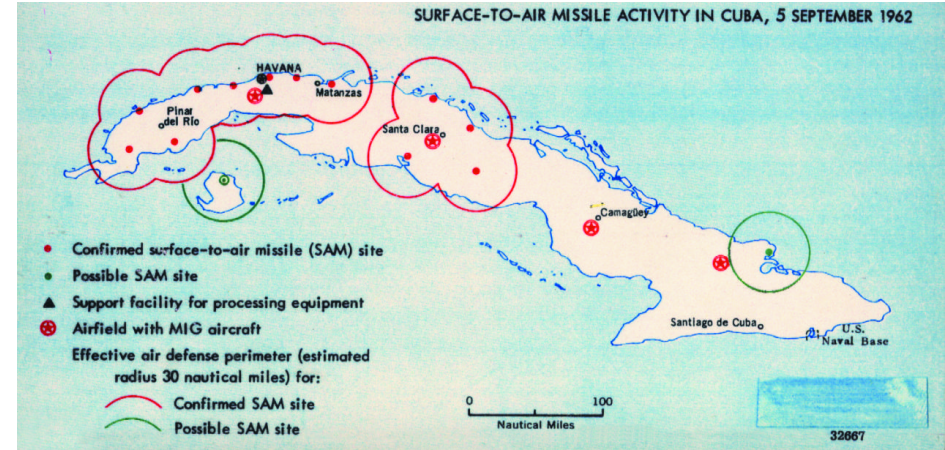


Brinksmanship

The Cuban Missile Crisis

- Here we present a *theory-based case study* of nuclear brinksmanship in the Cuban missile crisis of 1962
- This is the moment the world came closest to a nuclear war
- Though the USSR has disintegrated, many nations are still engaged in arms races that threaten the general welfare
- **Brinksmanship** is a strategic move where one makes **threats**, a response-rule that imposes costs on both players



- The risk of **errors**, the risk that the threat fails to achieve its purpose or the threatened action occurs on accident, is inherent
- *Brinksmanship* is the creation and deployment of probabilistic threats, a deliberate loss of control

A Brief Narrative Of Events



In the late summer and early fall the Soviet Union (U.S.S.R.) started to place medium- and intermediate-range ballistic missiles (MRBM & IRBM) in Cuba.

This was the first time the Soviets had attempted to place their weapons outside Soviet territory.

The Soviet's military might still paled in comparison to the U.S.'s.



A US Navy P-2H Neptune of VP-18 flying over a Soviet cargo ship with crated Il-28s on deck during the Cuban Crisis.

U.S. surveillance of Cuban shipping lanes indicated suspicious behavior by the Russians. They, of course, denied any surreptitious behavior. After being confronted with proof of their military posturing, they claimed their intention to be defensive.

On Oct. 14 & 15, a U.S. spy plane took photos over Cuba documenting the construction of missile-launching sites.

President Kennedy immediately convened a group of advisors to later be called EXCOMM to discuss the alternatives.

Kennedy kept this a complete secret because *if the Soviets knew the Americans knew*, they might speed up their installation and missile deployment before the Americans were ready to act. Spreading the news might also create panic domestically.

ExComm met numerous times over the week (Oct. 16-21) increasing the likelihood of exposing what they knew.

October 29, 1962 EXCOMM meeting held in the White House Cabinet Room. President Kennedy, Robert McNamara and Dean Rusk.





President Kennedy meets with Soviet Foreign Minister Andrei Gromyko in the Oval Office (October 18, 1962)

Members of ExComm had varying assessments of the situation from a tilting of the balance of powers to potentially problematic but not yet.

Pres. Kennedy was keenly aware of the geopolitical angle as well, and how this could threaten the West's position in West Berlin.

Kennedy's assessment was prescient as Khrushchev planned a major military base in Cuba and parlaying that into concessions regarding Berlin at a U.N. meeting the following month.

The early discussion centered on a military response.

1. An air strike directed exclusively at the missile sites and the SAM sites nearby
2. A wider air strike including Soviet and Cuban aircraft parked at airfields, and
3. A full-scale invasion of Cuba

Sec. of Defense Rob McNamara proposed a blockade instead as Undersecretary George Ball argued an airstrike without warning would be a "Pearl Harbor" and the U.S. should not do it.



President Kennedy and Secretary of Defense McNamara in an EXCOMM meeting

Because blockades are traditionally acts of war, the U.S. opted to call it a "quarantine," evocative of a defensive position and in accordance with international laws.

The positions of the Joint Chiefs remained firmly toward air strikes. The rest vacillated between that and softer options. Kennedy aware that a soft political response would likely hurt Dems in midterms heavily weighed the military options.

A straw vote was held at the end of the week between blockade and air strike and blockade emerged victorious by an 11 to 6 vote which Kennedy announced on TV on Oct. 22.

Soviet Premier Khrushchev's October 24, 1962 letter to Kennedy stating that the blockade of Cuba "constitute[s] an act of aggression...

The Soviets talked tough publicly, but were exploring ways to avoid crisis even before Kennedy made his public address.

Discussions centered around removing U.S. missiles in Turkey which the U.S. was fine with, but Turkey did not want.

Kruschev sent a private letter to Kennedy offering withdrawal in exchange for the U.S. not invading Cuba. However, sensing a softening U.S. position, he sent a public letter on Saturday, Oct. 26 demanding the U.S. withdraw their missiles in Turkey in exchange for the withdrawal in Cuba.



CIA reference photograph of Soviet medium-range ballistic missile (SS-4 in U.S. documents, R-12 in Soviet documents) in Red Square, Moscow.

With tensions mounting and a few accidental escalations, the situation seemed to be heading to armed conflict. Kennedy in an attempt to avoid catastrophe sent a private letter with an exploding offer to Krushev making three distinctions:

1. The Soviet Union withdraws its missiles in IL-28 bombers from Cuba
2. The U.S. promises to not invade Cuba
3. The U.S. missiles in Turkey will be removed after a few months

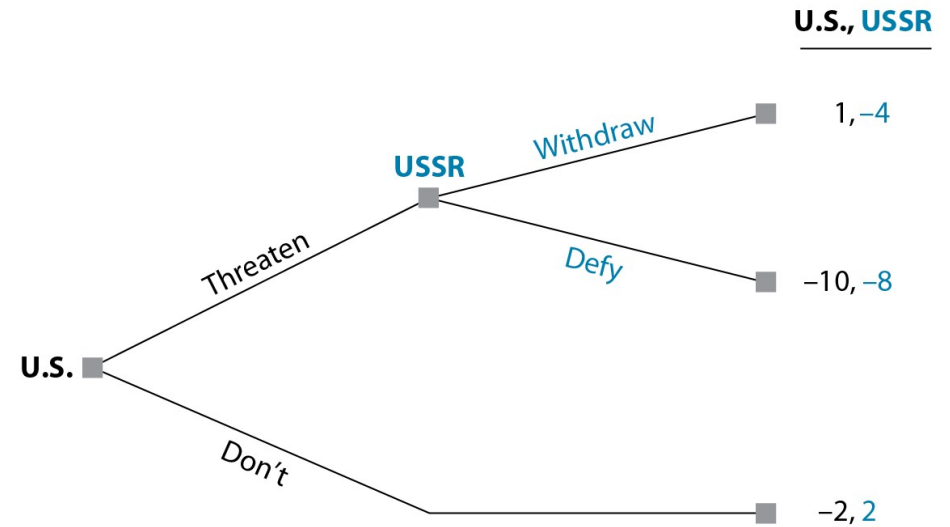
The Soviets had 24 hours to comply. The following morning the Soviets broadcasted a message Krushev was sending to Kennedy announcing construction was being halted and equipment would be sent back to the U.S.S.R. Catastrophe had been avoided.¹

¹ This is the neater version of the story. It took almost a month for a lot of this to become final.

A Simple Game-Theoretic Explanation

On first glance the game-theoretic aspect of the crisis is simple.

- The Soviets install missiles in Cuba and now the U.S. has the first move
- They can issue a threat or not, not doing so would be a big win for the U.S.S.R.
- If a threat is issued, then the Soviets move
 - Defying the threat is catastrophic for both but more for the U.S.
 - Withdrawing is a humiliating defeat for the U.S.S.R. and an affirmation of the U.S.'s hegemony



The Simple-Threat Model of the Crisis

A Simple Game-Theoretic Explanation

- This however is an unsatisfactory rendering. The Soviets using rollback could've predicted the final outcome and avoided all of the costs of their initial actions if this were true.
- There are additional complexities we must consider, one being the nature of a *compellent threat*. In order to compel the Soviets to acquiesce the nature of the threat must have an expiration; otherwise, the noncompliant party can just procrastinate
- The U.S. originally placed themselves in this strategy when U.N. ambassador Adlai Stevenson said the U.S. would "wait until hell freezes over," to hear the Soviet's response to the accusation they were placing nuclear weapons in Cuba.

Accounting For Additional Complexities

Threats carry a twofold risk:

1. Your opponent may defy it forcing you to carry out a potentially costly threat
2. Your opponent may comply but the threatened action may occur by mistake anyway

Considering (2) becomes important in accounting for the costs. Additionally note

- Neither the U.S. nor the U.S.S.R. was fully aware of the other's payoffs
- There existed a range of strategies between *blockade* and *air strike*

Considering this as a two-person game is convenient but it's fairly multi-layered with each coalition having differing goals. (We can consider Kennedy and Krushchev the major players, but there were many smaller and still pivotal actors)

A Fuller Accounting Of The Players

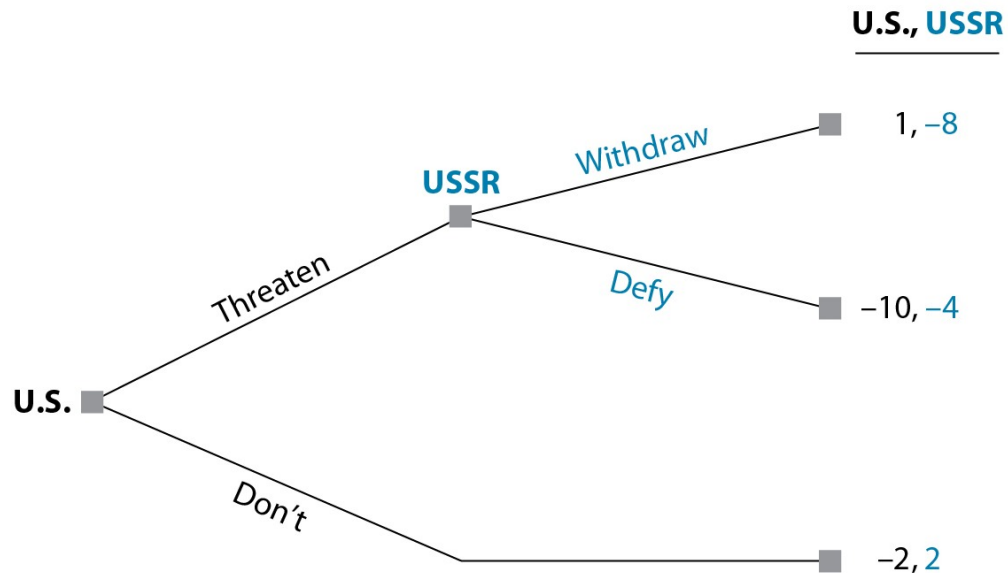
In the U.S.

- The Joint Chiefs were always hawkish
- Air Force general Curtis LeMay wanted to invade even after it was resolved
- Def. Sec McNamara was dovish initially and moved to a moderate position
- Kennedy additionally consulted Eisenhower and other members of Congress

On the Soviet Side

- Khrushchev had greater discretion than Kennedy
- The Presidium, however, didn't rubber stamp everything
- Khrushchev was more hawkish than his advisors, often being tempered into safer positions
- Castro took a very aggressive position defying orders from the Kremlin

A Reconsideration Of The Game



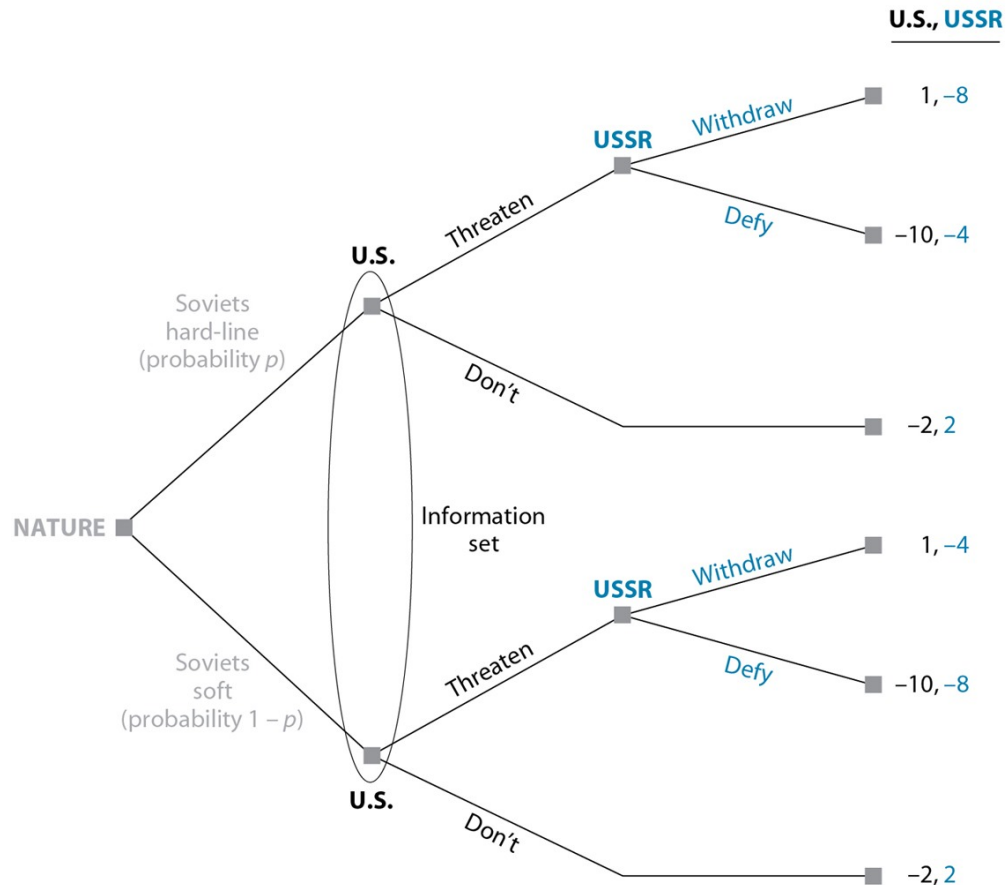
The game with hard-line Soviets

Here we take one form of uncertainty, the U.S.'s lack of knowledge of the Soviets' true motives & recast the game with inverted payoffs for the Soviets.

- Soviets prefer nuclear annihilation to withdrawal; "Better off dead than red-white-and-blue."
- New SPNE: threat wouldn't work, so don't make one (Don't; Defy)

Incorporating The Uncertainty

The threat with unknown Soviet payoffs



- Nature selects the type of the Soviets, hard-liners or soft
- The probability of being a hard liner is p
- The U.S. is unaware of the Soviets' type, indicated by the information set
- Unaware of the Soviets' true type, the U.S. has **TWO** strategies: {Threaten, Don't}

Incorporating The Uncertainty

So when does the U.S. threaten?

- We can use rollback at the final nodes and then calculate the expected payoffs because we know what the Soviets do at each node
- $E_{U.S.}(Threaten) = -10p + (1 - p)$ and $E_{U.S.}(Don't) = -2$
- The U.S. should make a threat when the expected payoff from threatening is higher than the expected payoff from not threatening; therefore

$$-11p + 1 > -2$$

$$p < 3/11 = 0.27$$

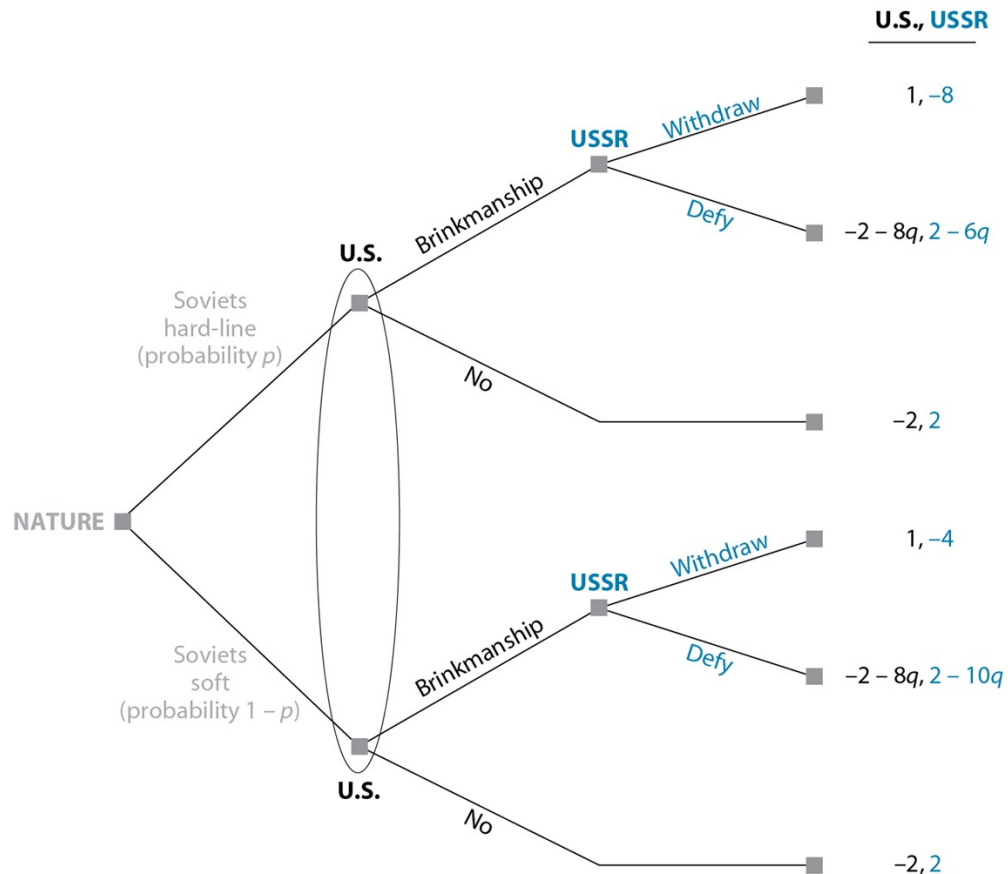
A Probabilistic Threat

Pres. Kennedy estimated the threat of outright war to be $1/3$. Combining this with our crude estimate on the Soviet's hard-line stance, an outright threat would be too dangerous. A softening of a simple threat would be a **probabilistic threat**, the opponent *risks* something bad to happen if they were not to comply.

Brinksmanship is the creation and control of a probabilistic threat. It requires two apparently inconsistent things:

1. You must let matters get enough out of your control that you will not have full freedom after the fact from taking the dire action
2. You must retain sufficient control to keep the risk of the action from becoming too large and your threat too costly (controlled lack of control)

A Probabilistic Threat

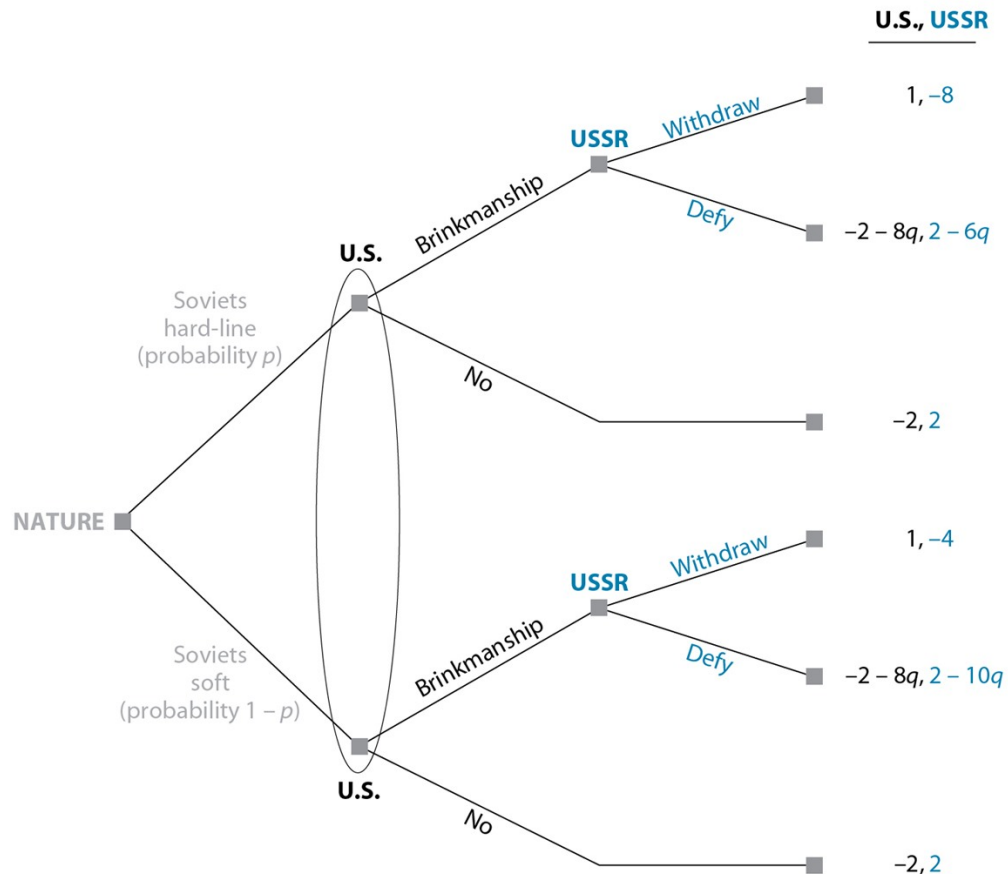


Now, we choose a probability q and fix it as the probability war will occur if the Soviets defy the U.S.

Remember once the Soviets defy, the U.S. doesn't have a choice, the Russian-roulette revolver has been set (to q) and chance determines if it goes off.

No one knows the exact payoffs from defy but we do know the probabilities so we can calculate expected payoffs.

A Probabilistic Threat



For the U.S. the outcome is -10 w/ prob q and -2 w/ prob $(1 - q)$; thus we get $-2 - 8q$.

For the Soviets the outcome is -4 w/ prob q and 2 w/ prob $(1 - q)$ in the hard-line state $= 2 - 6q$ & -8 w/ prob q and 2 w/ prob $(1 - q)$ in the soft state $= 2 - 10q$

- Hard-line Soviets \rightarrow Always defy
- Soft-line Soviets \rightarrow Defy when $q < .6$
- $q \geq .6$ is called the **effectiveness condition**

A Probabilistic Threat

Let's assume the soft Soviets comply. How risky can the U.S. threat be and still remain tolerable to the U.S.?

- If the United States makes the threat it runs the risk of p that it will encounter the hard-line Soviets who will defy the threat. It encounters the soft Soviets with probability $(1 - p)$; thus the expected payoff is

$$(-2 - 8q)p + (1 - p) = 1 - 3p - 8qp$$

- When the U.S. doesn't make the threat, its payoff is -2, so in order for the U.S. to make the threat the following has to hold

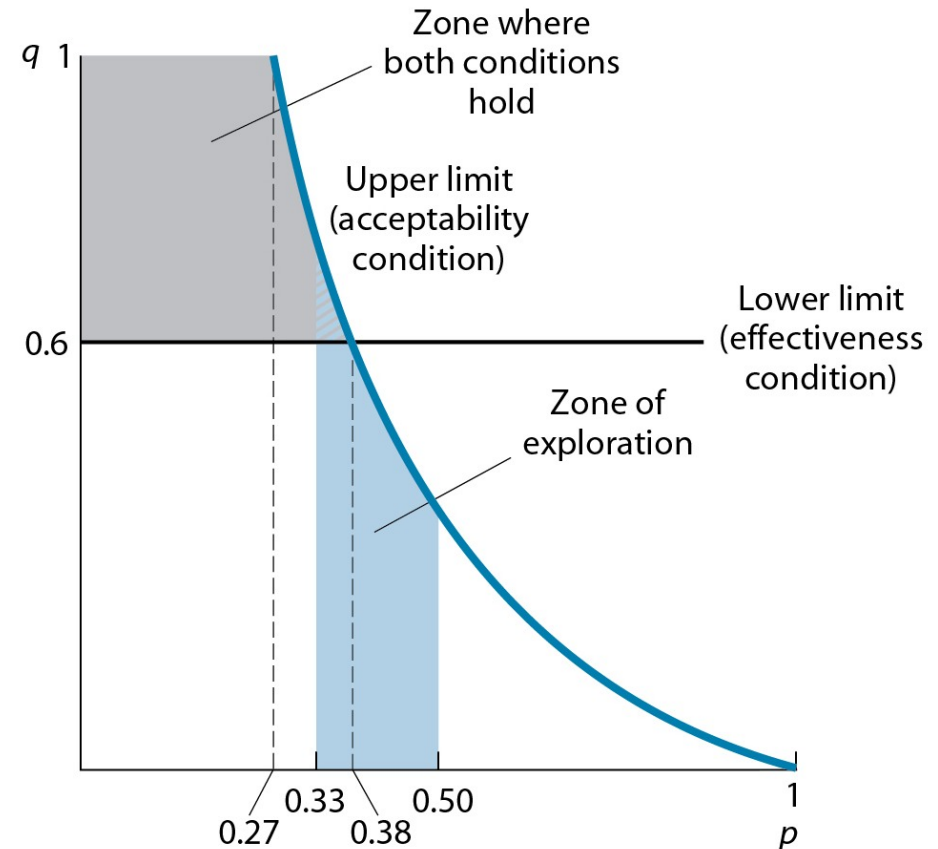
$$1 - 3p - 8qp > -2 \Rightarrow q < \frac{0.375(1 - p)}{p}$$

A Probabilistic Threat

The probability of war must be small enough to satisfy the previous expression. The upper bound on q is called the **acceptability condition**.

If the probabilistic threat works it should satisfy both the effectiveness and acceptability condition.

If $p > 0.38$ then no value of q satisfies both conditions. i.e. the risk of war is too large to be acceptable to the U.S.



Practicing Brinksmanship

Kennedy does not want to start out with his most aggressive stance. He would prefer to *explore* the Soviets' risk tolerance. Note the blue shaded boundary in the previous figure. This aligns with Kennedy's estimate of the chance of war being between $1/3$ and $1/2$.

Kennedy can start with a small action that lies in the lower left corner of the blue shaded region and gradually ratchet up his actions (raise q) to feel out the Soviets until he encounters one of the boundaries. Which boundary does he encounter? That depends on the value of p .

While this is occurring, a third outcome can happen: catastrophe occurs before either side realizes the threshold was crossed.

Brinksmanship in practice is the **gradual escalation of the risk of mutual harm or chicken in real time.**

Brinksmanship, A Reinterpreted As Collective Bargaining

1. Start small and safe. Step 1 should not be a walkout
2. Raise the risks gradually. Stage a slowdown or something to signal serious intent/follow-through
3. Read & interpret management's actions to determine management's profit potential
4. Retain *enough* control over the situation. If management believes you've lost control over membership, there's no reason to accede

Summary

- Strategic use of a probabilistic threat in which you expose you and your rival to an increasing risk of harm is brinksmanship
- Brinksmanship requires players to relinquish control over the outcome of the game without completely losing control
- The Cuban Missile Crisis of 1962 serves as a case study in the use of brinksmanship on the part of President Kennedy