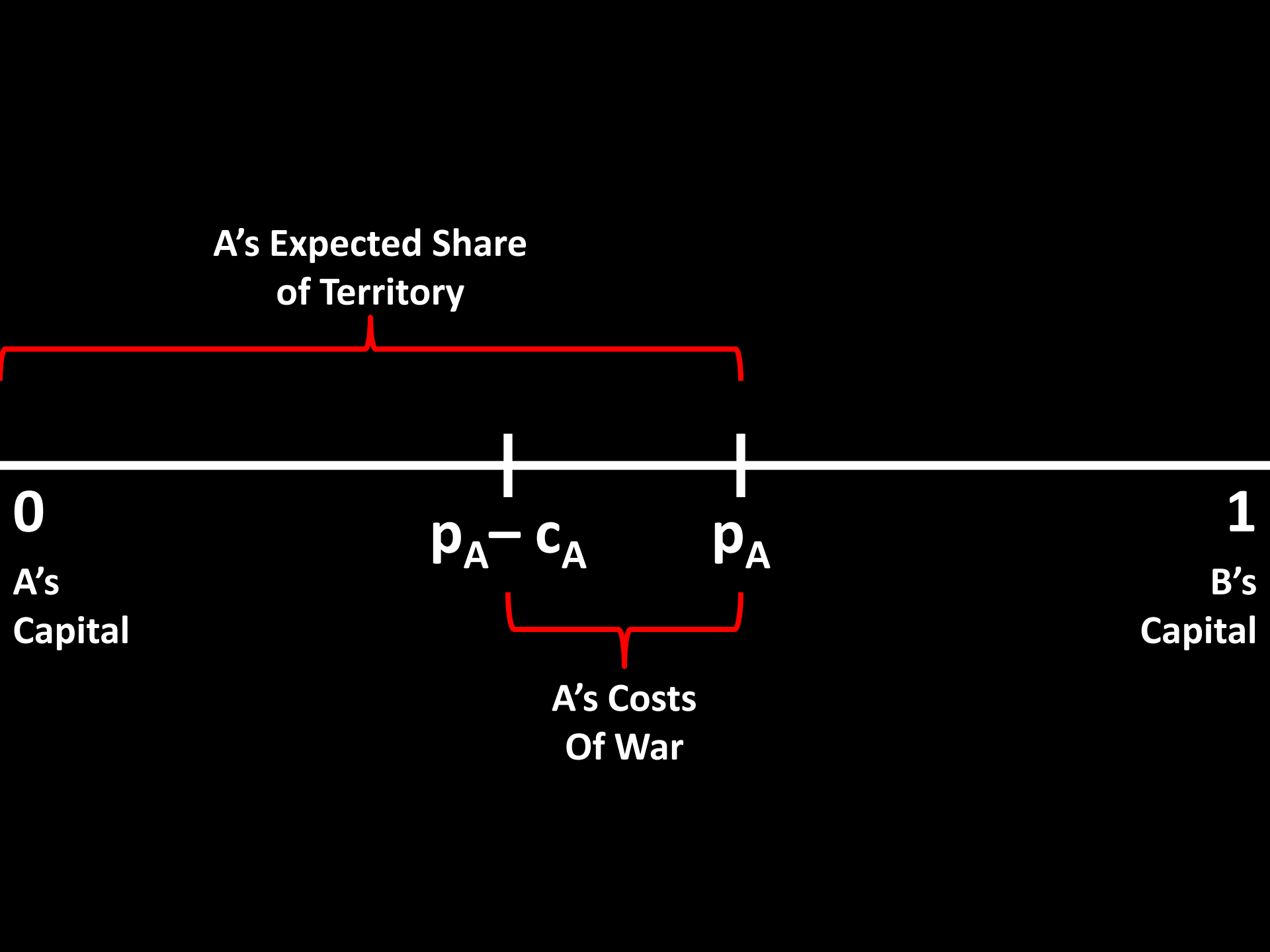
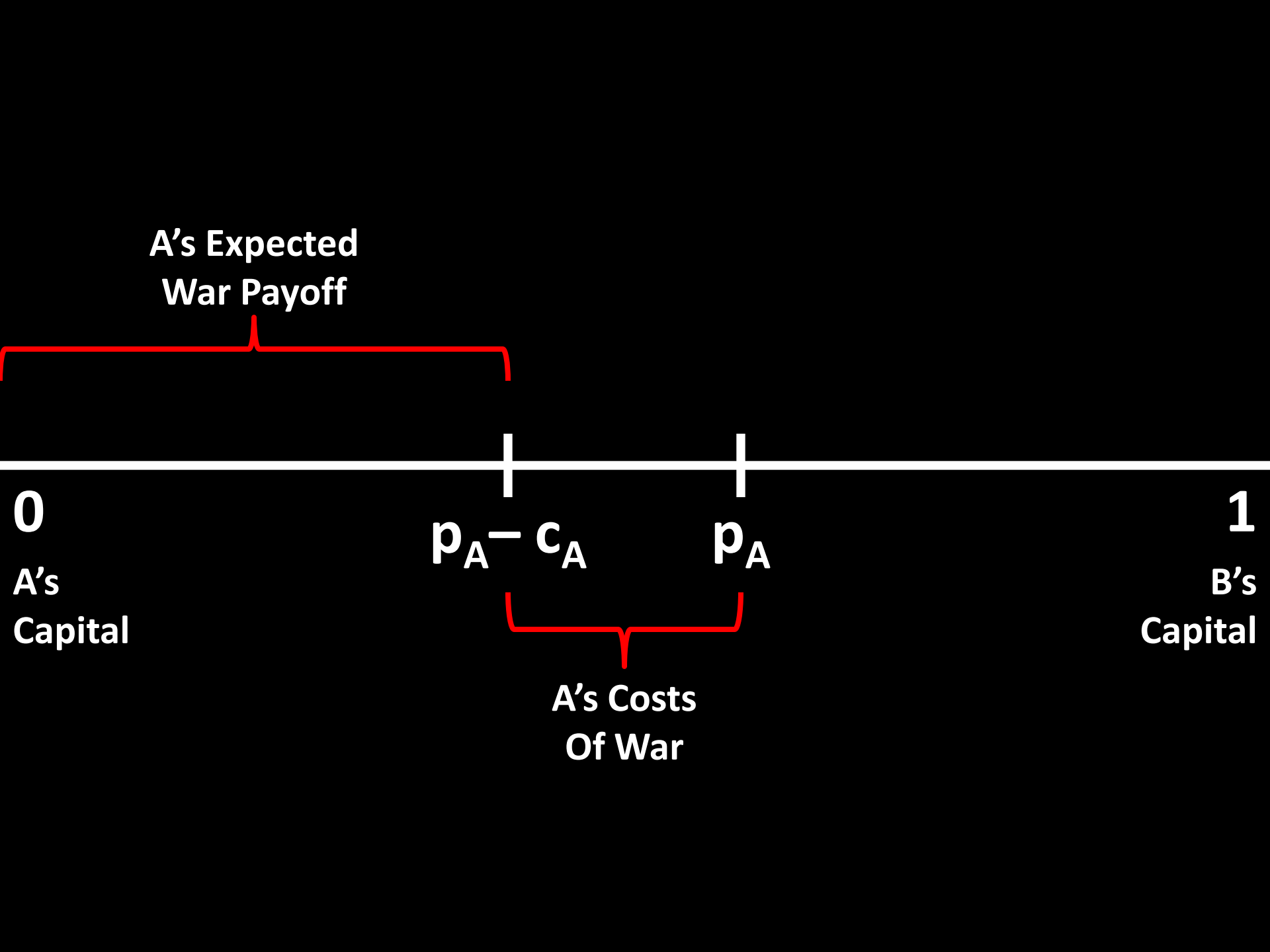

0
A's
Capital
p_A
1
B's
Capital

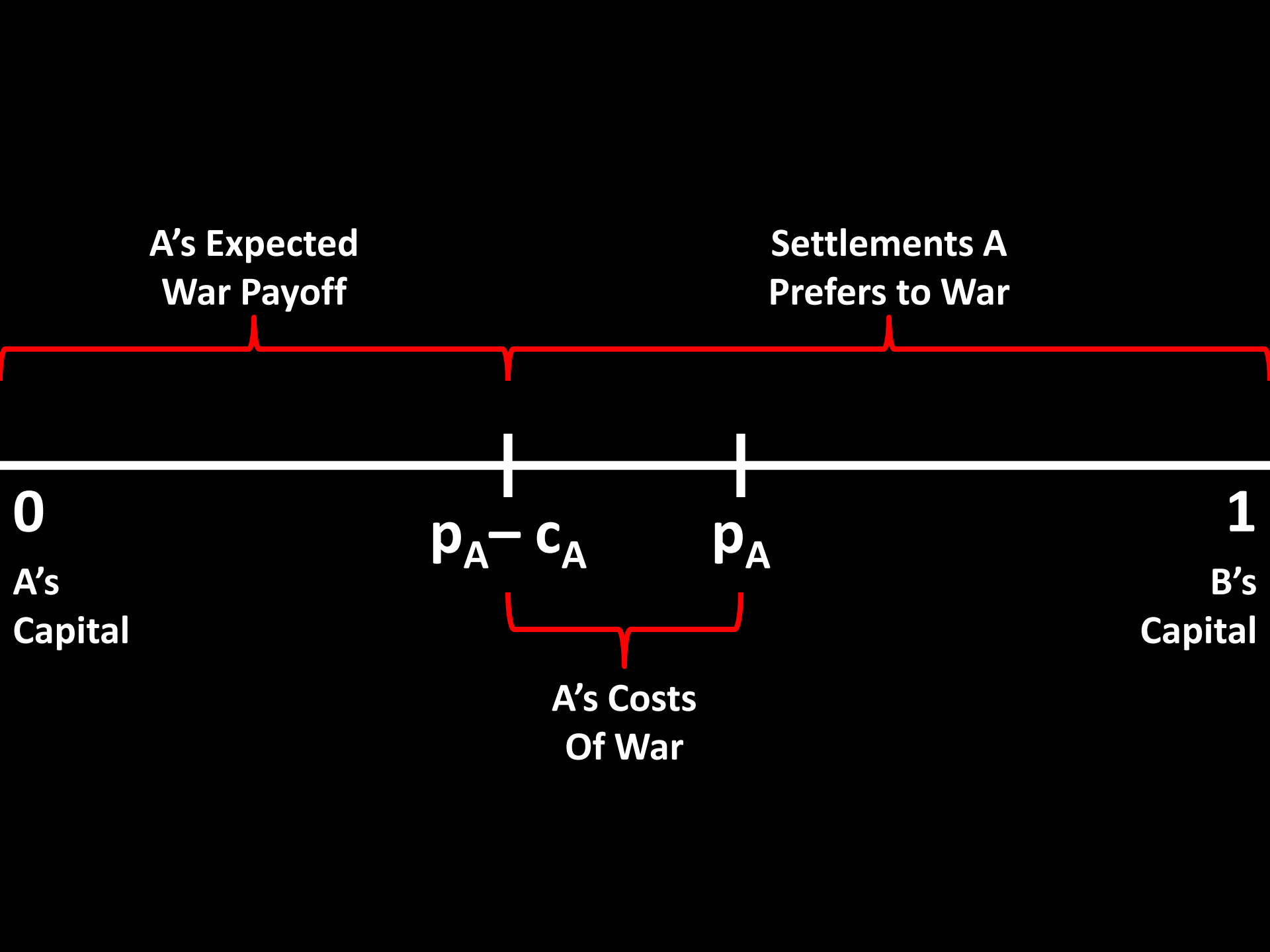

A's Expected Share of Territory
B's Expected Share of Territory
0
A's Capital
p_A
1
B's Capital

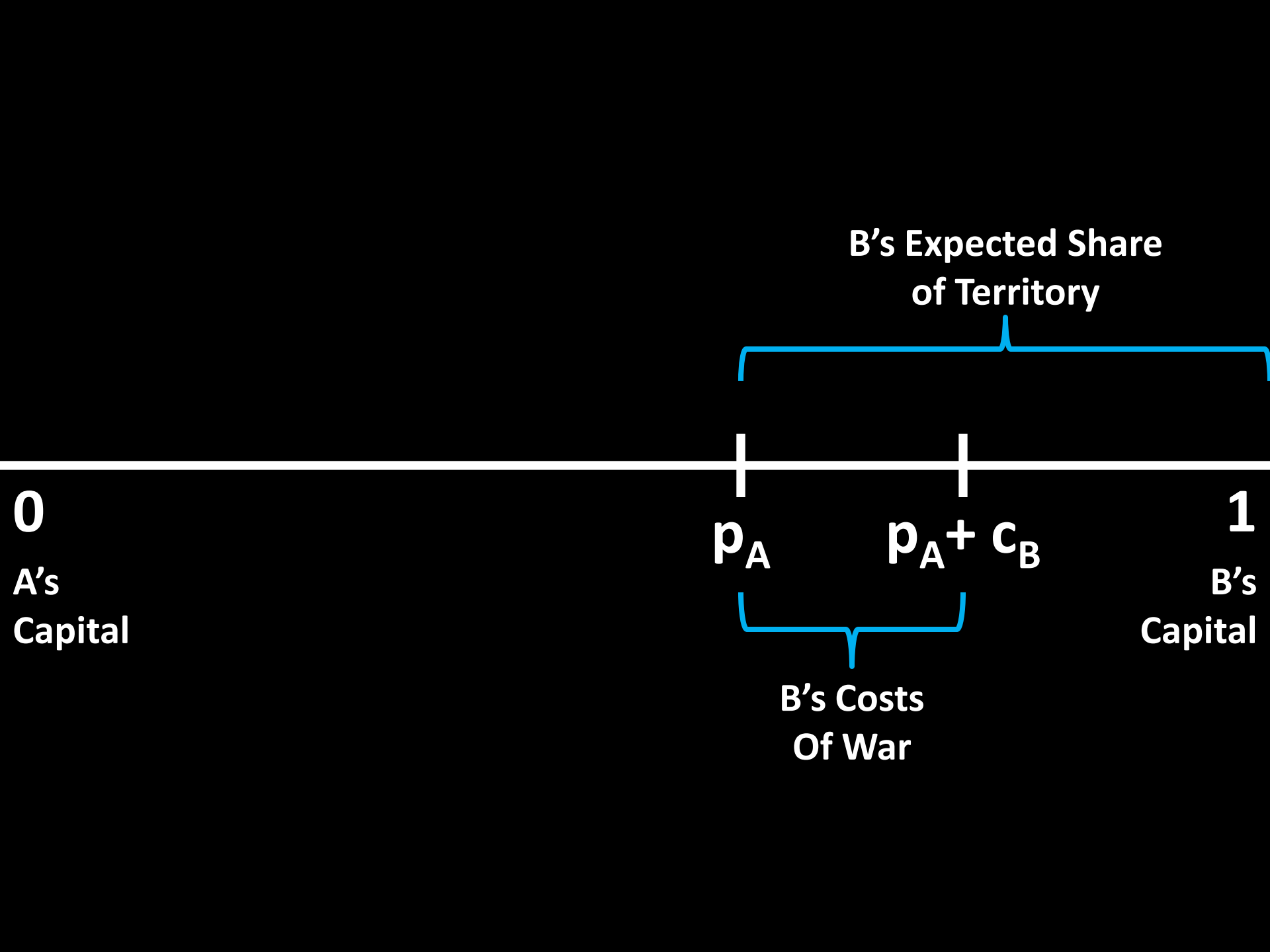
The Model

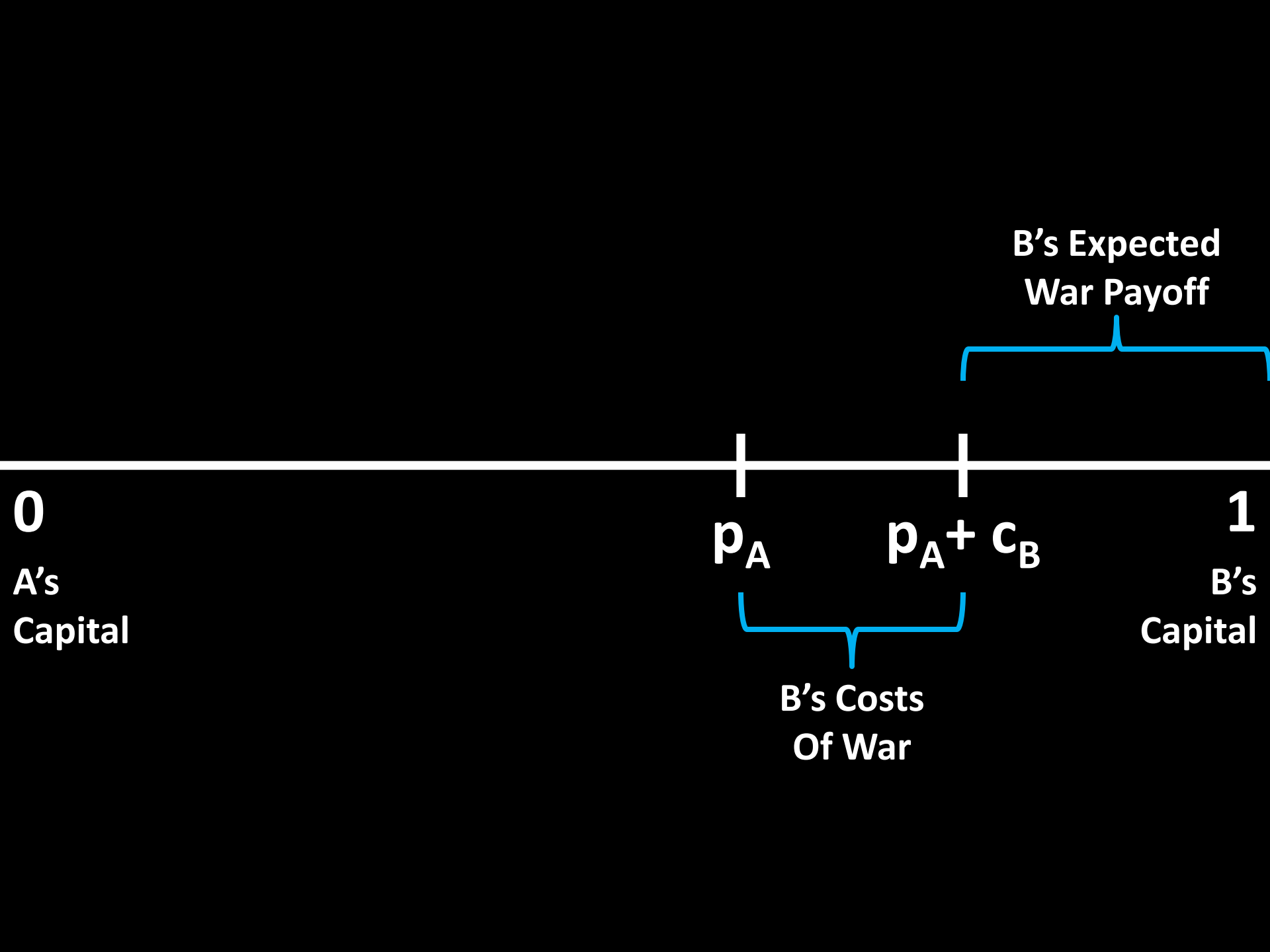
- If the states fight a war, they pay costs $c_A > 0$ and $c_B > 0$


A's Expected Share
of Territory
0
A's
Capital
$p_A - c_A$
p_A
1
B's
Capital
A's Costs
Of War


A's Expected
War Payoff
0
A's
Capital
$p_A - c_A$
p_A
1
B's
Capital
A's Costs
Of War


A's Expected War Payoff
Settlements A Prefers to War
0
A's Capital
$p_A - c_A$
p_A
1
B's Capital
A's Costs Of War


B's Expected Share
of Territory
0
A's
Capital
p_A
$p_A + c_B$
1
B's
Capital
B's Costs
Of War


B's Expected
War Payoff
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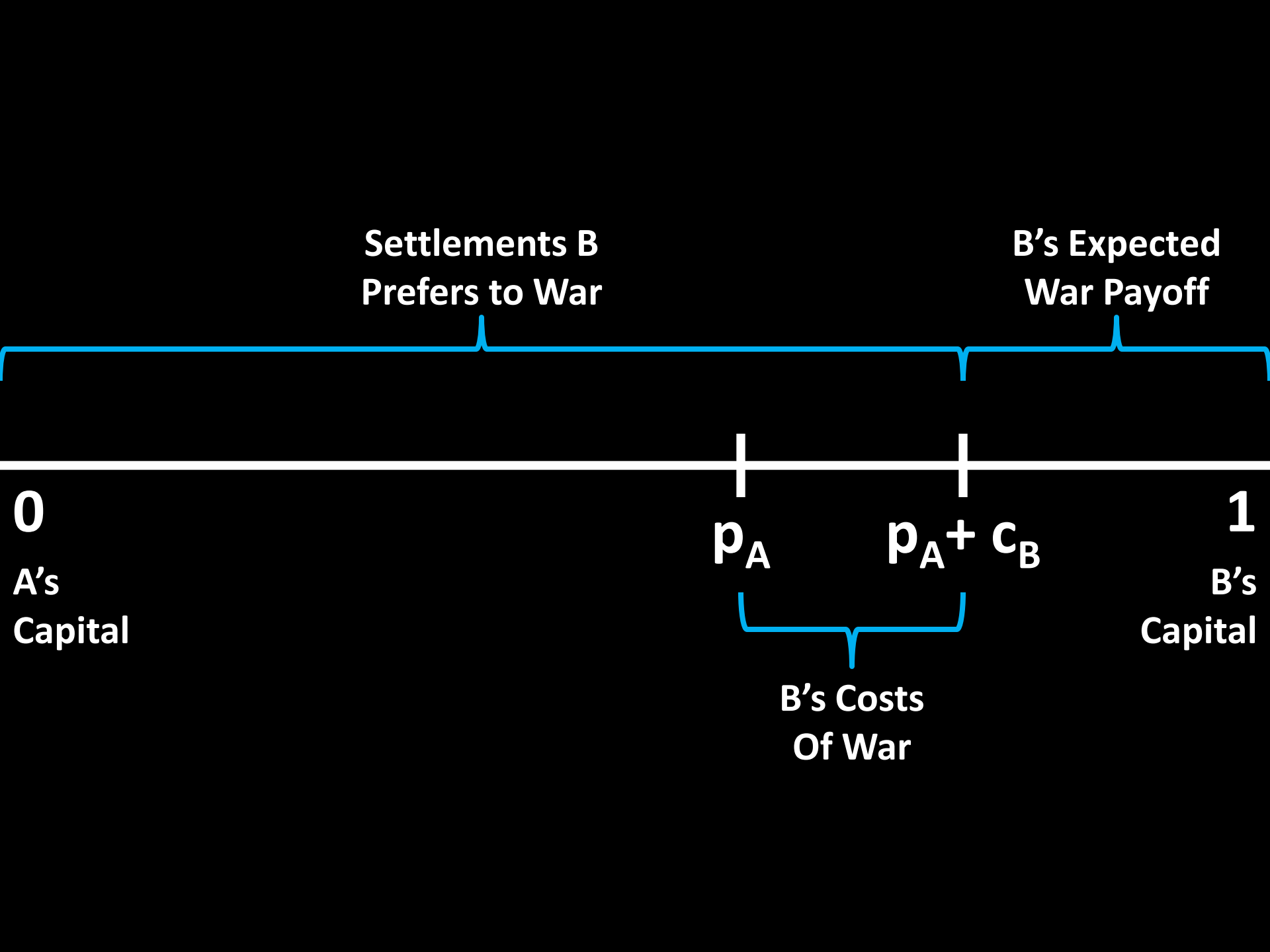
A's
Capital
p_A
$p_A + c_B$
1
B's
Capital
B's Costs
Of War


Settlements B
Prefers to War
B's Expected
War Payoff
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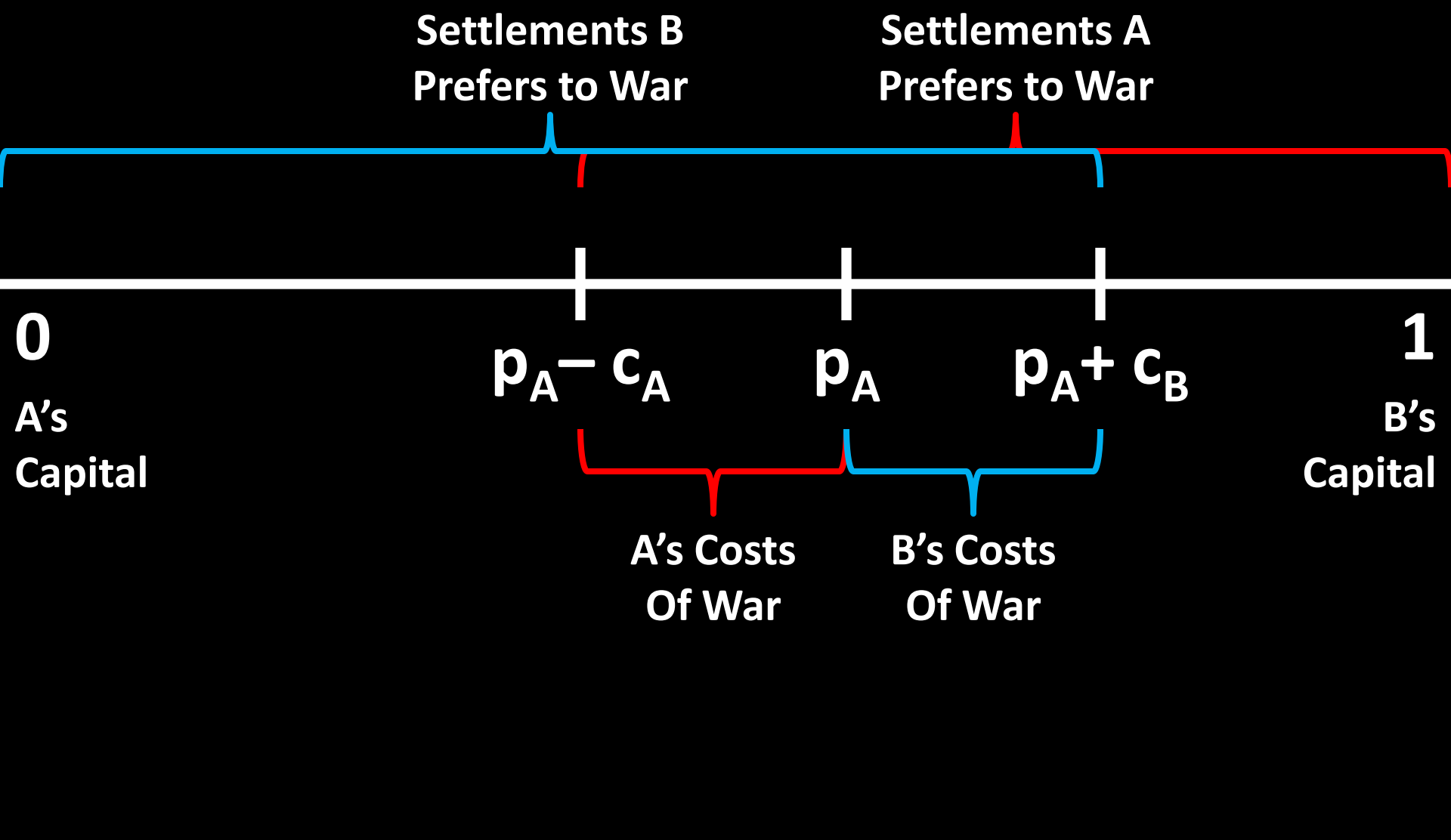
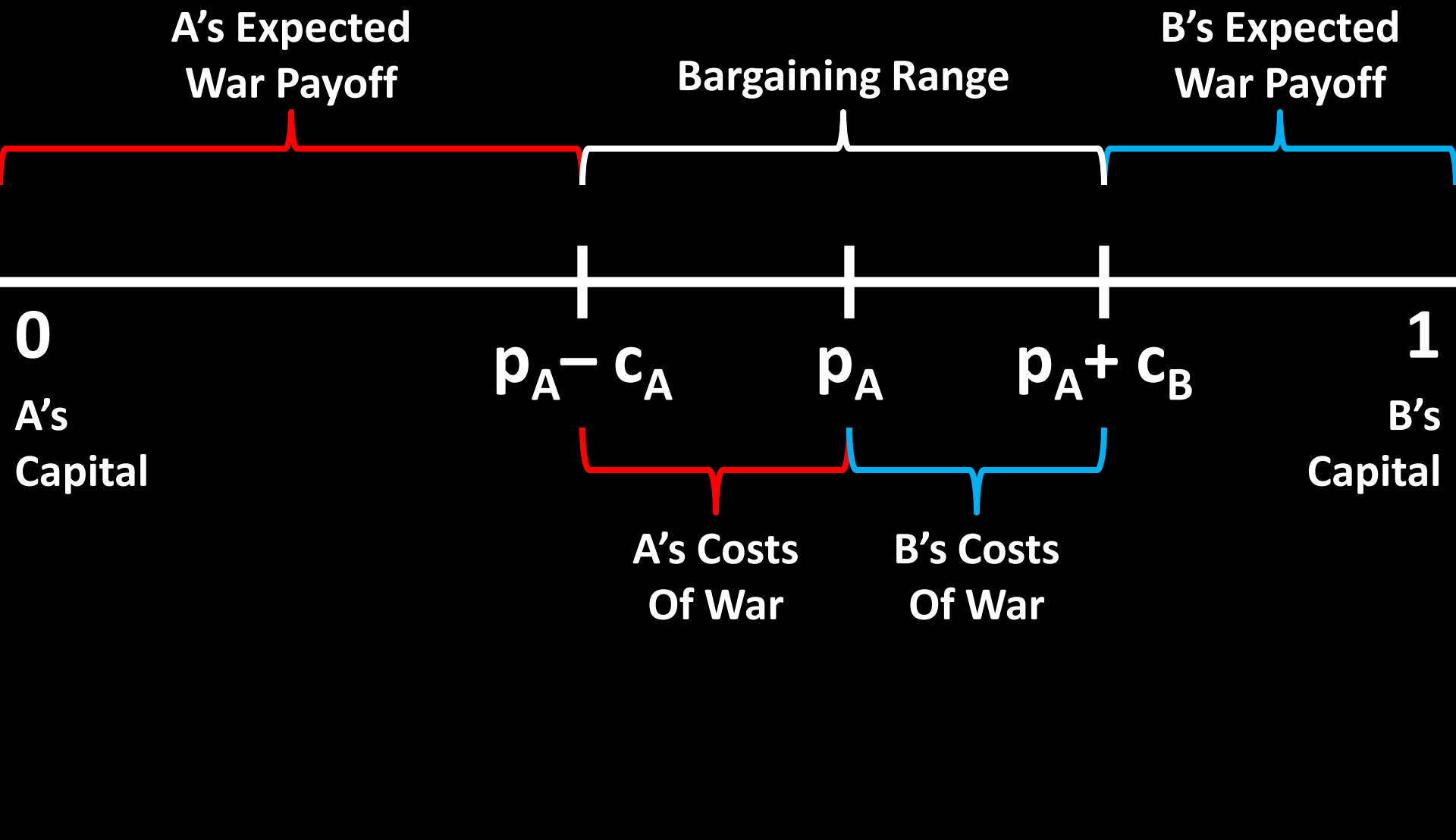
A's
Capital
p_A
$p_A + c_B$
1
B's
Capital
B's Costs
Of War


Settlements B
Prefers to War
Settlements A
Prefers to War
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital
A's Costs
Of War
B's Costs
Of War


A's Expected War Payoff
Bargaining Range
B's Expected War Payoff
0
A's Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's Capital
A's Costs Of War
B's Costs Of War

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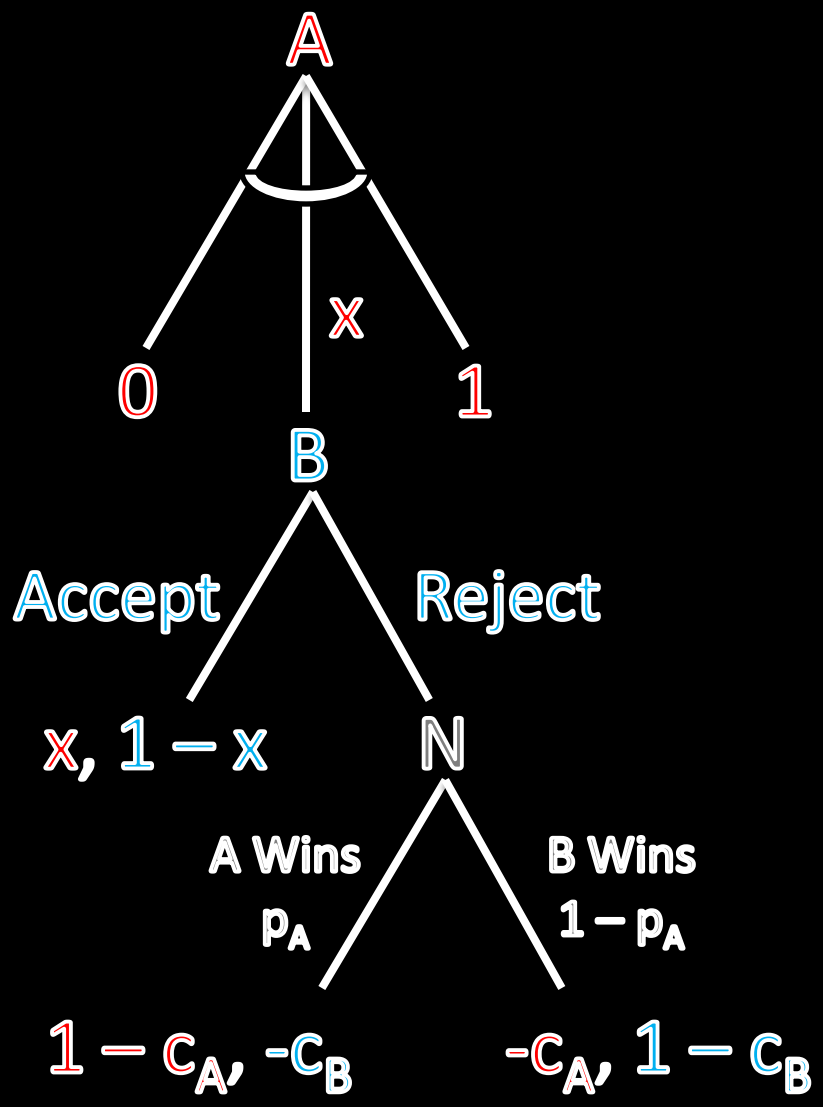
The Model

- Same as before, with one new assumption
  - Suppose A controls the entire good at the start, and A gives B a take-it-or-leave-it offer
  - If B accepts, the settlement is implemented. Otherwise, the states fight

Crisis Bargaining



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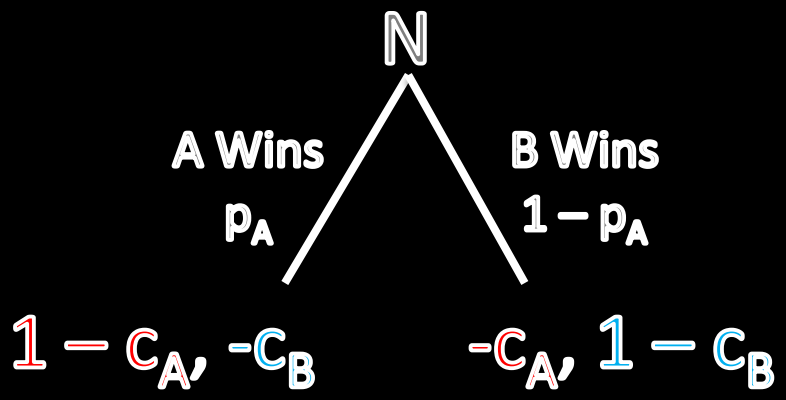
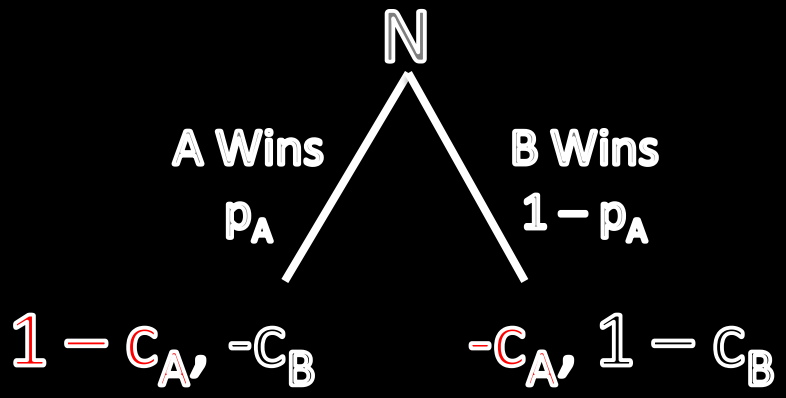


Crisis Bargaining

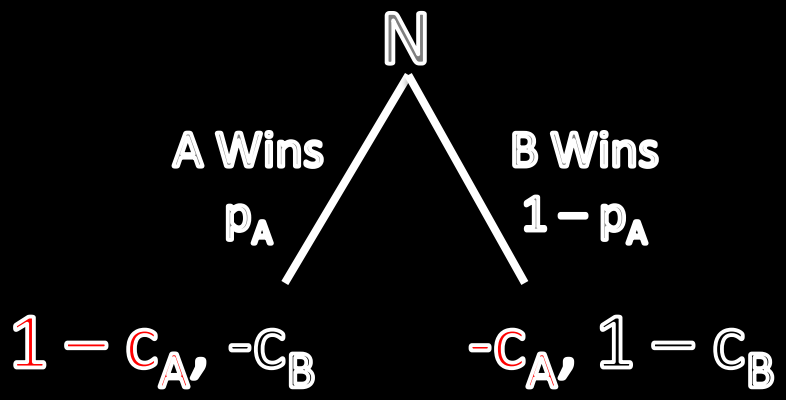
A's War Payoff



Crisis Bargaining

A's War Payoff

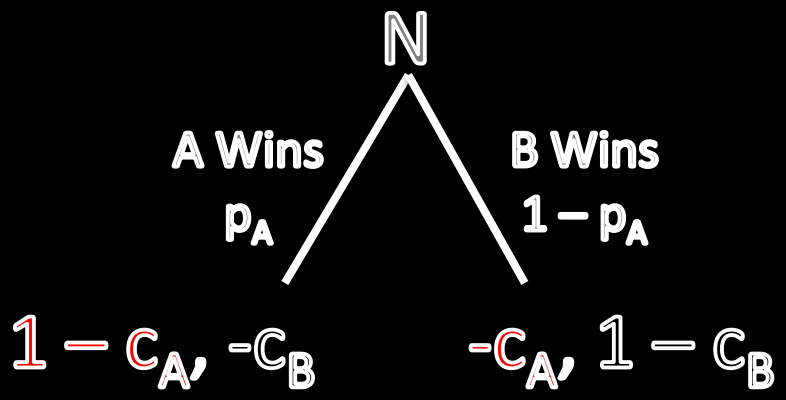
$$= p_A(1 - c_A) + (1 - p_A)(-c_A)$$



Crisis Bargaining

A's War Payoff

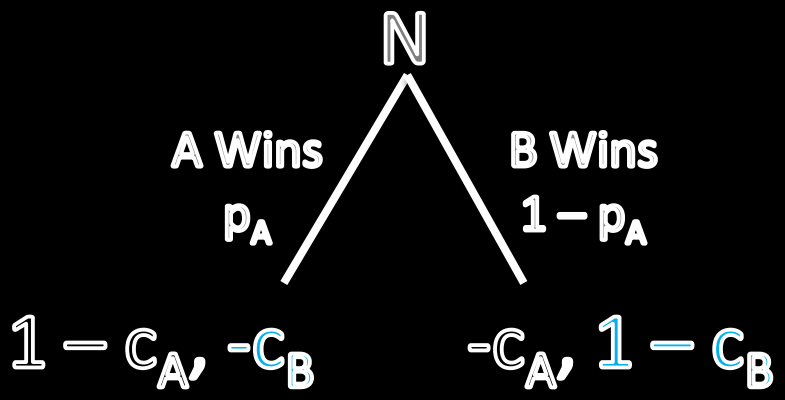
$$= p_A(1 - c_A) + (1 - p_A)(-c_A)$$
$$= p_A - pc_A - c_A + p_A c_A$$
$$= p_A - c_A$$



Crisis Bargaining

B's War Payoff

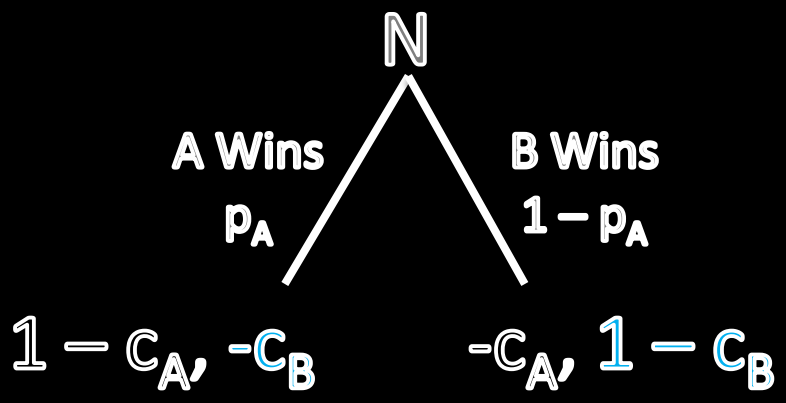
$$= p_A(-c_B) + (1 - p_A)(1 - c_B)$$



Crisis Bargaining

B's War Payoff

$$= p_A(-c_B) + (1 - p_A)(1 - c_B)$$
$$= -p_A c_B + 1 - c_B - p_A + p_A c_B$$
$$= 1 - p_A - c_B$$



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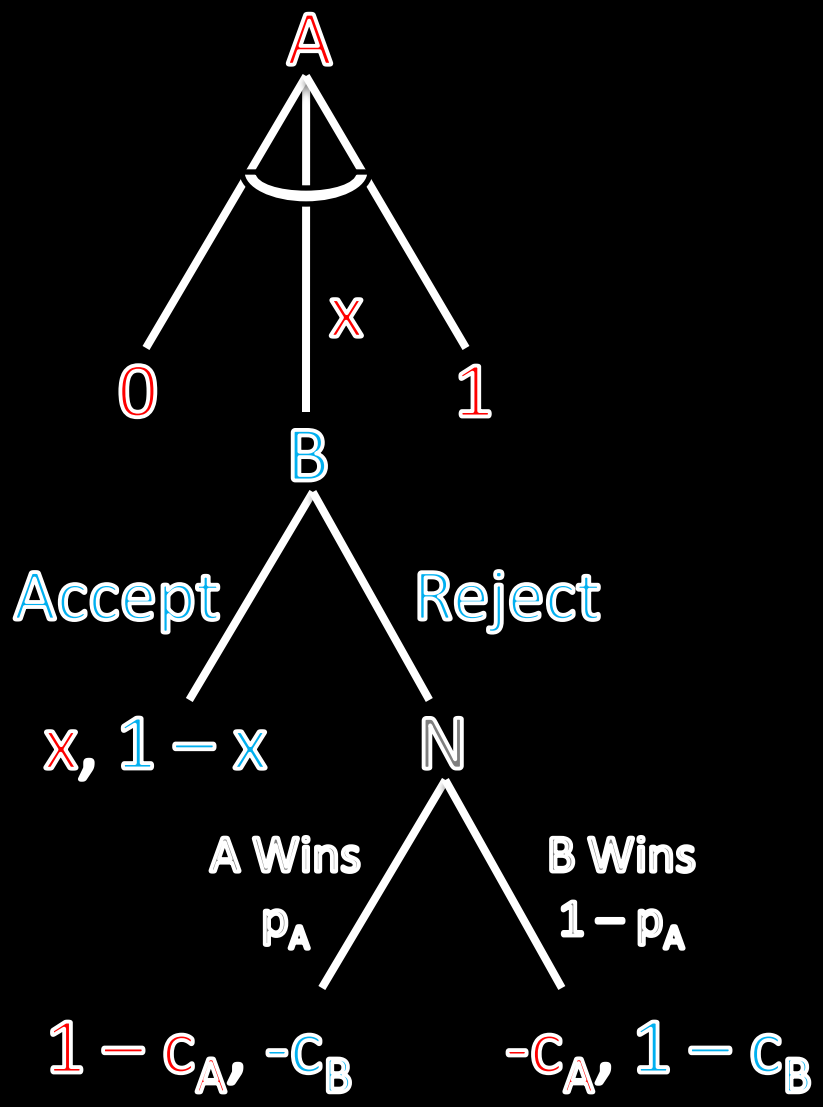

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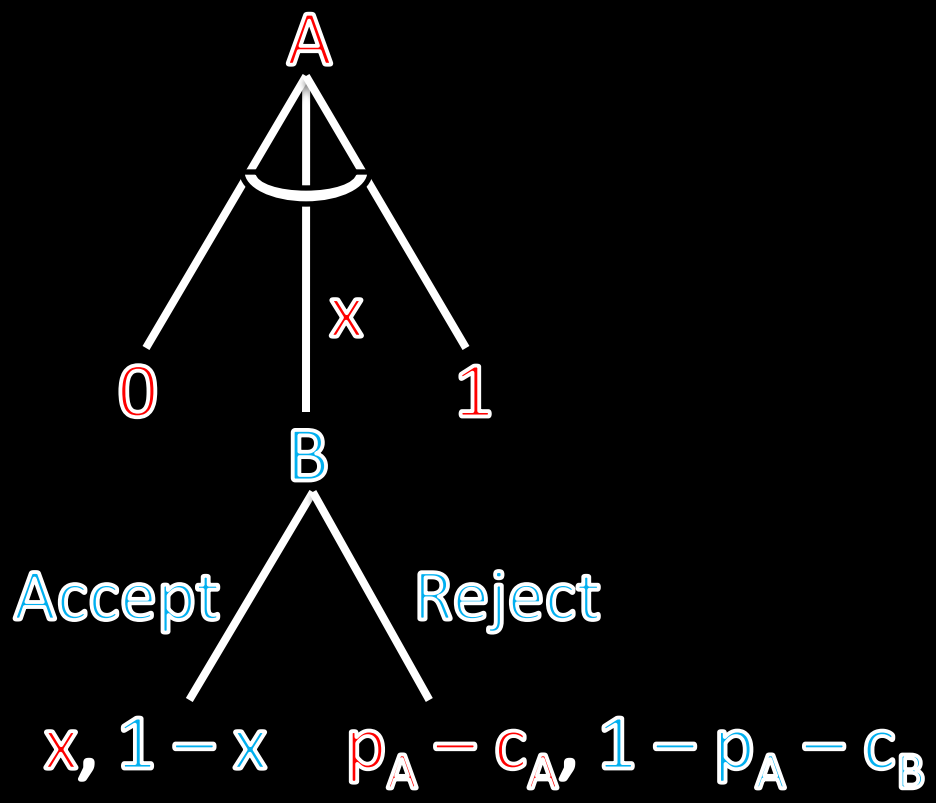

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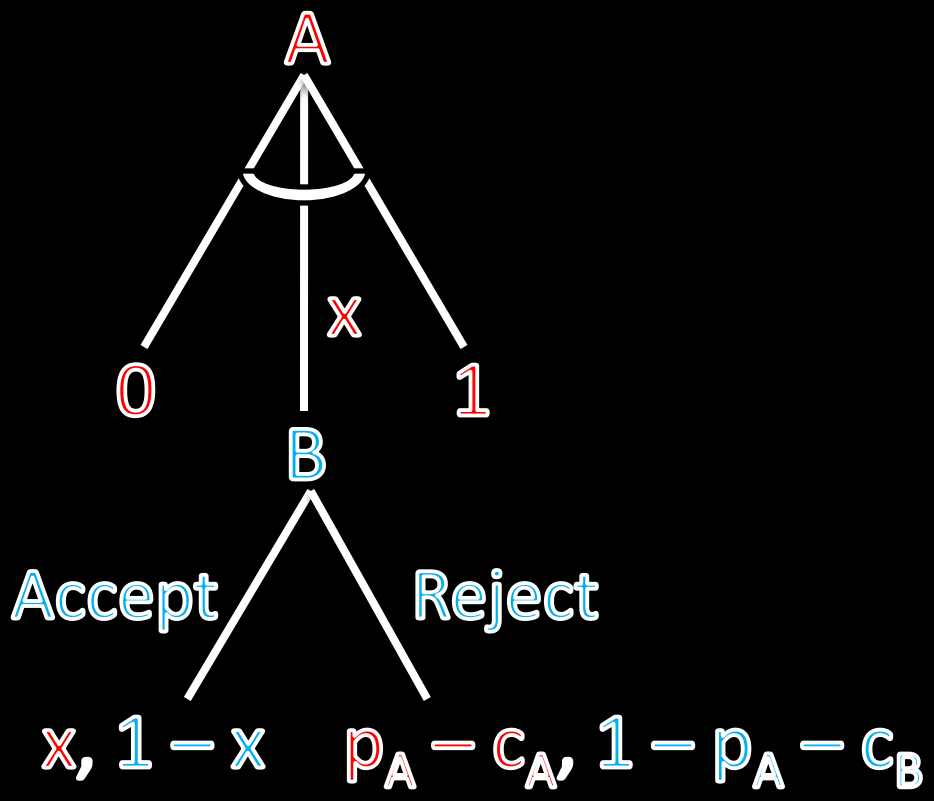
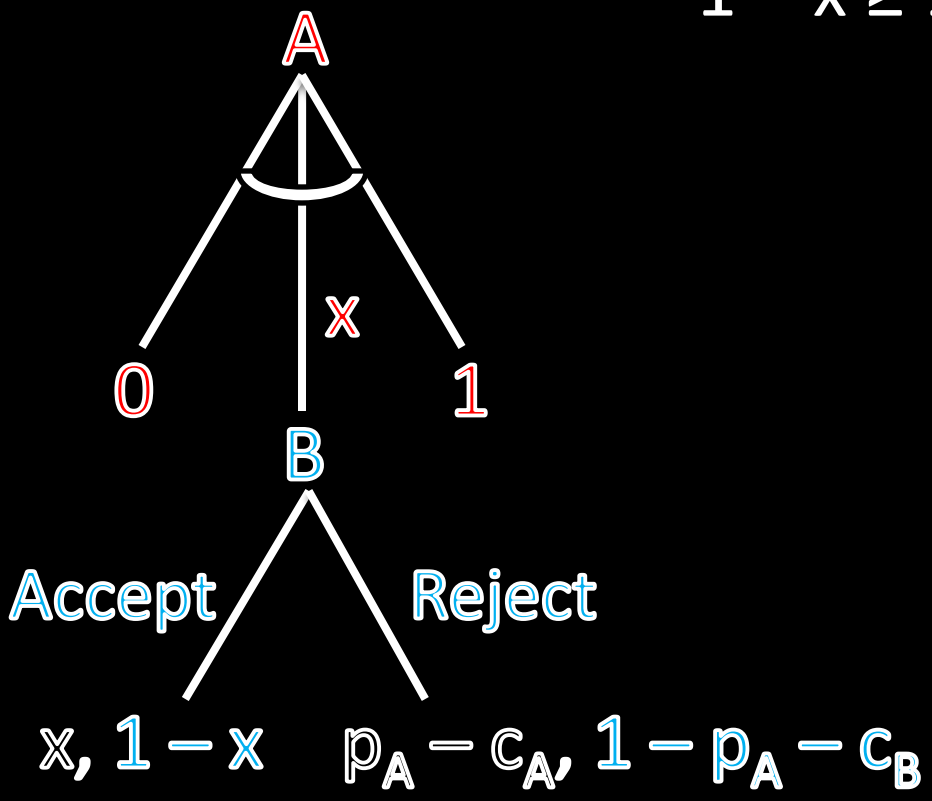


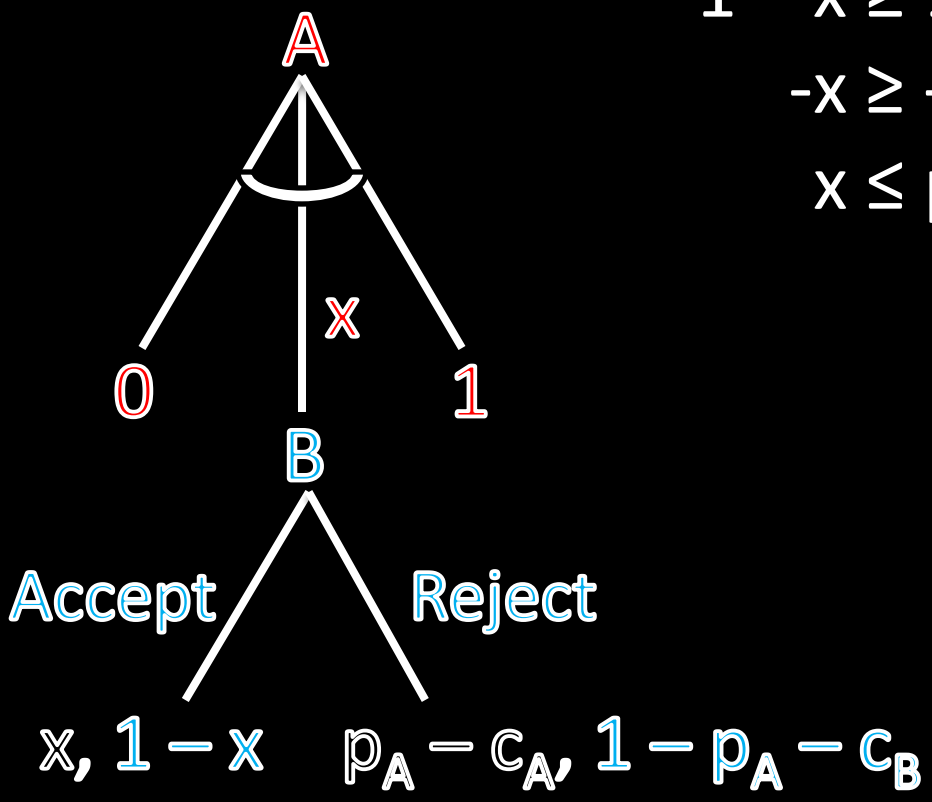
Crisis Bargaining



B Is Willing To Accept If

$$1 - x \geq 1 - p_A - c_B$$

Crisis Bargaining



B Is Willing To Accept If

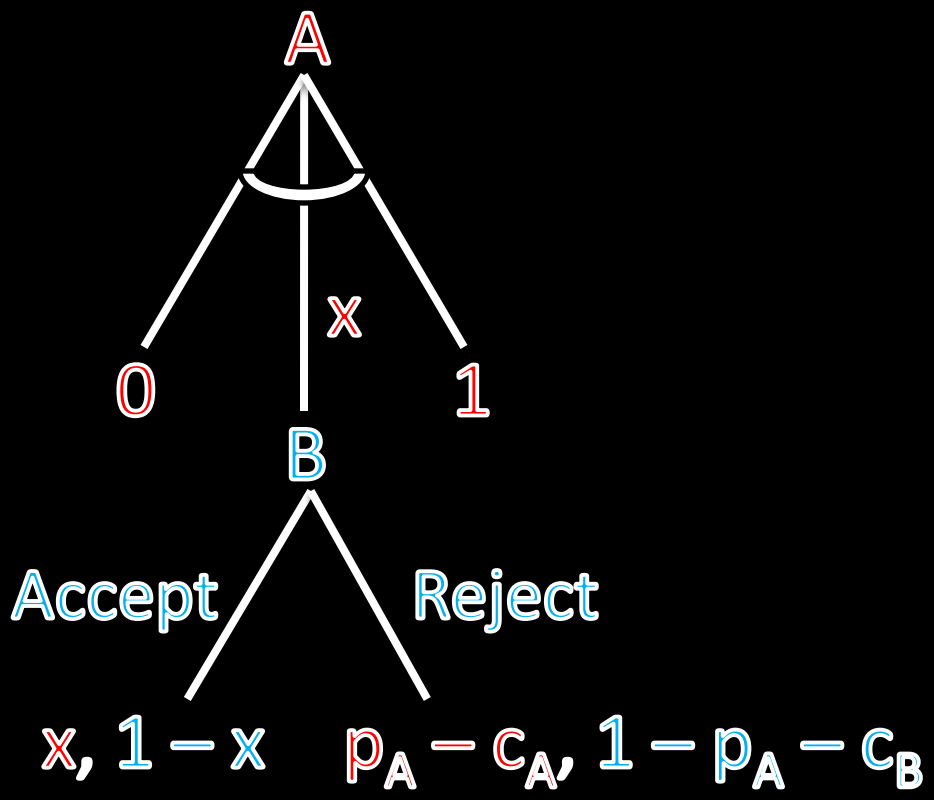
$$1 - x \geq 1 - p_A - c_B$$

$$-x \geq -p_A - c_B$$

$$x \leq p_A + c_B$$

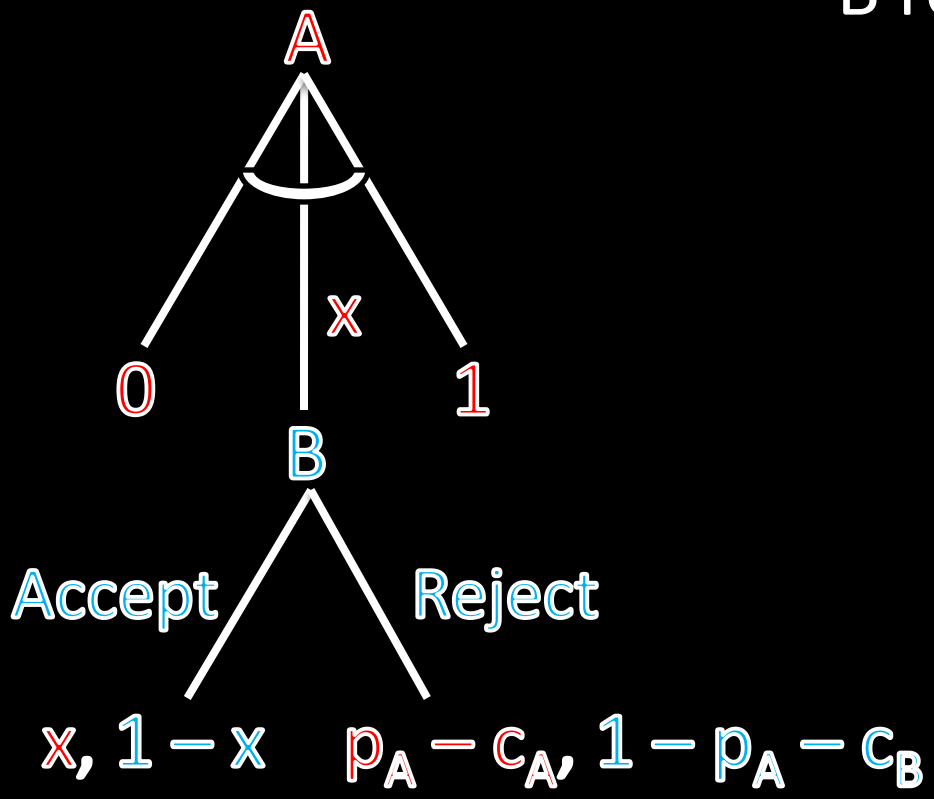
Crisis Bargaining

If A Demands More than $p_A + c_B$



Crisis Bargaining

If A Demands More than $p_A + c_B$
B rejects

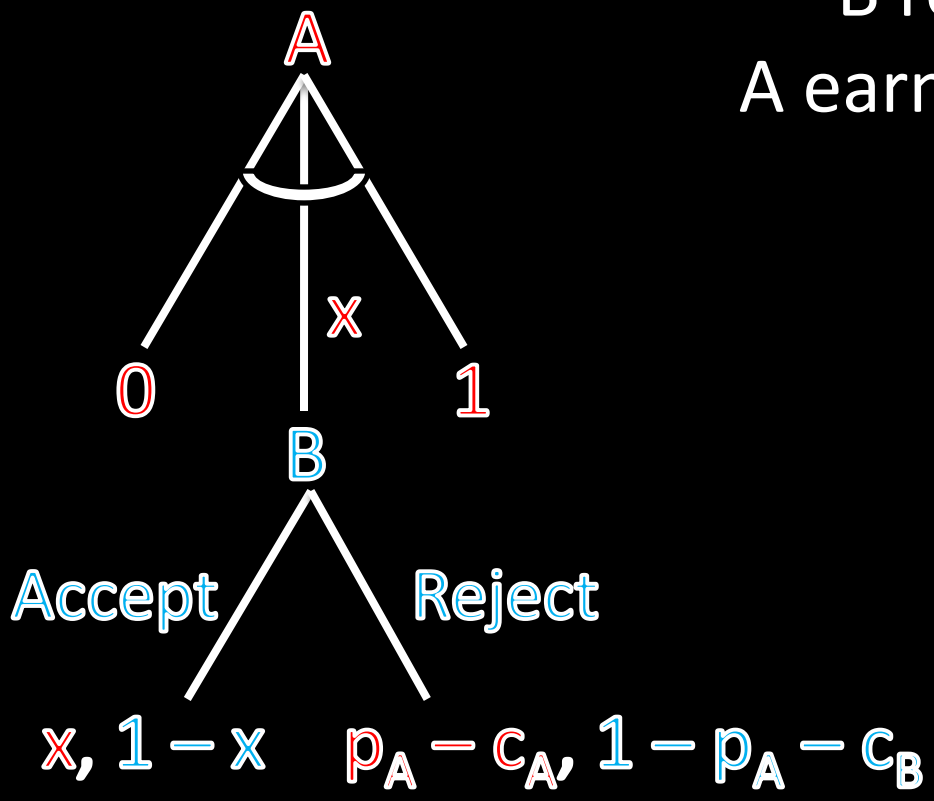


Crisis Bargaining

If A Demands More than $p_A + c_B$

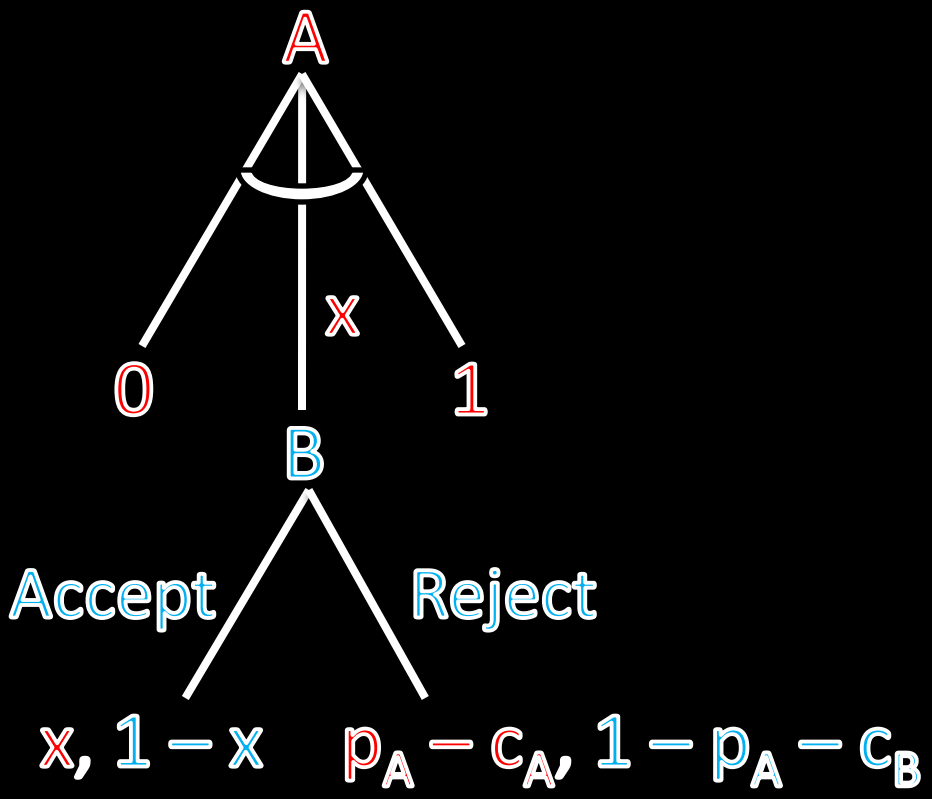
B rejects

A earns $p_A - c_A$



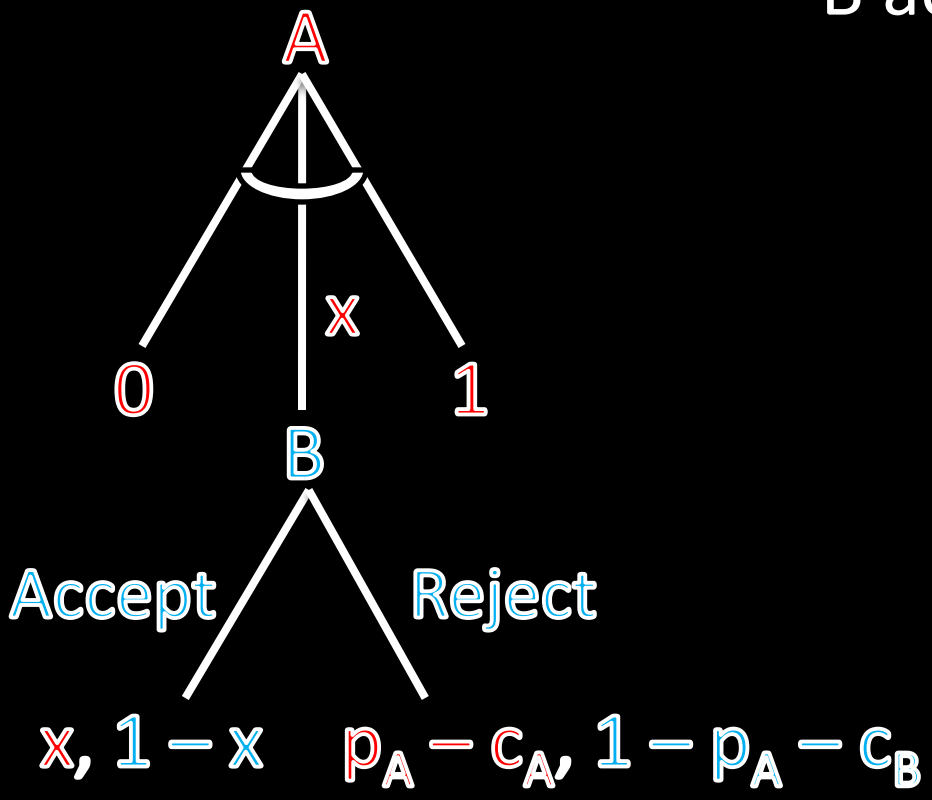
Crisis Bargaining

If A Demands No More than $p_A + c_B$



Crisis Bargaining

If A Demands No More than $p_A + c_B$
B accepts

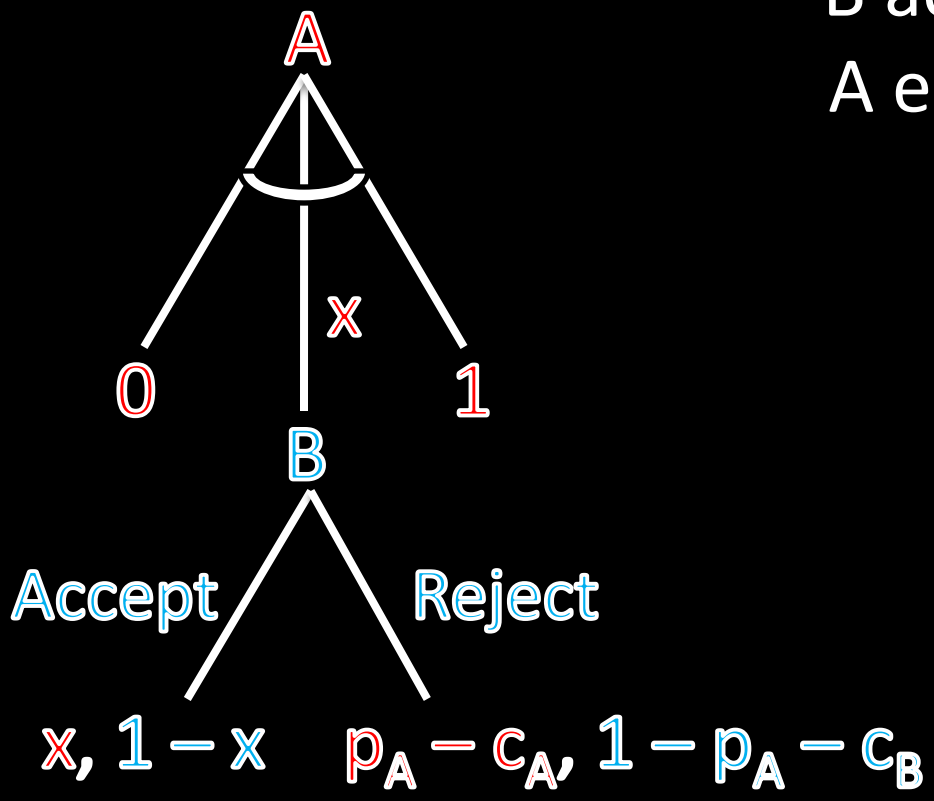


Crisis Bargaining

If A Demands No More than $p_A + c_B$

B accepts

A earns x



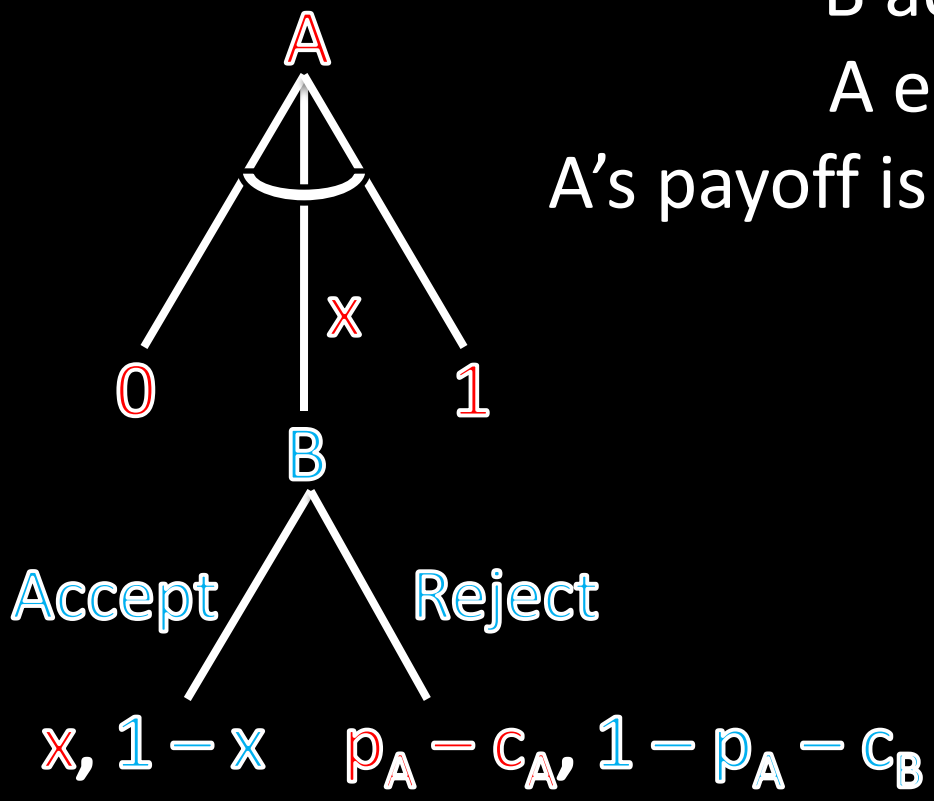
Crisis Bargaining

If A Demands No More than $p_A + c_B$

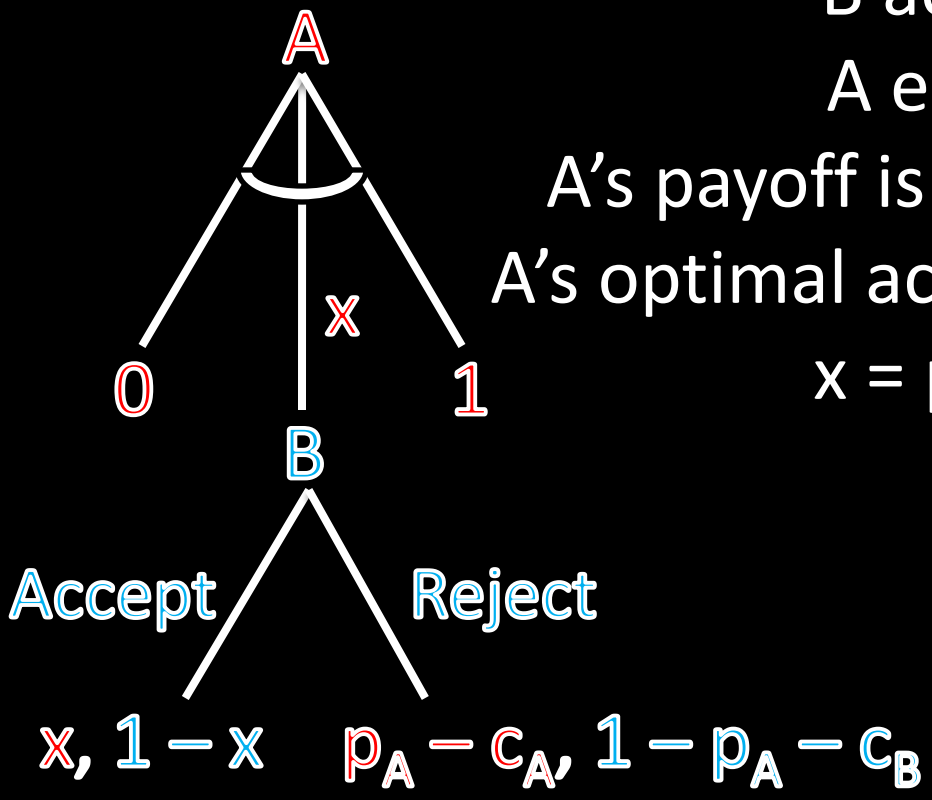
B accepts

A earns x

A's payoff is increasing in x



Crisis Bargaining



If A Demands No More than $p_A + c_B$

B accepts

A earns x

A's payoff is increasing in x

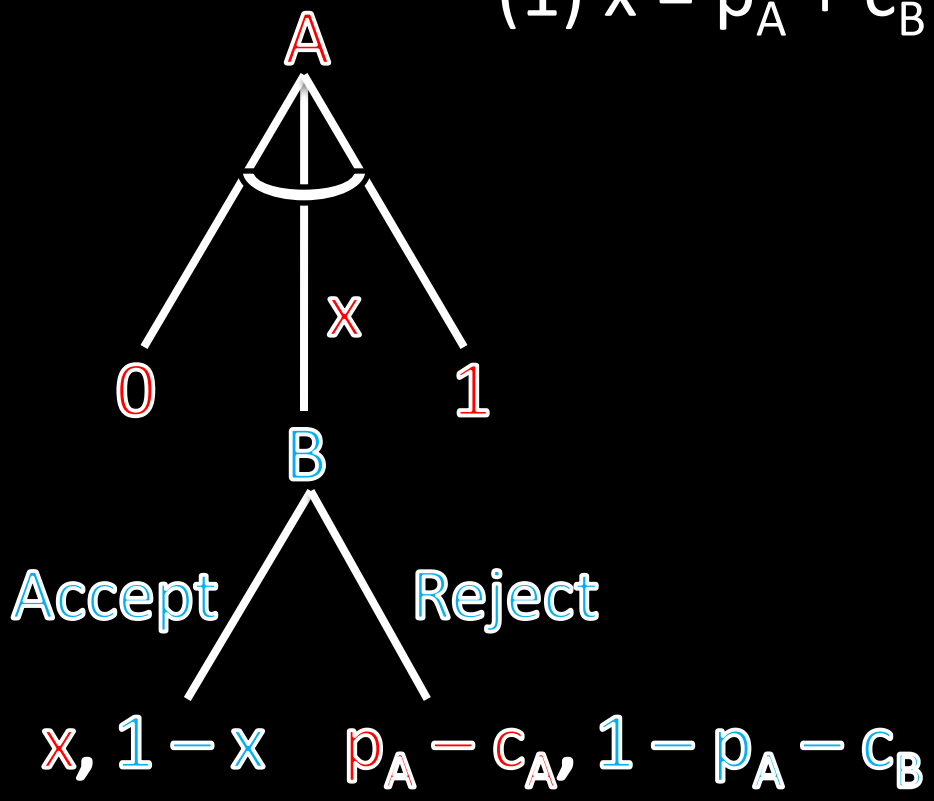
A's optimal acceptable offer is

$x = p_A + c_B$

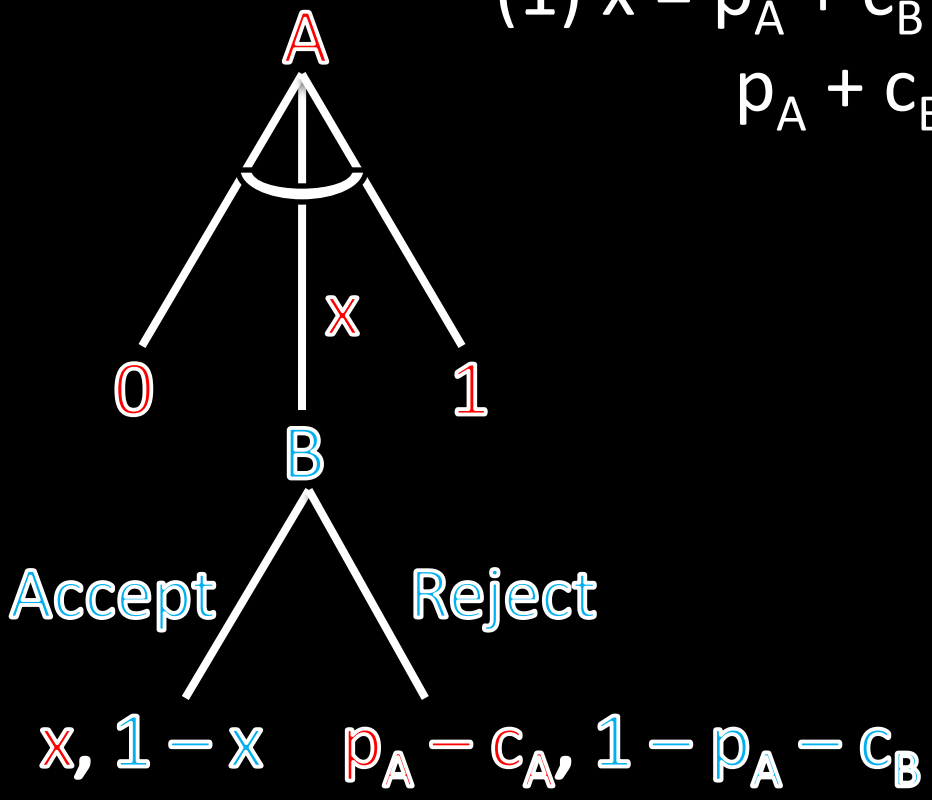
Crisis Bargaining

Which is better for A?

(1) $x = p_A + c_B$ or (2) $x > p_A + c_B$



Crisis Bargaining

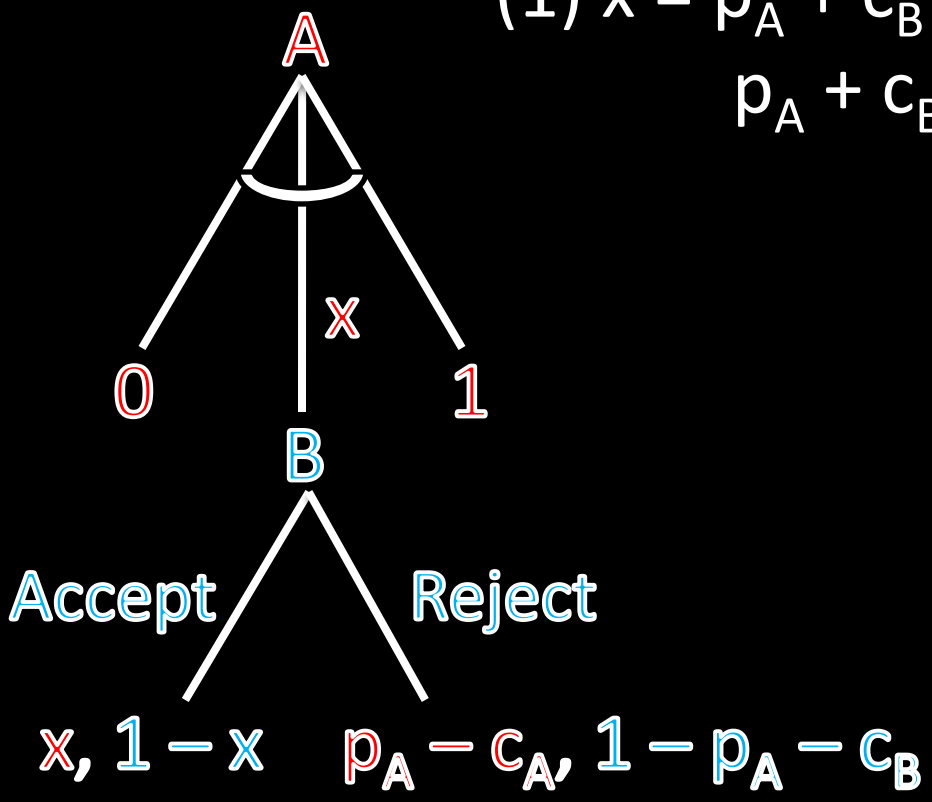


Which is better for A?

(1) $x = p_A + c_B$ or (2) $x > p_A + c_B$

$p_A + c_B$ $p_A - c_A$

Crisis Bargaining

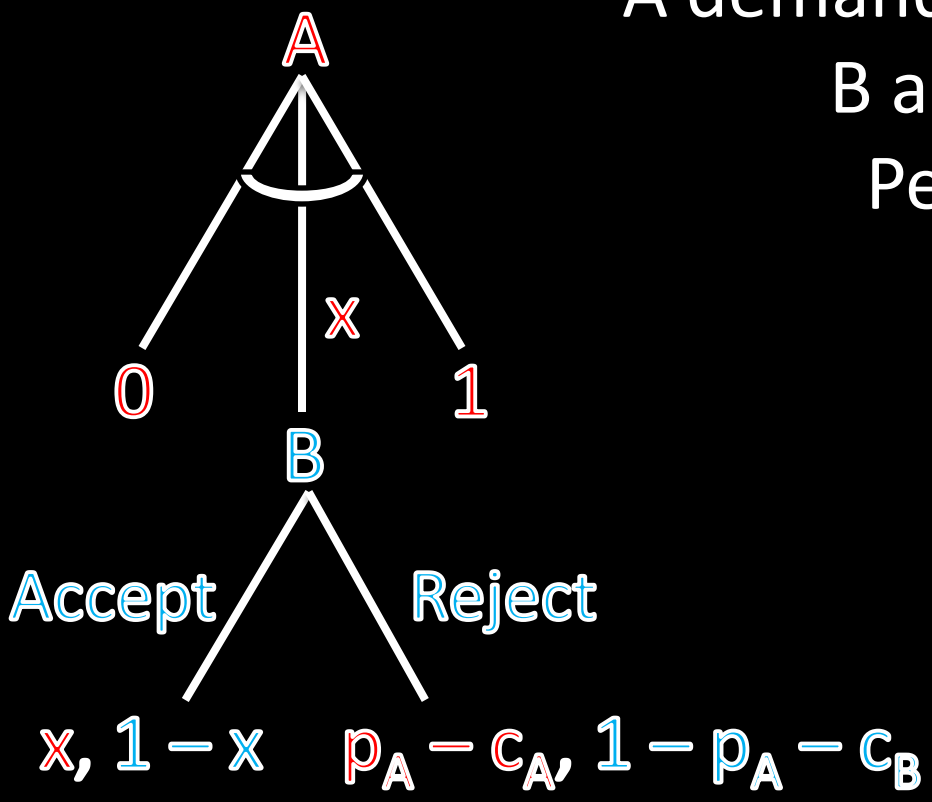


Which is better for A?

(1) $x = p_A + c_B$ or (2) $x > p_A + c_B$

$p_A + c_B > p_A - c_A$

Crisis Bargaining



The Outcome

A demands $x = p_A + c_B$

B accepts

Peace!

Road Map

- All of our models have resulted in peace
  - But these models are simple!

Road Map

- All of our models have resulted in peace.
  - But these models are simple!
  - Some strong assumptions:
    - Power remains stable through time
    - Everyone knows each other's strengths
    - Object is infinitely divisible
    - No first strike advantages

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Big question: Why do power shifts lead to war?

The Contenders

1. Rising states start wars after they have become strong to steal stuff from the declining states
2. Declining states choose to fight because they prefer a costly war today to an efficient but disadvantageous peace tomorrow
3. Power shifts only cause problems when the rising state surpasses the declining state in strength

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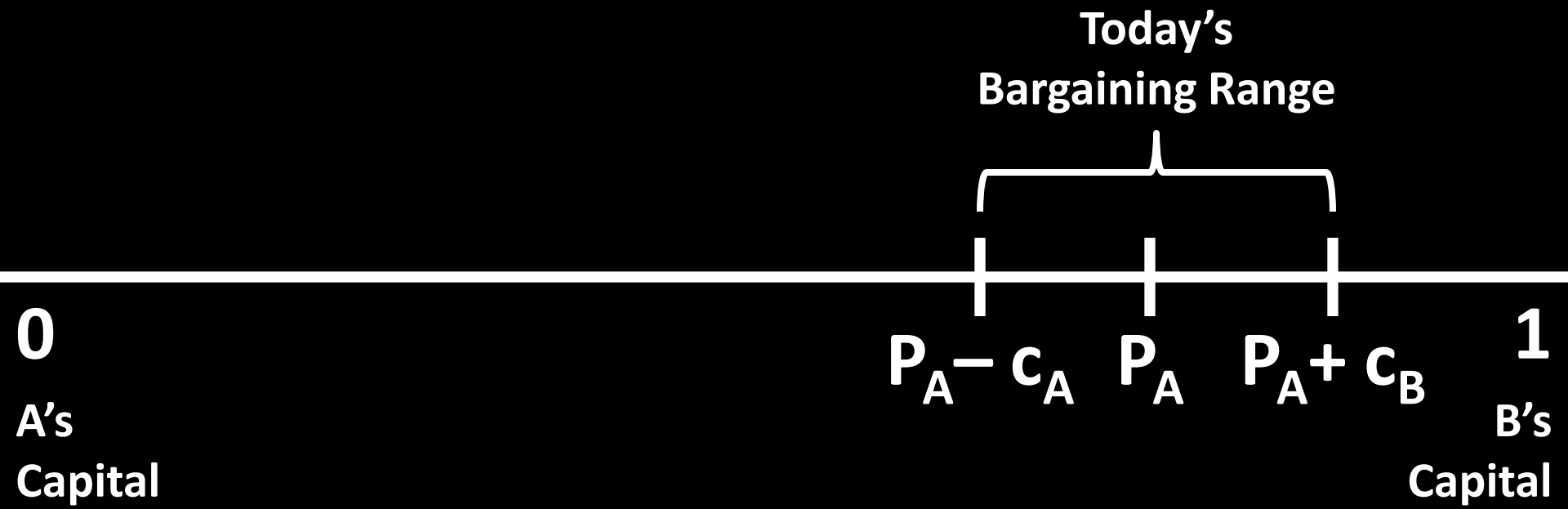
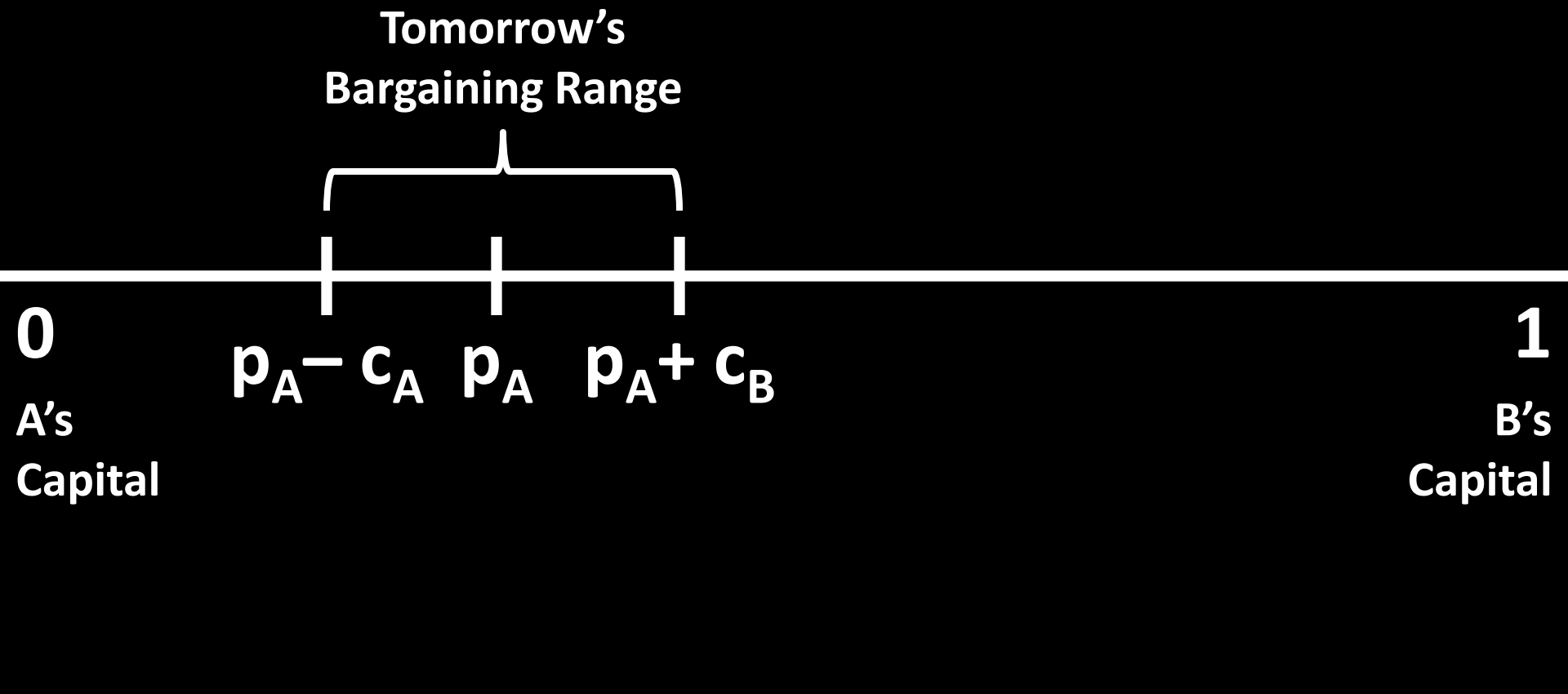

Today's
Bargaining Range
0
A's
Capital
$P_A - c_A$
P_A
$P_A + c_B$
1
B's
Capital


Tomorrow's
Bargaining Range
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital

The Contenders

1. ~~Rising states start wars after they have become strong to steal stuff from the declining states~~
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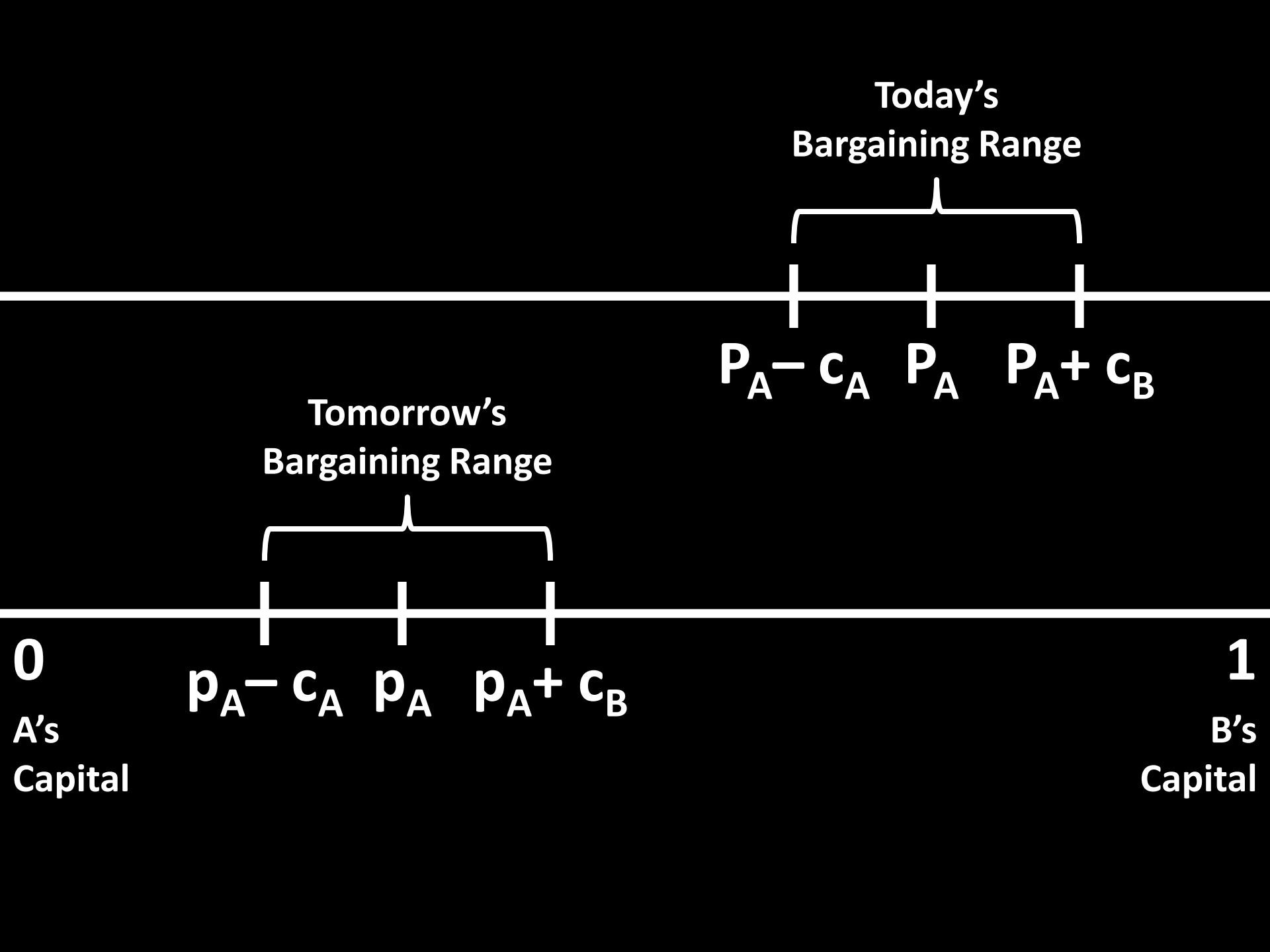
Today's
Bargaining Range
$P_A - c_A$
P_A
$P_A + c_B$
Tomorrow's
Bargaining Range
$p_A - c_A$
p_A
$p_A + c_B$
0
A's
Capital
1
B's
Capital

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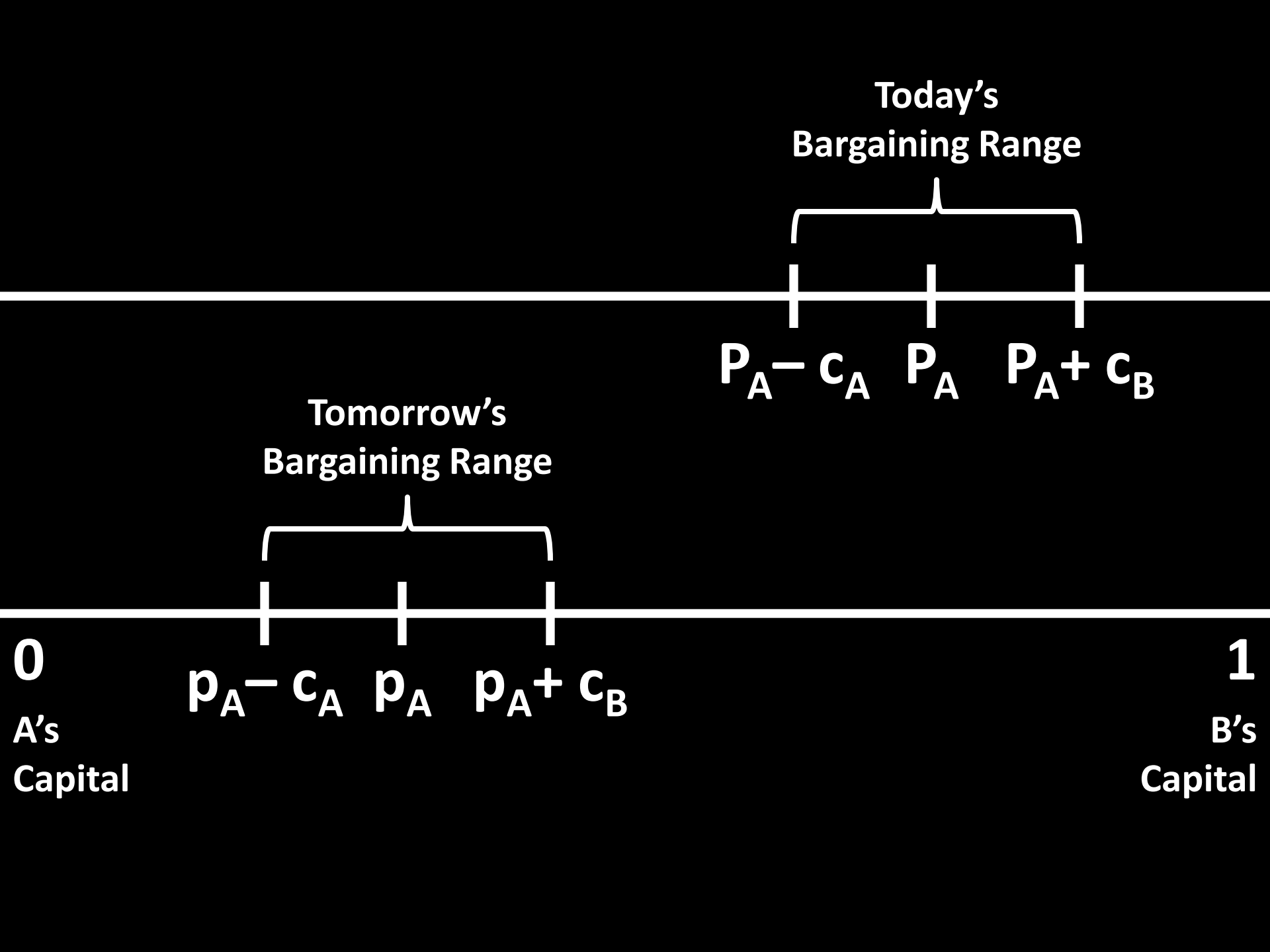
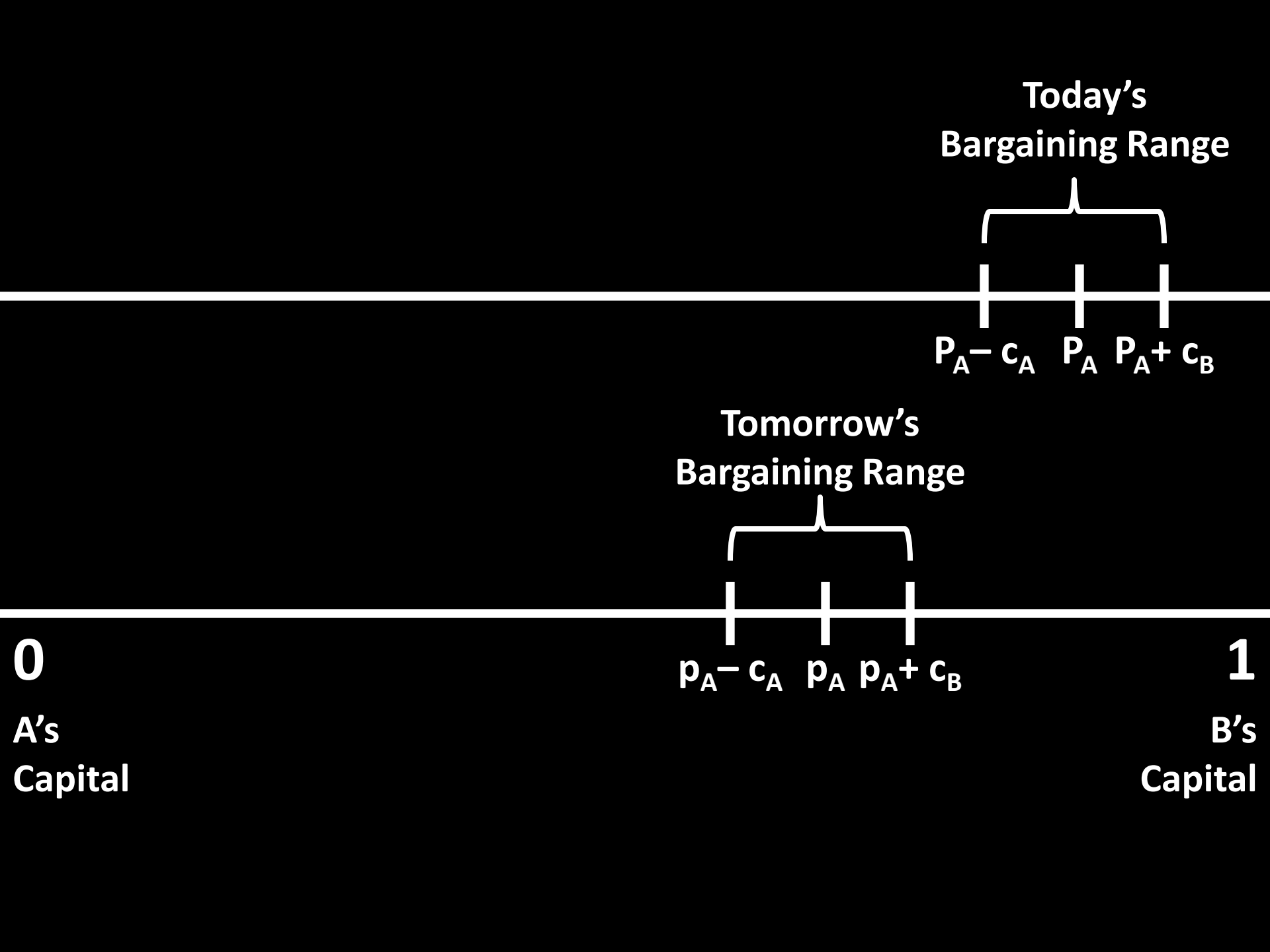

Today's
Bargaining Range
$P_A - c_A$
P_A
$P_A + c_B$
Tomorrow's
Bargaining Range
$p_A - c_A$
p_A
$p_A + c_B$
0
A's
Capital
1
B's
Capital


Today's
Bargaining Range
$P_A - c_A$ P_A $P_A + c_B$
Tomorrow's
Bargaining Range
$p_A - c_A$ p_A $p_A + c_B$
0
A's
Capital
1
B's
Capital

The Contenders

1. ~~Rising states start wars after they have become strong to steal stuff from the declining states~~
2. Declining states choose to fight because they prefer a costly war today to an efficient but disadvantageous peace tomorrow
3. ~~Power shifts only cause problems when the rising state surpasses the declining state in strength~~

Preventive War

- Definition: When a declining state fights because it prefers a costly war today to an efficient but disadvantageous peace tomorrow

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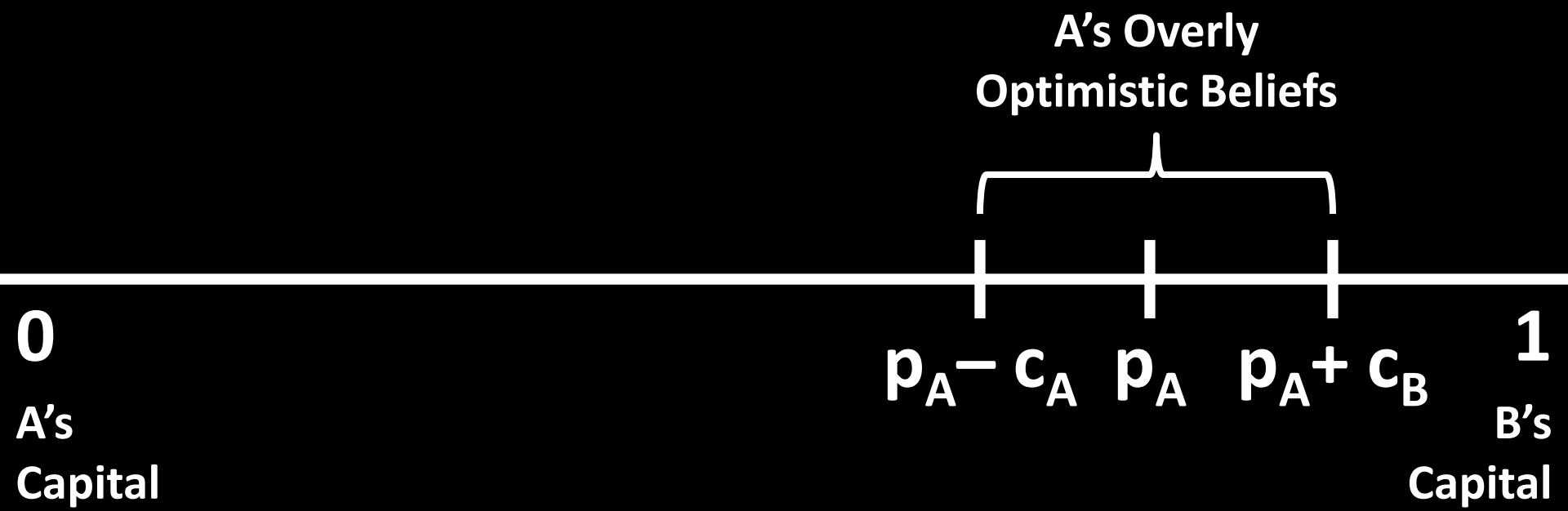
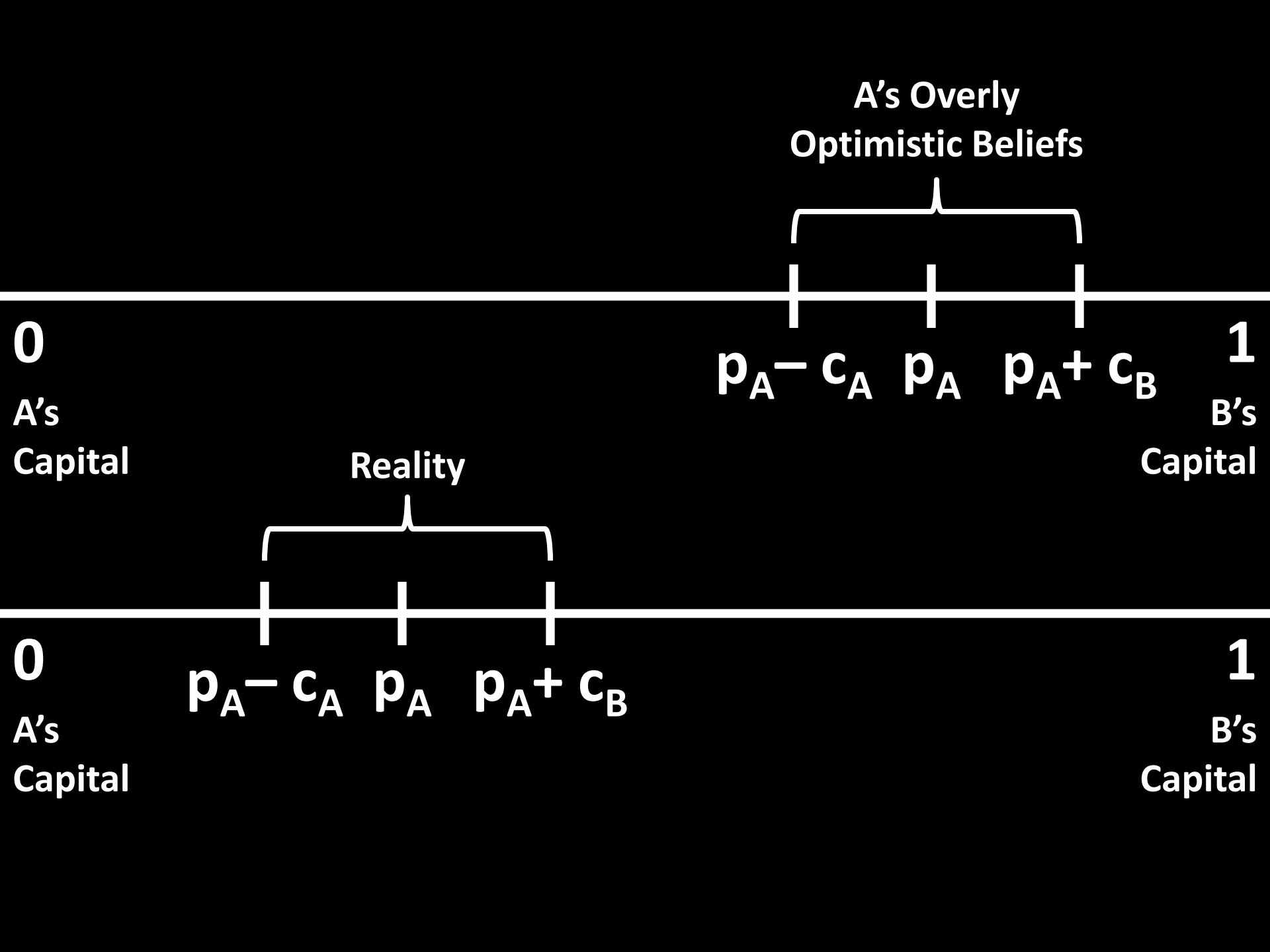
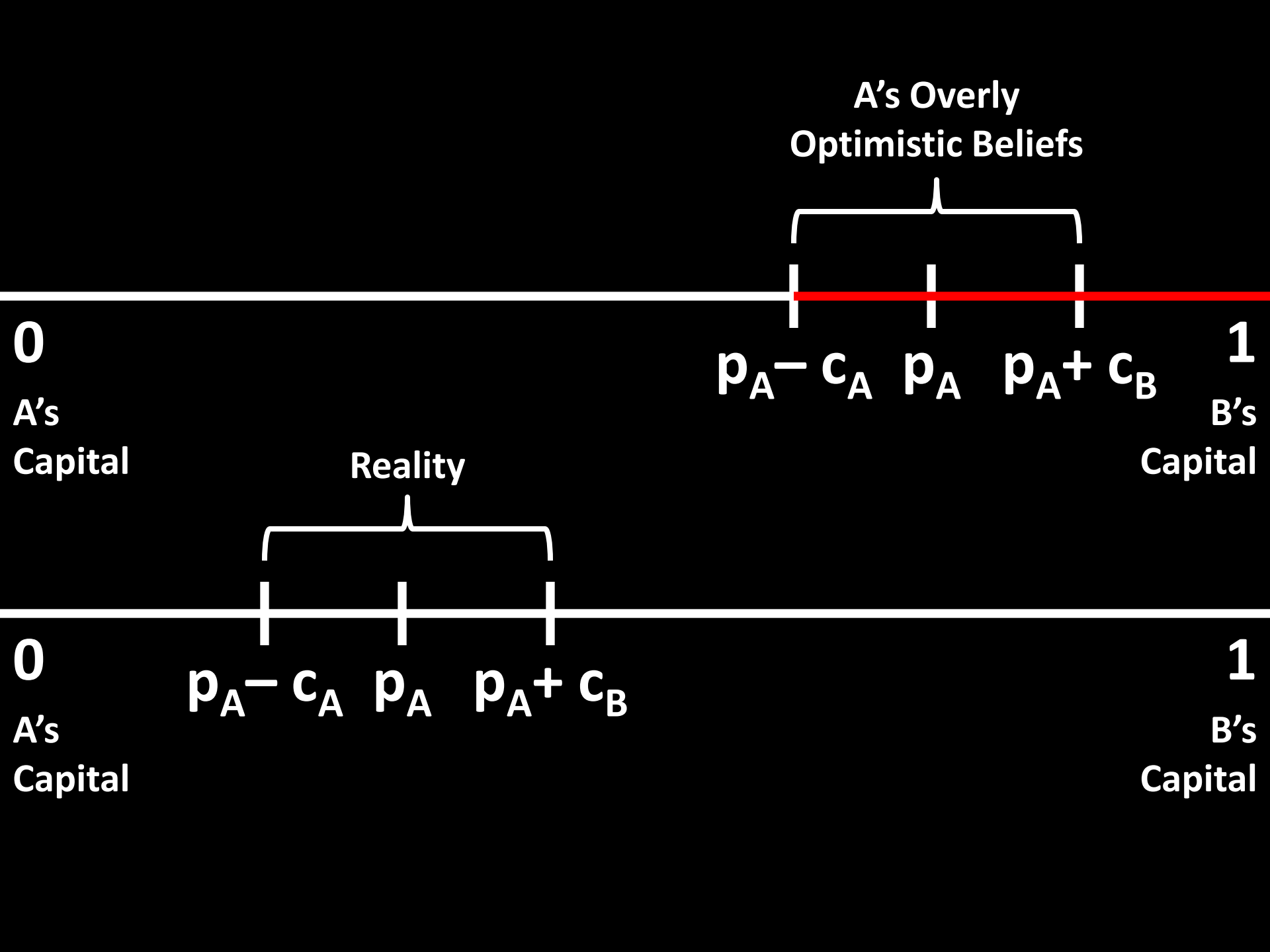
Big question: How does uncertainty cause war?

Two Reasons

1. Disagreement over who will win
   - Suppose B is weak or strong
2. Uncertain resolve


A's Overly
Optimistic Beliefs
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital


A's Overly
Optimistic Beliefs
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital
Reality
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital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Optimistic Beliefs
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A's
Capital
$p_A - c_A$
p_A
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Reality
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p_A
$p_A + c_B$
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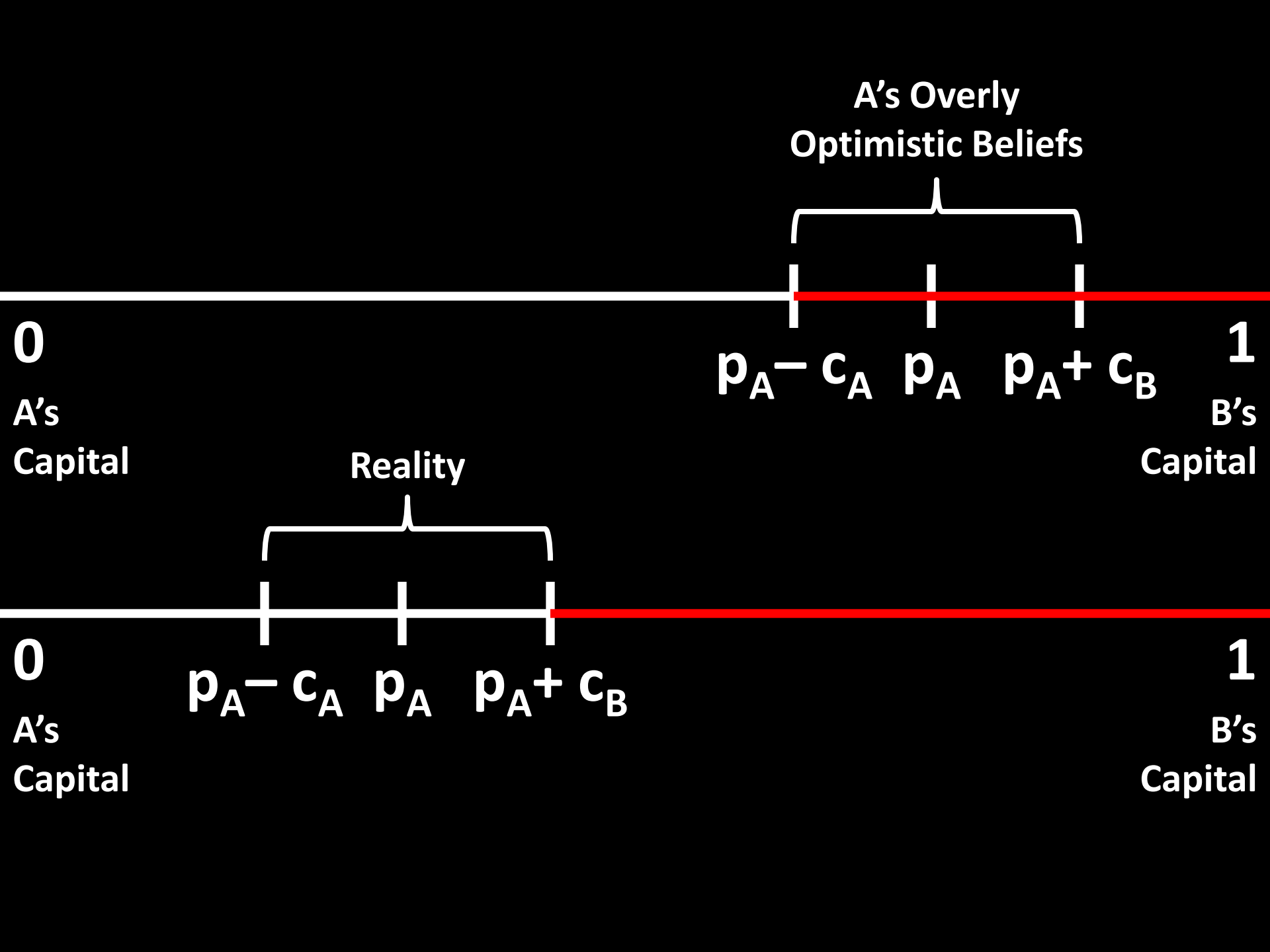
B's
Capital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Optimistic Beliefs
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A's
Capital
$p_A - c_A$
p_A
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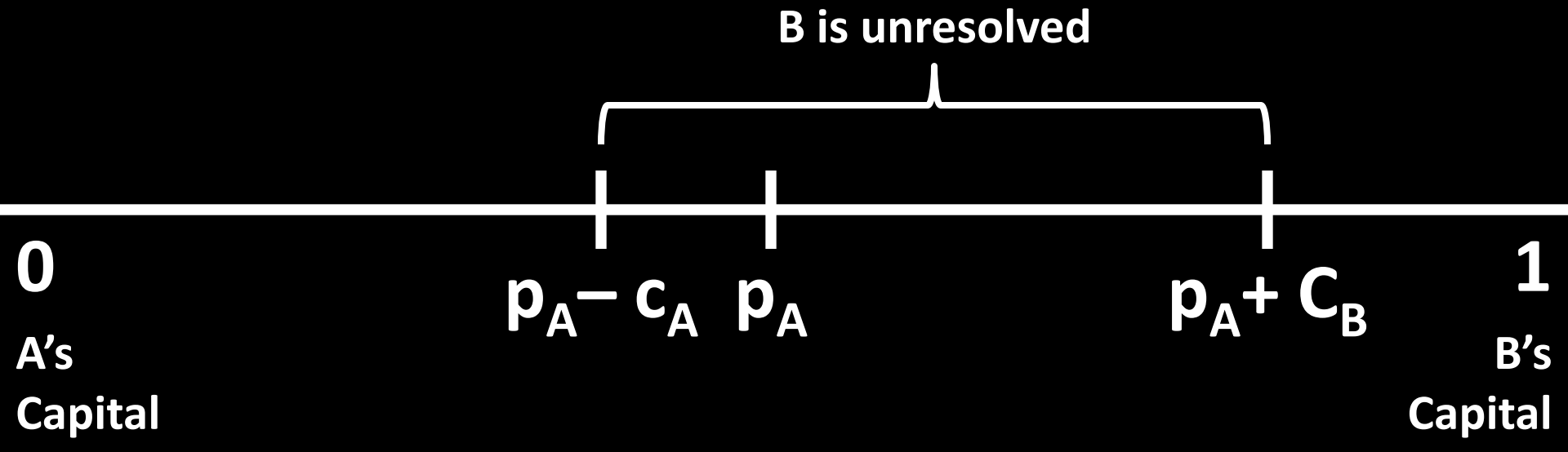
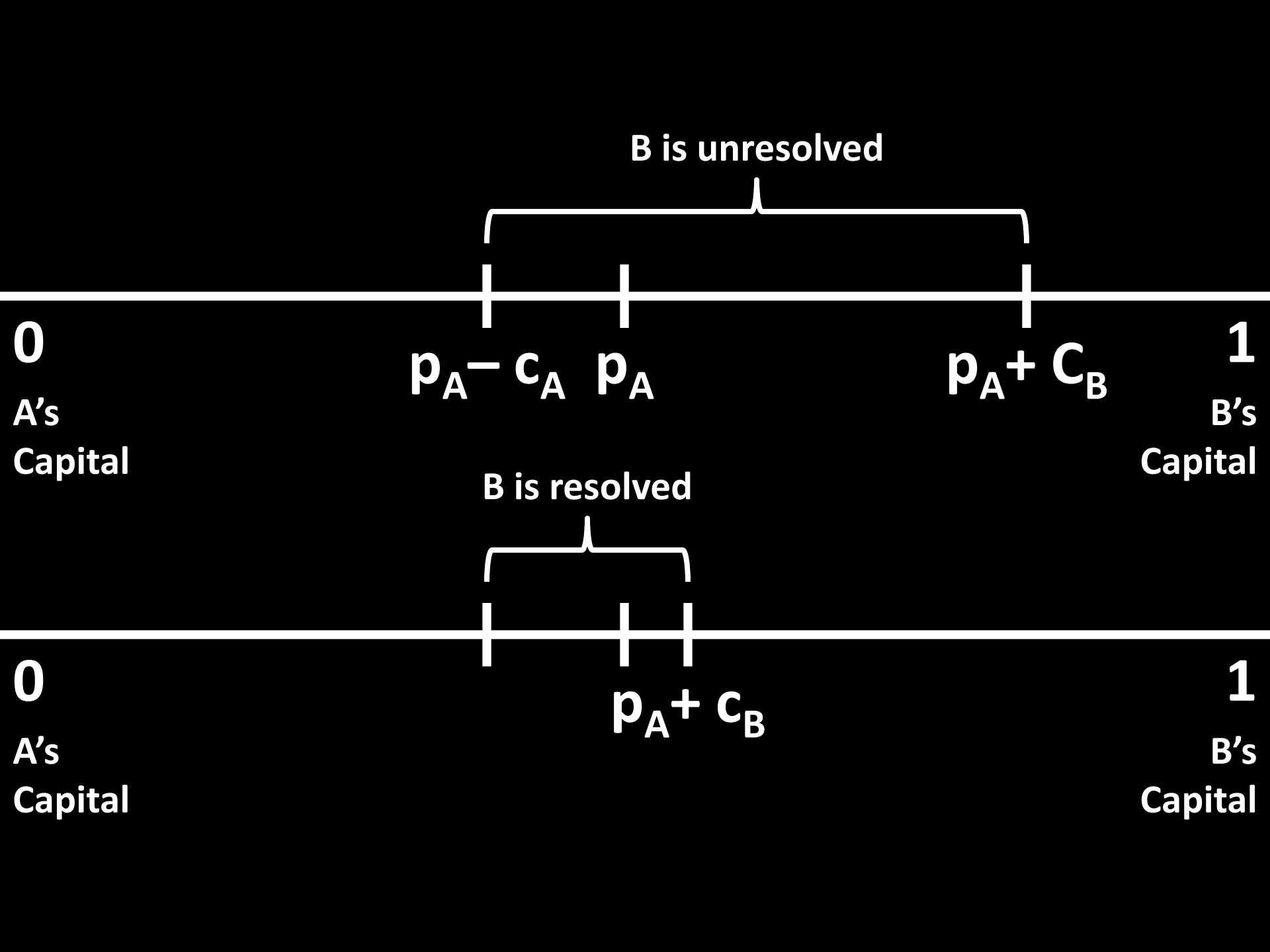
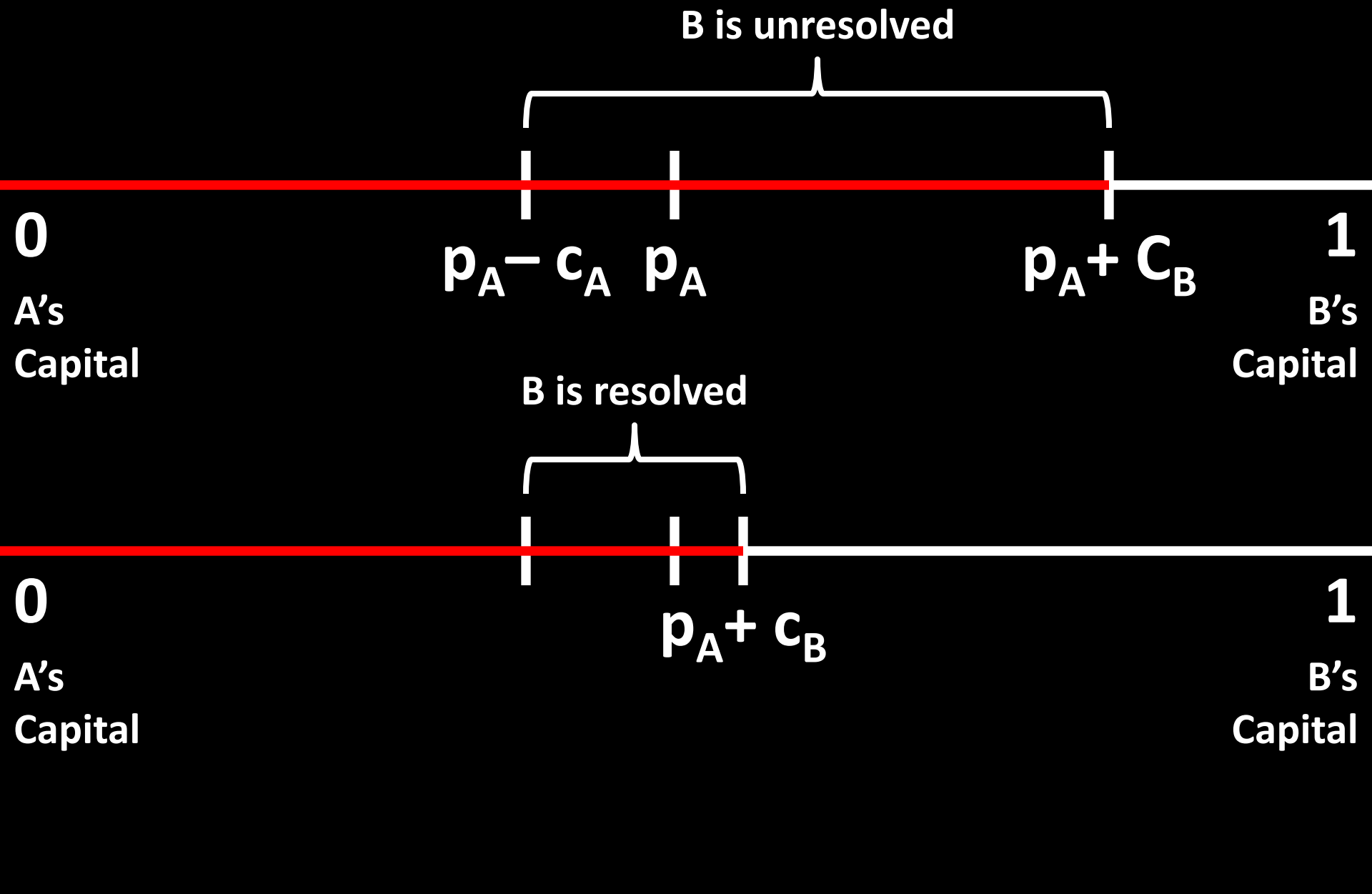
B's
Capital
Reality
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital

Two Reasons

1. Disagreement over who will win
2. Uncertain resolve
   - Suppose B is resolved or unresolved


B is unresolved
0
A's Capital
$p_A - c_A$
p_A
$p_A + C_B$
1
B's Capital


B is unresolved
0
A's Capital
$p_A - c_A$
p_A
$p_A + C_B$
1
B's Capital
B is resolved
0
A's Capital
$p_A + c_B$
1
B's Capital


B is unresolved
0
A's Capital
$p_A - c_A$
p_A
$p_A + C_B$
1
B's Capital
B is resolved
0
A's Capital
$p_A + c_B$
1
B's Capital

Incentives to Misrepresent

- If war is costly, why can’t the states simply tell their opponents their demands and avoid the costs of war?

Incentives to Misrepresent

- If war is costly, why can't the states simply tell their opponents their demands and avoid the costs of war?
- When are such statements credible?
  - Weaker types would need to want to announce they are weak and strong types would need to want to announce they are strong

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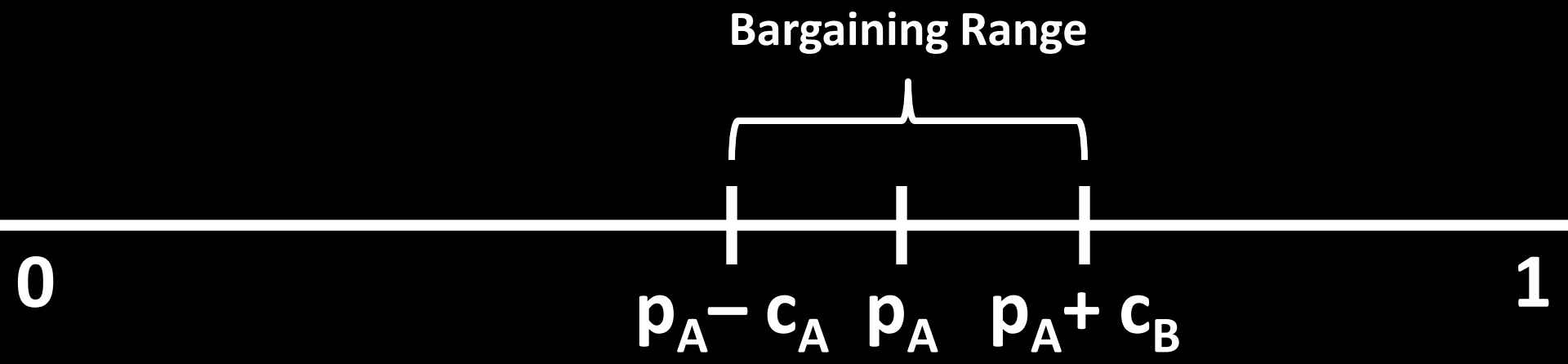
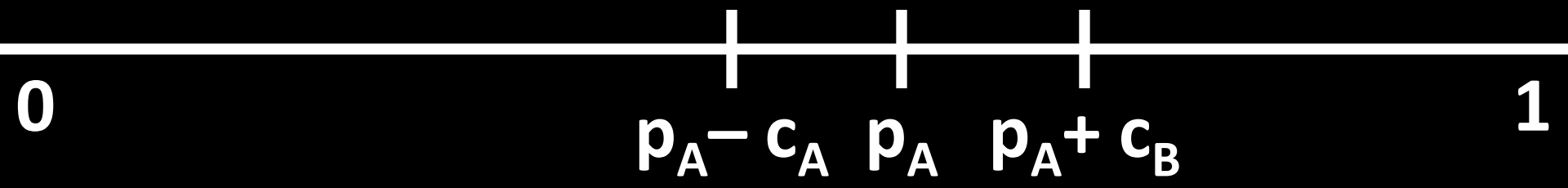
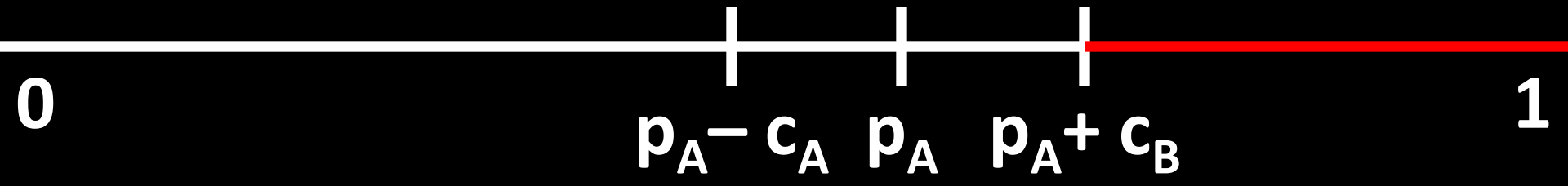
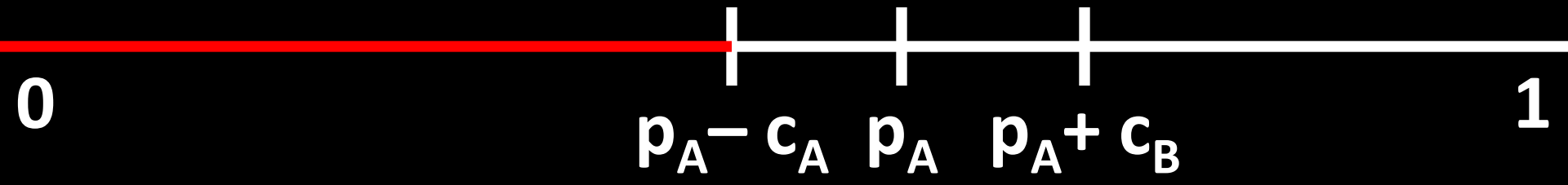
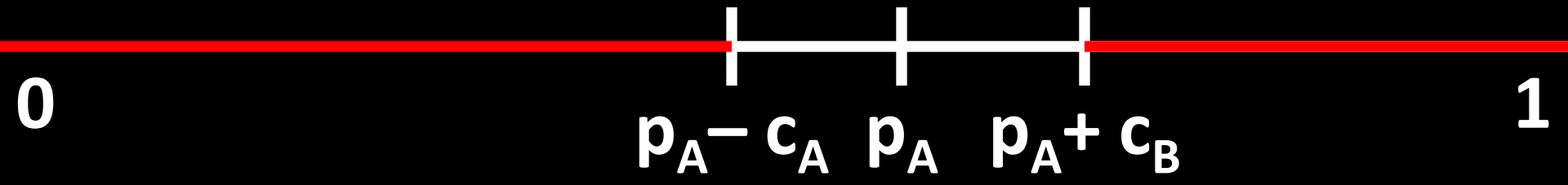
Big question: How can bargaining indivisibilities lead to war?


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$


0
$p_A - c_A$
p_A
$p_A + c_B$
1


0
$p_A - c_A$
p_A
$p_A + c_B$
1


0
$p_A - c_A$
p_A
$p_A + c_B$
1


0
$p_A - c_A$
p_A
$p_A + c_B$
1

Side Payments

- Bargaining usually takes place on many dimensions
- Why can't one state buy the island from the other?
  - U.S. and the Philippines
- War is only rational if value of the good is much larger than possible side payments

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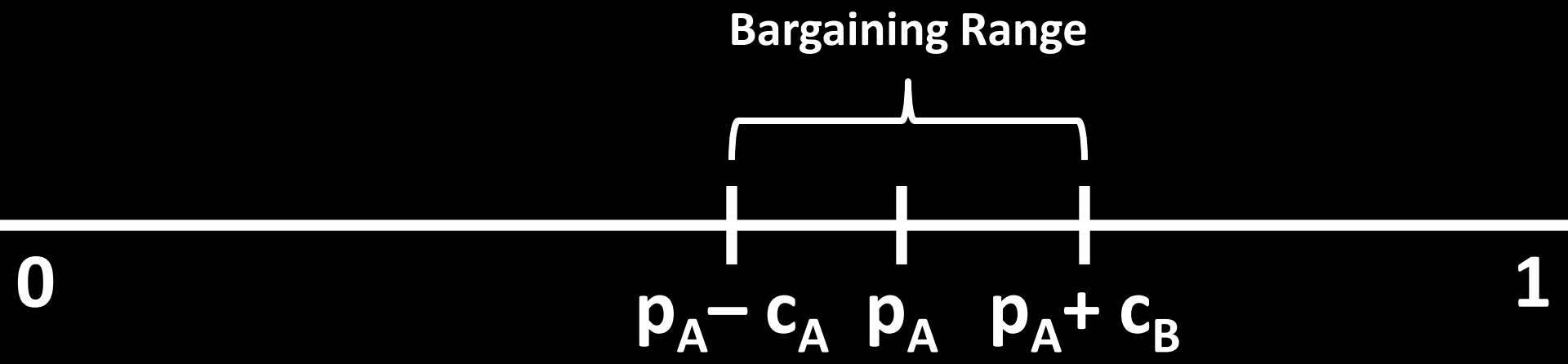
Big question: How do first strike advantages lead to war?


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$

Building the Model

- The probability of victory remains constant regardless of who starts the war
  - But first strike advantages exist: element of surprise, choice of where to fight

Building the Model

- The probability of victory remains constant regardless of who starts the war
  - But first strike advantages exist: element of surprise, choice of where to fight
- Do first strike advantages lead to war?
  - Yes, if they are sufficiently large

The Model

- Suppose the states must choose whether to preempt or bargain
  - If both preempt or both bargain (and bargaining fails), A wins with probability p_A
  - If A preempts but B bargains, the states fight, and A wins with probability $p_A + \Delta_A$. ($1 – p_A + \Delta_B$ if B preempts and A bargains.)

The Modeling Question

- Suppose x is the outcome of bargaining.
- Does there exist an x such that the states individually prefer the bargained outcome to preemption?

A's Dilemma

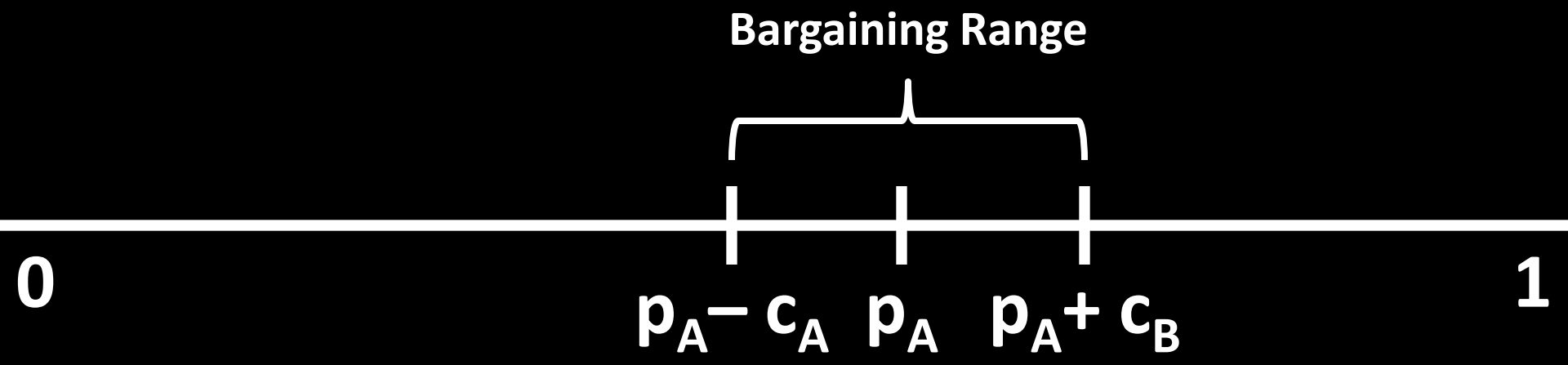
- Assume the other guy wants to bargain
- Eu(preempt) = $p_A - c_A + \Delta_A$
- Eu(bargain) = x
- Bargaining acceptable if:
  - $x \geq p_A - c_A + \Delta_A$

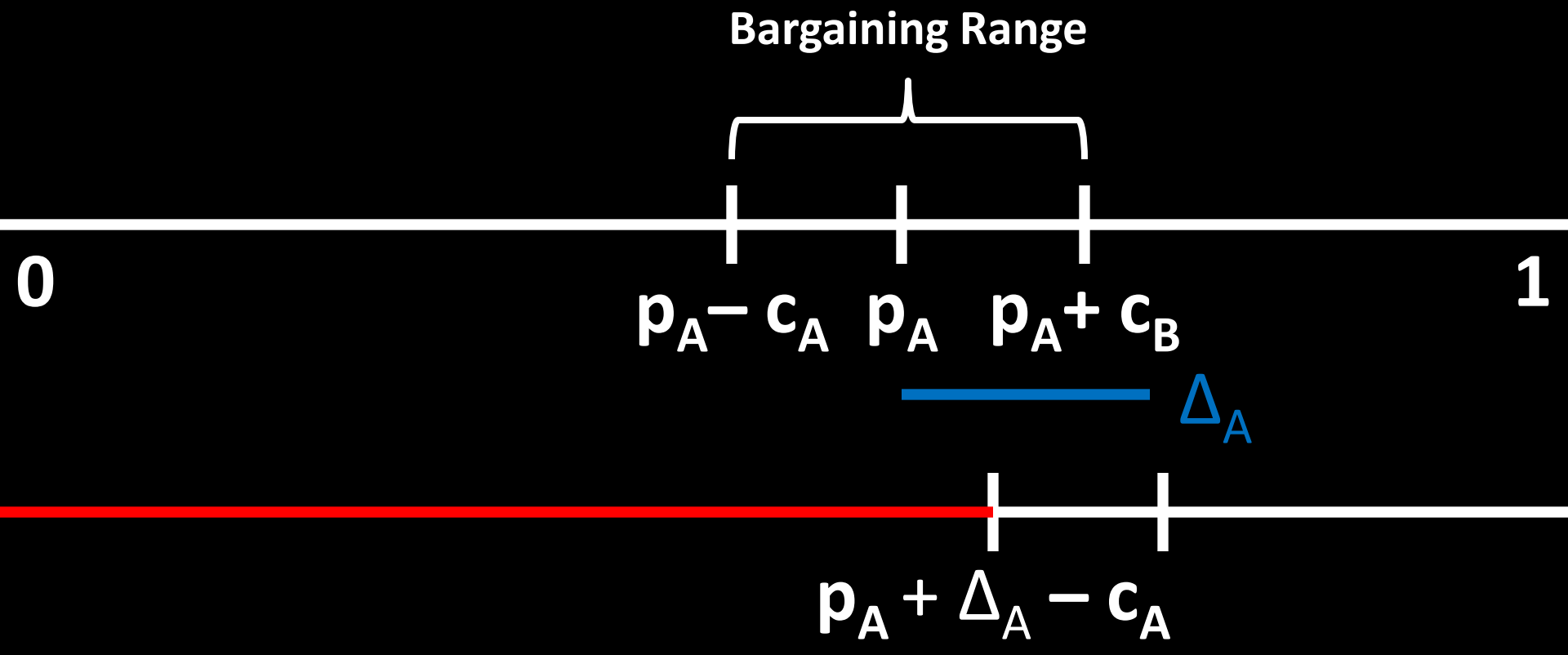
B's Dilemma

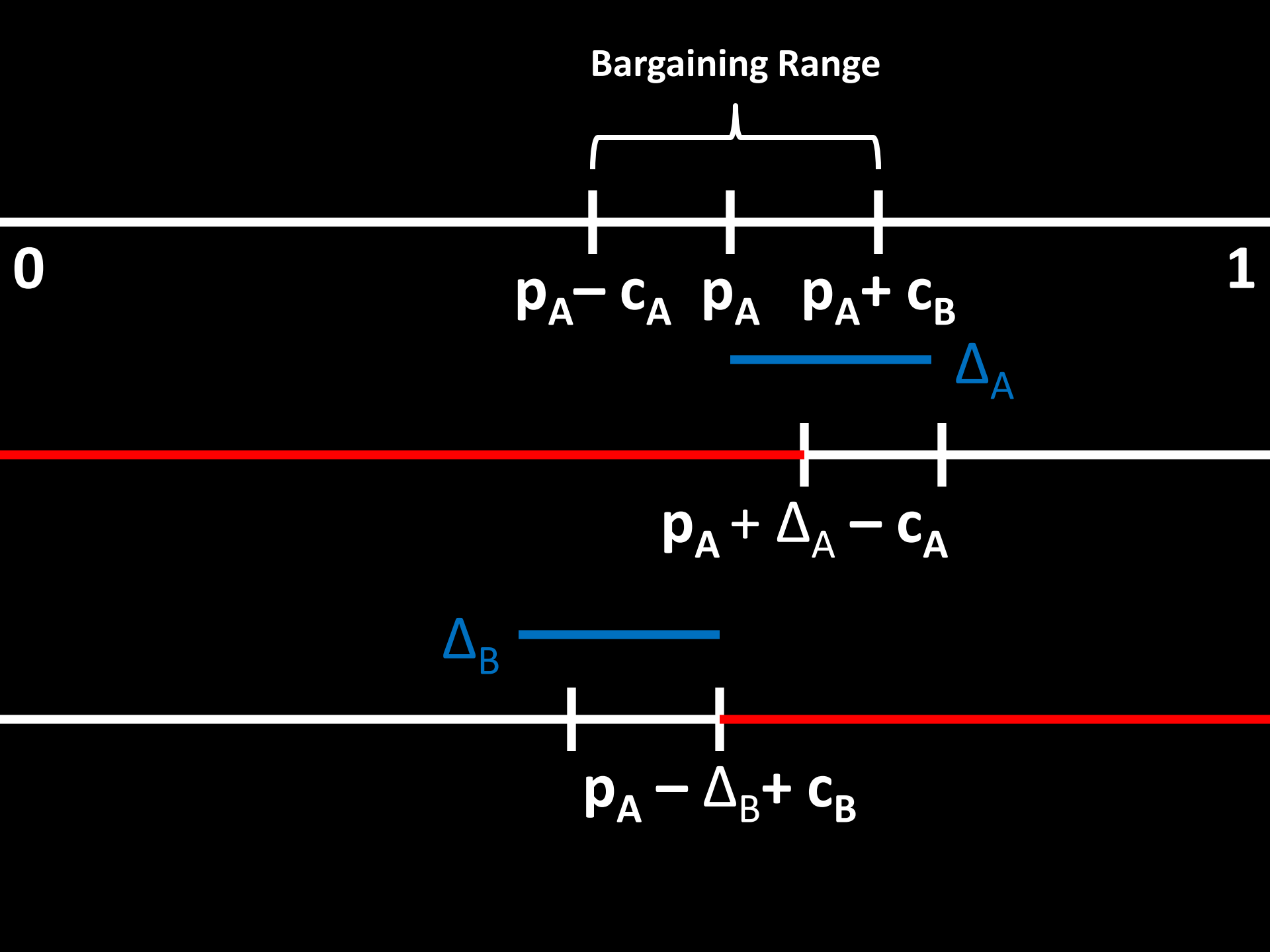
- Assume the other guy wants to bargain
- Eu(preempt) = $1 - p_A - c_B + \Delta_B$
- Eu(bargain) = $1 - x$
- Bargaining acceptable if:
  - $1 - x \geq 1 - p_A - c_B + \Delta_B$
  - $x \leq p_A + c_B - \Delta_B$

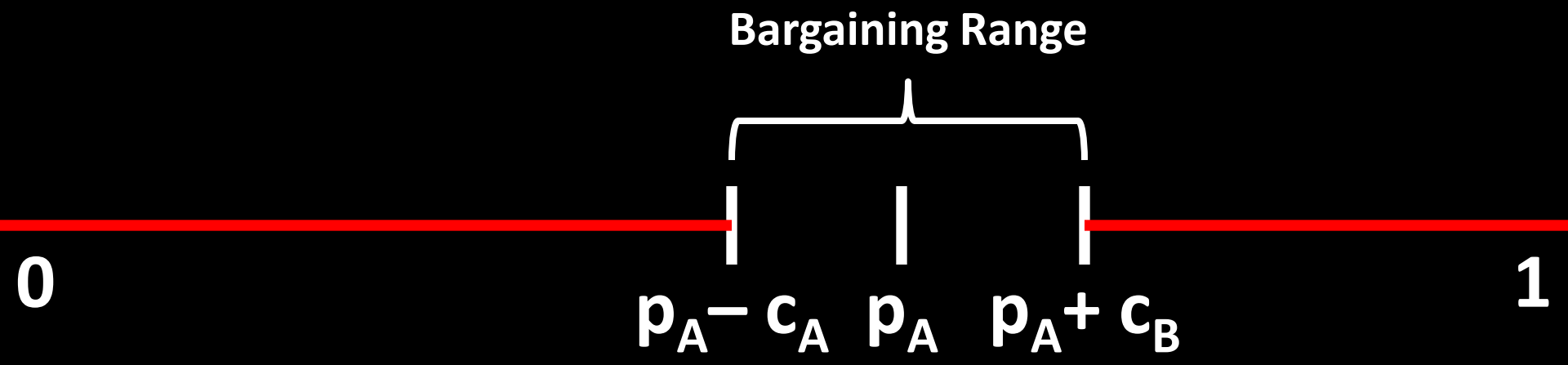
Mutually Acceptable Bargains?

- $p_A - c_A + \Delta_A \leq x \leq p_A + c_B - \Delta_B$
- An x exists if:
  - $p_A - c_A + \Delta_A \leq p_A + c_B - \Delta_B$
  - $\Delta_A + \Delta_B \leq c_A + c_B$
  - That is, the first strike advantages are smaller than the costs of fighting


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$
Δ_A
$p_A + \Delta_A - c_A$


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$
Δ_A
$p_A + \Delta_A - c_A$
Δ_B
$p_A - \Delta_B + c_B$


Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$

Realistic?

- Wars tend to be really costly. Do first strike advantages really outweigh costs?

Realistic?

- Wars tend to be really costly. Do first strike advantages really outweigh costs?
  - Probably not
  - But presence of any first strike advantage shrinks the bargaining range, making it easier for other rationalist explanations to cause problems

Outline

- War in the Court
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
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- Information Problems
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- Preemptive War
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Why This Matters

- What caused the American Revolution?
- What caused the American Civil War?
- What caused World War I?

Why This Matters

- What caused the American Revolution?
  - Taxation without representation!
- What caused the American Civil War?
  - Slavery!
- What caused World War I?
  - Colonial ambitions!

Why Not Bargain?

- None of these explanations are sufficient for war
  - They don't explain why the parties could not reach a mutually preferable bargain
  - This is why peace prevailed up until the wars began

Recipe for War

- We need two things for war:
  1. Grievance (taxation without representation, slavery, territorial ambitions, etc.)
  2. Bargaining problem (incomplete information, shifting power)
- With only one, we do not get conflict
  - Your high school history classes were lacking here

Understanding War

- Our research focuses on the bargaining problems, not grievances
- There are only two(?) types of bargaining problems
- There are too many types of grievances to count

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Data on Power

- We measure data on power with CINC (Composite Indicator of National Capability) scores
- There are strengths and weaknesses
- You will learn more about these in the data analysis

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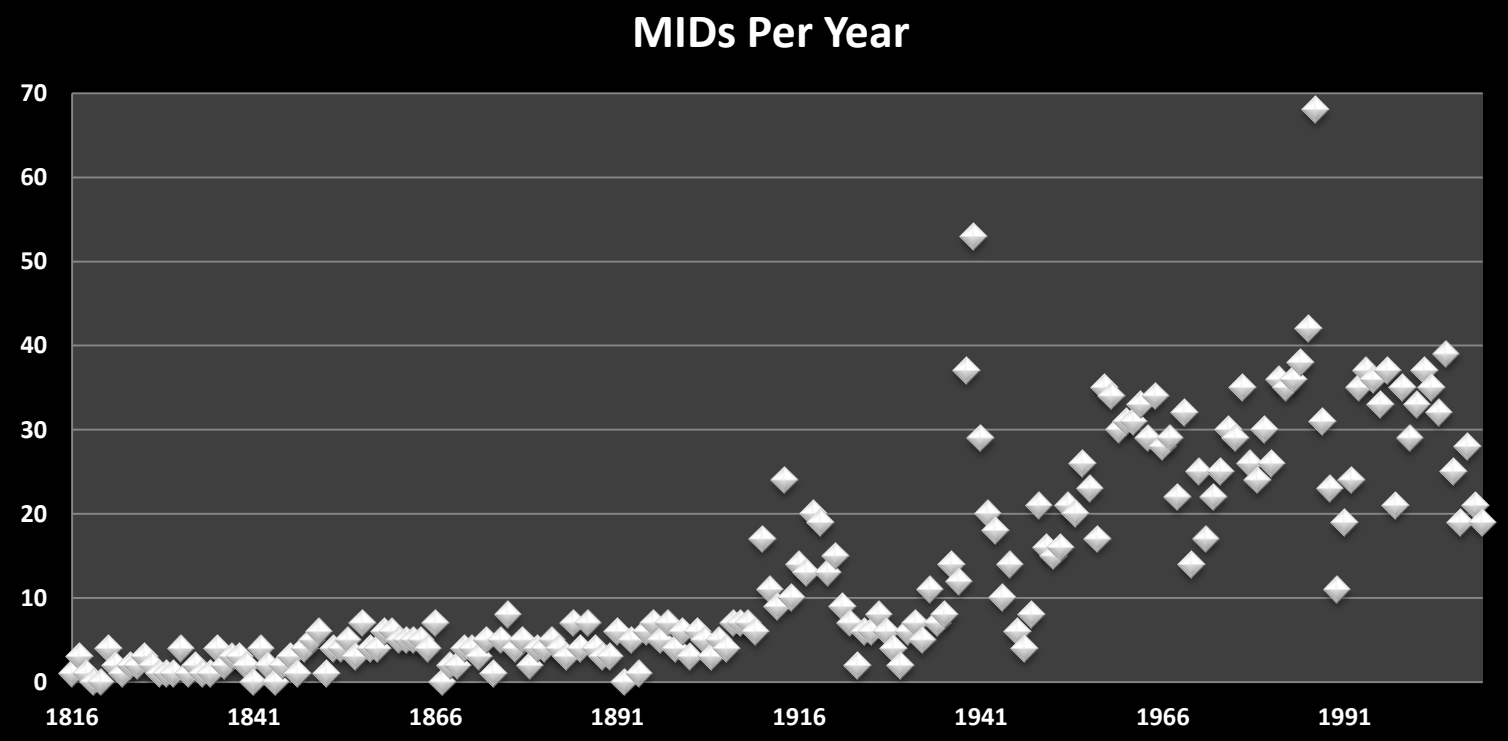
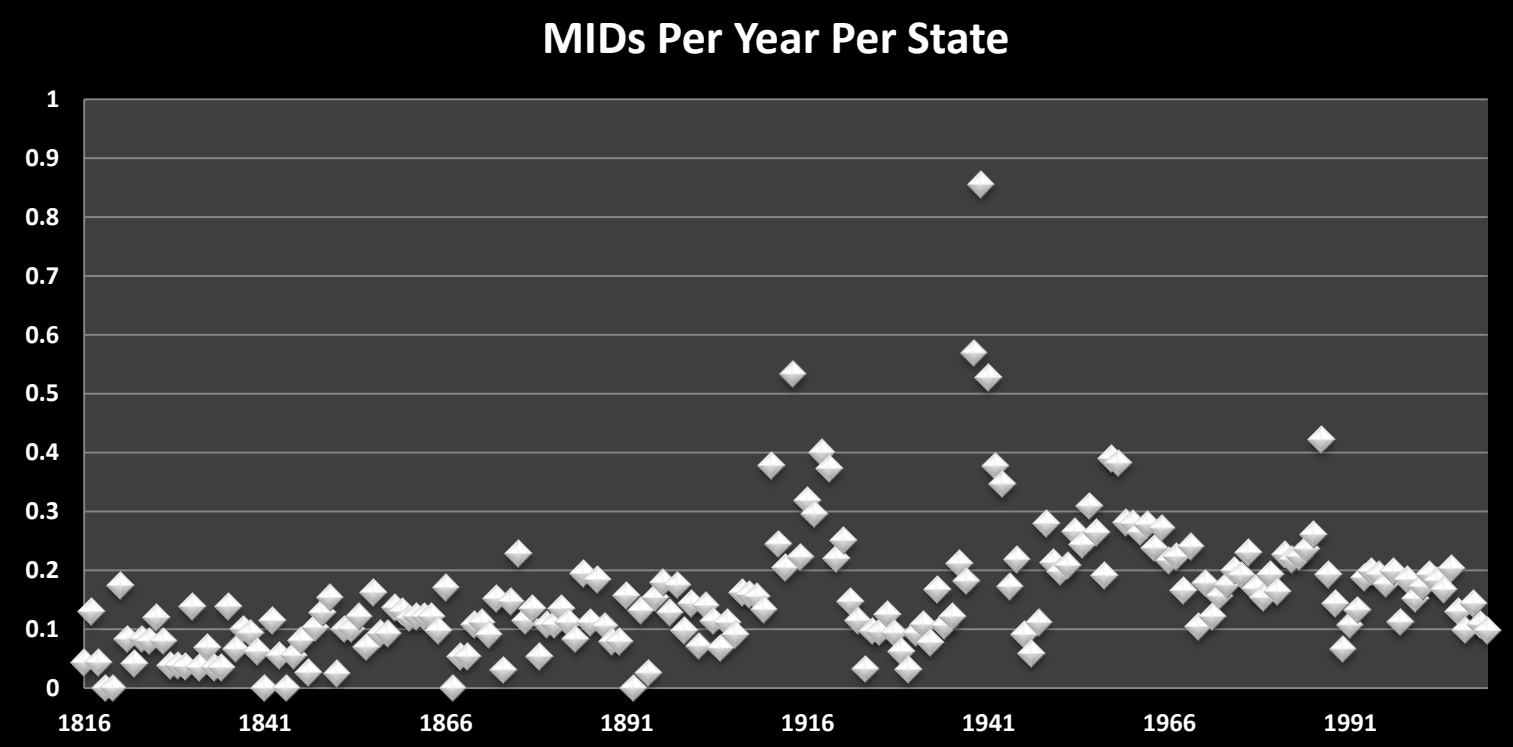
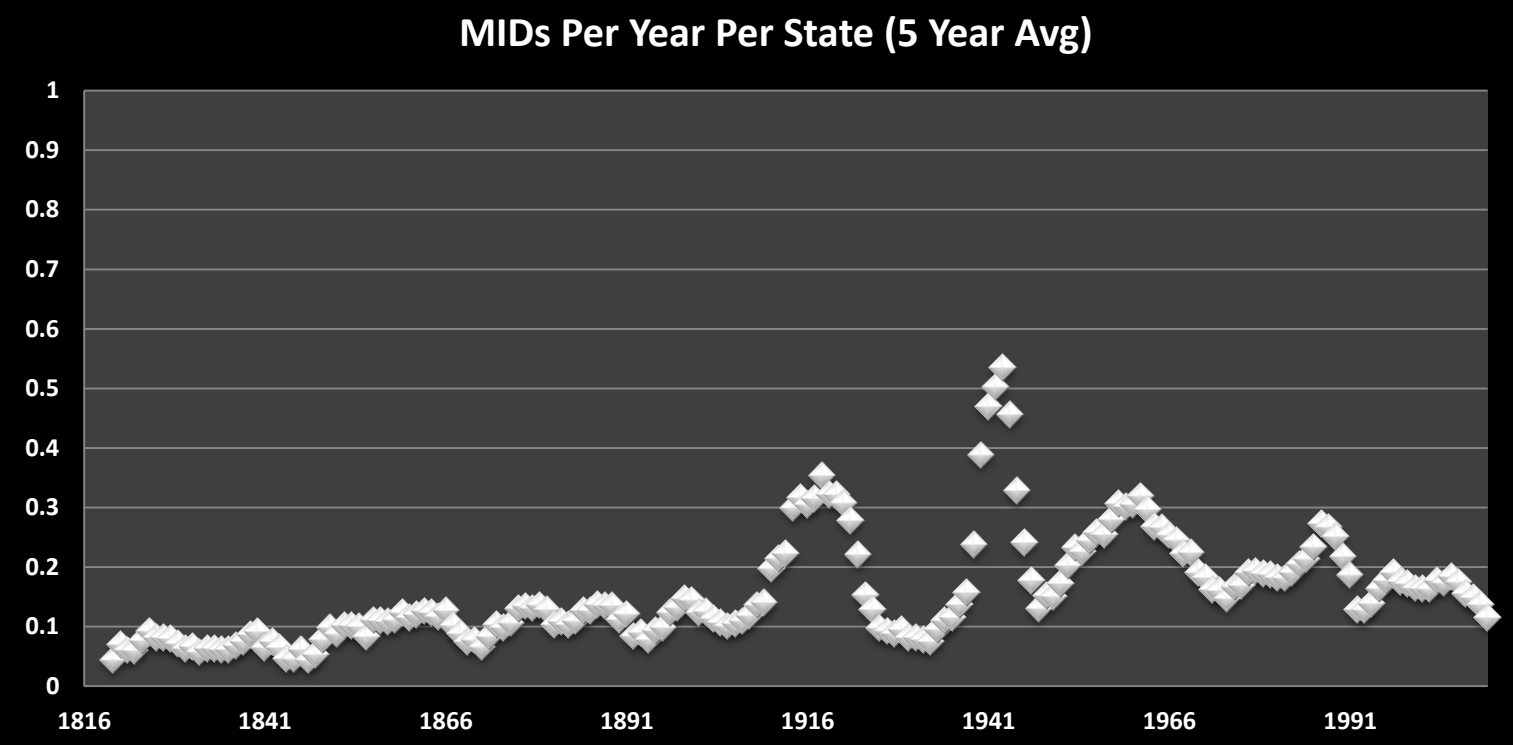
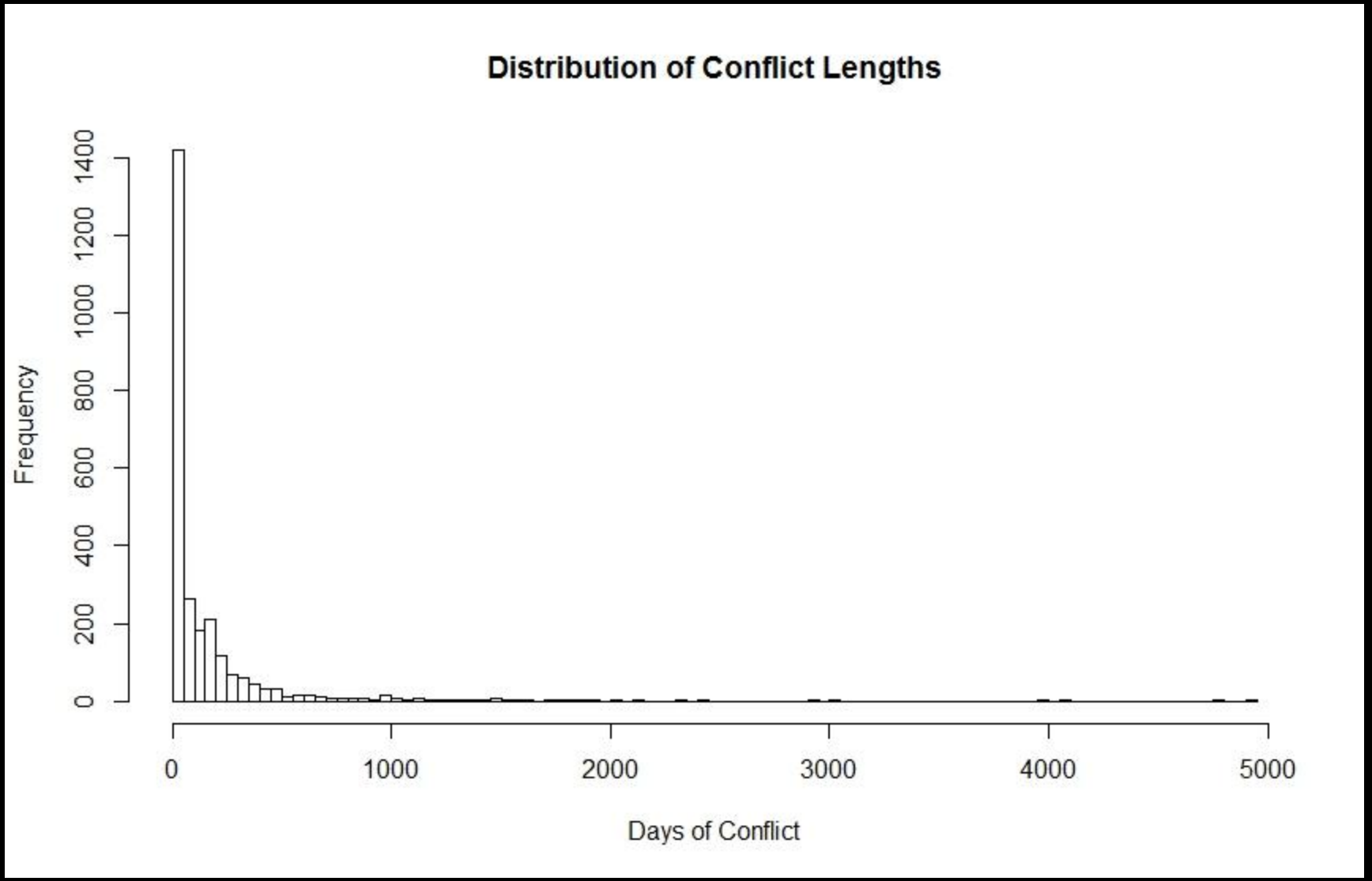
Militarized Interstate Disputes (MIDs)

- “cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state”
- 1816-2010: 2586 (known) instances


MIDs Per Year
70
60
50
40
30
20
10
0
1816
1841
1866
1891
1916
1941
1966
1991


MIDs Per Year Per State
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1816
1841
1866
1891
1916
1941
1966
1991


MIDs Per Year Per State (5 Year Avg)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1816
1841
1866
1891
1916
1941
1966
1991


Distribution of Conflict Lengths
Frequency
0
200
400
600
800
1000
1200
1400
0
1000
2000
3000
4000
5000
Days of Conflict

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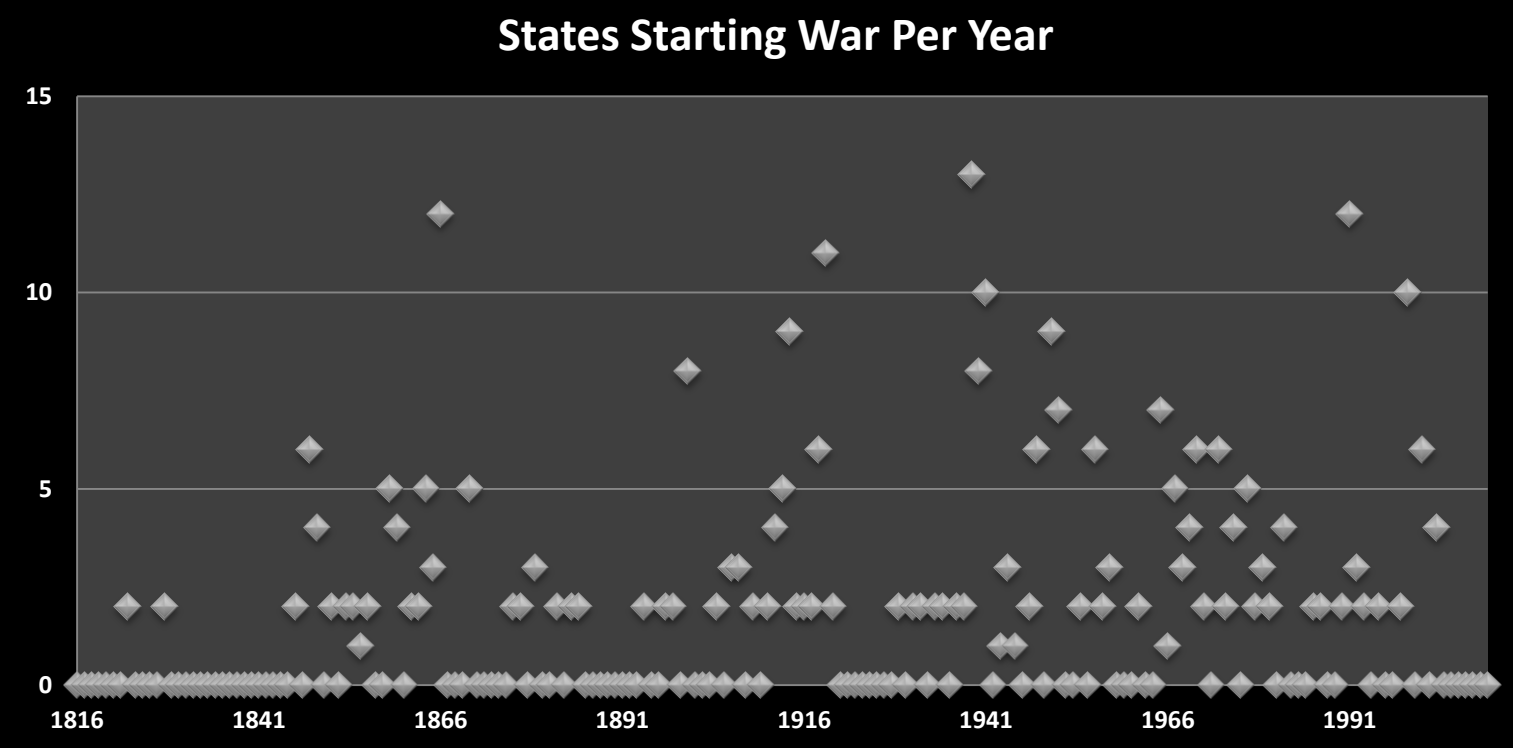
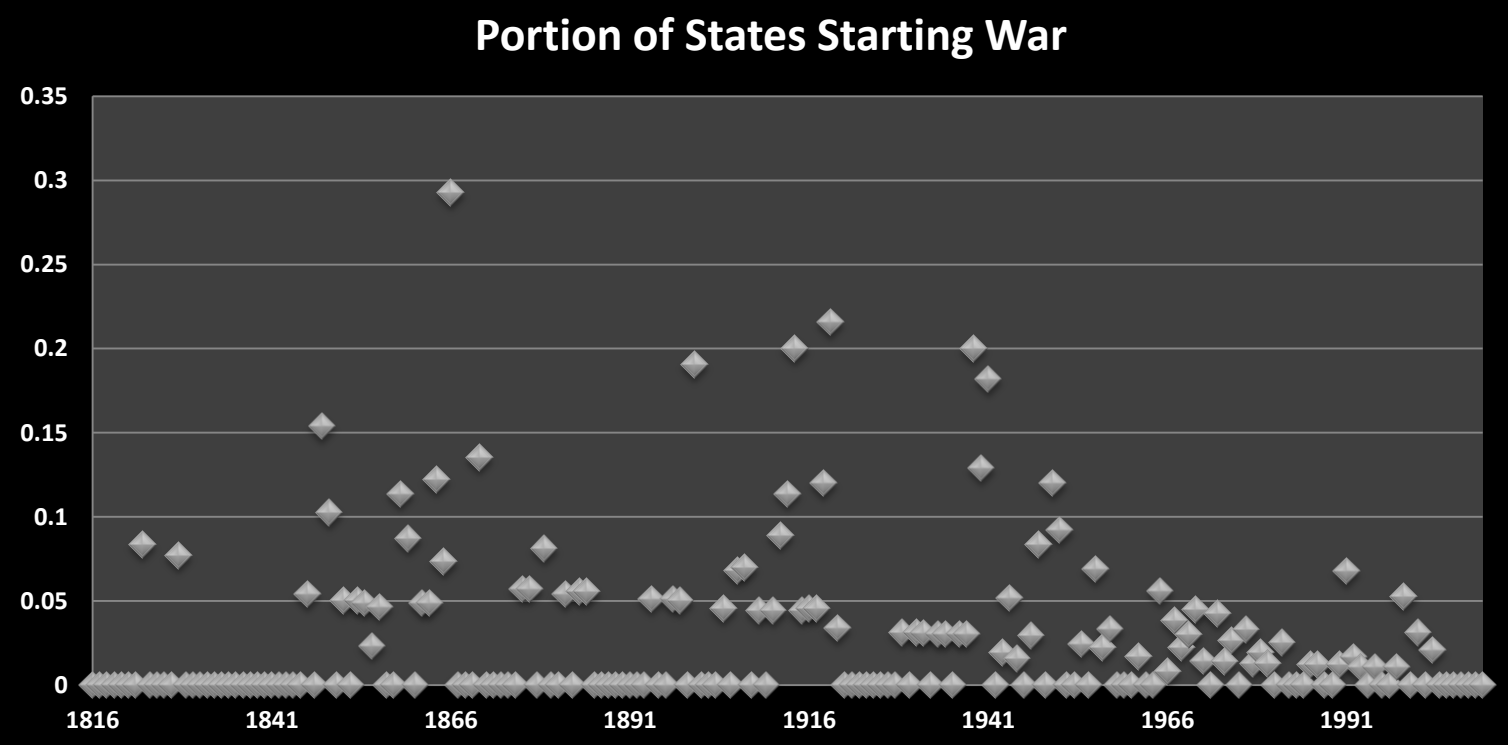
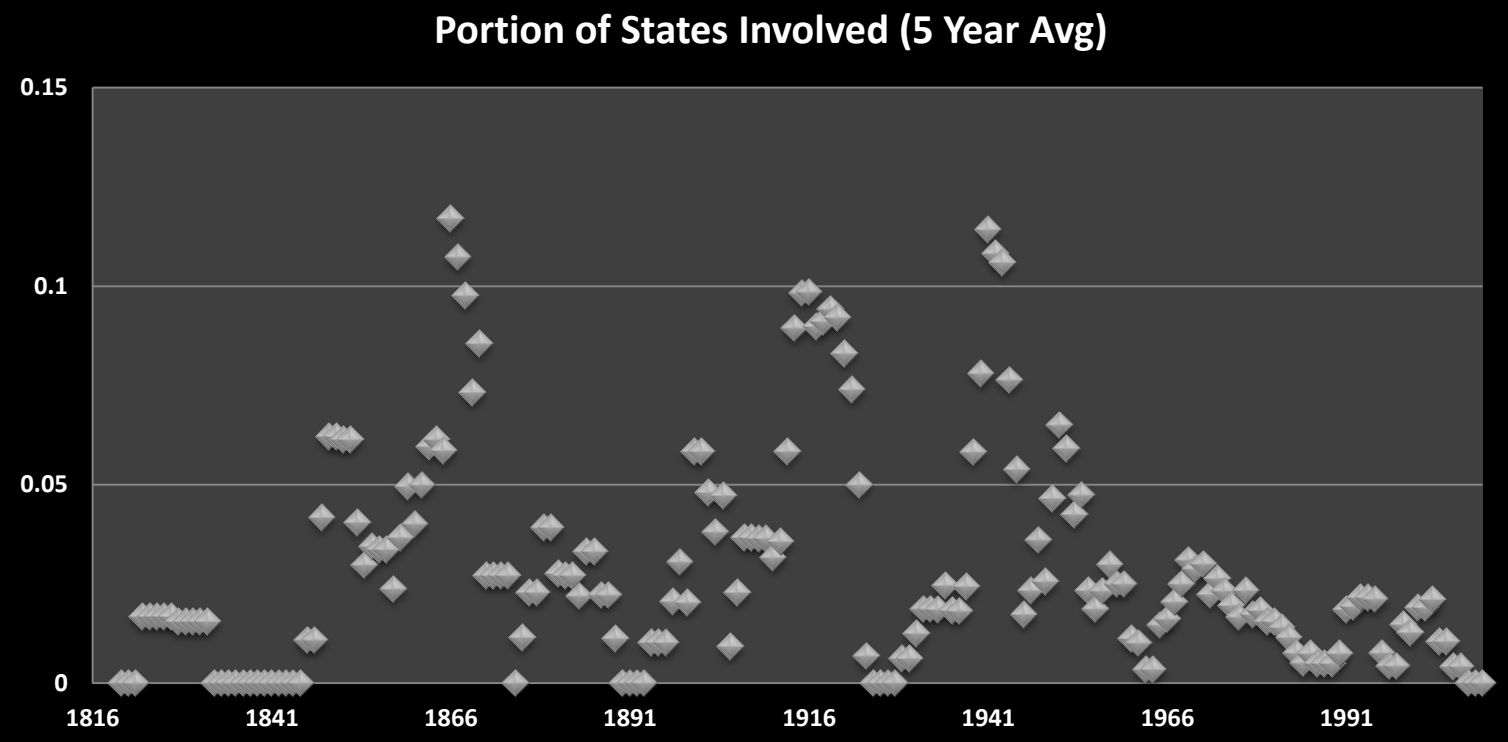
Correlates of War

- Sustained combat between regular armed forces of two states
- At least 1000 combat fatalities total
- Each side has at least 100 combat fatalities or at least 1000 armed forces

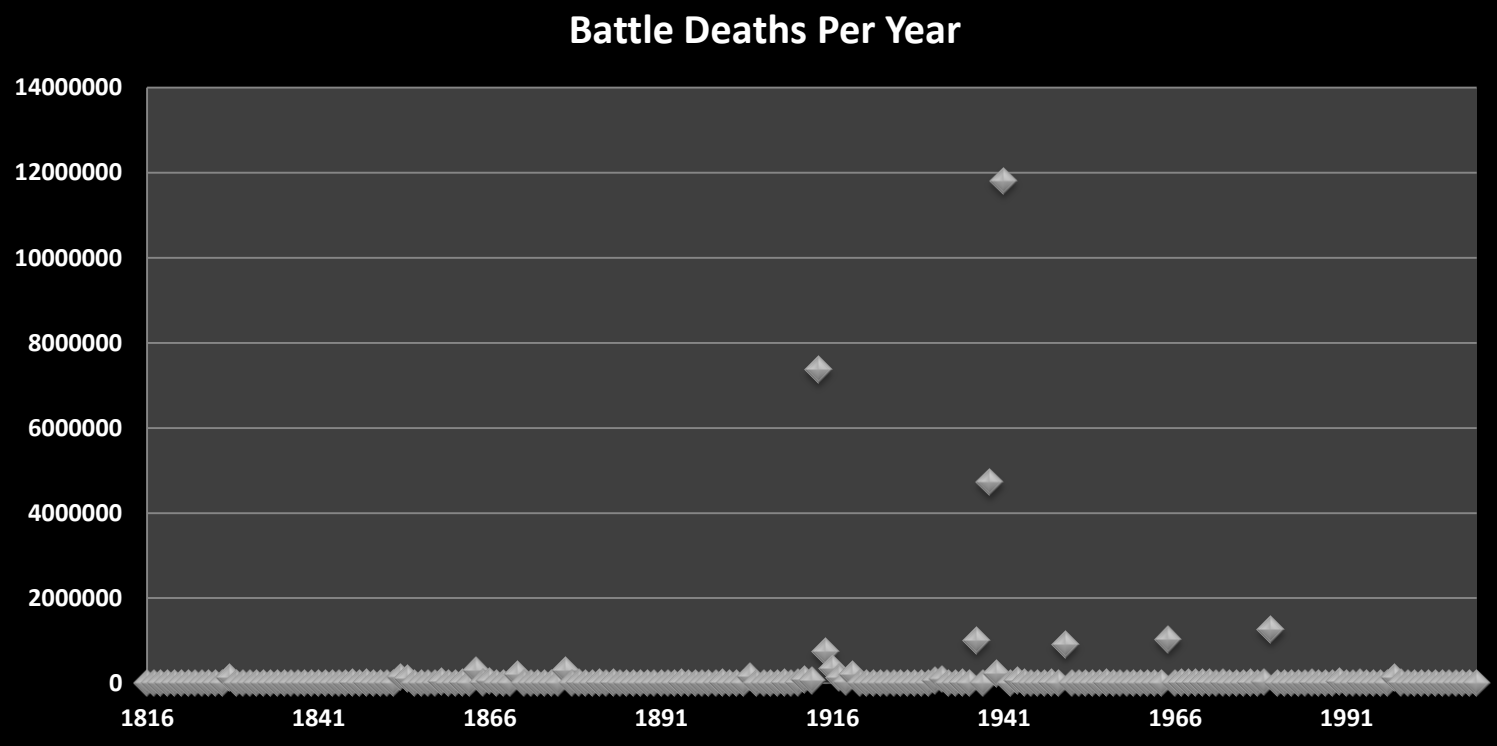

States Starting War Per Year
15
10
5
0
1816
1841
1866
1891
1916
1941
1966
1991

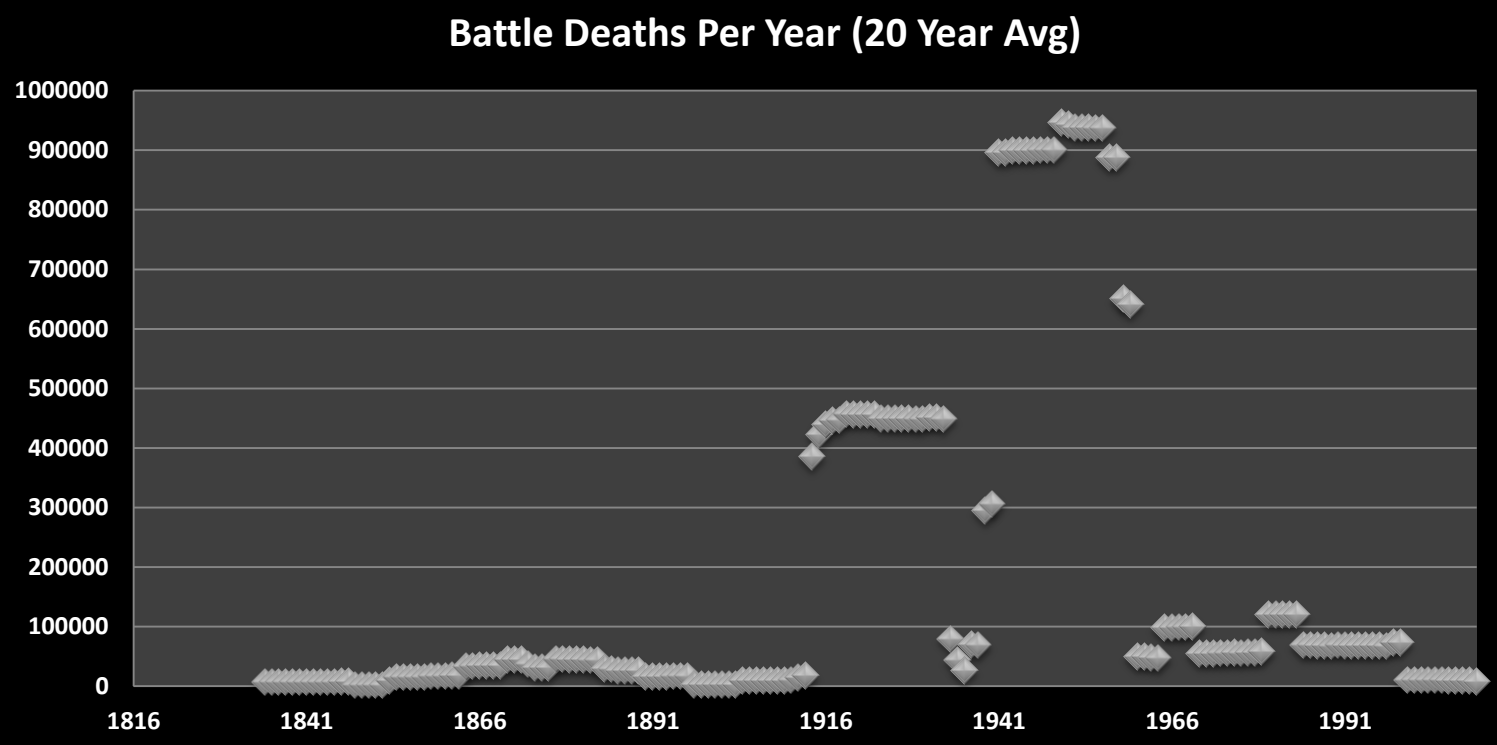

Portion of States Starting War
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1816
1841
1866
1891
1916
1941
1966
1991


Portion of States Involved (5 Year Avg)
0.15
0.1
0.05
0
1816
1841
1866
1891
1916
1941
1966
1991

The Long Peace

- Wars have been trending downward following World War II
- There have been 0 wars between major powers in that period
  - Unclear if it is a product of chance
  - Many theories assume that peace is growing more prevalent


Battle Deaths Per Year
14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
1816
1841
1866
1891
1916
1941
1966
1991


Battle Deaths Per Year (20 Year Avg)
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
1816
1841
1866
1891
1916
1941
1966
1991