Known Unknowns: Power Shifts, Uncertainty, and War

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Introduction

- problems in study of power shifts
  - most large and rapid power shifts are endogenous to state interaction resulting from militarization efforts
  - studies that do endogenize power shift fail to acknowledge the time lag between the moment in which a state decides to invest in military capabilities and the moment these become available, ignoring the possibility of a preventive attack
- argument: when power shifts are endogenous, preventive war requires uncertainty and preventive attacks can occur in the absence of unambiguous evidence that the target is militarizing

Theory and Literature

- power transition theory
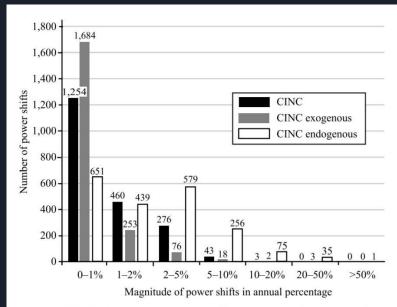 - has reached a stalemate
- CINC index

FIGURE 1. *Distribution of exogenous and endogenous power shifts as a function of their magnitude*

The Model

- strategic interaction between two states
  - T - target
  - D - deterrer
- T decides whether or not to militarize, D decides whether or not to launch preventive war
- states face two problems
  - commitment problem
  - information problem

The Model

- D decides to declare war or peaceful division of pie
- the two-period game
  - timing and solution concept
  - solving the game
- infinite-horizon game

2003 US Invasion of Iraq

- March 20, 2003 US invasion of Iraq
- main motivation was to prevent Iraqi nuclearization
- nuclearization would make Saddam immune to any external regime-change efforts
- role of Sept 11, 2001 attacks
- 1 Percent Doctrine
- US administrations inability to eradicate uncertainty about Iraqi nuclearization led to breakdown of peace

2003 Invasion of Iraq

- US not certain of detecting Iraqi nuclear program
- unwilling to run risk of nuclear Iraq, US launched preventive war
- intelligence reports and services
- Iraq possessed no WMD and no solid WMD program
- why Iraq not North Korea?

Rational Treatment?

- Saddam misperceived US resolve to invade
- multiple accounts of Saddam's behavior
- Bush administration's underestimation of cost of war and post-war governance in Iraq
- irrational standard for Iraq to prove absence of WMD

Conclusion

- information problems play a crucial role in providing a rationalist explanation for war
- power shifts do not in and of themselves lead to conflict
  - only when information problems are present
- mistaken preventive wars are more likely under conditions of power preponderance

You Get What You Give: A Model of Nuclear Reversal

William Spaniel

Introduction

- Why do potential proliferators agree to provisions (weapons inspections, divestment)?
- Why does international community push for weapons inspections if they've proven ineffective at revealing information?
- Argument: Additional burdens to proliferation allow parties to reach agreements that would have been impossible otherwise

The Model

- to analyze nuclear reversal, uncertainty over proliferation behaviors, bargaining over weapons, and preventive war together
- Two players
  - State A - proliferator
  - State B - opponent
- four phases to the game

Phase One

- A chooses cost k ∈ [k,∞)
  - price A will pay if it attempts to proliferate
- selecting k means A will allow itself cheapest and easiest path to nuclear weapon
- higher values correspond to more barriers to proliferation

Phase Two

- B offers A division of stakes $x \in [0, 1]$
- If A rejects → game-ending war
- A captures $pA \in [0, 1)$ portion of the good, B takes the remainder
- states pay respective costs of c_A, $c_B > 0$
- payoffs persist long term, states share common discount factor δ
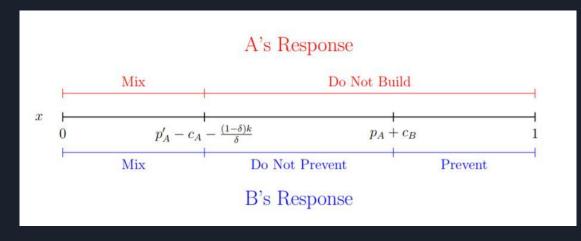- A's payoff for rejecting is $p_A - c_A$ and B's is $1 - p_A - c_B$

Phase Three

- A accepts division of stakes
- A chooses to build nuclear weapon or not
- B chooses whether or not to fight a preventive war without knowing A's decision

Phase Four

- if A builds and B does not prevent, both accept proposed division
- B offers proposal y ∈ [0, 1]
- accepting locks in division for remainder of time, no further weapons construction, preventive war
- rejecting leads to game-ending war

Preventive War Calculus

	Prevent	$\sim$ Prevent
Build	$p_A - c_A - (1-\delta)k,\ 1 - p_A - c_B$	$(1-\delta)x + \delta(p'_A - c_A) - (1-\delta)k,$ $(1-\delta)(1-x) + \delta(1 - p_A + c_A)$
$\sim$ Build	$p_A - c_A,\ 1 - p_A - c_B$	$x,\ 1 - x$

A's Response

Mix — Do Not Build

x

0 — $p'_A - c_A - \frac{(1-\delta)k}{\delta}$ — $p_A + c_B$ — 1

Mix — Do Not Prevent — Prevent

B's Response

Lemma 1. *Suppose A has successfully nuclearized. In every SPE, B offers $y = p'_A - c_A$ and A accepts.*

Lemma 2. *Suppose $x \in \left[p'_A - c_A - \frac{k(1-\delta)}{\delta}, p_A + c_B \right]$. Then A does not build and B does not prevent.*

Lemma 3. *Suppose $x > p_A + c_B$. Then B prevents and A does not build.*

Lemma 4. *Suppose $x < p'_A - c_A - \frac{k(1-\delta)}{\delta} < p_A + c_B$. Then both players mix in equilibrium. Specifically, B prevents with probability $\frac{p'_A - c_A - \frac{(1-\delta)k}{\delta} - x}{p'_A - c_A - x}$ and A builds with probability $\frac{x - p_A - c_B}{\delta(x - p'_A + c_A)}$.*
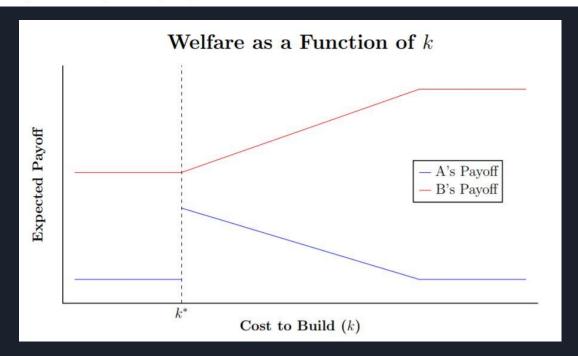
Bargaining to Avoid War

Proposition 1. *Suppose the cost of proliferation is great relative to the extent of the power shift (i.e., $k \geq \frac{\delta(p'_A - p_A)}{1-\delta}$). In equilibrium, B offers $x = p_A - c_A$ and A accepts. The states then play the strategies in Lemma 2.*

Proposition 2. *Suppose the cost of proliferation falls in a medium range (i.e., $k \in \left[k^*, \frac{\delta(p'_A - p_A)}{1-\delta}\right]$ holds). In equilibrium, B offers $x = p'_A - c_A - \frac{(1-\delta)k}{\delta}$ and A accepts. The states then play the strategies in Lemma 2.*

Proposition 3. *Suppose the cost of proliferation is low (i.e., $k < k^*$). The subgame has multiple SPE. B receives its war payoff in every SPE. Preventive war, mistaken preventive war, and successful proliferation are supported in SPE.*

Endogenous Nuclear Reversal

Proposition 4. *In every SPE, if the smallest possible cost to build is sufficiently low (i.e., $\underline{k} < k^*$), A artificially inflates its cost to $k = k^*$.*

Welfare as a Function of k

Empirical Implications

- weapons inspections
  - imperfect solution
- inspections as power shifts
- costly weapons inspections
- possible detection
- infinite horizon

Conclusion

- rivals of states with nuclear programs should not treat proposed reversals as obvious traps
- reversals are skipping stones to an agreement
- agreements cannot be fleeting
- reason to be cautiously optimistic about the future of nuclear non-proliferation