PS 0500: The Bargaining Model of War

William Spaniel
williamspaniel.com/classes/IR21

Outline

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

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 most definitely did not have sexual relations with, so I'm going to bomb some country 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

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

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

Outline

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

Can war be mutually beneficial?

Crisis!

- Saudi Arabia discovers an oil deposit worth $80 billion

Crisis!

- Saudi Arabia discovers an oil deposit worth $80 billion
- Kuwait hears about this and declares the oil deposit to be on its side of the border

Crisis!

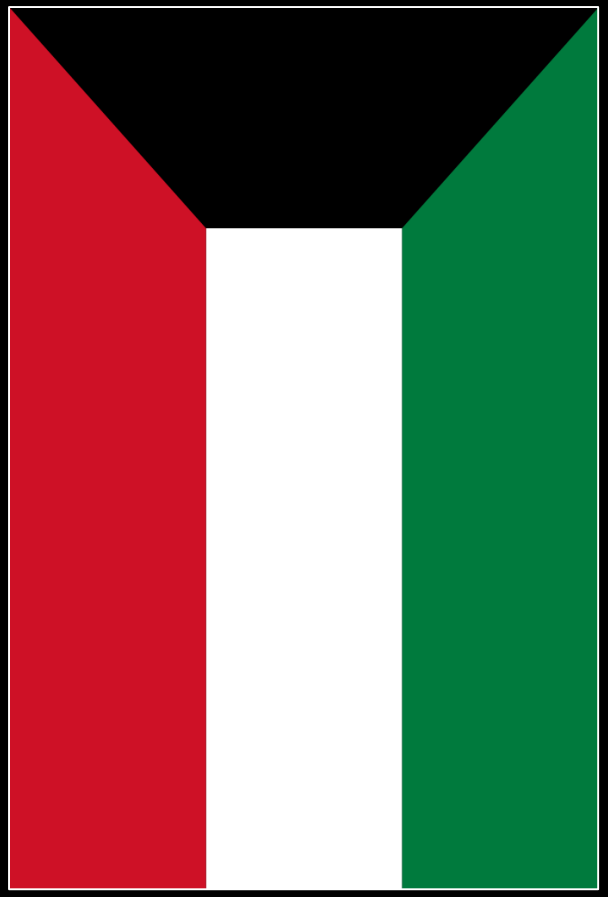
- Saudi Arabia discovers an oil deposit worth $80 billion
- Kuwait hears about this and declares the oil deposit to be on its side of the border
- The sides call in their militaries and prepare for war

Saudi Arabia's Perspective

- Saudi Arabia will win the war (and $80 billion in oil) 60% of the time
- Cost of death, destruction, and lost oil: $12 billion

Kuwait's Perspective

- Kuwait will win the war (and $80 billion in oil) 40% of the time
- Cost of death, destruction, and lost oil: $15 billion



Is war inevitable between these two countries?

Saudi Arabia's Needs

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

Kuwait's Needs

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

A Rationalist Explanation for War?

- Both countries have positive expected payoffs from fighting
  - So war makes sense for both parties

A Rationalist Explanation for War?

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

Bargaining

- War does not make sense here
- Saudi Arabia's and Kuwait'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 does not make sense here
- Saudi Arabia's and Kuwait'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 Saudi Arabia's share of the settlement
- Then x satisfies Saudi Arabia if $x > 36$
- And x satisfies Kuwait if $80 - x > 17$,
  or $x < 63$

A Better Resolution

- Let x be Saudi Arabia's share of the settlement
- Then x satisfies Saudi Arabia if $x > 36$
- And x satisfies Kuwait 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 Saudi Arabia is mutually preferable to war
  - Such settlements exist
  - Bargaining is mutually preferable to war

This Is NOT Abstract

- Uqair Convention of 1922 created a neutral zone

Percy Cox

This Is NOT Abstract

- Uqair Convention of 1922 created a neutral zone
- Oil discovered nearby in 1938
- Territory chopped up, multinational corporation created


Caribbean Sea
Martinique
St Lucia
St Vincent and the Grenadines
Barbados
Aruba
Curaçao
Grenada
Trinidad and Tobago
Venezuela
Guyana
Colombia
3D


Iraq
Kuwait


BT
053

War's Inefficiency Puzzle

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

War's Inefficiency Puzzle

- Was this a quirk with the payoffs for Saudi Arabia and Kuwait?

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)

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)
  - 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:

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

A's Peace Constraint

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

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

$$x \geq p_A - c_A$$

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:

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

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

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

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:

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

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

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:

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

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:

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

  $p_A - c_A \leq p_A + c_B$

  $c_A + c_B \geq 0$

Outline

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

The Model

- 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

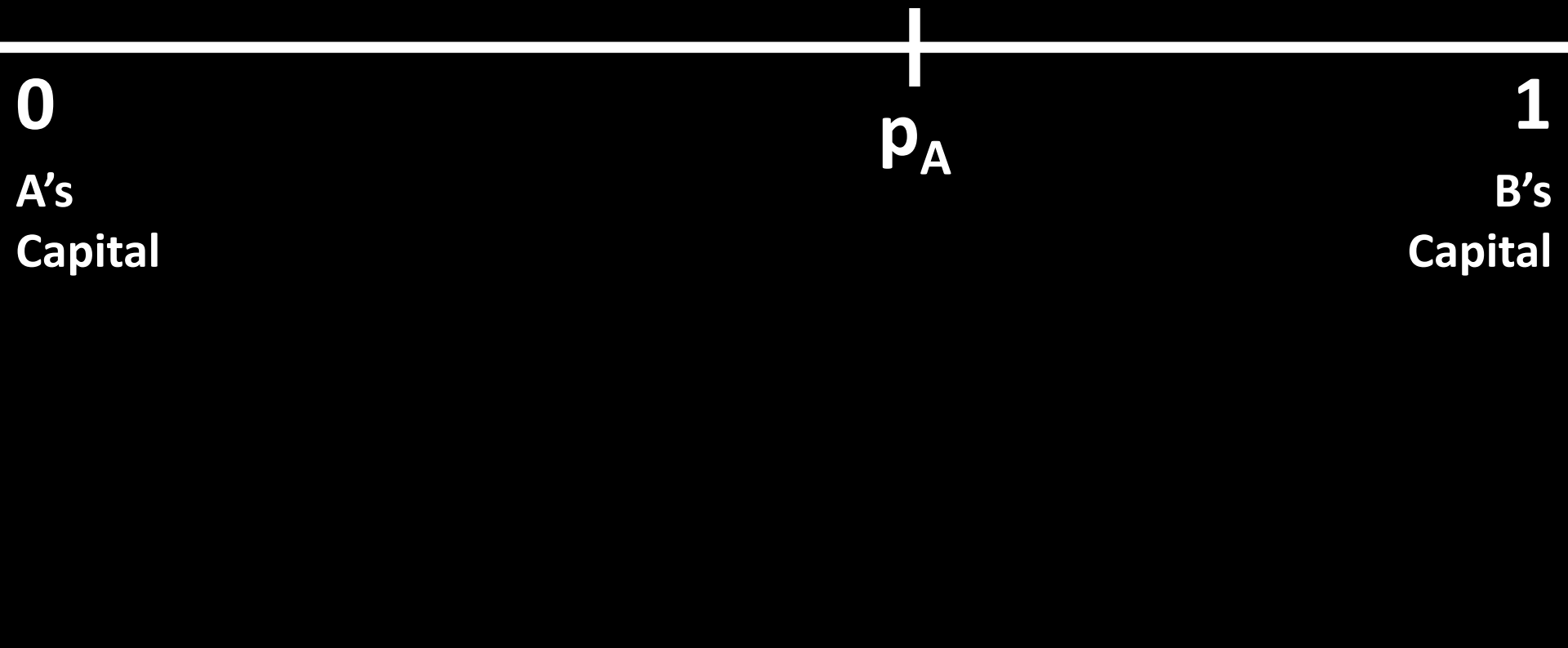
A's Capital

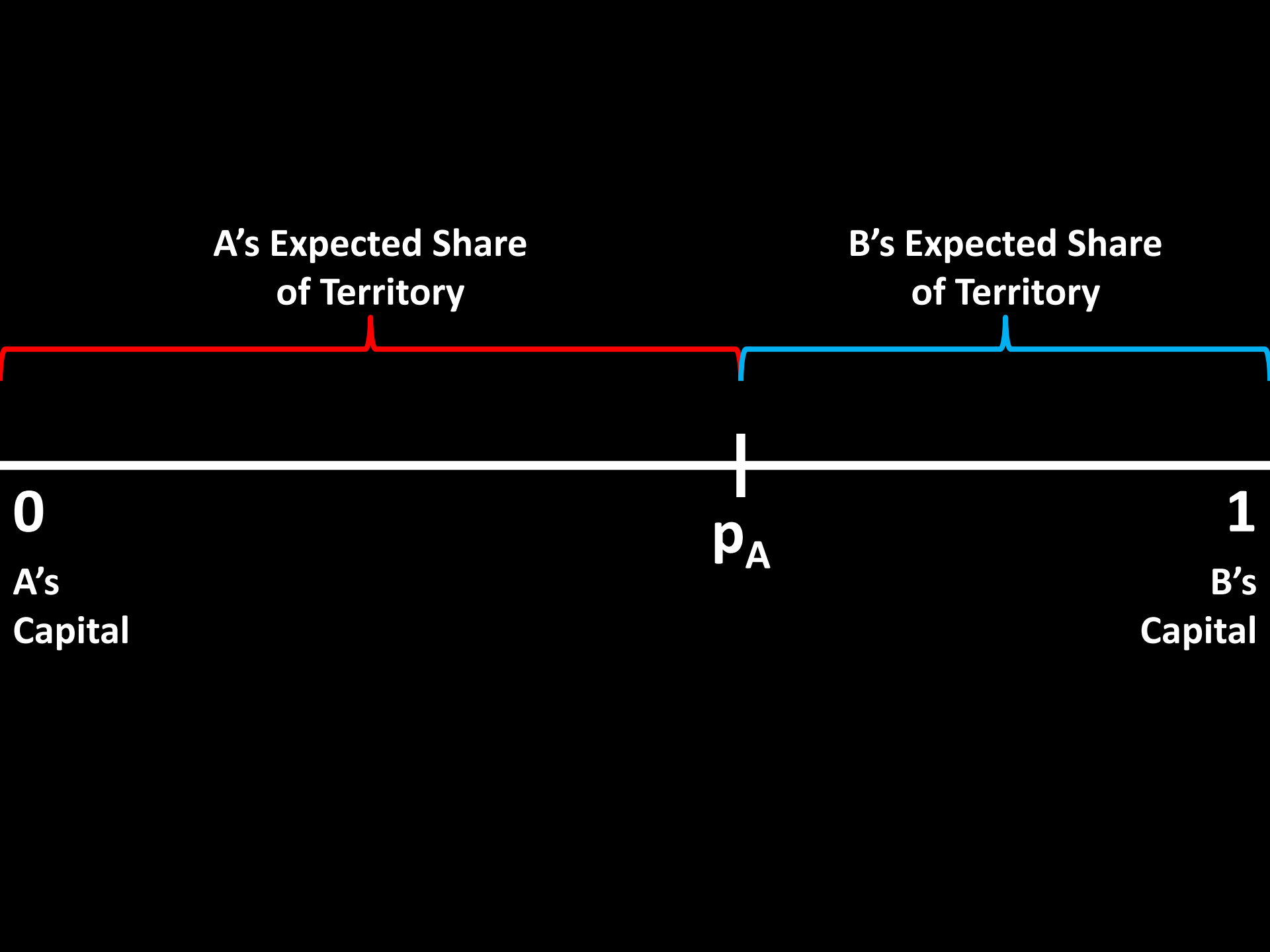
1

B's Capital

The Model

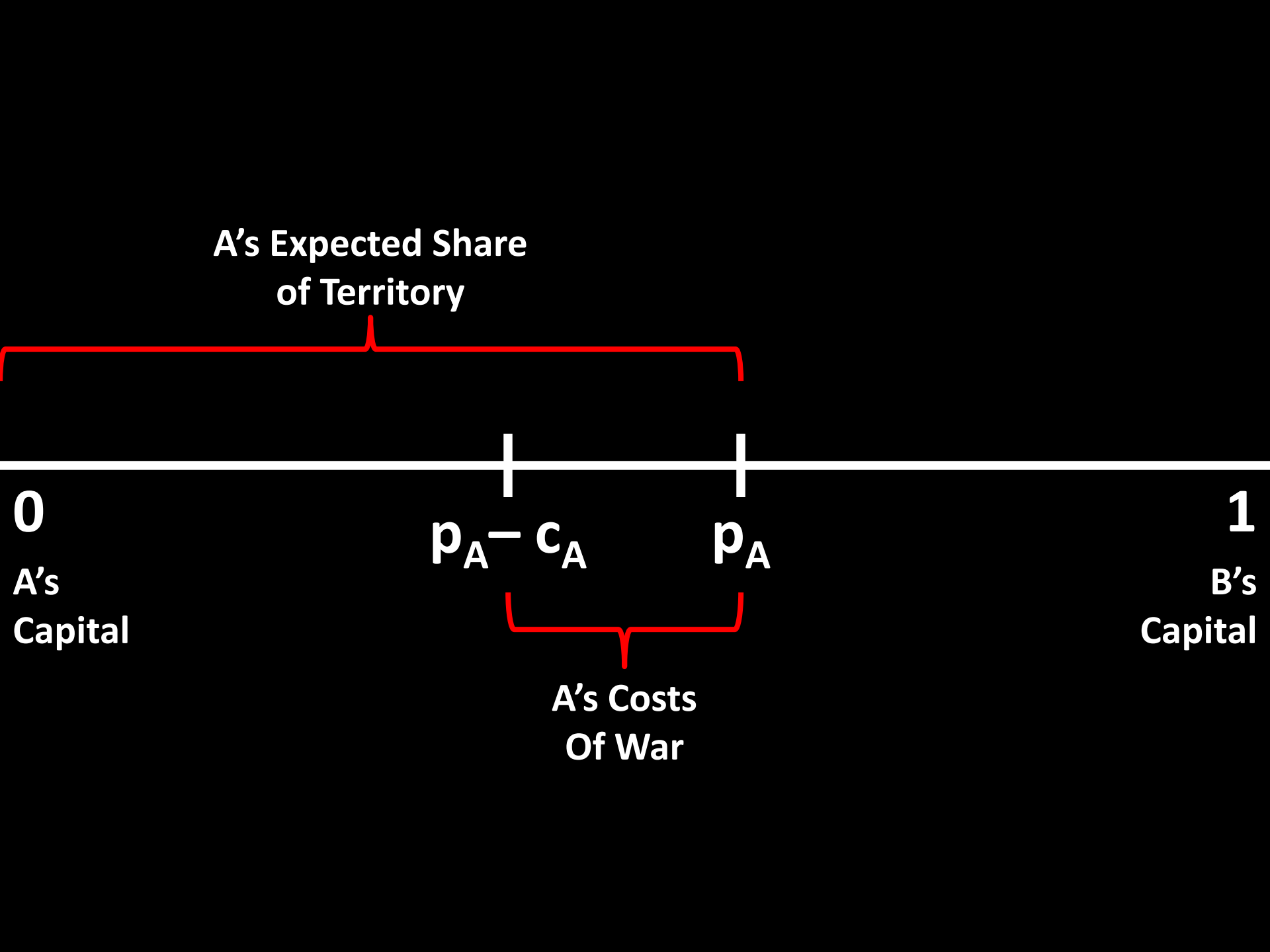
- Two states: A and B
- Bargain over an object worth 1
- p_A is the probability A wins a war
- $1 - p_A$ is the probability B wins a war

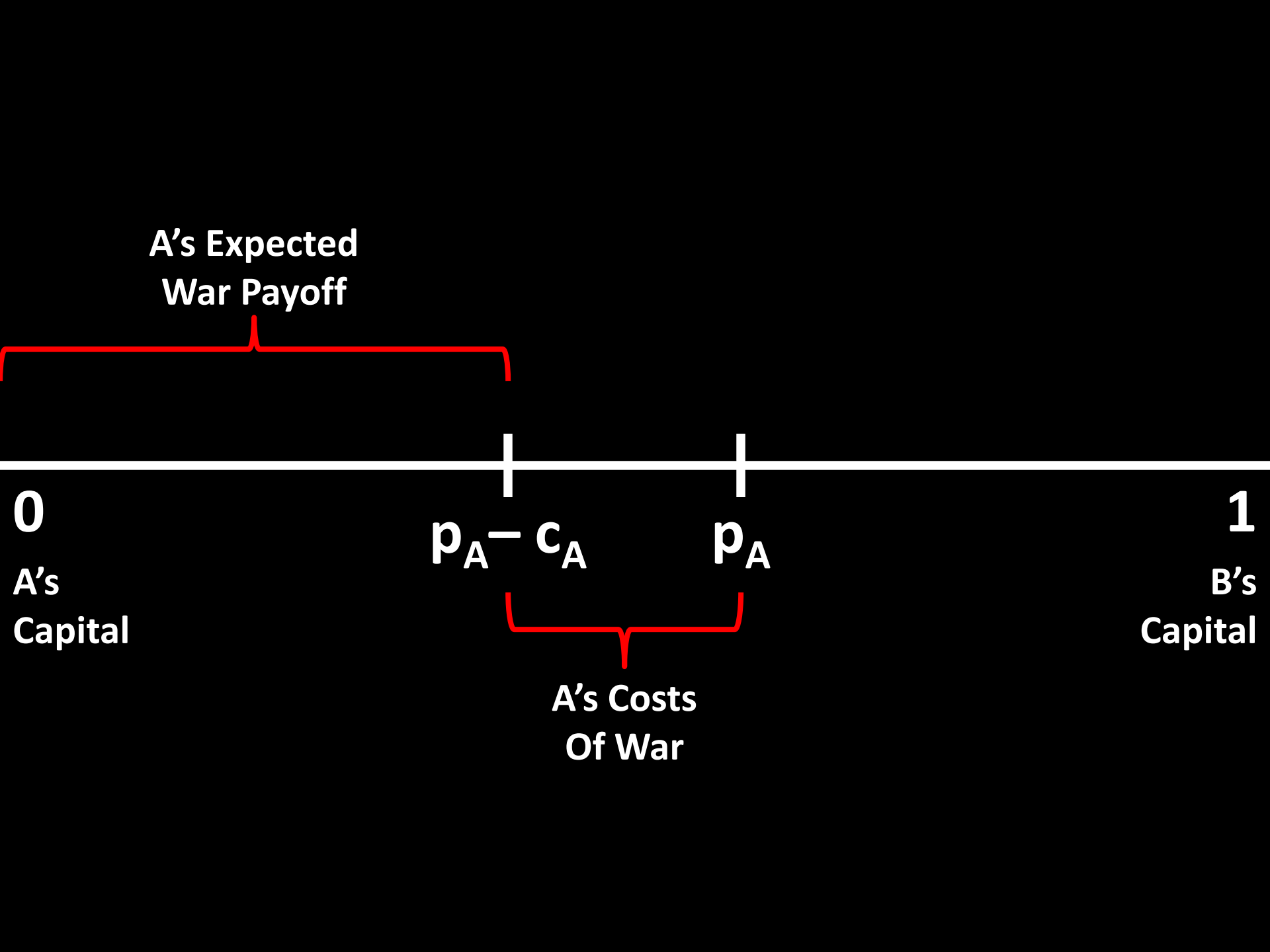

0
A's
Capital
p_A
1
B's
Capital

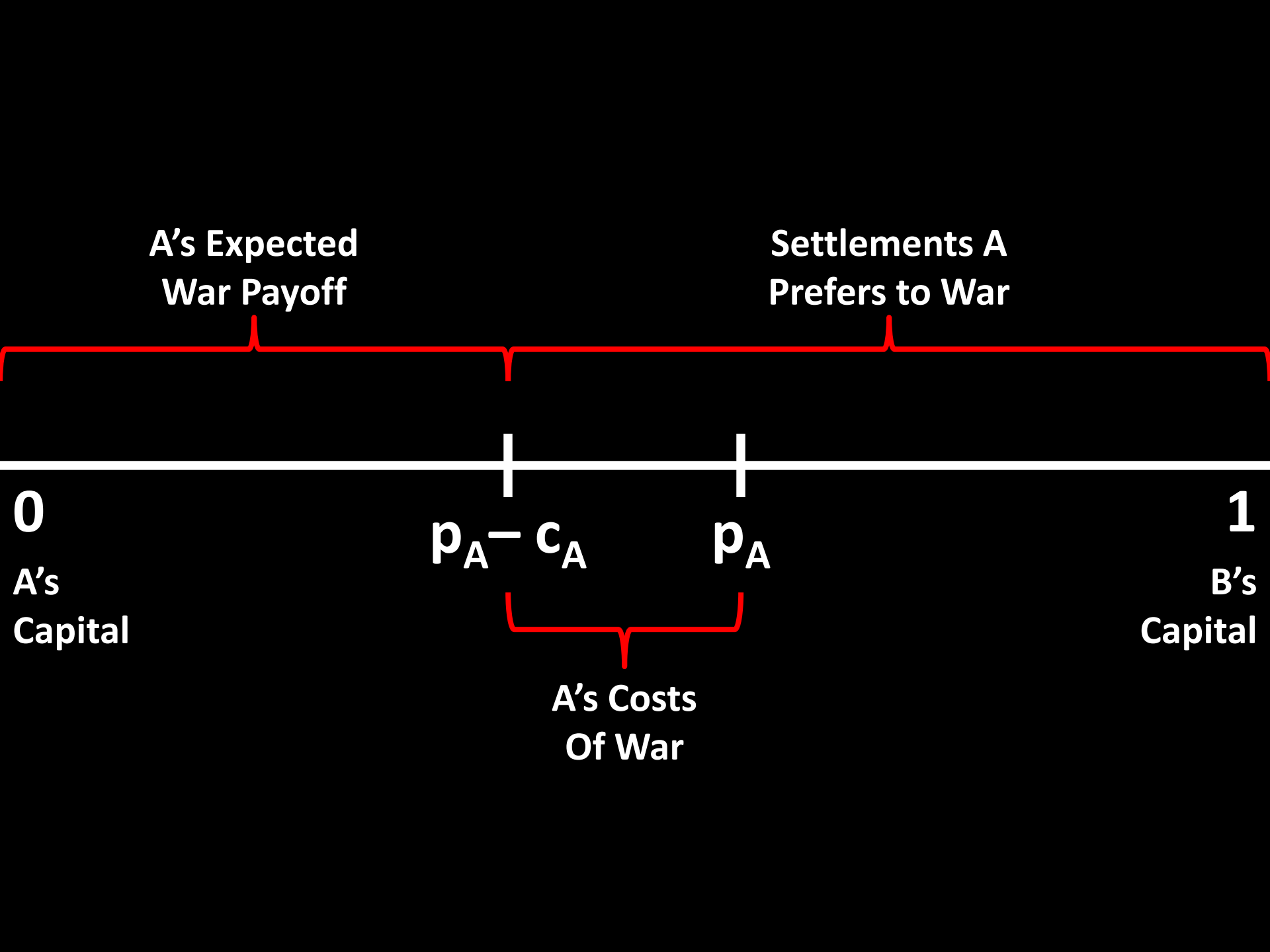

A's Expected Share of Territory
B's Expected Share of Territory
0
A's Capital
p_A
1
B's Capital

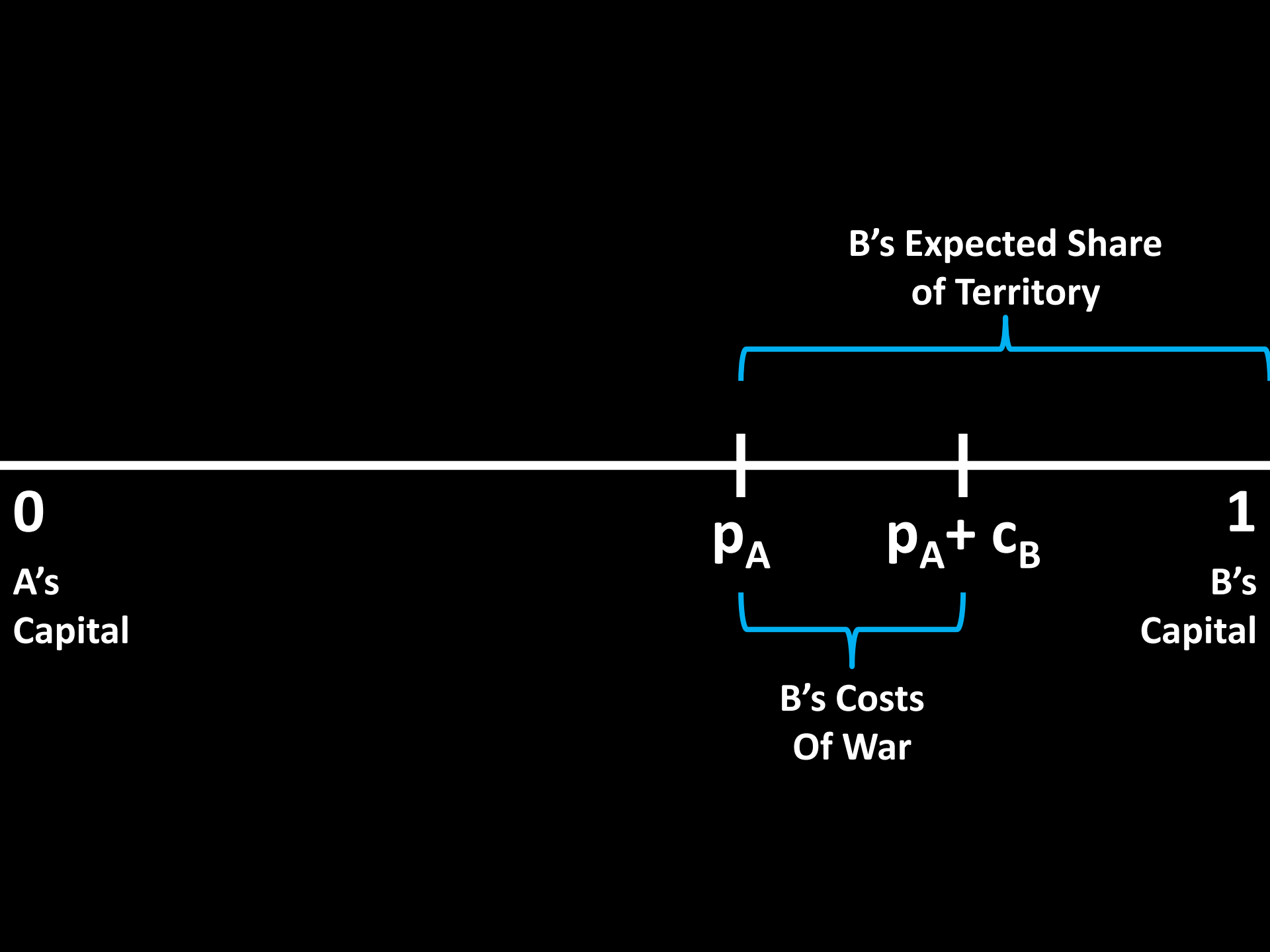
The Model

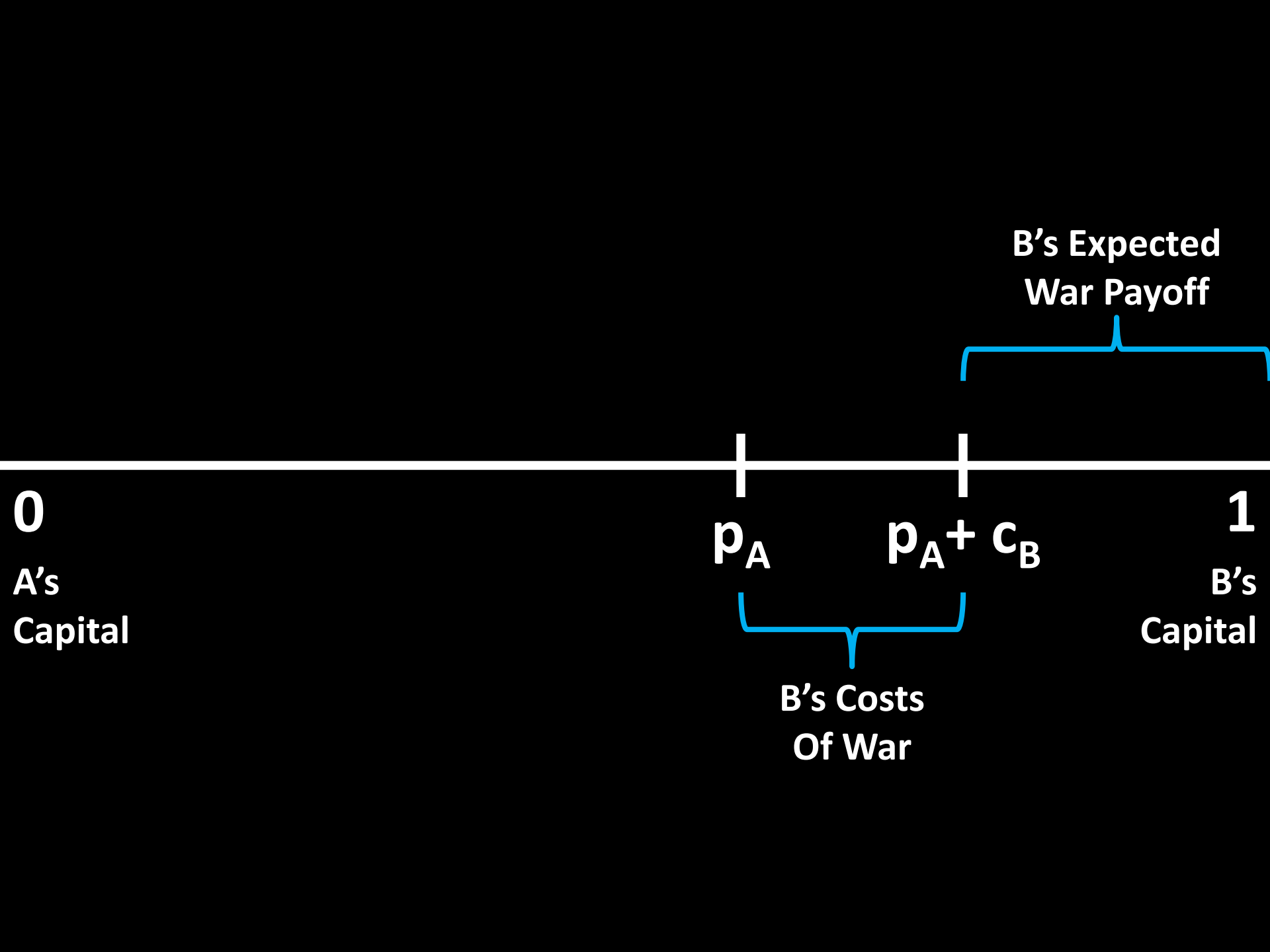
- If the states fight a war, they pay costs $c_A > 0$ and $c_B > 0$

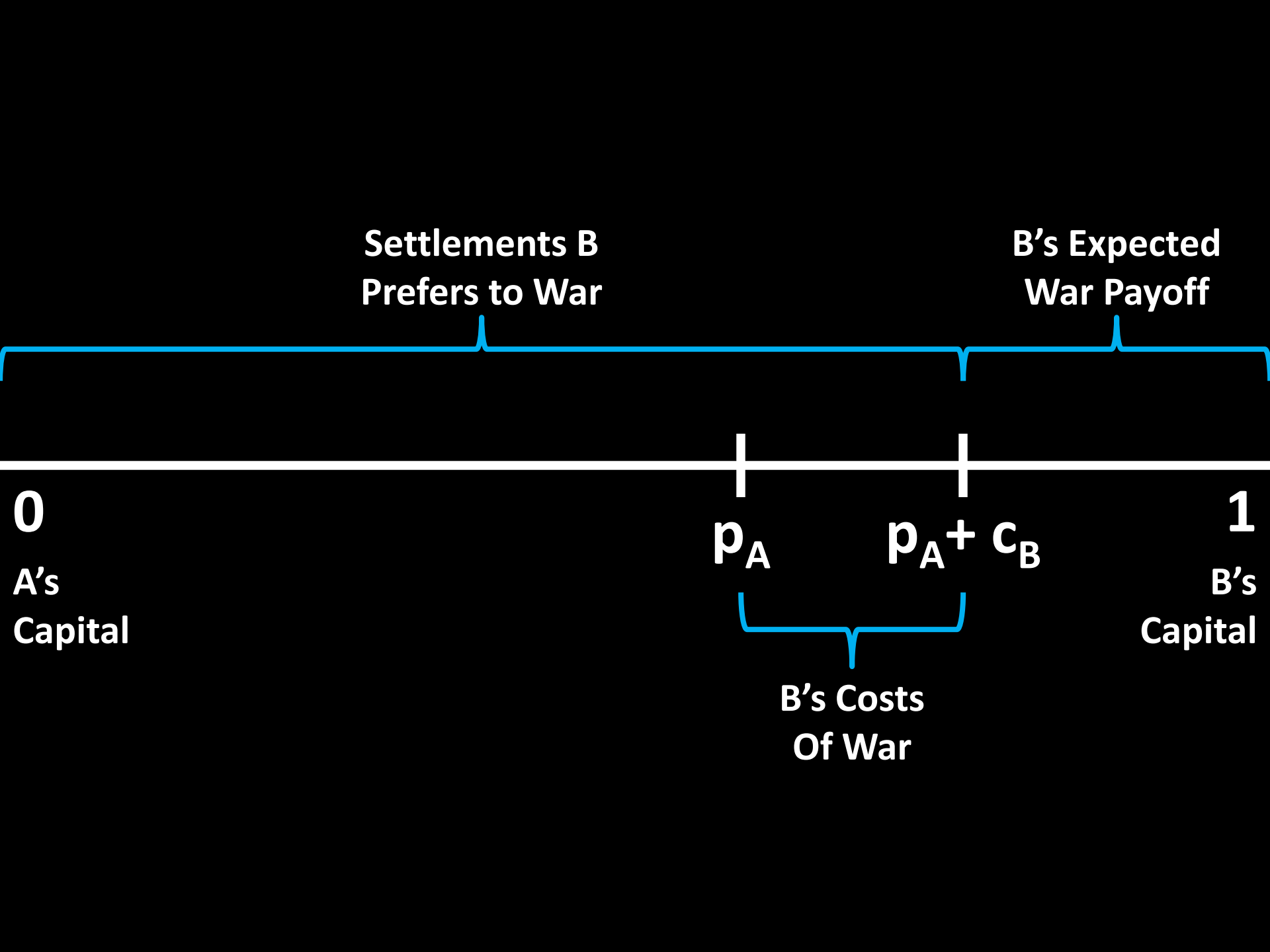

A's Expected Share
of Territory
0
A's
Capital
$p_A - c_A$
p_A
1
B's
Capital
A's Costs
Of War

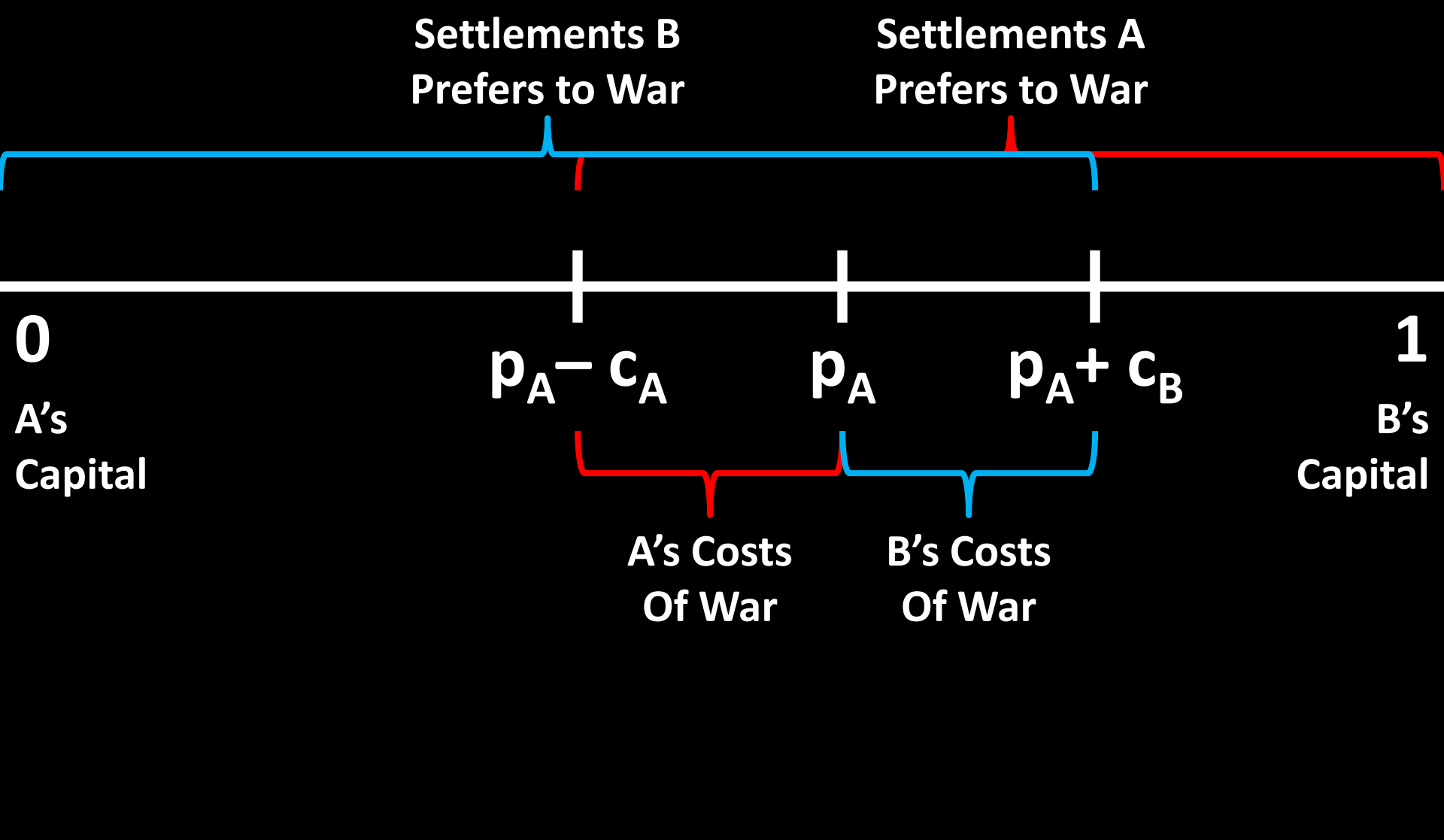

A's Expected
War Payoff
0
A's
Capital
$p_A - c_A$
p_A
1
B's
Capital
A's Costs
Of War

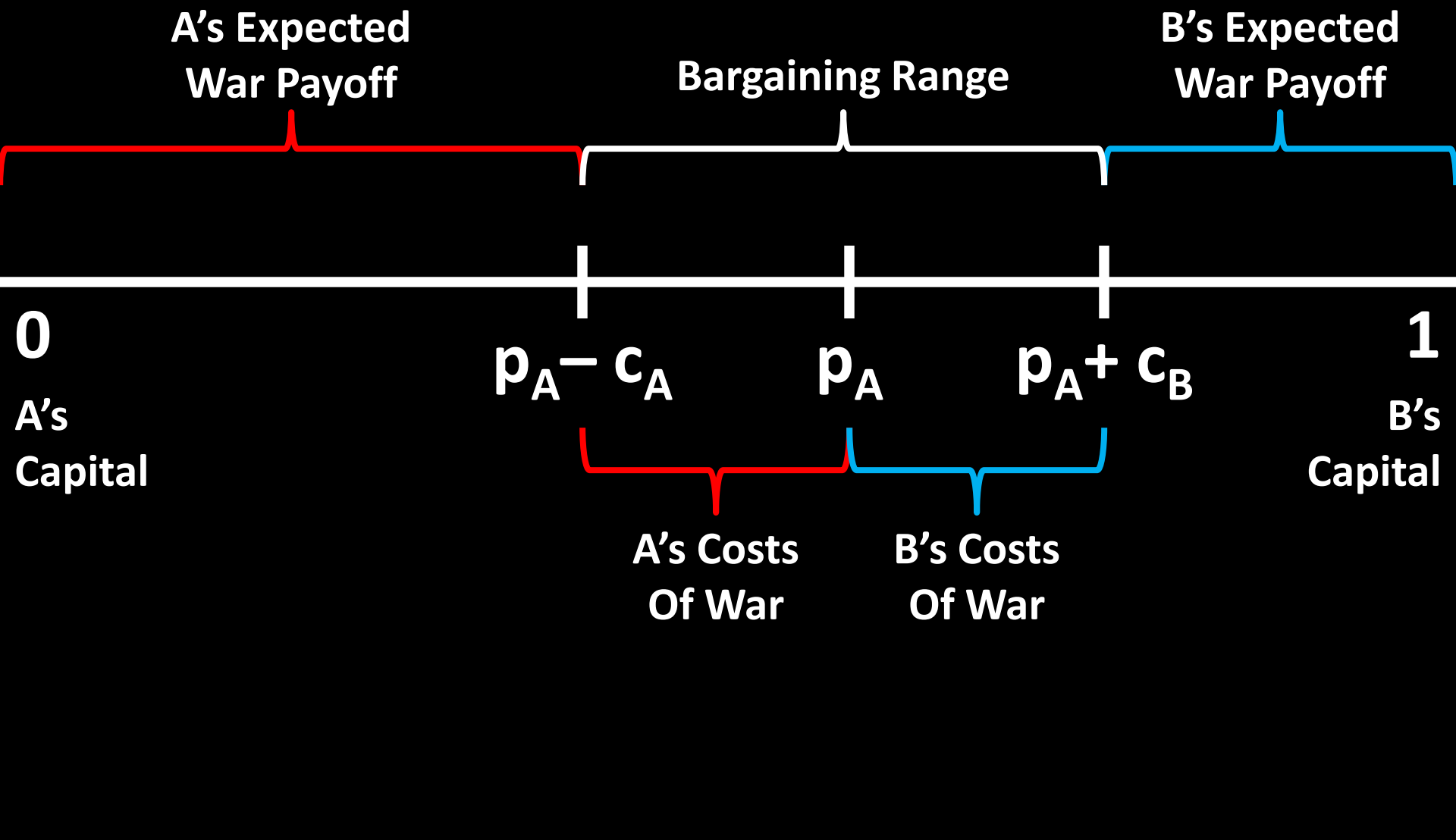

A's Expected War Payoff
Settlements A Prefers to War
0
A's Capital
$p_A - c_A$
p_A
1
B's Capital
A's Costs Of War


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
0
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
0
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

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

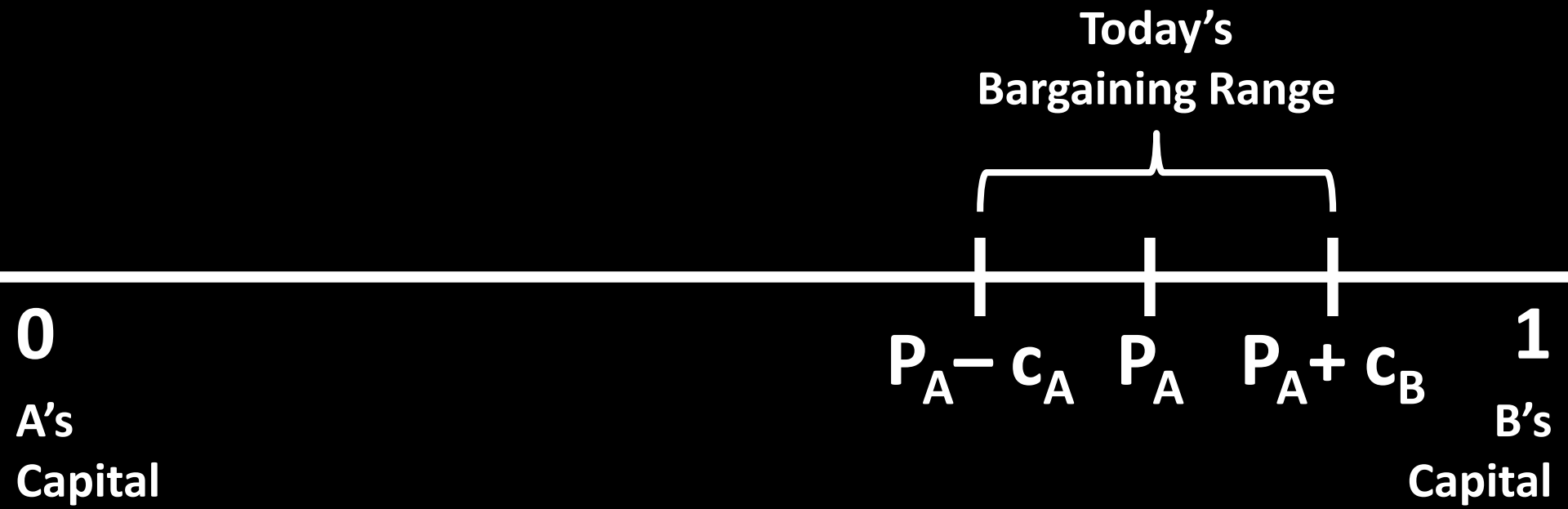
Outline

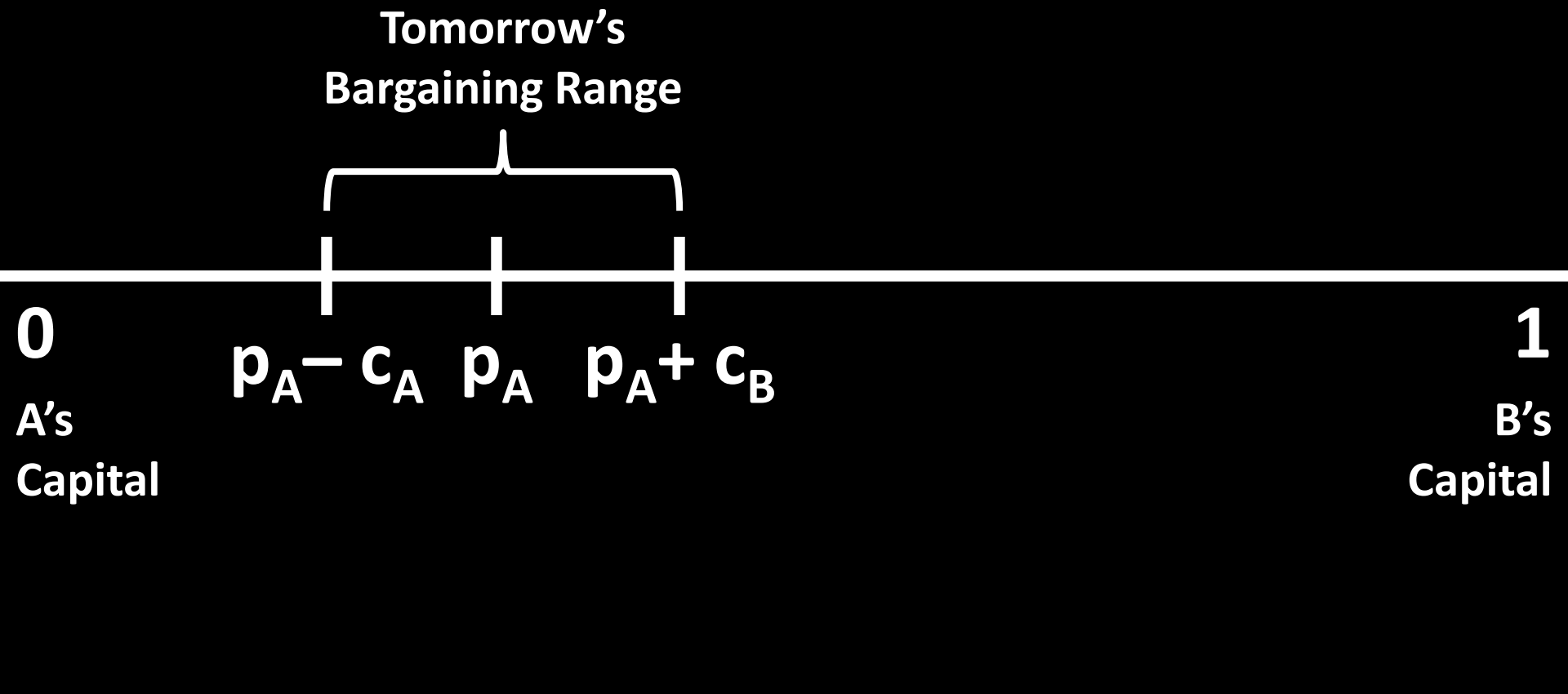
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
- Preventive War
- Information Problems
- Issue Indivisibility
- Preemptive War
- Understanding War
- Measuring Power
- Militarized Interstate Disputes
- Correlates of War and the Long Peace

Why do power shifts lead to war?

The Contenders

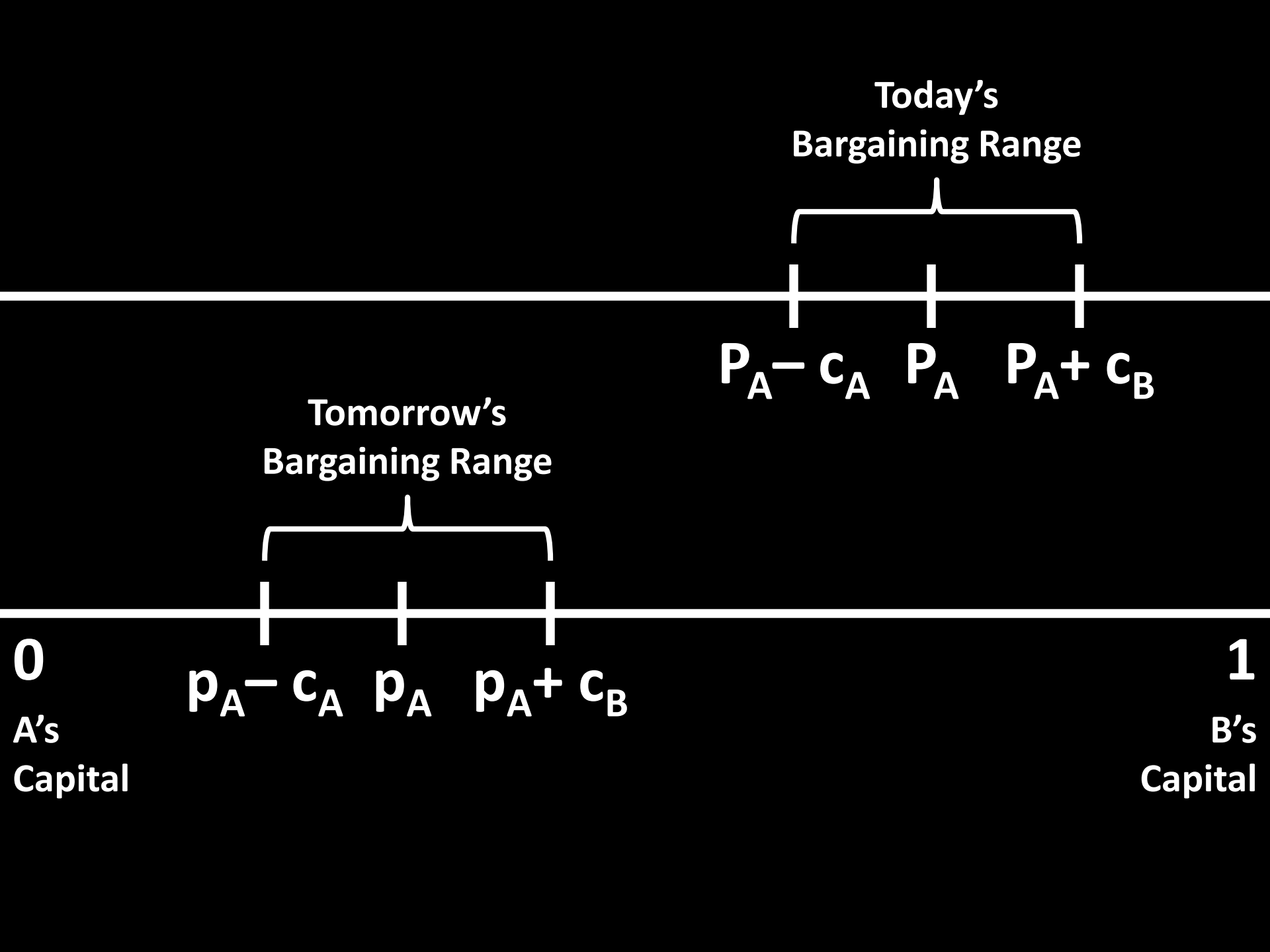
1. Rising states start wars after they have become strong to steal stuff from the declining states


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

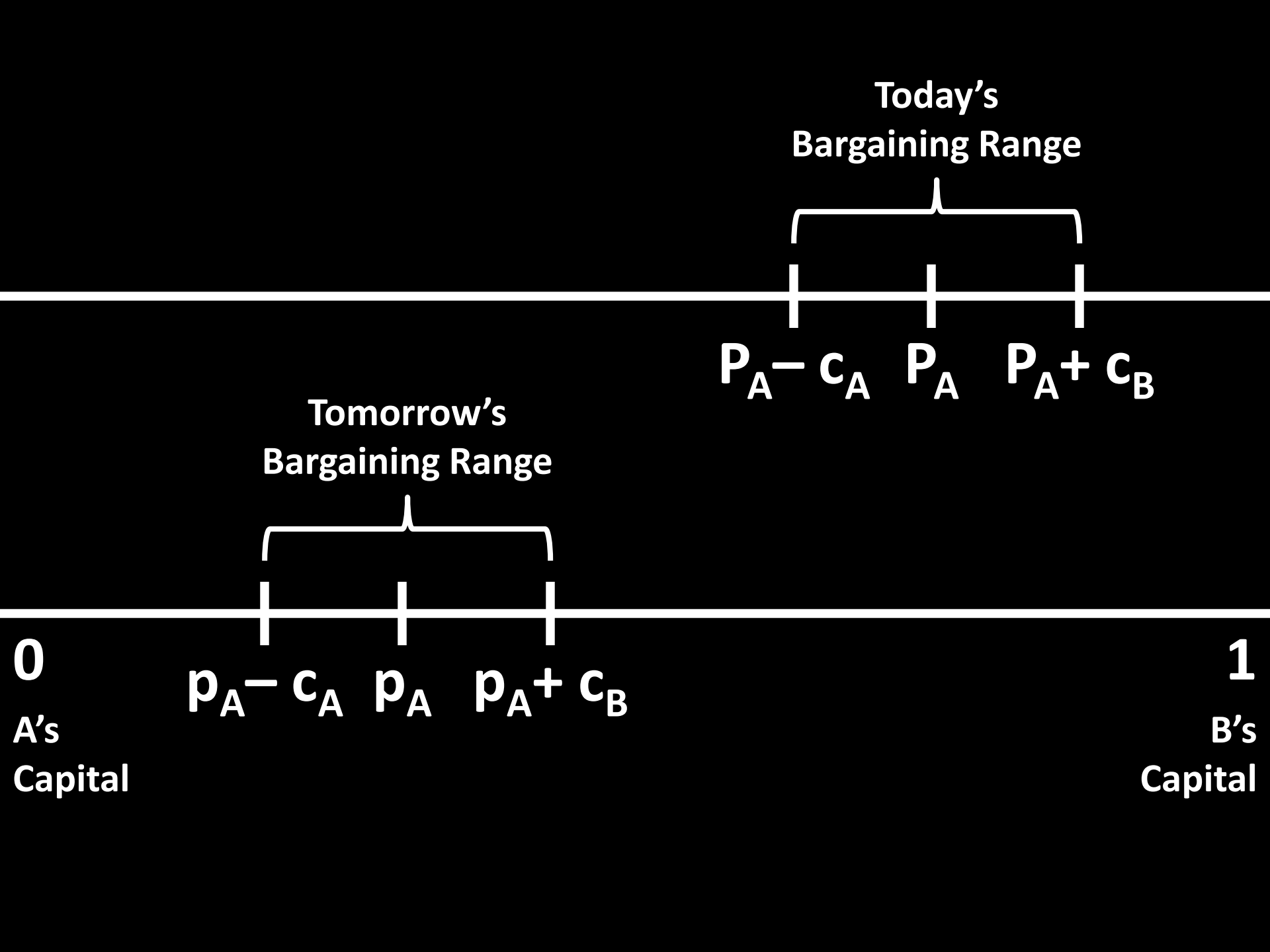
The Contenders

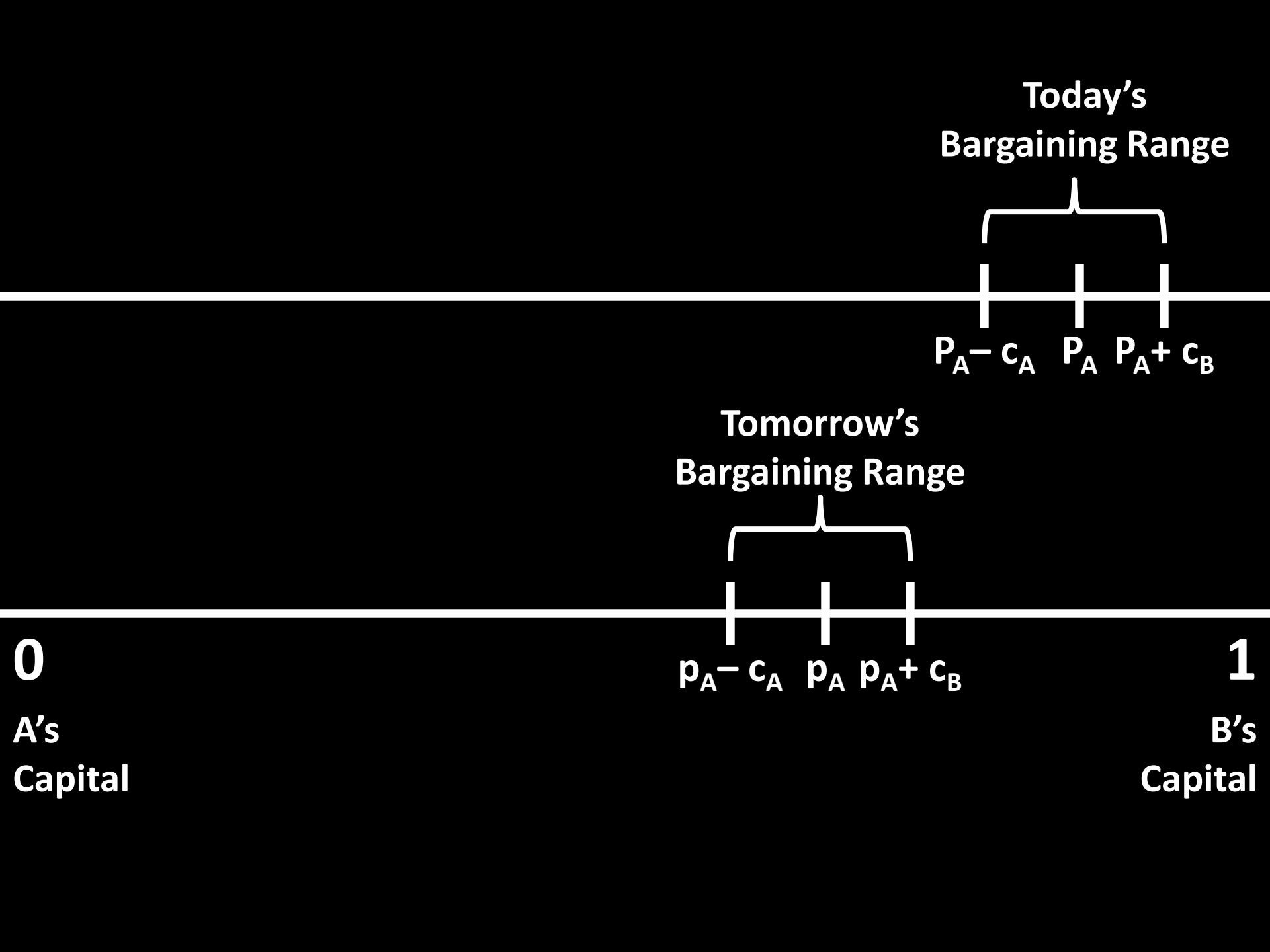
1. ~~Rising states start wars after they have become strong to steal stuff from the declining states~~
2. Declining states choose to fight because they prefer a costly war today to an efficient but disadvantageous peace tomorrow

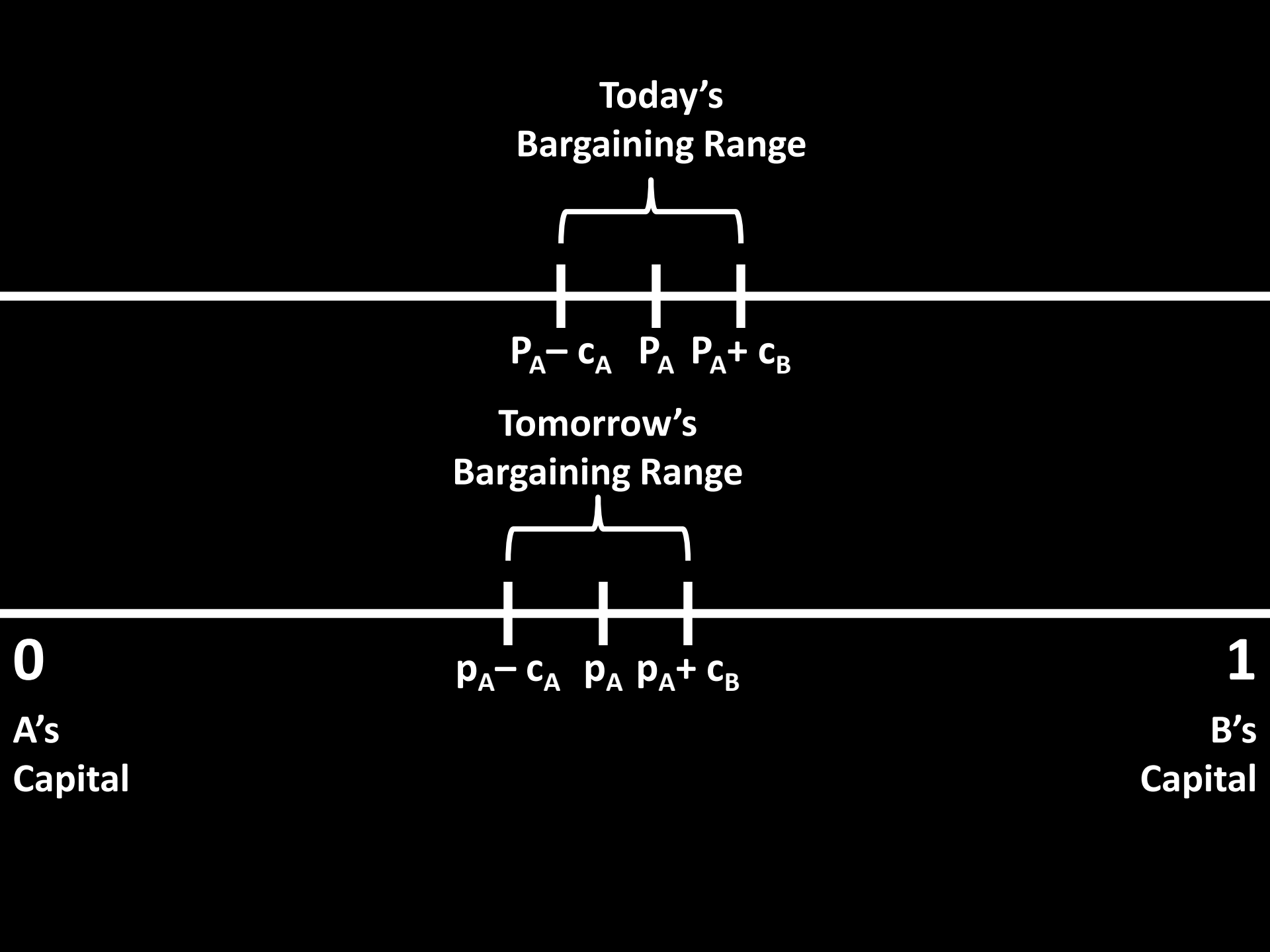

Today's
Bargaining Range
$P_A - c_A$
P_A
$P_A + c_B$
Tomorrow's
Bargaining Range
$p_A - c_A$
p_A
$p_A + c_B$
0
A's
Capital
1
B's
Capital

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


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


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

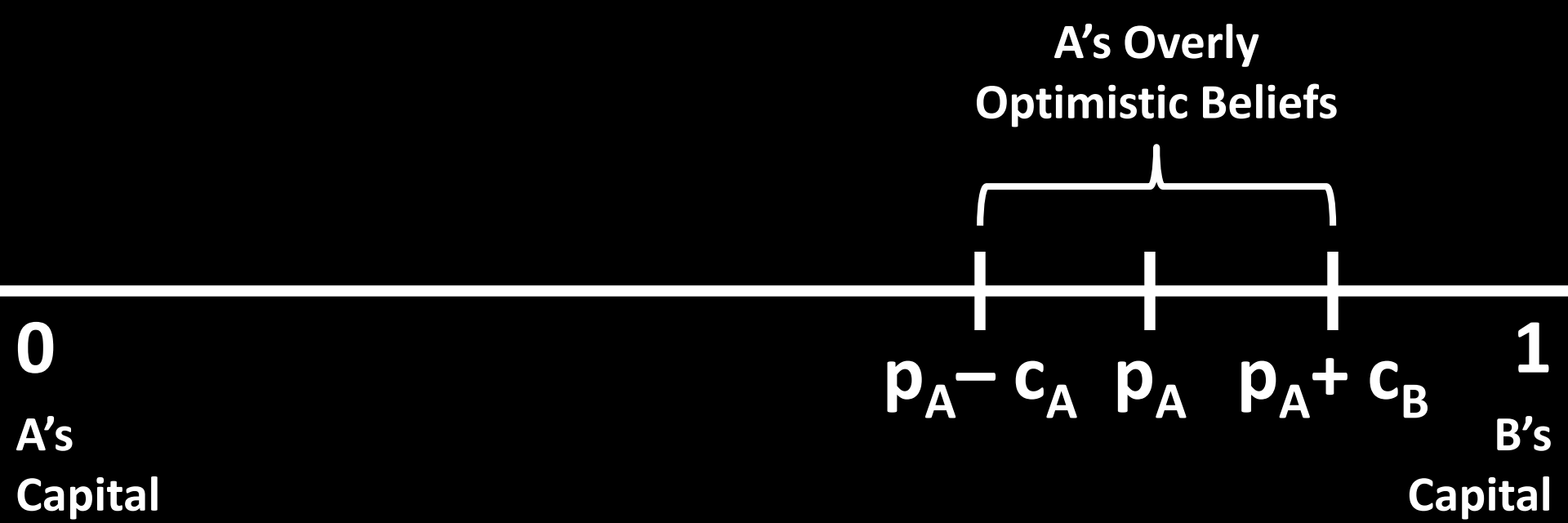
Outline

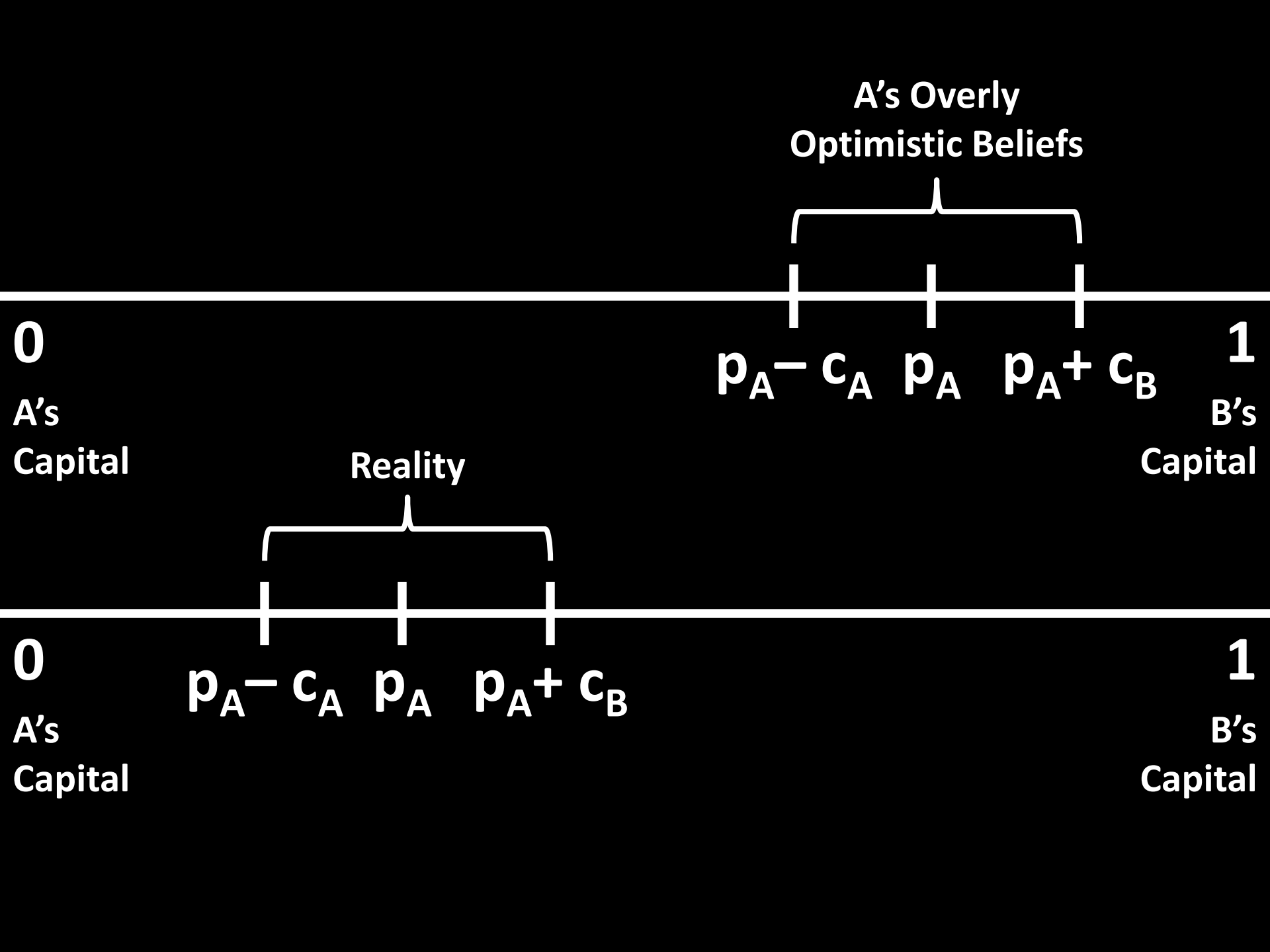
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
- Preventive War
- Information Problems
- Issue Indivisibility
- Preemptive War
- Understanding War
- Measuring Power
- Militarized Interstate Disputes
- Correlates of War and the Long Peace

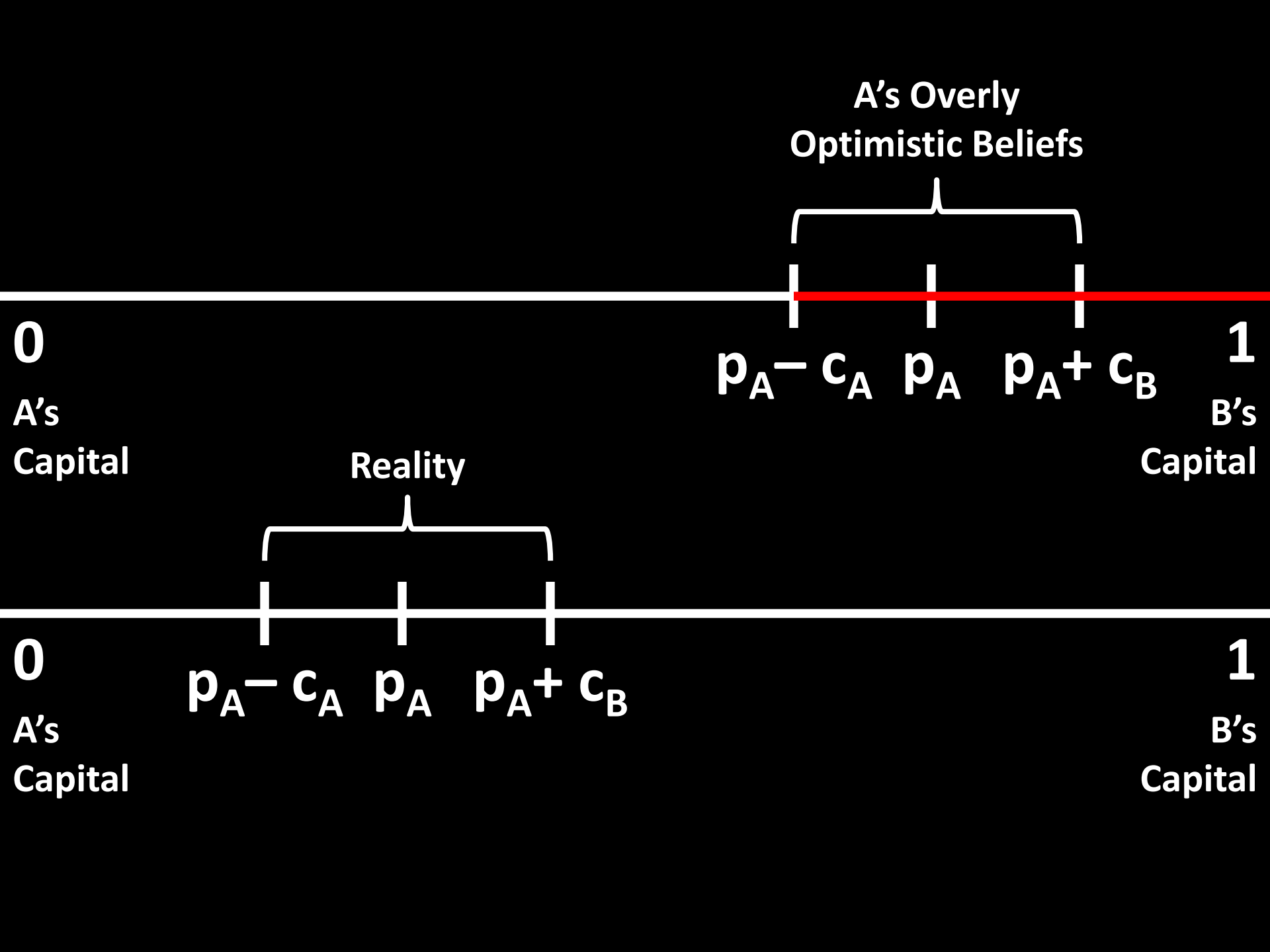
How does uncertainty cause war?

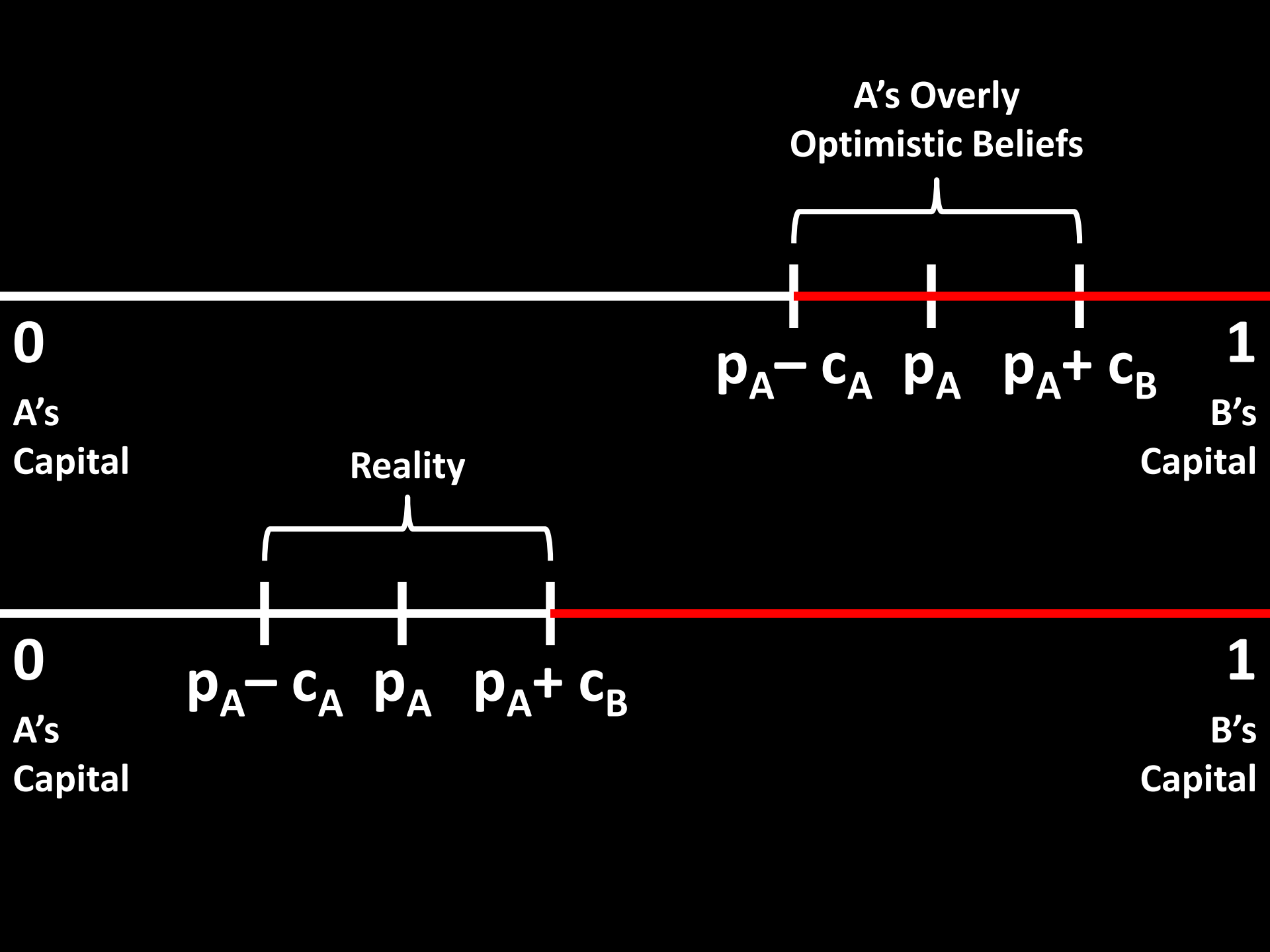
Two Reasons

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

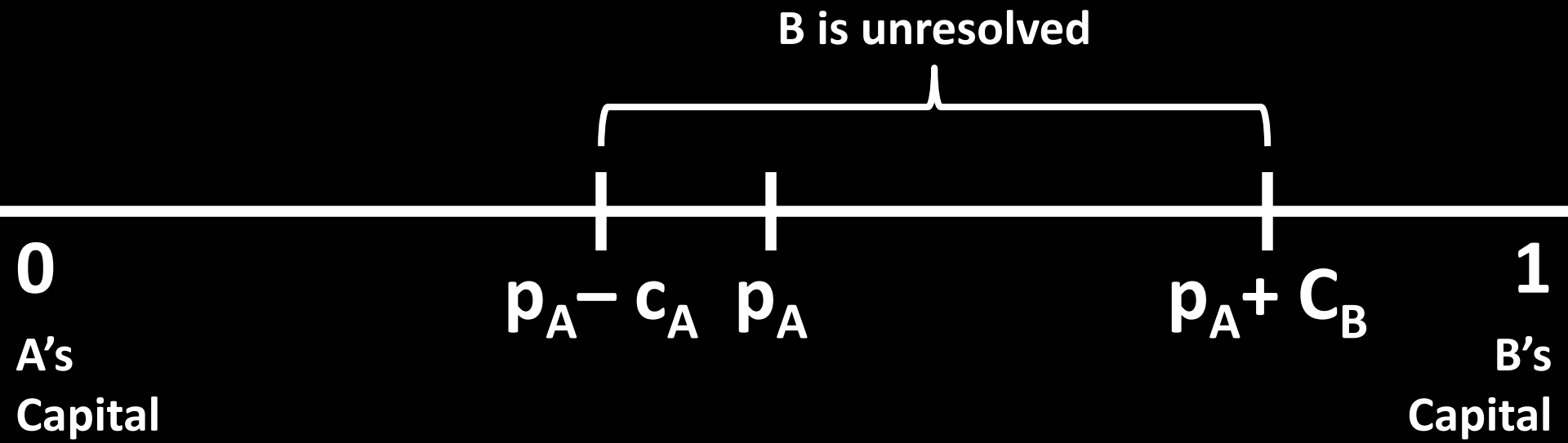

A's Overly
Optimistic Beliefs
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital
Reality
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital

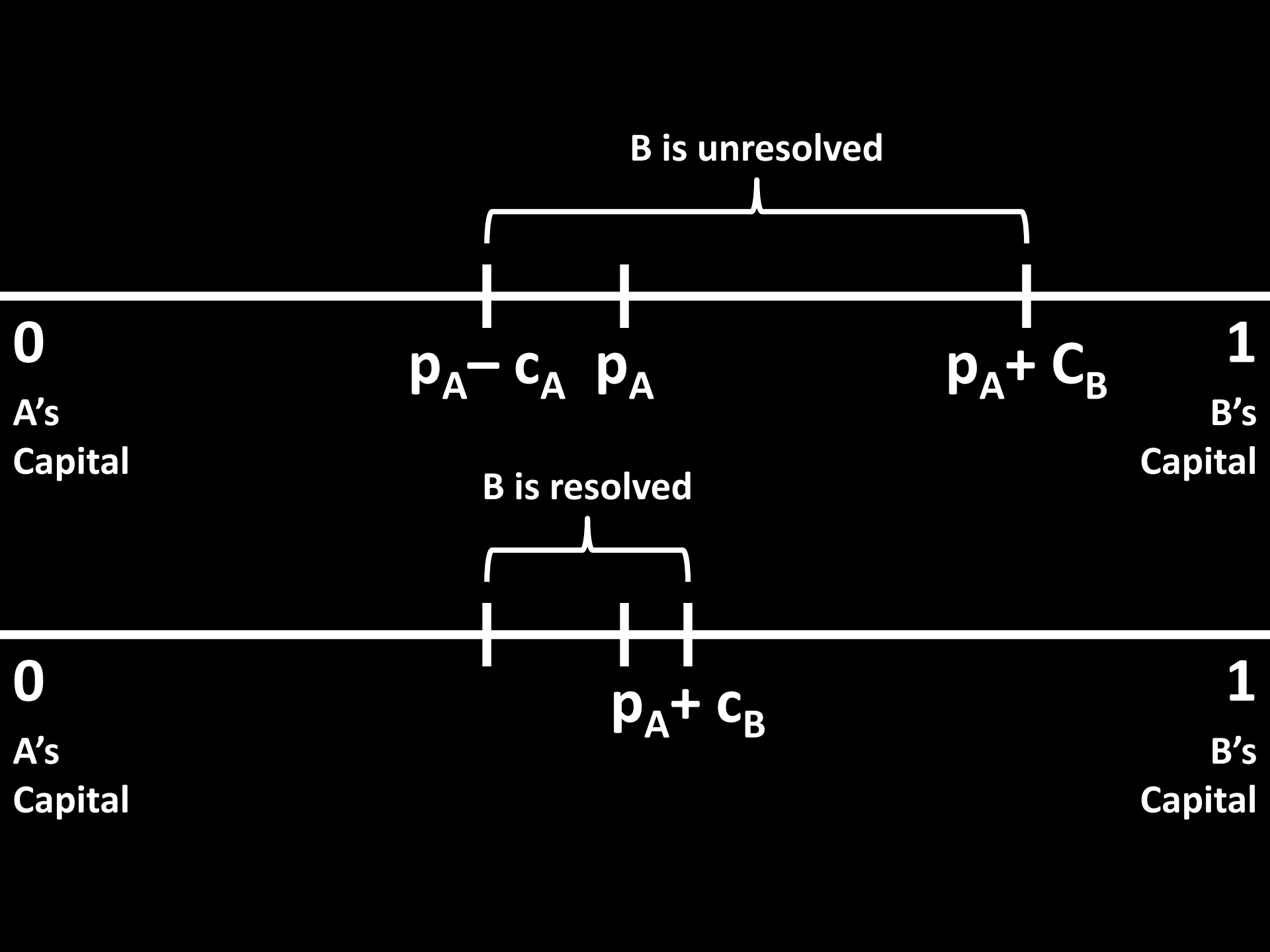

A's Overly
Optimistic Beliefs
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital
Reality
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital

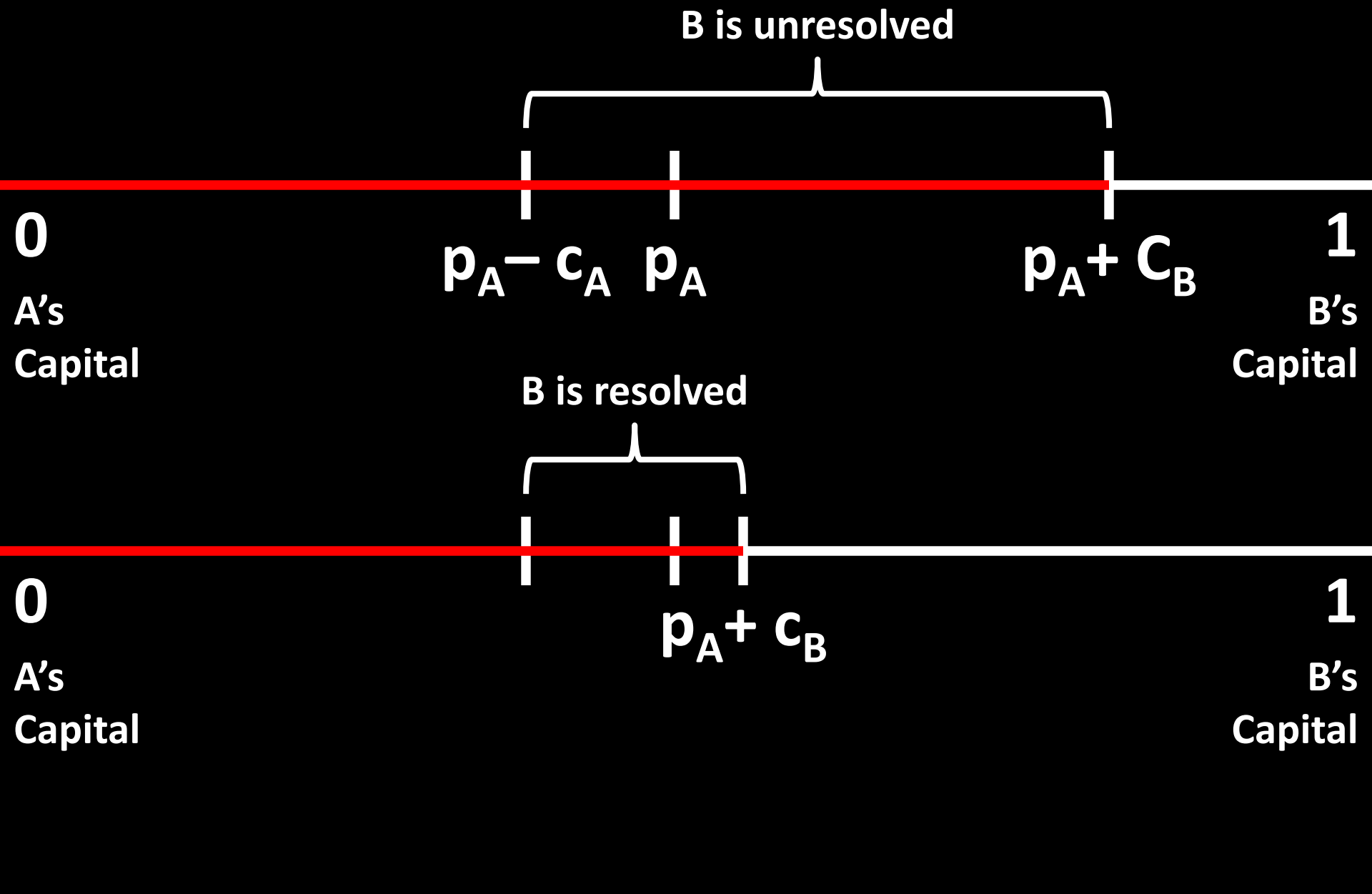

A's Overly
Optimistic Beliefs
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital
Reality
0
A's
Capital
$p_A - c_A$
p_A
$p_A + c_B$
1
B's
Capital

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?

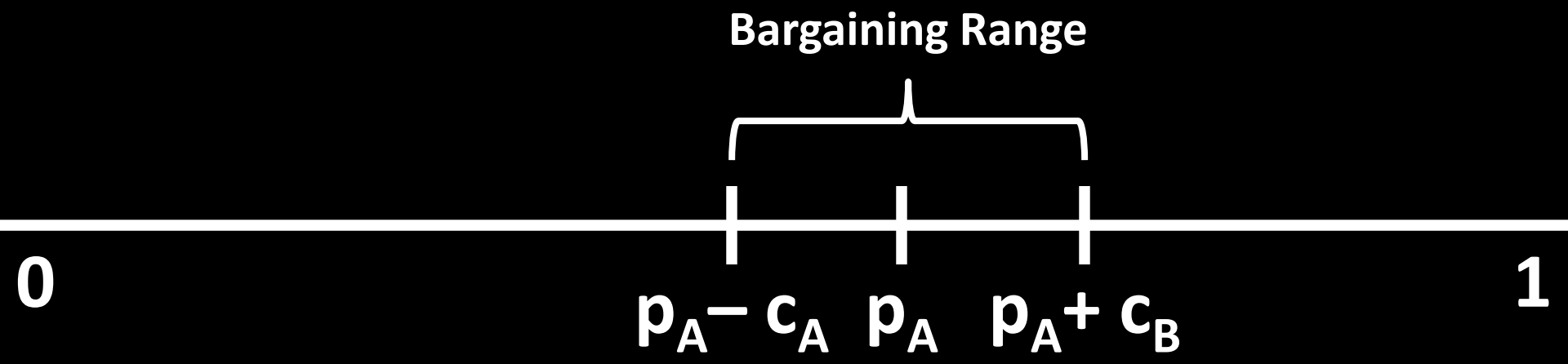
Incentives to Misrepresent

- If war is costly, why can't the states simply tell their opponents their demands and avoid the costs of war?
  - Claims about power and resolve are not inherently credible
- What can you communicate?
  - How much you prefer one issue to another
  - Whether you prefer a moderate outcome to an extreme outcome

Outline

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

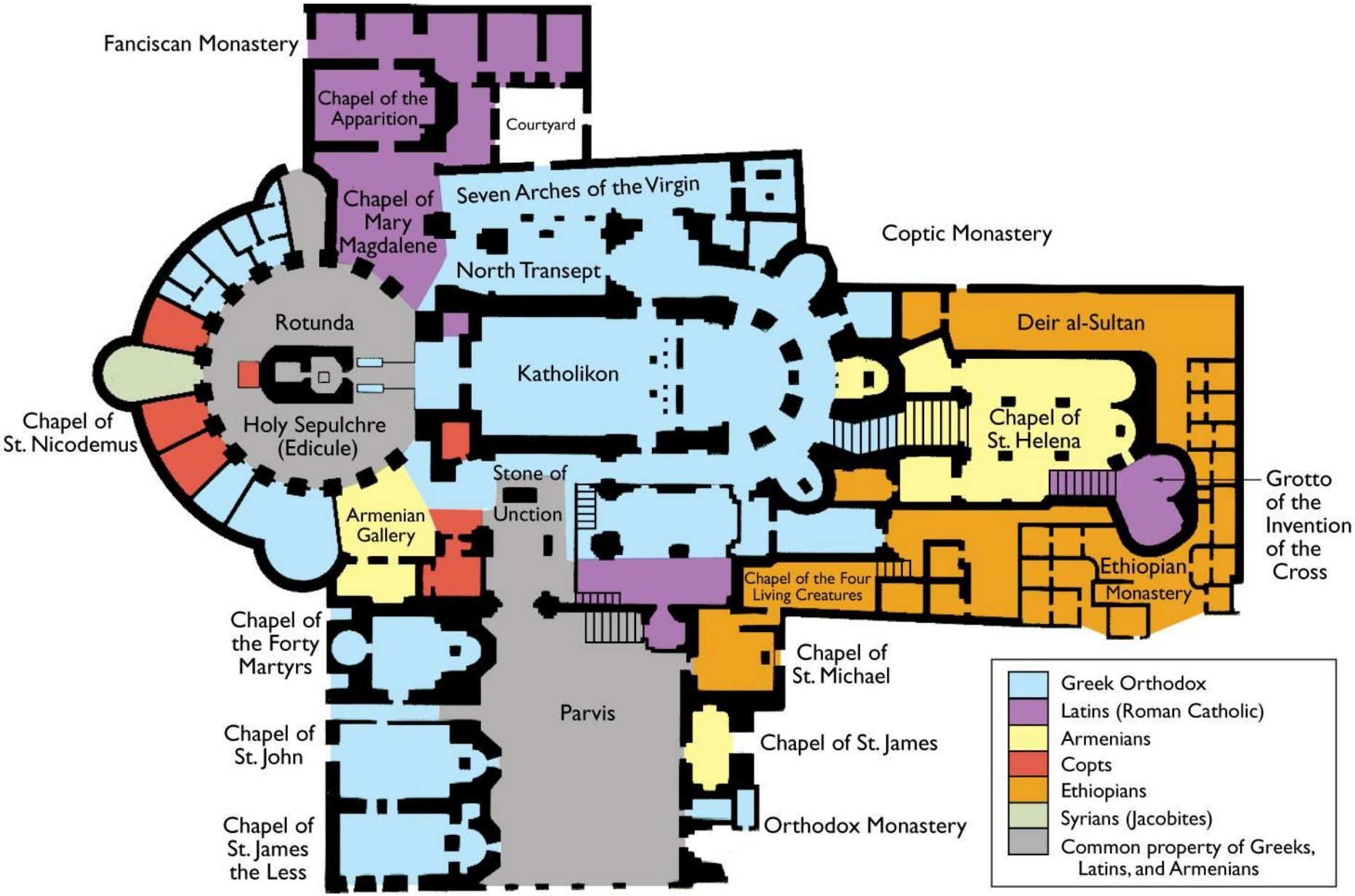
How can bargaining indivisibilities lead to war?

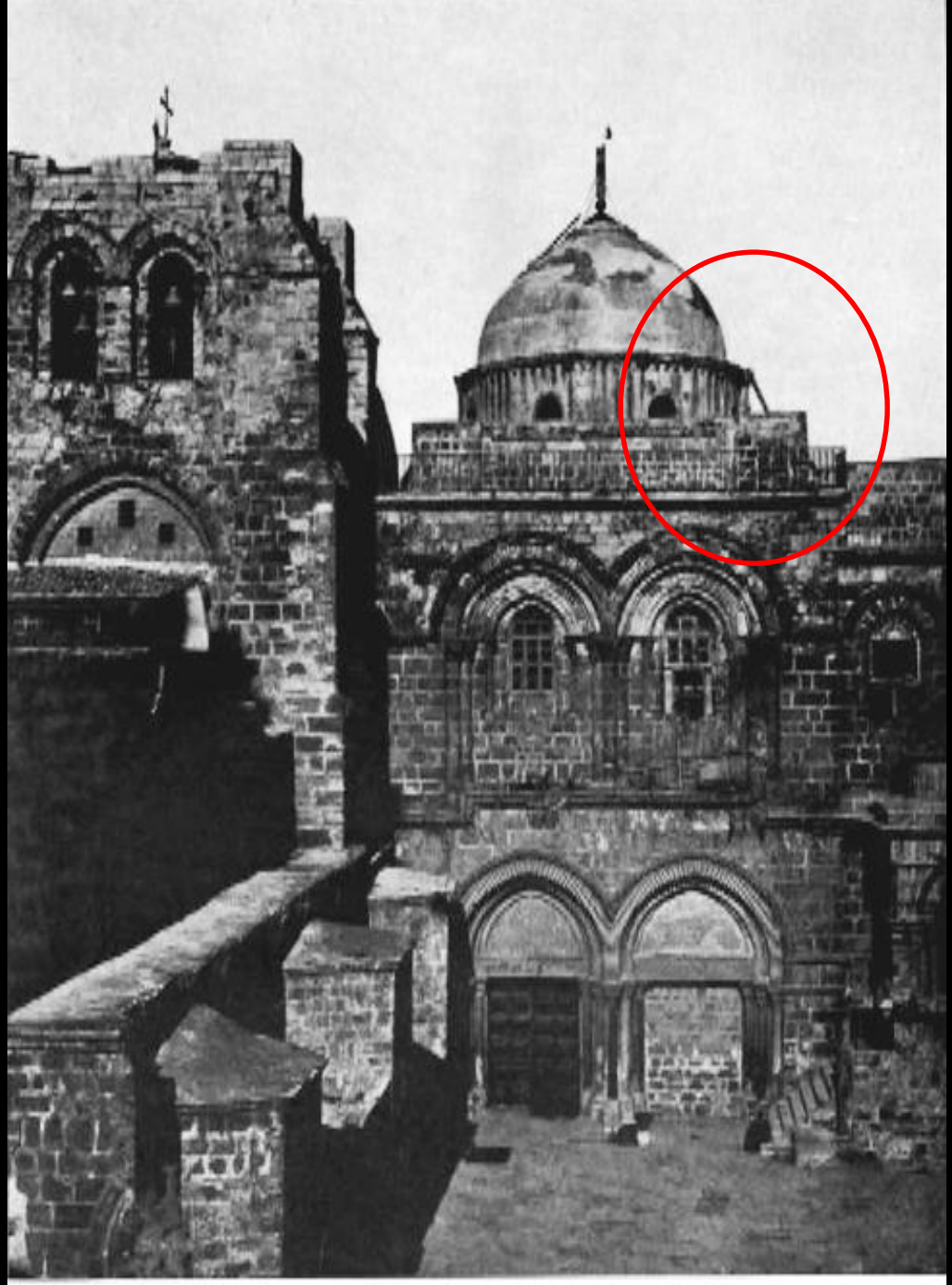

Bargaining Range
0
1
$p_A - c_A$
p_A
$p_A + c_B$

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

Church of the Holy Sepulchre



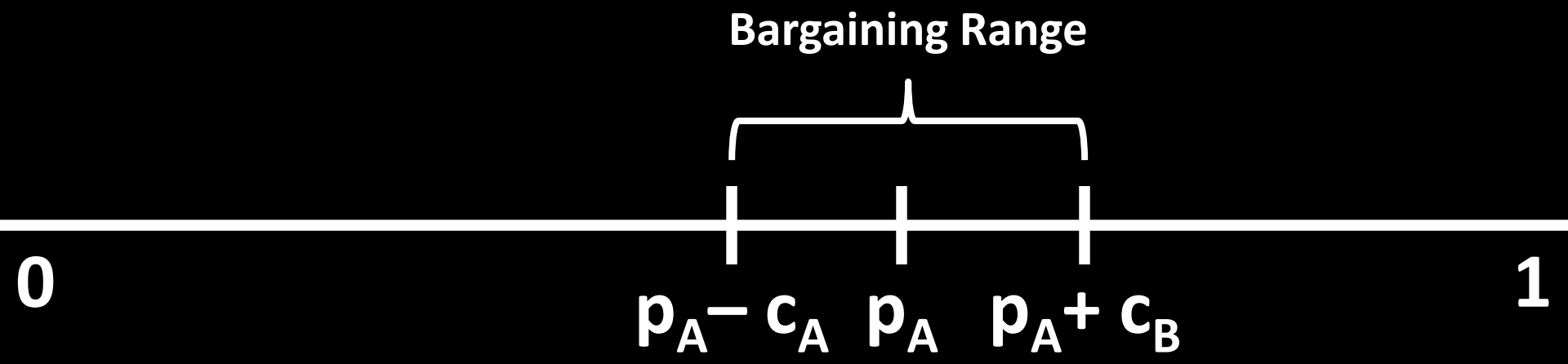


THE CHURCH OF THE HOLY SEPULCHER

Outline

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

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

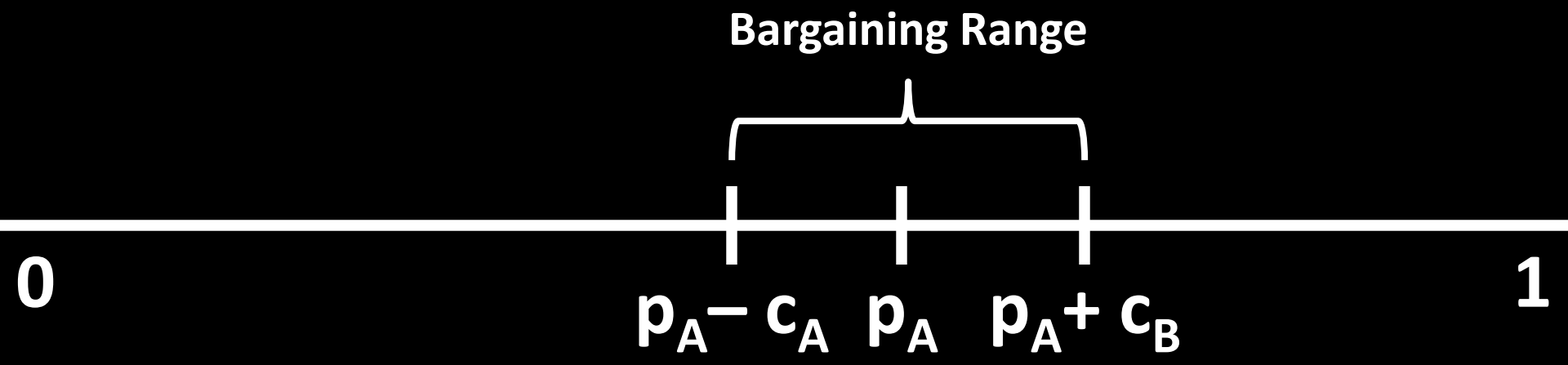
- Assume the other guy wants to bargain
- u(preempt) = $p_A - c_A + \Delta_A$
- u(bargain) = x
- Bargaining acceptable if:
  - $x \geq p_A - c_A + \Delta_A$

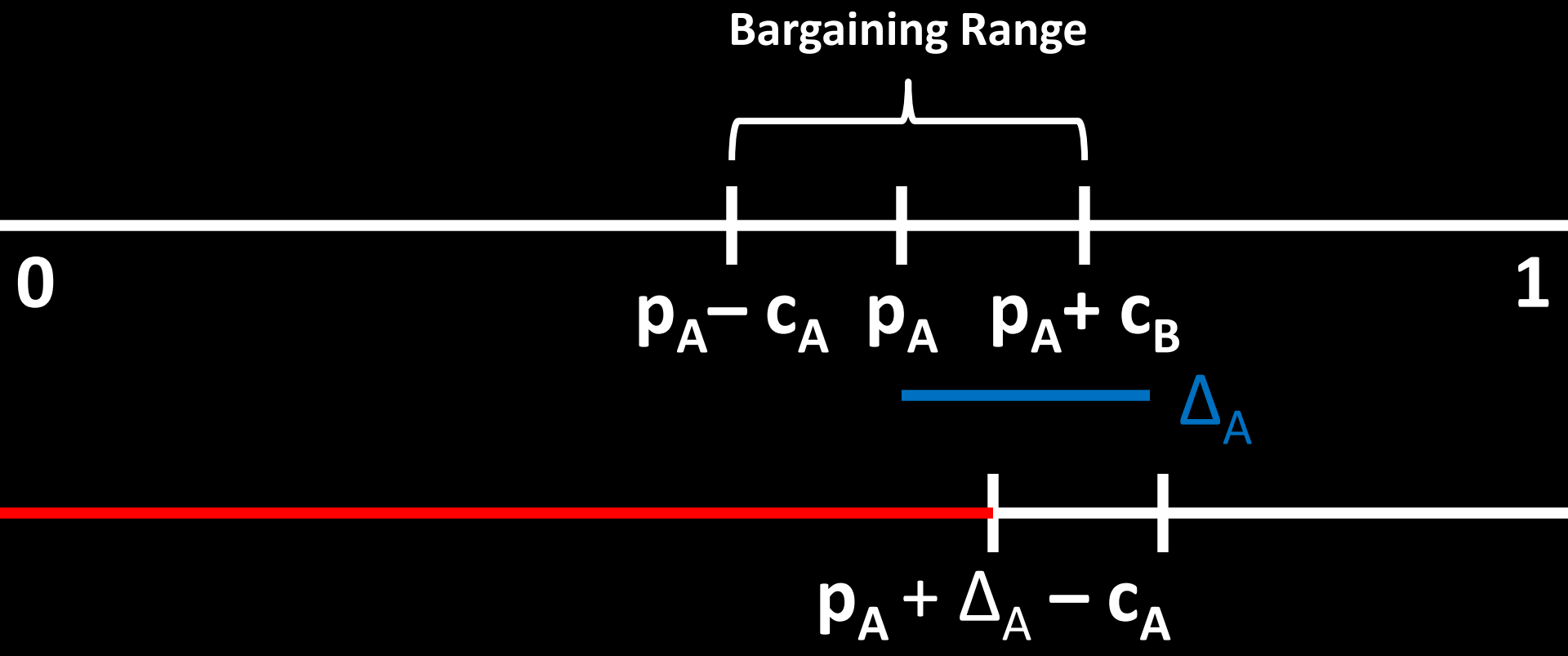
B's Dilemma

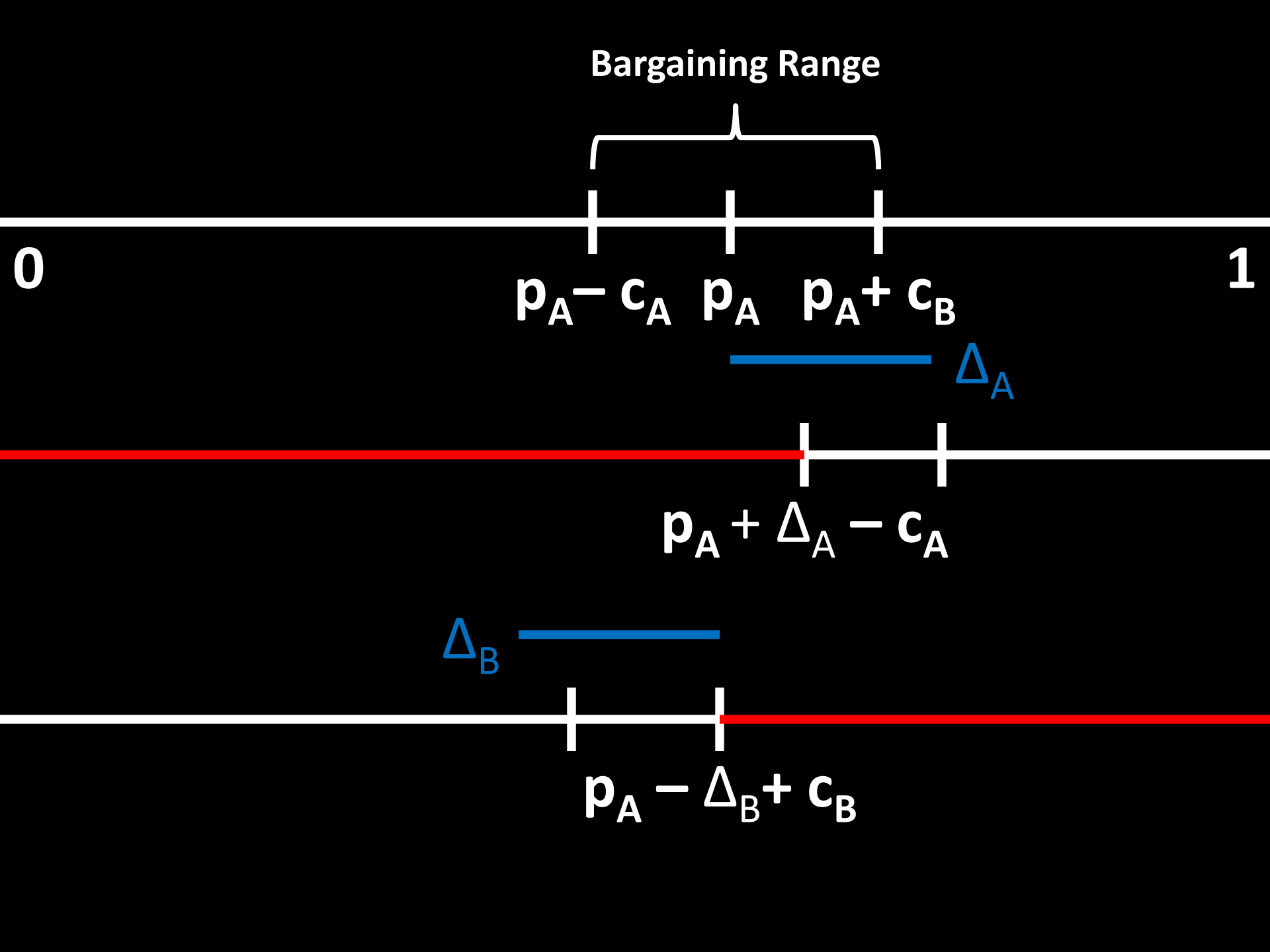
- Assume the other guy wants to bargain
- u(preempt) = $1 - p_A - c_B + \Delta_B$
- u(bargain) = $1 - x$
- Bargaining acceptable if:
  - $1 - x \geq 1 - p_A - c_B + \Delta_B$
  - $x \leq p_A + c_B - \Delta_B$

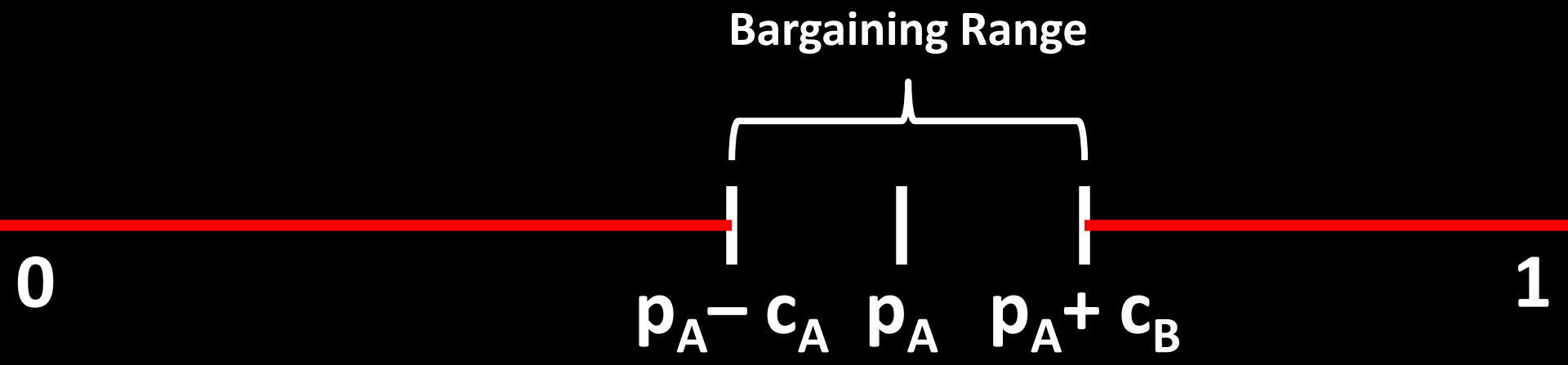
Mutually Acceptable Bargains?

- $p_A - c_A + \Delta_A \leq x \leq p_A + c_B - \Delta_B$
- 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
$p_A - c_A$
p_A
$p_A + c_B$
1


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?

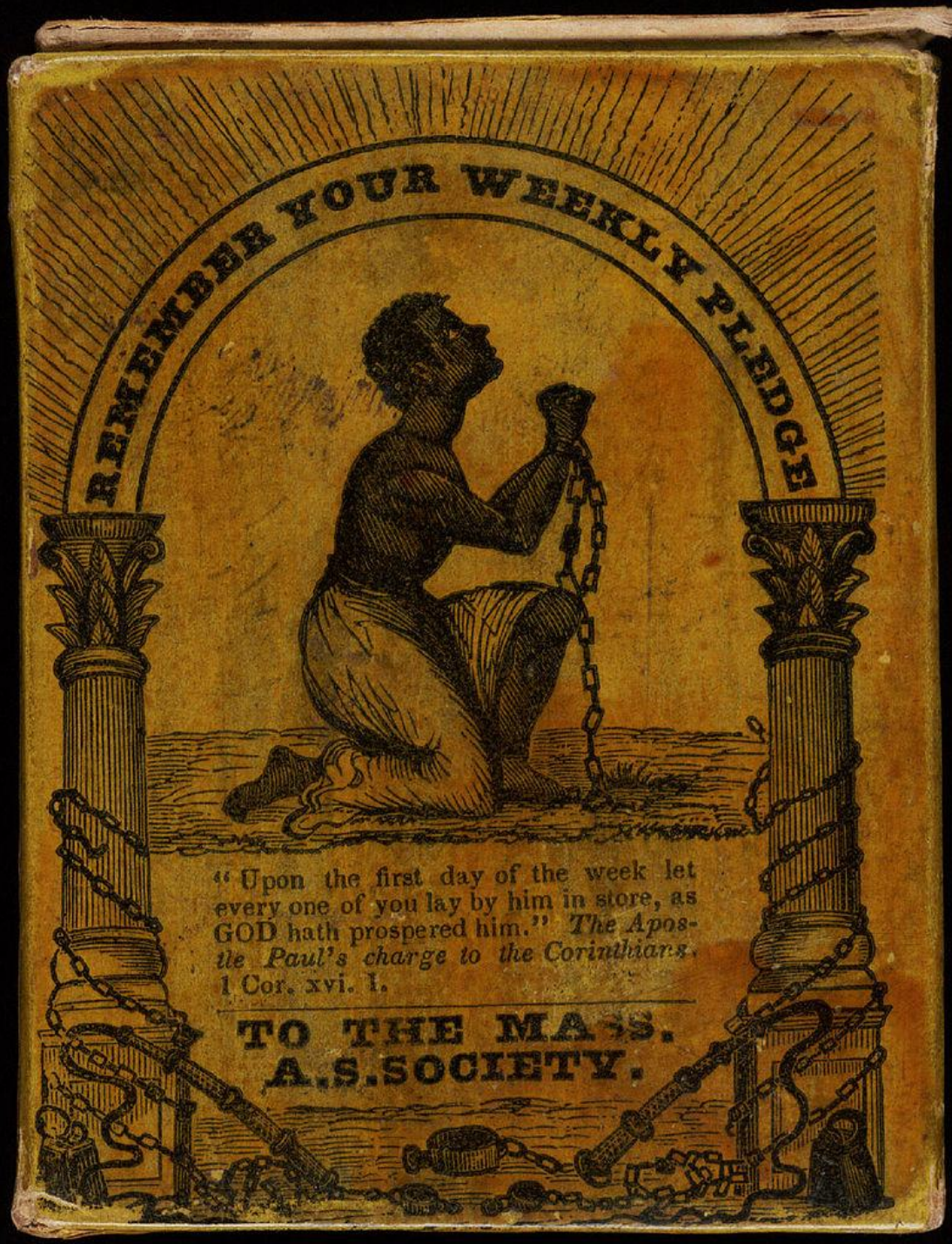
Realistic?

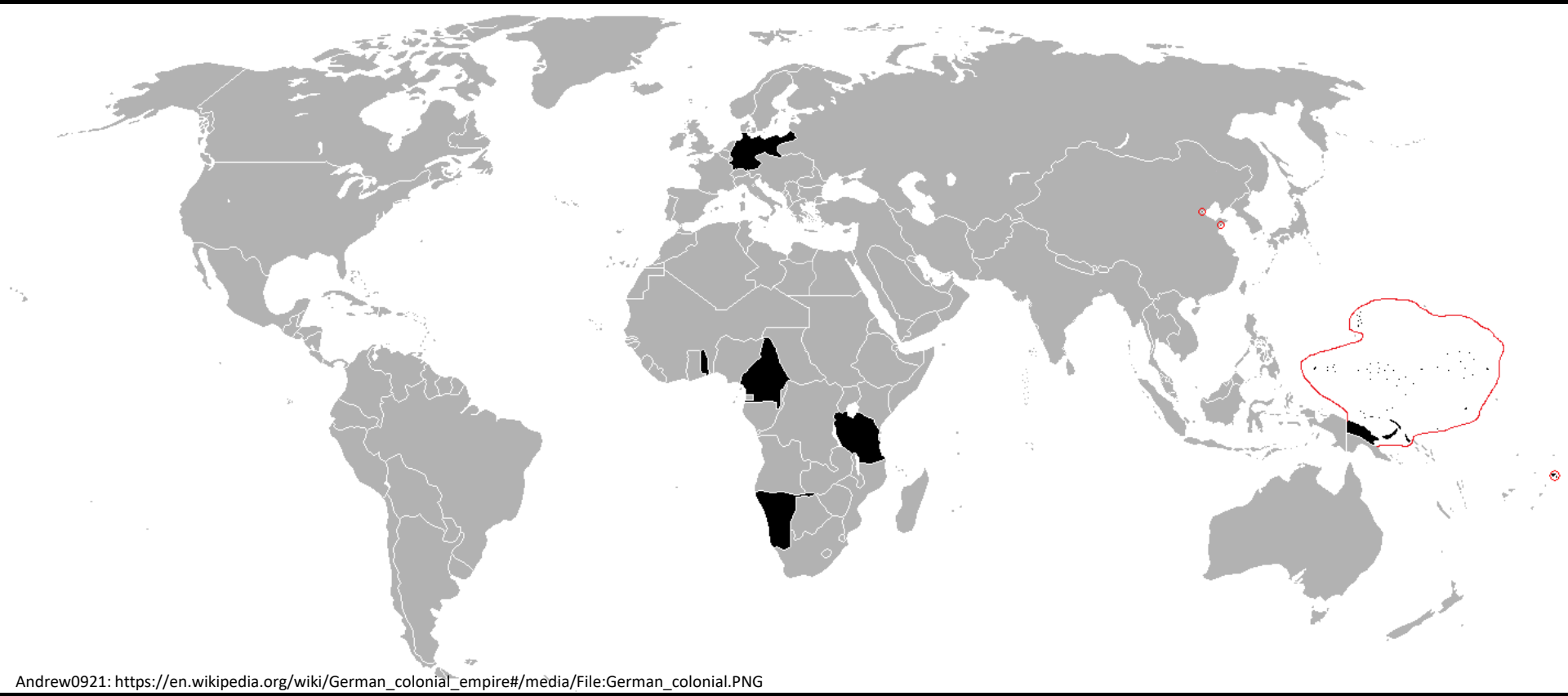
- Wars tend to be really costly. Do first strike advantages really outweigh costs?
  - Probably not
  - But presence of any first strike advantage shrinks the bargaining range, perhaps making it easier for other bargaining frictions to cause problems

Outline

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


SEE WINDOW STICKER
DISTRICT OF COLUMBIA
SEE WINDOW STICKER
EK 3333
TAXATION WITHOUT REPRESENTATION


REMEMBER YOUR WEEKLY PLEDGE
"Upon the first day of the week let every one of you lay by him in store, as GOD hath prospered him." *The Apostle Paul's charge to the Corinthians.* 1 Cor. xvi. 1.
TO THE MASS. A.S.SOCIETY.



Andrew0921: https://en.wikipedia.org/wiki/German_colonial_empire#/media/File:German_colonial.PNG


正陽橋

Kremlin: https://en.wikipedia.org/wiki/Bashar_al-Assad#/media/File:Bashar_al-Assad_(2018-05-17)_03.jpg

Why Not Bargain?

- None of these explanations are sufficient for war
- Why couldn't the states reach a mutually preferable bargain?

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
  - High school history classes are 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

Outline

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

Data on Power

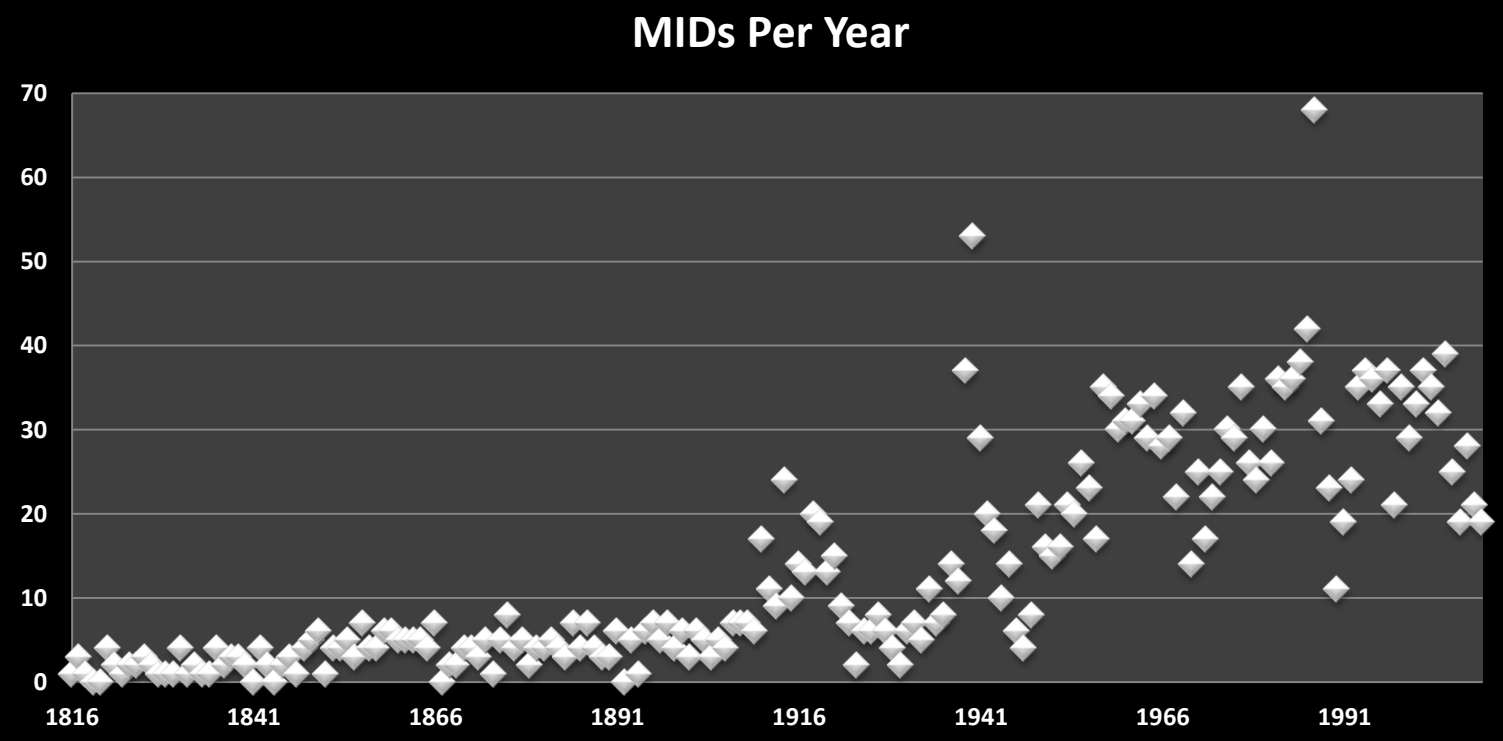
- We measure data on power with CINC (Composite Indicator of National Capability) scores
- There are strengths and weaknesses
- You will learn more about these in the data analysis

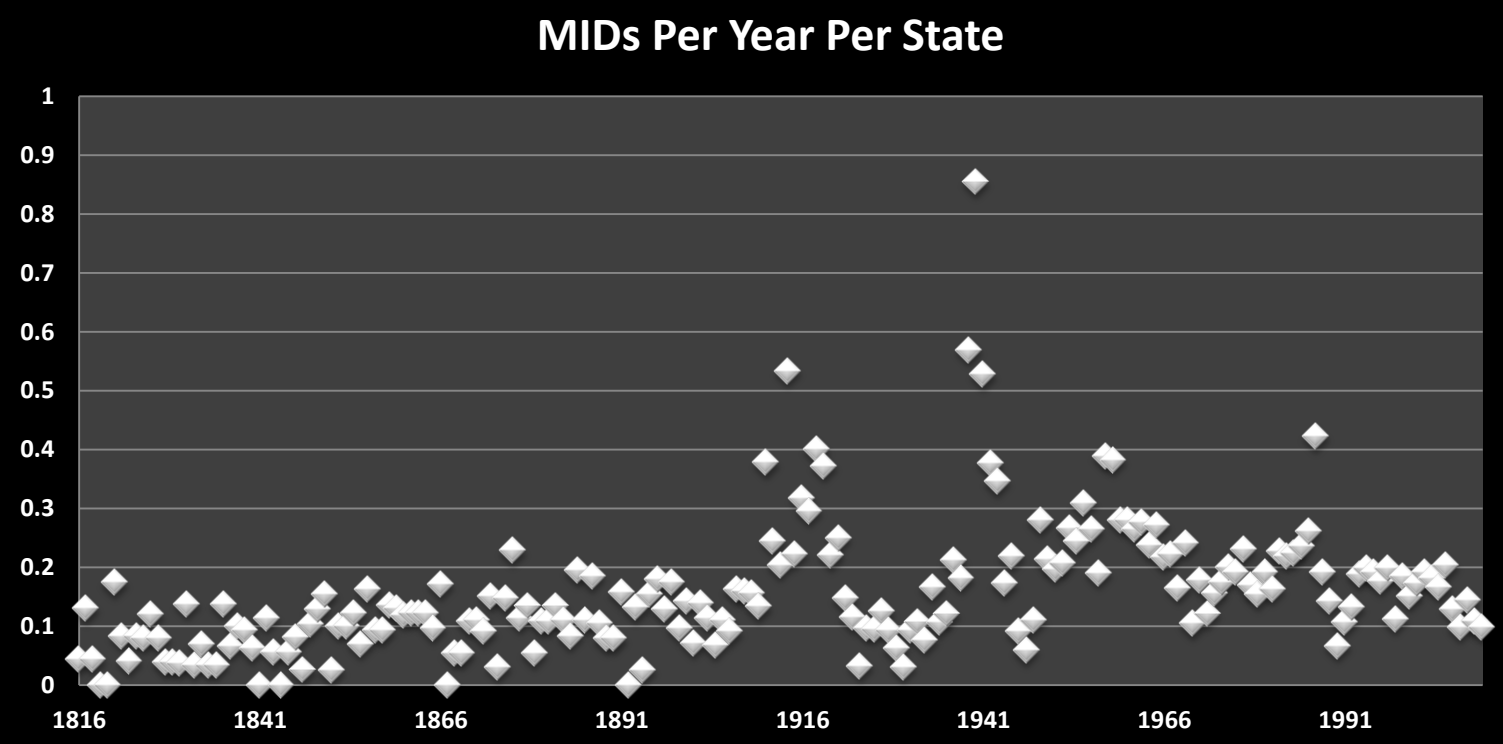
Outline

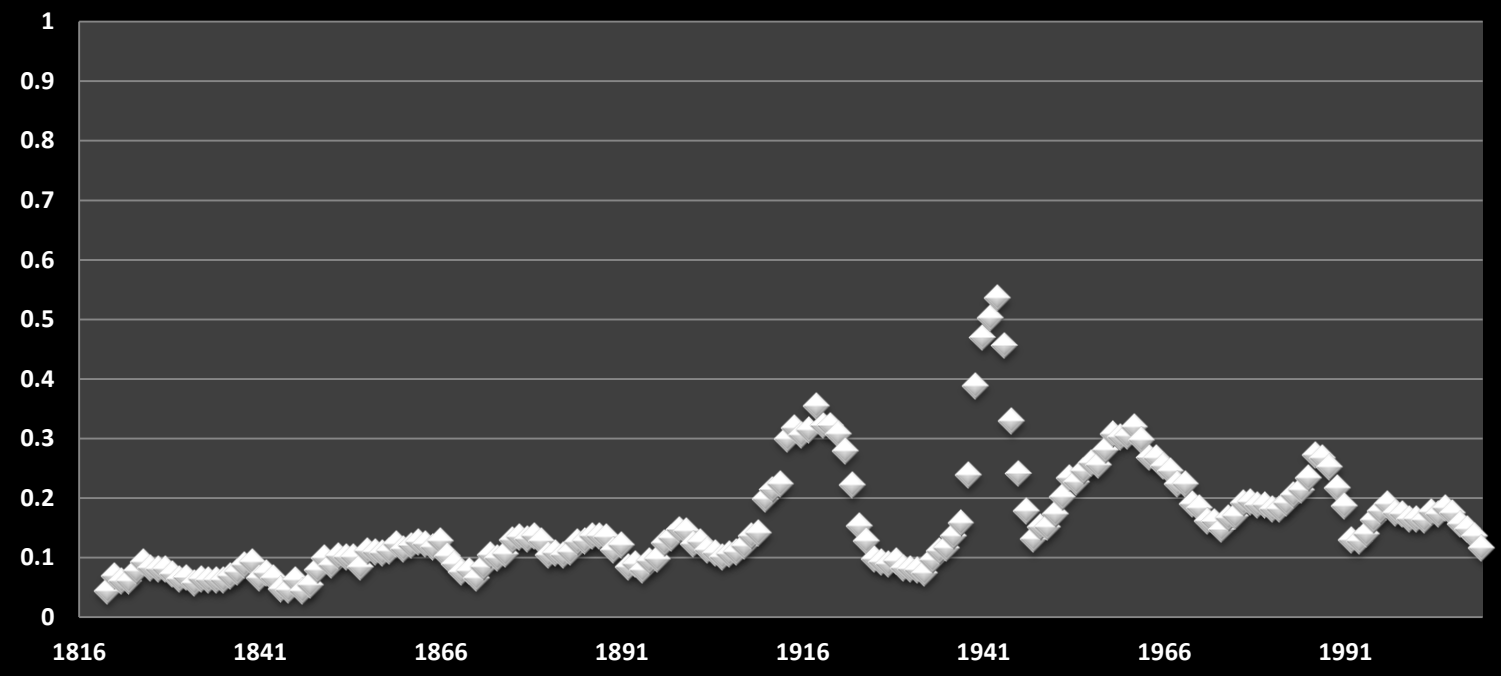
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
- Preventive War
- Information Problems
- Issue Indivisibility
- Preemptive War
- Understanding War
- Measuring Power
- Militarized Interstate Disputes
- Correlates of War and the Long Peace

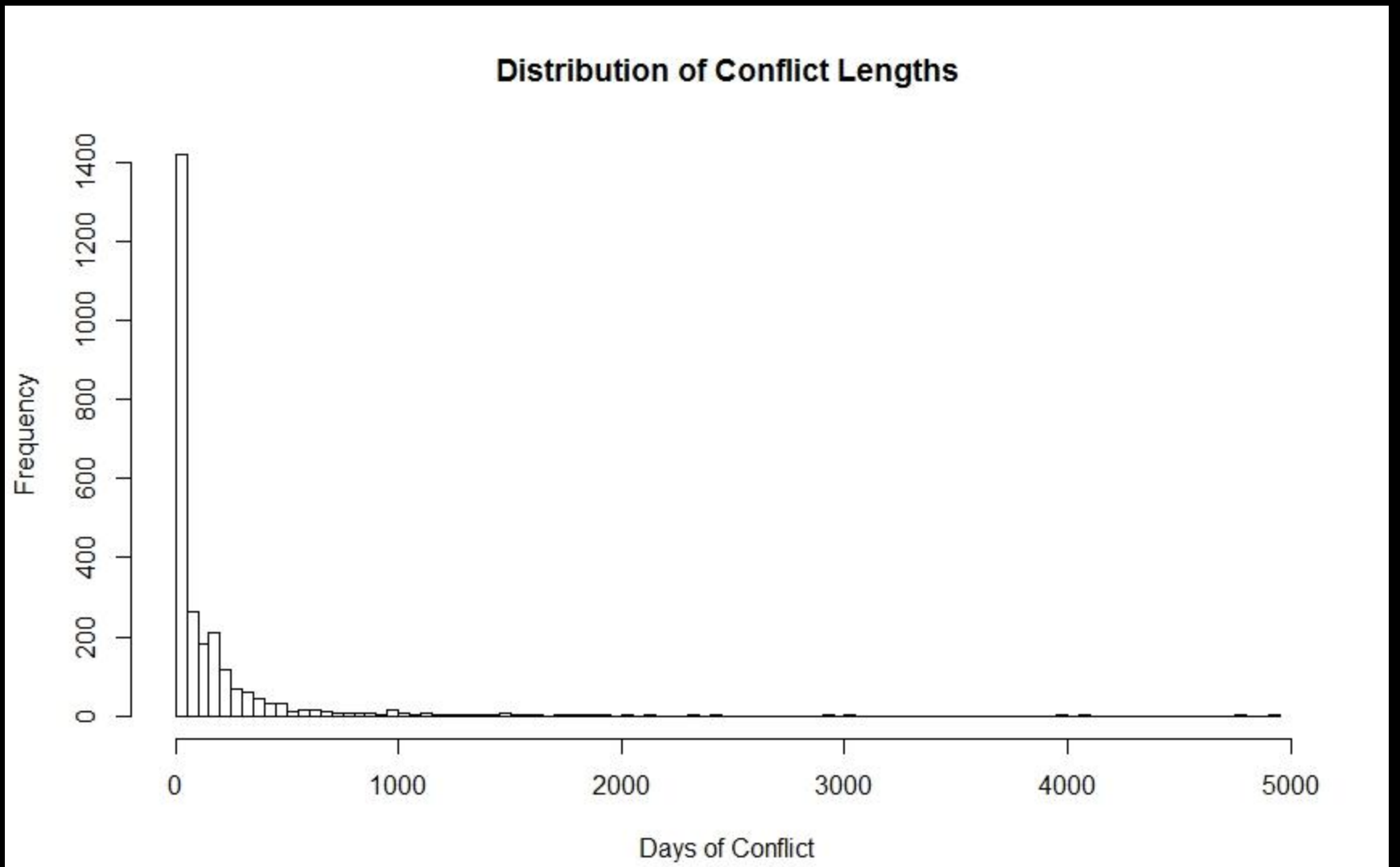
Militarized Interstate Disputes (MIDs)

- “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

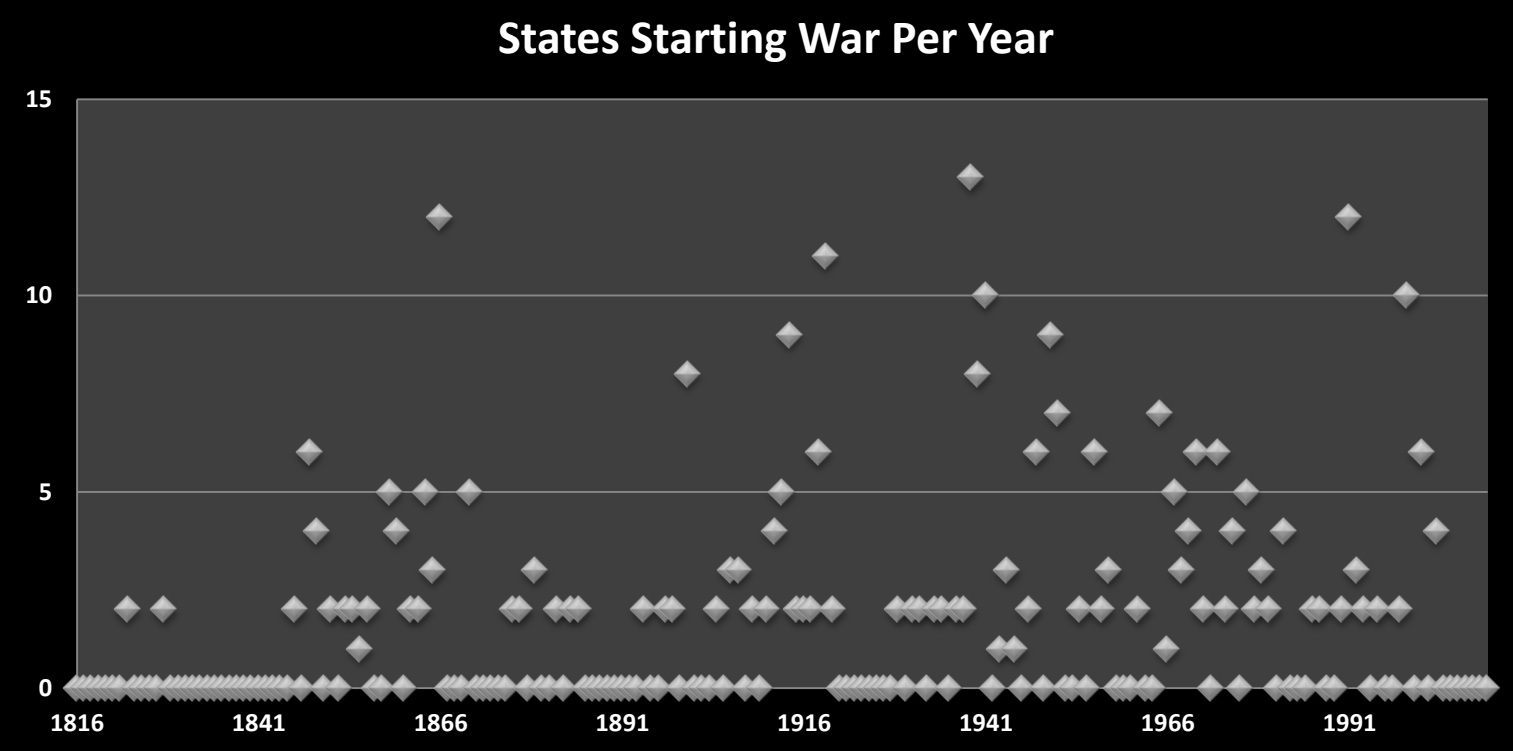

Distribution of Conflict Lengths
Frequency
0
200
400
600
800
1000
1200
1400
0
1000
2000
3000
4000
5000
Days of Conflict

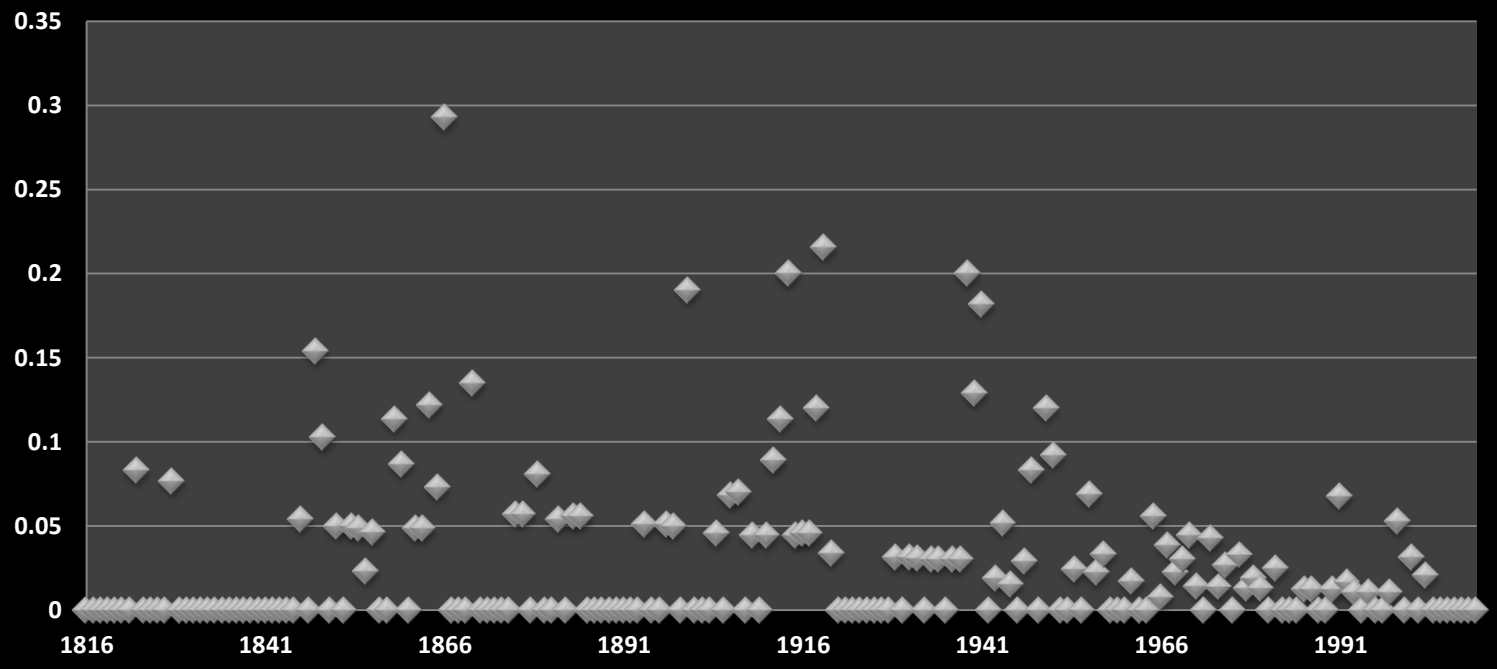
Outline

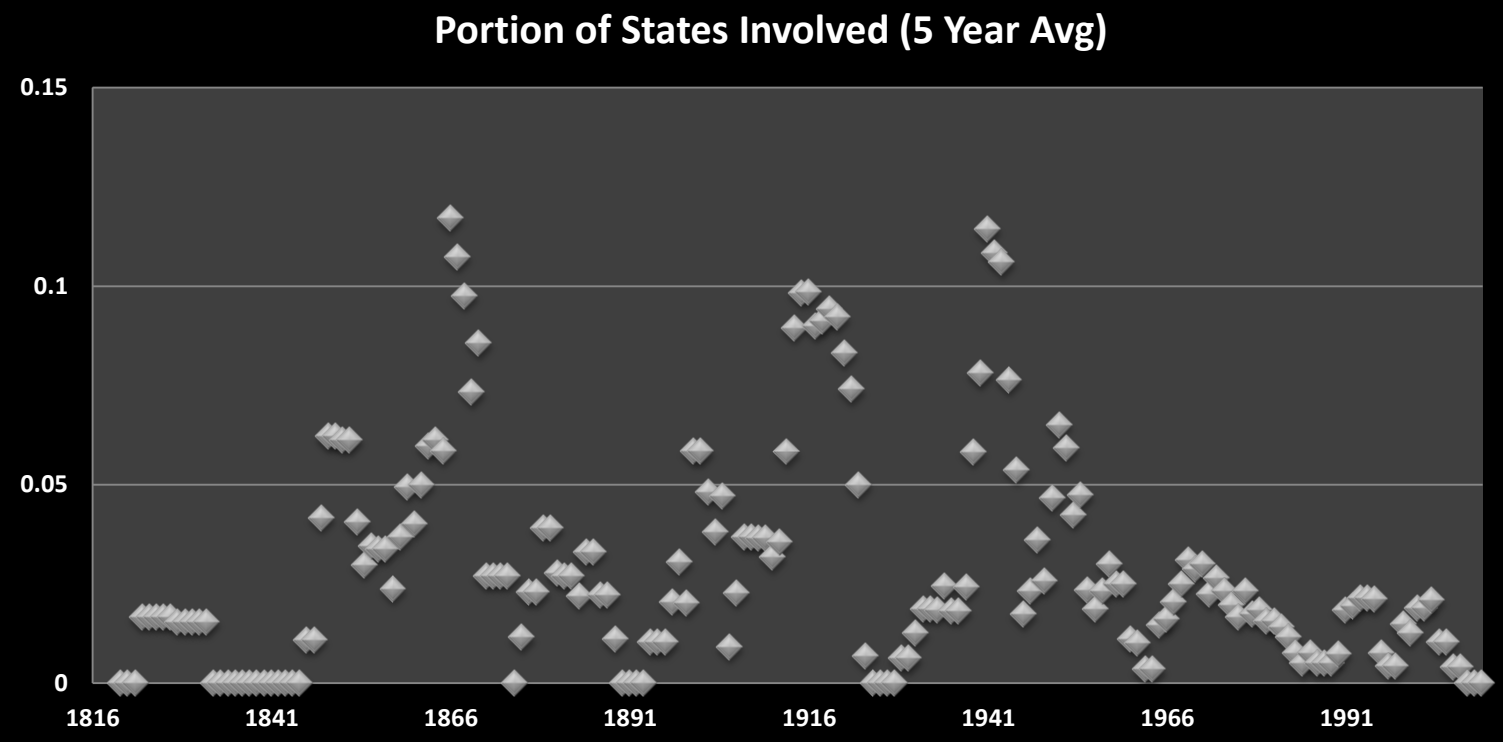
- Unitary Actor Assumption
- Algebraic Model
- Geometric Model
- Preventive War
- Information Problems
- Issue Indivisibility
- Preemptive War
- Understanding War
- Measuring Power
- Militarized Interstate Disputes
- Correlates of War and the Long Peace

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

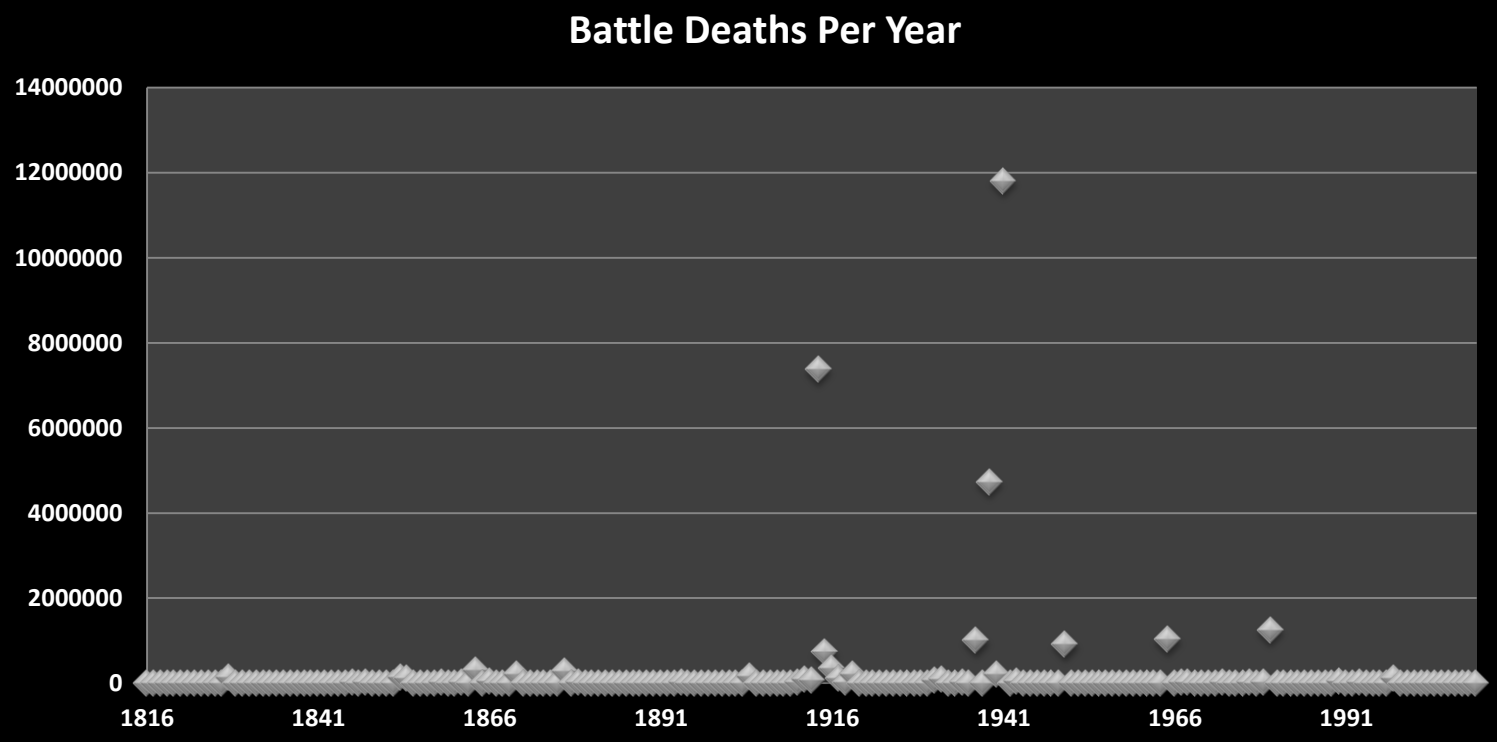

States Starting War Per Year
15
10
5
0
1816
1841
1866
1891
1916
1941
1966
1991

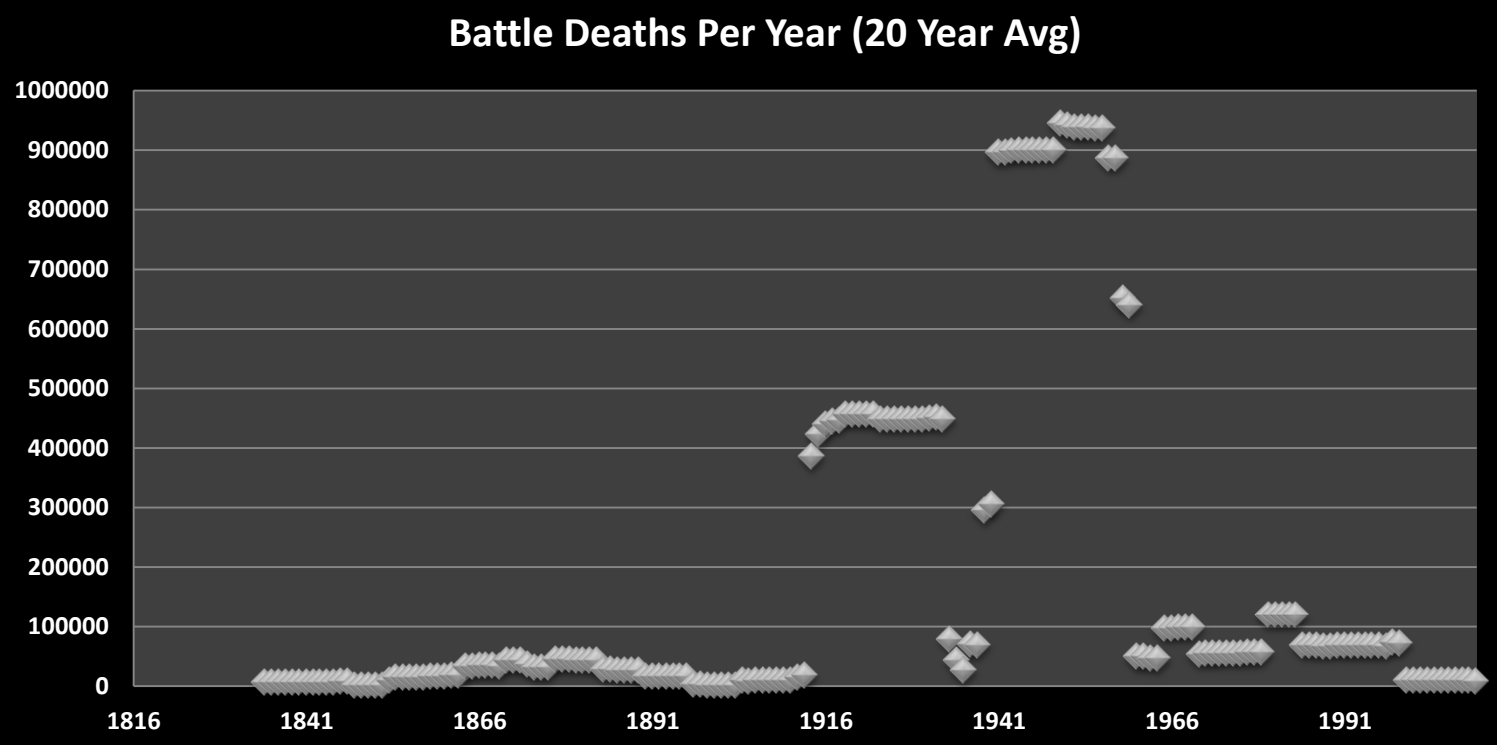

Portion of States Starting War
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1816
1841
1866
1891
1916
1941
1966
1991


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