

# Arms Negotiation, War Exhaustion, and the Credibility of Preventive War

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# Question At Hand

Why do some states suspend their weapons programs in exchange for compensation while other fail to come to terms?

- Mechanism: commitment problems as result of changing credibility of preventive war
- Times of weakness:
  - Incentive to appease adversaries to keep them from increasing arms production
- Times of strength:
  - Leverage threat of preventive war to deter arms building

# The Window of Opportunity

- Argument: “The changing credibility of preventive war is an important determinant of arms construction”
  - When preventive war is not ever an option, states that engage in bargaining with one another have the ability to reach settlements that are mutually preferable to conflict
  - But, when preventive war today is not credible but will be tomorrow, the next day, etc., there arises a commitment issue:
    - The state that does not have weapons needs to build them now or they will forego the ability to use them in negotiations
- “Building forces the opponent to provide concessions under the threat of costly war; not building means that rivals can cut concessions without fear of significant reprisal”

# Case Study: USSR

- To illustrate the previously mentioned theory, USSR's decision to proliferate in 1949 is used
- Previous literature: nuclear outcome inevitable
- Divergent preferences/incompatible demands not sufficient answer
- Fading war exhaustion
  - Waning post WWII exhaustion prevented USSR and USA from settling on mutually preferable outcome, deal would be too unstable

# Literature

- Research tradition on preventive war
  - Thucydides (1972) +Levy (1987)
  - Declining states may prefer costs of war for favorable terms today vs. accommodations tomorrow
    - Model analyzes how incentives to prevent affect success of negotiation

# Literature

- Models of preventive war/arms building
  - Fearon (1995) + Powell (1999, 2006)
    - Source of power shifts is exogenous
  - Chadeaux (2011)
    - Endogenous power shifts explaining preventive war
  - Debs and Monteiro (2014)
    - Shadow of preventive war affects arms building
    - Potential proliferator makes build decision in first stage of the game
- Vs. Debs and Monteiro
  - Begin game with negotiations to settle on “nonproliferation” deal
- Vs. Guns-versus-butter
  - Carrot and stick: bribes and preventive war
  - Can states buy compliance through concessions?
    - Only if they can credibly commit to continuing to provide

# Literature

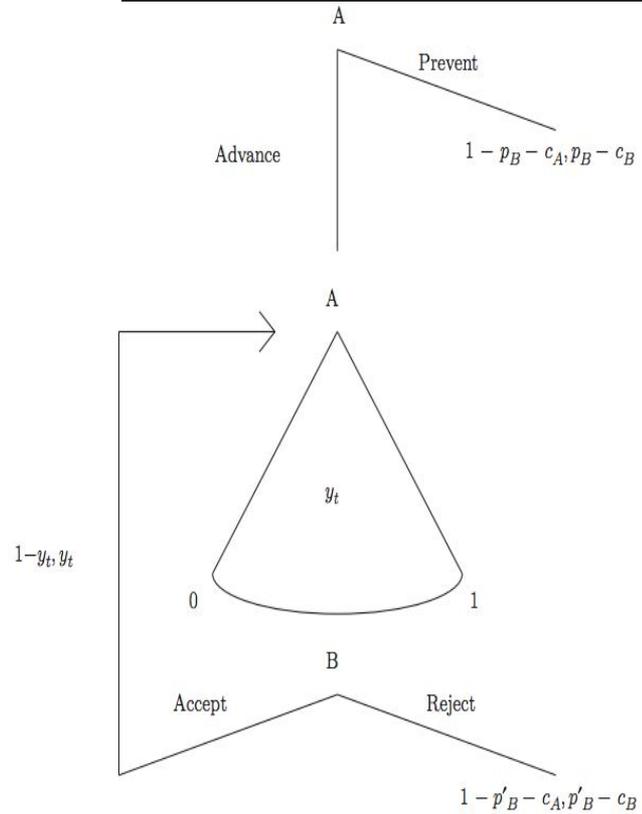
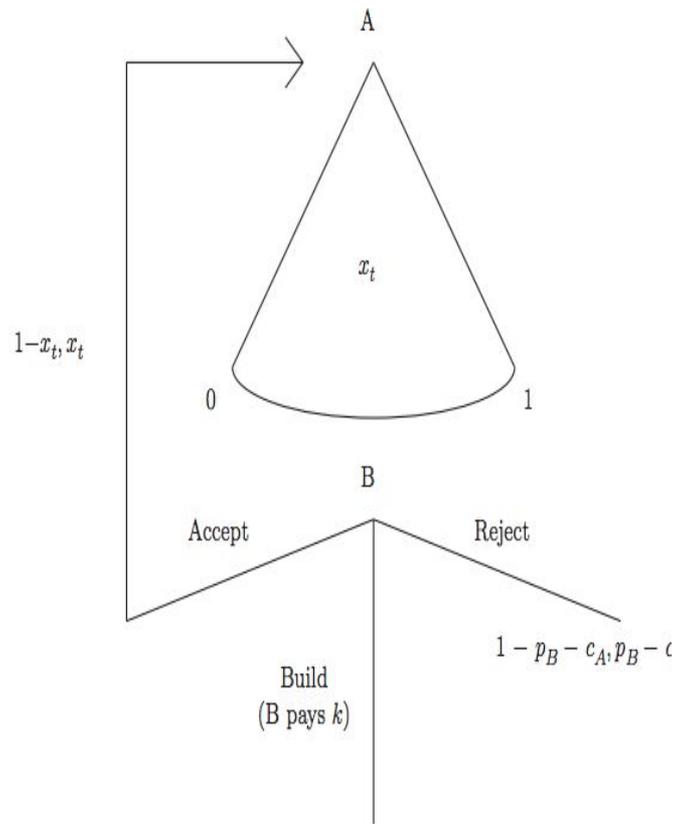
- Thayer (1995)
  - Security is the only necessary and sufficient cause of nuclear proliferation
  - So, USSR proliferation to counter USA was inevitable
- Model argues that disagreement can't sufficiently explain costly decision to invest in a weapons program
- USA couldn't credibly commit to long term concessions and forced the USSR's hand in the proliferation decision

# Baseline Model

- Incompatible demands do not explain production of arms
- The Game
  - Two actors → B (potential builder) and A (builder's antagonist)
  - Begins before B has decided to invest in new weapons
  - A's offer to B:  $x_t$  → somewhere between 0 and 1
    - B either accepts, rejects, or builds weapons in response
  - Reject  $x_t$ : war that ends the game, B gets  $P_b$ , A gets  $1-P_b$ , both pay costs ( $C_a$ ,  $C_b$ )
  - Accept  $x_t$ : period ends, B gets  $x_t$ , A gets  $1-x_t$ , and process repeats with A offering  $x_{t+1}$
  - B builds: forgo  $x_t$  and pay  $k > 0$  to begin construction
    - A then must decide: initiate preventive war or bargain post-power shift
    - War gets reject payoffs, bargain gets accept payoffs

# Baseline Model

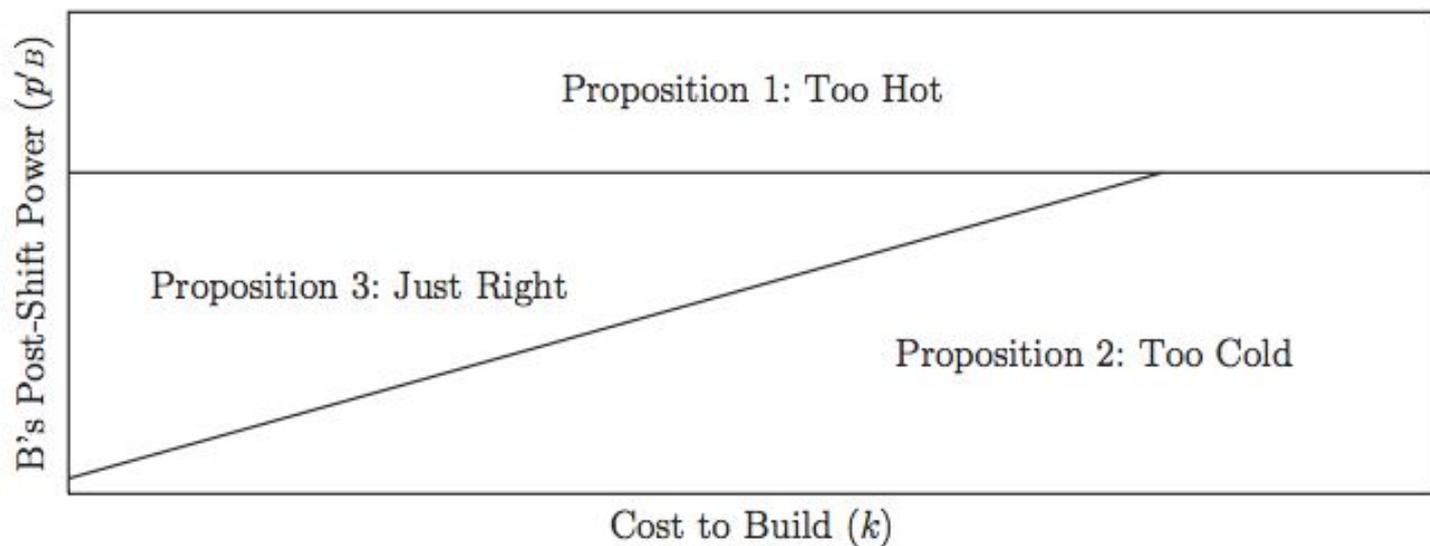
- If B builds successfully: B's outside option of war improves in future periods
- A makes offer  $y_{t+1}$  in post-power-shift period
  - B accepts: B gets  $y_{t+1}$ , A gets  $1-y_{t+1}$ , and game repeats, A offers  $y_{t+2}$
  - B rejects: game-ending war, B takes  $P'b$  (between  $P_b$  and 1) while A takes  $1-P'b$ , costs
    - B expects to get more from war post-shift than previously
- Discount factor,  $d$  (between 0 and 1)
  - Discount period  $t$ 's share of goods/costs paid by  $dt-1$
  - Greater values place greater weight on future payoffs
  - Represents time B takes to develop successfully their weapons program
- Assumptions
  - Decision to arm is public, A can retract any offer
  - Both make decision to arm less attractive



# Equilibria

Lemma 1: in every SPE, in every post-shift period, A offers  $y_t = P'b - C_b$ , B accepts

- Because war creates deadweight loss, A always can offer just enough to satisfy B, and the optimal offer is preferable to war for A as well
- A offers just enough and keeps all the surplus
  - B:  $P'b - C_b$
  - A:  $1 - P'b + C_b$
  - Payoffs for the rest of time
- B has great incentive to build: more weapons means more coercive power, and A must offer more concessions for peace



**FIGURE 2** Equilibrium outcomes as a function of  $p'_B$  and  $k$ . Figure drawn with values  $p_B = .3$ ,  $c_A = .3$ ,  $c_B = .1$ , and  $\delta = .9$ .

Power shift is too great: A finds it too hot to permit, B does build and avoids wasted investment  
 Power shift is too small: B finds investment too cold to be worth it

# Proposition 1

- If  $P'b > ((Pb+Ca)/d) + Cb$ , A offers  $x_t = Pb-Cb$  in the SPE, B accepts and never builds
- Right side: inefficiency of war
- Left side: measures extent of power shift, defined as improvement in B's outside option
- Shift sufficiently greater than inefficiency, too hot
  - B builds, A would respond with preventive war  $\rightarrow$  B's build threat is incredible
- A treats bargaining as if B cannot build
- A offers  $d(P'b-Cb) - (1-d)k \rightarrow$  amount B receives in static bargaining game
- Bargaining succeeds, offers are trivial, payoffs are same as if no shift happens

## Proposition 2

- If  $P'b < ((Pb + (1-d)(k-Cb))/d)$ , A offers  $x_t = Pb-Cb$ , B accepts and never builds
- Right side: time adjusted cost of building
- Magnitude of shift is small relative to cost: too cold for investment
- A observes that B does not have credible threat, offers same concessions as if power didn't shift
- No bribes or preventive war here, but same results as proposition 1

# Proposition 3

- If  $((Pb+(1-d)(k-Cb))/d) < P'b < ((Pb+Ca)/d) + Cb$ , A offers  $x_t = d(P'b-Cb)-(1-d)k$  in all pre-shift periods, B accepts and never builds
- Here B views building as an investment in future power
  - If they make investment, get  $(P'b-Cb)$  in accordance with Lemma 1
  - A anticipates this, offers B most of the concessions they would receive in the future
  - B no longer needs to invest, A benefits from extracting potential investment cost of  $k$
- B accepts/doesn't build here because the advantageous stake in bargaining today out-weighs potential value additional power gives
- Building:  $d(P'b-Cb)-(1-d)k$  forever
- Accepting: that amount today, and at least that much in the future

# Examples

- Belarus, Kazakhstan, Ukraine at end of Cold War
- Did not control local nuclear weapons, but had knowledge to develop own
- 1992 Cooperative Threat Reduction Bill
  - \$2.6 Bn in aid
- Could have developed the programs to gain power, but would take on massive economic hit
- Instead accepted and all parties benefit
- Highlight: Arms construction is not an inherently irreconcilable issue. Programs are attractive because they shift power. Security gains for builder implies security loss for rivals, giving rivals incentive to buy off opponents

# How Bargaining Can Fail

- Baseline: incompatible demands  $\neq$  investment in arms programs
- Why does bargaining fail? Changing credibility of preventive war

# The Game: Modified

- Overall structure is same as before, only difference is that A's cost of war now changes over time
  - Cost of war for A:  $C_a(t)$ , where  $C_a(t) > 0$  for all  $t$
  - Suppose  $C_a(t) > C_a(t+1)$
  - War becomes increasingly attractive for the opponent over time

# Inefficient Equilibria

- Condition 1: Changing Credibility of Preventive War
- A's cost of preventive war sufficiently changes over time
- In particular, a period  $t^* \geq 2$  exists such that  $P'b > ((Pb+Ca(t))/d)+Cb$  for all  $t \geq t^*$  and  $P'b < ((Pb+Ca(t))/d) + Cb$  for all  $t < t^*$
- At the beginning of the interaction, A's cost of war is large enough that the parameters are above the horizontal line from earlier, but at some point in time the costs are small enough that they drop below that line
- If  $t^*$  (critical period where A can first credibly threaten war) doesn't exist, A's threat to prevent is credible (b/c costs of war remain high) or is incredible (b/c costs of war were low to begin)
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# Inefficient Equilibria

- Condition 2: Large, Rapid Shifts
- Let  $d(P'b-Cb) - (1-d)k > 1-d + d(Pb-Cb)$
- Left side: contains measure for concessions with new power and time adjusted cost to build weapons now → best possible outcome if building
- Right side: most concessions opponent could offer on eve of change in credibility of preventive war
  - $1-d$  is time adjusted amount proliferator gains if opponent concedes entire prize
  - $d(Pb-Cb)$  is amount of concessions proliferator gains for rest of time if it fails to arm while opponent would still permit building
- If war reluctance fades slowly, it becomes possible for opponent to credibly buy off the proliferator during the final period of its reluctance
- Large, rapid shifts in A's cost of preventive war causes inefficient arms construction to occur

# Proposition 4

- In every SPE, A offers  $x_t = d(P'b - Cb) - (1-d)k$ , where B accepts in periods  $t = 1, \dots, t^* - 2$ . In period  $t = t^* - 1$ , B will build regardless of the offer
- States negotiate nonarmament for the first  $t^* - 2$  periods; the continued threat to build in the future compels A to give concessions or lose out on surplus
- At  $t^* - 1$ , B's continued threat goes away, as A can credibly threaten preventive war in  $t^*$ 
  - At this point, the power shift is too hot to not prevent, B knows it will not get concessions to match potential power
  - In contrast, if B builds, they receive a larger share of the good, per Lemma 1, and it invests in arms to force concessions from A

# Proposition 4

- Time inconsistency commitment problem causes the inefficiency
  - Resolutions exist that make both better off, because bargaining is zero-sum and weapons investment adds DWL
- However, A cannot credibly commit to these settlements
  - In  $t^*-1$ , A wants to keep the level of concessions to B for the future, and if the offer were credible it would negate B's need to increase power
  - But B's credible threat to develop is the driver behind A's credible commitment for concessions
  - Negotiations break down once A's cost of war is low enough to deprive B of the threat to arm
- In the case of Nuclear weapons
  - Bargaining over proliferation is especially vulnerable to this proposition due to the speed with which a state can increase power with nuclear weapons, vs. conventional weapons

# Case Study: USSR in 1949

- On August 29, 1949 the Soviet Union joined the nuclear club
- Baseline model shows that there exists mutually preferable agreements, and distrust alone cannot explain proliferation, despite conventional wisdom which points to additional security as being worth the cost of construction
- The US chose not to launch preventive war, despite holding a nuclear monopoly and being able to prevent the cold war before it really began
  - General consensus is that the war would have been too costly and ineffective to be worthwhile
- Question at hand: if the preventive war was not an option, what stopped the US from bargaining their way out of nuclear escalation?

# Case Study: USSR in 1949

- That preventive war was too costly to be worthwhile says that the interaction does not fit “too hot” parameters of Proposition 1
- That weapons were worth the investment says that the interaction does not fit “too cold” parameters of Proposition 2.
- Argument: American and British war exhaustion made the immediate act of preventive war not possible in short term, but not the long term

# Case Study: USSR in 1949

- Tensions in Germany
  - After the war, the USSR wanted reparations from Germany, which would provide security for the Soviets in maintaining a post-war advantage
  - The US wanted to return their troops home and rebuild Germany to self-sufficiency, which reparations would prevent
  - This began the end of cooperation between the Soviets and Americans

# Case Study: USSR in 1949

- War Exhaustion and Domestic Political Resistance
  - The US pulled most troops home, and was thus strategically vulnerable in Europe
  - Political resistance to keeping the US armed and proactive after the war
  - UK elections turned Britain towards the same problems
  - The US and UK were exhausted from the war and this gave the USSR a window to take advantage
  - USSR pursued aggressive expansionist policies in Eastern Europe, but the lack of domestic interest in resolving the issue prevented resistance to the expansion

# Case Study: USSR in 1949

- In the face of battling “what to do with Berlin”, the Soviets blockaded West Berlin, trying to starve them out
- With negotiation seemingly impossible and withdrawal an unacceptable option, this was the only apparent time to make a challenge, since they still held a nuclear monopoly
- Instead they opted for the Berlin Airlift, the most conservative option available
  - It represented a lack of other available options, since the US did not want to accidentally provoke a war
  - Once Moscow lifted the blockade, the airlift proved to be a loss for the Soviets, as Communist opposition grew heavily within West Berlin
- But this proved to the Soviets that the US was very reluctant to fight

# Case Study: USSR in 1949

- Issues
  - Lack of intelligence meant that the US could not surgically strike the USSR nuclear sites
  - This also meant that the remaining option would be to nuke the entire Soviet Union, which was inherently infeasible.
  - The US nuclear program was in shambles, as many participants in the program felt their job was done
  - The US nuclear arsenal was also minor, with weak options for delivery, and the conventional capabilities were exhausted at this point
- Condition 1 holds: opposing state was unwilling to initiate preventive war in the early years

# Case Study: USSR in 1949

- Preventive war was not an option in 1949, but the US's reluctance was fading over time. This growing acceptance of conflict put the US in the commitment problem, and forced Moscow's hand in proliferating
- Korean War started in 1950, where America's intervention sent a mixed message
  - The war revitalized US conflict interests
- The US would have had to have offered the USSR a large concession for a nonproliferation agreement to have succeeded, but the USSR's large expansive aims would have garnered a strong Western response, regardless of the USSR's proliferation status
- By the time the US was ready to engage the Soviets in 1962, it was already too late

# Case Study: USSR in 1949

- Stalin had confidence to progress a nuclear program unimpeded, at least briefly
  - Lack of American conventional forces and struggles to mass produce nuclear weapons
- He also was aware that tensions between the two would eventually flare up again, and that the resistance to the Soviets would only grow stronger w/ time
- Distrust with the US meant Stalin would not have believed in a treaty to eliminate nuclear weapons in both the USSR and the US
- He knew a window was open, and was not going to be betrayed again like he was with Hitler, so he traded efficiency for speed and rapidly developed the nuclear program

# Conclusion

- Purpose of the article
  - Establish that incompatible demands are insufficient to explain arms development, and there are mutually preferable settlements
  - War exhaustion and improved intelligence create an issue, gives the proliferator a “now or never” mentality
- Case study
  - While illustrated through the USSR, this problem exists today with Iran and North Korea
    - Exhaustion after the Iraqi War, the US was vulnerable
    - Iran and NK programs escalated due to fear of US removing all concessions
    - US should consider the commitment problem it faces and work with Iran to be negotiable