Theories of Conflict

Scott A. Tyson

Conflict

How should we think about conflict?

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Critical ingredient:

Conflict

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Critical ingredient:

Opposed interests

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Critical ingredient:

Opposed interests

Conflict as a Game

Players—who's in conflict?

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Actions—what can each player do?

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Preferences over outcomes—who wants want?

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Other Things:

Who moves when and what they can do

Conflict as a Game

Players—who's in conflict?

Actions—what can each player do?

Preferences over outcomes—who wants want?

Other Things:

Who moves when and what they can do (we'll get to that)

Outline

An International Crises

Two countries (A and B) are competing over a piece of land that B occupies

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Country A decides whether to make a demand

If Country A makes a demand, B can either acquiesce or fight a war

If A does not make a demand, B keeps land (game ends)

An International Crises

A can choose: Demand (D) or No Demand (ND)

B can choose: Fight a war (War) or Acquiesce (Acq)

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A's best outcome is Demand followed by acquiesce, worst outcome is demand and war

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B's best outcome is no demand and worst outcome is demand and war

An International Crises

Preferences:

$$u_A(D, Acq) = 3 \quad u_A(D, War) = 1$$
$$u_A(ND, Acq) = u_A(ND, War) = 2$$
$$u_B(D, Acq) = 2 \quad u_B(D, War) = 1$$
$$u_B(ND, Acq) = u_B(ND, War) = 3$$

How can we represent this scenario as a game?

An International Crises

Player A is rows and Player B is columns:

	War	*Acq*
D	$1, 1$	$3, 2$
ND	$2, 3$	$2, 3$

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Specifically, (ND, War)?

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Specifically, (ND, War)?

The threat of war deters the demand

But would B follow through?

Improving our Model

The equilibrium (ND, War) depends on a "non-credible threat"

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We need to incorporate the fact that actions are taken in sequence

Strategies

A strategy is a complete contingent plan

Player i's strategy specifies her action at each point where she makes a choice

How to Solve

A strategy specifies what a player will do at every decision point

Complete contingent plan

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Best-response at each node, given the strategies of other players

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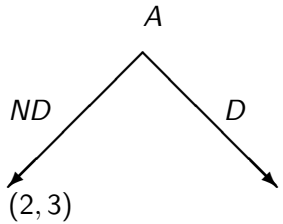
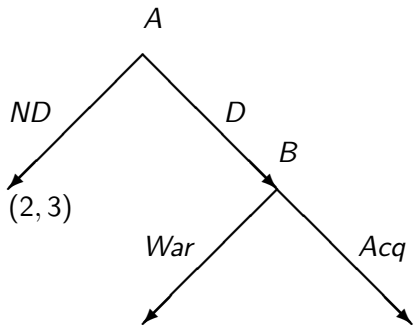
Backward Induction

An International Crises



An International Crises



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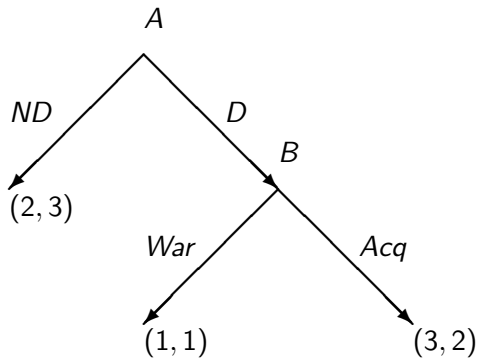

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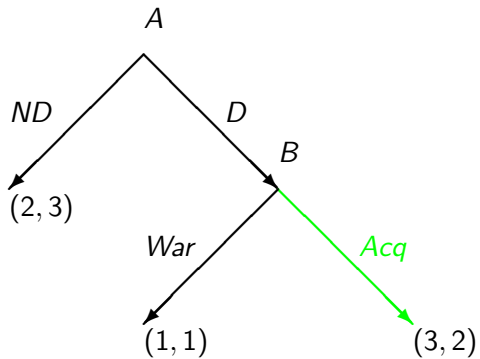

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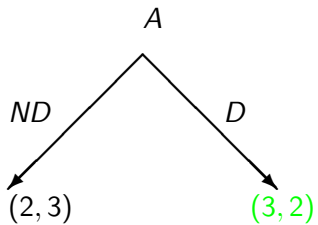

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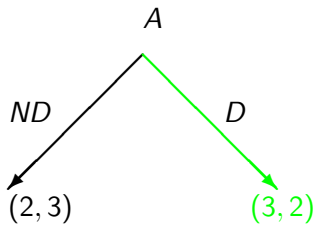

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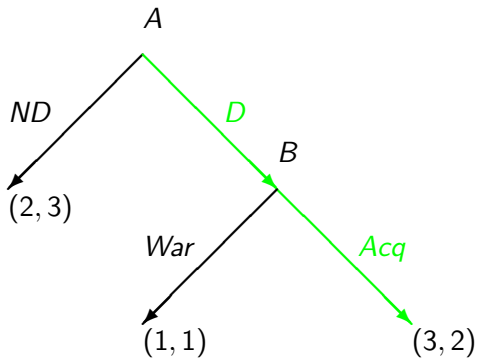

Outline

Negotiation and Conflict

Bargaining model of conflict (Fearon 1995)

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Ingredients:

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1. Commitment Problem

Negotiation and Conflict

Bargaining model of conflict (Fearon 1995)

Ingredients:

Conflict is costly $\Rightarrow$ worth avoiding

So, then, why does it happen?

Key insight: Conflict is a kind of contracting friction

1. Commitment Problem
2. Private information

An Example

Divided Society with two groups:

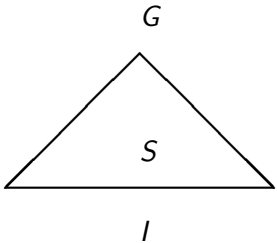
- Government (G)
- Insurgents (I)

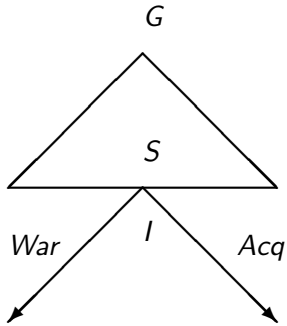
G divides resources, S

- Keep share S and give $1 - S$ to small

Insurgents can accept $1 - S$ or start conflict

- Insurgents win conflict with probability p


G
S
I


G
S
War
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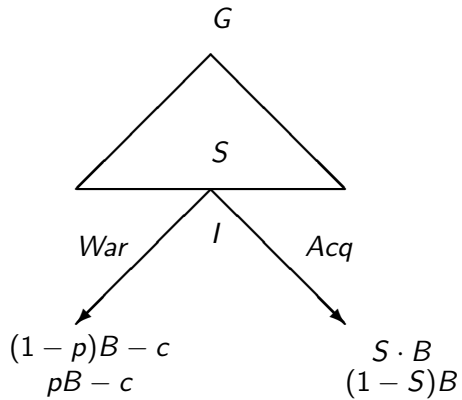
The Extensive Form Game



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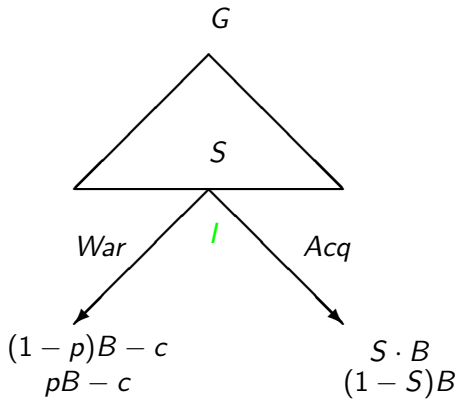

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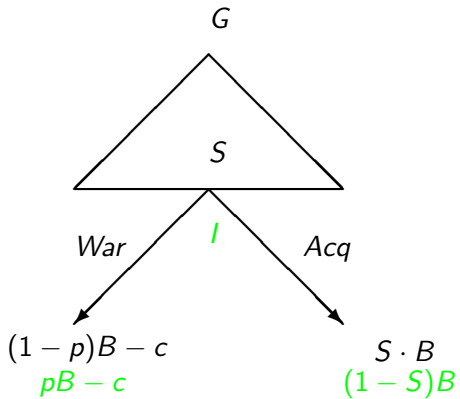

Insurgents' best-response

No Conflict if:

$$(1 - S)B \geq pB - c$$

Insurgents' best-response

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Holds if:

$$1 - S \geq p - \frac{c}{B}$$

Insurgents' best-response

No Conflict if:

$$S \leq 1 - p + \frac{c}{B}$$

Insurgents' best-response

No Conflict if:

$$S \leq 1 - p + \frac{c}{B}$$

Conflict if:

$$S > 1 - p + \frac{c}{B}$$

Government's best-response

Government wants to maximize its share

Choose largest $S \leq 1 - p + \frac{c}{B}$

Government's best-response

Government wants to maximize its share

Choose largest $S \leq 1 - p + \frac{c}{B}$

What happens?

$S^* = 1 - p + \frac{c}{B}$

Conflict if $S > 1 - p + \frac{c}{B}$; No if $S \leq 1 - p + \frac{c}{B}$

Comparative Statics

Equilibrium: $S^* = 1 - p + \frac{c}{B}$

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Comparative Statics: S^* is

- decreasing in p;
- increasing in c;
- decreasing in B.

How is this like a contract?

Outline

Preemptive Conflict

Same model but with an initial stage in which Insurgents can preemptively strike

Insurgent wins preemptive conflict with probability $q > p$

Idea is that Government is consolidating power

Preemptive Extensive Form Game

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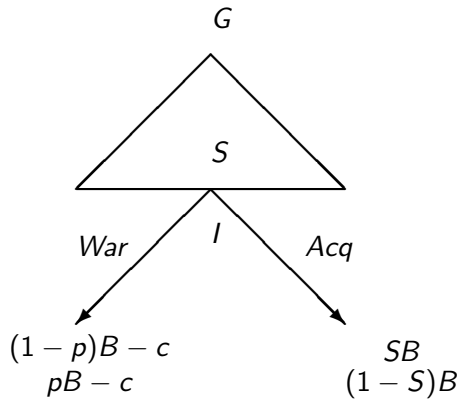
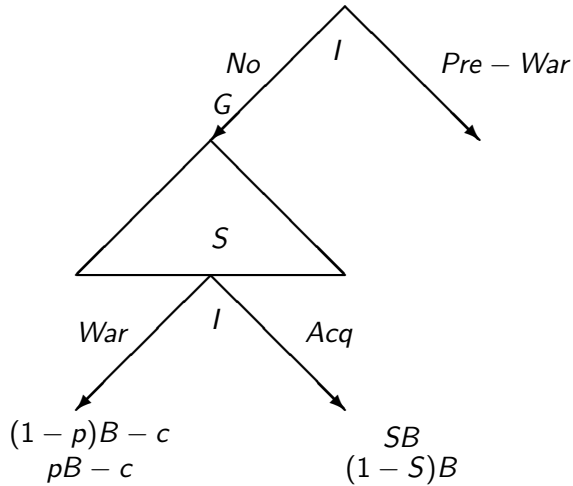


Preemption



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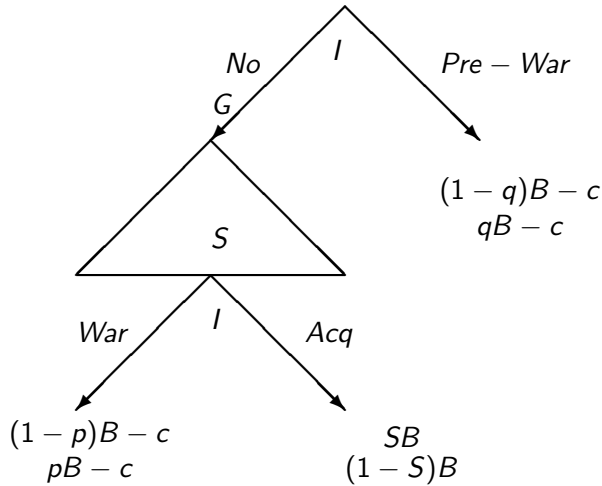

Preemptive Attack

Without preemptive conflict, Insurgents' payoff is $pB - c$

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Preemptive conflict is a best-response

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Preemptive conflict is a best-response

Note comparative statics are different!

A Pareto Improvement

Suppose Government could commit to offer $S = 1 - q$

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Government's Payoff

- Equilibrium: $(1 - q)B - c$
- Suggested offer: $(1 - q)B$

Insurgents' Payoff

- Equilibrium: $qB - c$
- Suggested offer: qB

Commitment Problem

Government cannot commit to $S = 1 - q$

Once Insurgents foregoes preemptive attack, Government will renege and offer $S = 1 - p + \frac{c}{B}$

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Government cannot commit to $S = 1 - q$

Once Insurgents foregoes preemptive attack, Government will renege and offer $S = 1 - p + \frac{c}{B}$

Insurgents' payoff is then $pB - c$

Thus, Insurgents launch a preemptive attack

Examples

First-mover advantage

Negotiating with terrorists

Outline

Suppose Insurgents' cost of conflict is unknown to Government—call it k

Suppose that it's drawn from some distribution with distribution function F

This means for any x, $P(k \leq x) = F(x)$, with an increasing reverse hazard rate (i.e. $\frac{f(x)}{F(x)}$ increasing in x)

Everything else is same as above

How does the analysis change?

Insurgents' best-response

No Conflict if:

$$S \leq 1 - p + \frac{k}{B}$$

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Conflict if:

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Probability of War

Insurgents choose war iff

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rearranging

$$P((S - 1 + p)B) > k)$$

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rearranging

$$P((S - 1 + p)B) > k)$$

which is

$$1 - F((S - 1 + p)B))$$

Government's choice

Government's expected payoff to offering S

$$\max_S \left((1-p)B - c)(1 - F((S-1+p)B))\right) + (SB)F((S-1+p)B)).$$

Government's expected payoff to offering S

$$\underbrace{((1-p)B-c)}_{\text{War Payoff}}\underbrace{(1-F((S-1+p)B)))}_{\text{Prob of War}} + \underbrace{SB}_{\text{Peace Payoff}}\underbrace{F((S-1+p)B))}_{\text{Prob of Peace}}.$$

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First-order condition:

$$\begin{aligned}((1-p)B - c)(-f((S-1+p)B))B + BF((S-1+p)B)) \\ + B(SB)f((S-1+p)B)) = 0.\end{aligned}$$

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Rearranging:

$$\begin{aligned}F((S-1+p)B)) + (SB)f((S-1+p)B)) \\ = ((1-p)B - c)f((S-1+p)B).\end{aligned}$$

Government's choice

We can write the first-order condition as:

$$1 + (SB)\frac{f((S-1+p)B))}{F((S-1+p)B))} = ((1-p)B - c)\frac{f((S-1+p)B)}{F((S-1+p)B))},$$

and

$$1 = ((1-p-S)B - c)\frac{f((S-1+p)B)}{F((S-1+p)B))}.$$

The LHS is constant.

Wrap Up

Crisis Bargaining

Bargaining model of conflict

Ingredients:

- Conflict is costly
- So, then, why does it happen?

Key insight: Conflict is a kind of contracting friction

1. Commitment Problem
2. Private information