

Bargaining over power:

When do shifts in power lead to war?

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When do shifts in power lead to war?

- Extensive existing literature on preventive war
- Much of bargaining literature treats power as exogenous factor
 - Two sides fight over a pie *given* a power distribution

Thesis:

If rapid changes in power can lead to conflict, why don't parties negotiate over the determinants of power?

- History shows that they often do
- Previous work has not properly considered bargaining over power itself

Game setup

- Two players, A (declining state) & B (rising state)
- Both occupy parts of territory X, of size 1
- Player A expects player B to grow stronger in the next period
 - A anticipates B will want a larger share of territory
- Players negotiate over territorial benefits (x)
- Outcome is determined by a utility function. If the utility loss from concessions is greater than from war, the players enter war.

Game setup (cont.)

Initial partition of territory X Let $(x^0, 1-x^0)$, $x^0 \in [0,1]$ denote the partition of X

In each period A makes an offer $x^t \in [0,1]$ to player B ,

If B rejects x^t , war starts with cost equal to a loss of utility of size $c_i > 0$

If B accepts the offer, then the players occupy respective shares of the territory:
 x^t for A ; and $1-x^t$ for B

Probability that A occupies full territory X is $p(t)$, where $p'(t) \geq 0$

Game's payoffs are $U_i = u_i(x_i^1) + \delta_i u_i(x_i^2)$. where δ_i is discount factor

Commitment problem

We can now write player i 's expected utility for a war starting at time t as

$$p_i^t \sum_t^2 \delta^{t-1} - c_i, \quad (1)$$

Subgame Perfect Equilibrium (SPE)

Definition 1. A strategy pair is a SPE if the strategy pair it induces in every subgame is a Nash equilibrium of that subgame.

Definition 2. A peaceful SPE is an SPE in which war never occurs in any subgame.

Proposition 1 (Commitment Problem). Let $\alpha \equiv (1 + \delta_B)/(\delta_B)$ and $\beta \equiv (1 - \delta_B)/(\delta_B)$. The game described in this section has no peaceful SPE if

$$p(2) > \alpha p(1) + \beta c_B. \quad (2)$$

Solving the commitment problem

- Rather than bargaining over final outcomes alone, actors can bargain over “capabilities”. That is, weapons, troop deployments, etc.
- Utility function remains the same, but offers now consist of the pair (x^t, r^t)
 - Probability of A winning is function of capabilities (r) $p^t = p(r^{t-1})$
- All SPEs are peaceful when actors bargain over relative power.

Examples of bargaining over power

- Avoiding power shifts
 - Washington Naval Treaty of 1922 > US destroyed 15 active ships
 - Cuban missile crisis
- Avoiding potential shifts
 - Negotiating over territory (a source of latent power)
 - Partition of Poland 18th century
 - Pooling resources
 - ECSC (European Coal and Steel Community)



Why might war still occur?

- Parties unable to trade capabilities
 - Have been assuming that land, population matter
 - Immaterial factors like technology, discipline, resolve may play a role
- Capabilities not always divisible
 - $p(\cdot)$ function is discontinuous
 - Rising state makes too large or too small of a concession
 - Consider nuclear disarmament and non-proliferation agreements
- Deeper power shifts
 - Concessions like destroying warships do not slow i.e. economic and population growth
 - If r is a function of x or if the two are indistinguishable (money) then

$$p^t = p(r^{t-1}) \text{ becomes } p^t = p(x^{t-1})$$

More factors

- Difference in discount rates can lead to war
 - If one state (the declining state) has a lower discount rate, will demand greater concessions
 - Parties prevented from smoothing consumption of territory
- Regime type and discount rates
 - Democracies may have higher discount rate than autocracies
 - Declining autocracy and rising democracy may be expected to lead to war
- Multilateral bargaining
 - Bargaining over capabilities impacts not just A's power vis-a-vis B, but also C
- Domestic constraints
 - Sources of power may have religious or ideological importance.
 - Possibility of “irrational” or militaristic future leaders create a commitment problem
 - For example: JCPOA