

# Playing to the Audience: Responses to Violations of International Order Online Appendix

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Section A presents an alternative version of our model, in which potential violators are uncertain about the enforcer's willingness to punish violation and must infer this from her behavior. Section B contains proofs of the propositions from the formal model. Section C documents the chronological order of proliferation events used in the large- $n$  analysis and displays the tables from which the permutation tests used in the paper are drawn. Section D reports robustness checks for our statistical analysis. Section E explains why we should expect generally inconclusive results for the effect of deals on subsequent proliferant behavior. Section F documents the cases for which we could find qualitative evidence in favor of or against our theory.

## **A Modeling Uncertainty about the Enforcer**

We proceed to setup a variant of our model in the main paper, in which the states that might violate international order are uncertain about the resolve to employ punishment of an enforcing state that would like to stop them from doing so, and must infer this from the enforcer's actions. We will describe the variant setup, derive the equilibrium

of interest, and show that this variant produces the same substantive implications as the original model.

In each of infinite rounds, Nature first chooses the type of the enforcer  $E$ , by drawing her cost of punishment  $p_E \in (0, \infty)$  according to a stochastic process. Only  $E$  observes the draw, but the characteristics of the stochastic process are common knowledge. As in the original model, the  $N$  potential violators then simultaneously choose whether to violate. If a state does not, it receives a payoff of zero.  $E$  then simultaneously chooses among penalizing, rewarding, or tolerating each violator. Punishment means  $E$  receives  $-p_E$  and the violator  $-p_V < 0$ , reward gives  $-r$  and  $r > 0$ , and toleration yields  $-s$  and  $s > 0$ , respectively. Future payoffs are discounted by  $\delta \in (0, 1)$ .

We will show that under certain conditions, the following profile of strategies and beliefs which we call “uncertain enforcement” constitutes an equilibrium. In any given round,  $E$ 's type is termed “low-cost”, “mid-cost”, or “high-cost” when it is in  $(r, p_E^L]$ ,  $(p_E^L, p_E^H]$ , or  $(p_E^H, \infty)$  respectively. The low-cost  $E$  responds to violation in a given round by punishing one violator and rewarding any others; the mid-cost  $E$  rewards all violators; and the high-cost  $E$  tolerates all violators. Upon observing any violator being penalized, all violators being rewarded, or any violator being tolerated, each state infers with certainty that  $E$  is low-, mid-, or high-cost, respectively. If  $E$  takes no action because no state violated in the current round, then each state updates its prior belief about  $E$ 's type according to Bayes' Law and the features of the stochastic process that determines  $E$ 's type. A state violates when its expected payoff of violating, equal to the sum of  $-p_V$ ,  $r$ , and  $s$  weighted by the probabilities that  $E$  is low-, mid-, and high-cost respectively in that round, is positive, and otherwise refrains.

We focus on this particular equilibrium because it has the least stringent conditions of any equilibrium that minimizes violation. In it, the enforcer only has to penalize a single state in order to establish a reputation for being low-cost. Requiring the enforcer to punish more than one violator (if there are multiple violators) in order for the other states to infer that it is low-cost makes the conditions for this to be in equilibrium more stringent. Conversely, any equilibrium that is less demanding for the enforcer must feature at least one subgame with positive probability on the equilibrium path in which the enforcer is a low-cost type but does not punish any of the current violators, and thus has more violation in equilibrium.

Observe that the uncertain enforcement equilibrium presented here yields behavior that is empirically richer than the enforcement equilibrium described in the main paper. Along the equilibrium path, there will be stretches of time where  $E$  has fading but strong-enough reputation for being low-cost that states are deterred from violating. Eventually, this reputation will wear off and states will be willing to try violating again. If  $E$  tolerates or rewards the violators, states will learn  $E$  is the mid- or high-cost type and be encouraged to violate (Hypotheses 1 and 3 in the main paper). If  $E$  instead punishes, her reputation will be restored and states will be discouraged from violating (Hypothesis 2). Along the equilibrium path then, we will see recurring episodes of deterrence and violation as  $E$ 's behavior reveals her type and states respond accordingly.

Interestingly, this equilibrium's prescribed behavior for a low-cost enforcer and resulting beliefs for the audience also seems empirically plausible. The United States, for instance, made nonproliferation deals with Iran (implicitly, through the EU-3) and Libya in 2003, immediately after attacking Iraq. In the model's terms, it penalized one violator

but rewarded the others. Yet, as we document in the main paper, Iran and Libya inferred from the attack on Iraq that they might be subject to attack themselves unless they stopped their programs. Thus it seems empirically supported that a single punishment is sufficient for the audience to infer that the enforcer is low-cost.

For tractability, we assume the stochastic process has the property that, if  $E$  is known to be low-cost in the current round, then the continuation value for a state of violating monotonically increases as additional rounds pass with no responses observed. This implies that, if  $E$  is known to be low-cost in the current round, then her probabilities of being low-, mid-, or high-cost in subsequent rounds are such that each state will not violate for the next  $\hat{t}$  rounds so long as no response by  $E$  is observed, but would violate in the  $\hat{t} + 1$  round. In effect,  $E$ 's reputation for being low-cost ebbs over time and becomes insufficient to deter violation after  $\hat{t}$  rounds.

Note that this property is satisfied by empirically plausible stochastic processes.  $E$ 's cost of punishment might be determined by the health of her domestic economy, the preferences of the particular elites governing  $E$ , and her military commitments or threats elsewhere in the world, among other factors. These factors typically change slowly, but the changes can accumulate over time, so that it becomes more and more likely as time passes that they might have had a large effect on  $E$ 's cost. Mathematically, we could represent this process as a Markov chain where  $E$ 's cost in the next round is drawn from a probability distribution that depends only on her current cost. Our assumption would be satisfied if there are positive but small probabilities of transitioning out of the current cost type, and a limiting distribution that places enough weight on the mid- and high-cost types.

We also assume that  $E$ 's ability to choose to reward a violator depends on her ability

to credibly punish that violator instead. If  $E$ 's continuation value of punishing the violator is at least as high as that of tolerating him, then punishment is credible and  $E$  can choose among punishing, tolerating, or rewarding the violator. If instead  $E$  prefers tolerating to punishing a violator, then  $E$  must choose between punishing or tolerating him; rewarding him to stop the violation is not an option. This assumption is a reduced-form version of the equilibrium results from models such as Bas and Coe (2018), where a deal in which the enforcer rewards a violator in exchange for stopping the violation is only in equilibrium if the enforcer's threat to punish the violator if it reneges on the deal is credible.

By construction, the strategies of the potential violators are optimal given  $E$ 's strategy, and their beliefs are consistent with Bayes' Law, so we need only determine whether  $E$ 's strategy is optimal given theirs. Suppose that a non-empty set of states violates in the current round. Observe that the only possible best-responses are to tolerate all the violators, to reward all the violators, or to punish one state and reward the rest. Either tolerating some violator when reward is feasible, or punishing more than one violator, would lower  $E$ 's immediate payoff and not change subsequent behavior and so cannot be best-responses.

The immediate payoffs of the three possible best-responses are  $-Ns$ ,  $-Nr$ , and  $-p_E - (N-1)r$  respectively. Rewarding or tolerating all current violators will lead to every state violating in the next round, while punishing one and rewarding the others will lead to  $\hat{t}$  subsequent rounds where no state violates, and then every state violating in the  $\hat{t} + 1$  round. Thus, relative to tolerating all violators, punishing one and rewarding the rest will impose on  $E$  the immediate cost  $p_E - s$ . The immediate cost of punishing one and rewarding the rest, relative to rewarding all violators, is  $p_E - r$ . In both cases, punishing one and

rewarding the rest also yields the subsequent benefit of not having to reward or tolerate (depending on  $E$ 's subsequent type draws)  $N$  violators in the next  $\hat{t}$  rounds. Observe that no matter what sequence of draws of  $E$ 's type occurs in those  $\hat{t}$  rounds,  $E$  will either tolerate or reward each set of  $N$  violators in each of those rounds. The present value of that benefit must thus lie within  $\left[\frac{\delta - \delta^{\hat{t}}}{1 - \delta}Nr, \frac{\delta - \delta^{\hat{t}}}{1 - \delta}Ns\right]$ , and so can be written as  $\frac{\delta - \delta^{\hat{t}}}{1 - \delta}N(\tau s + (1 - \tau)r)$ , where  $\tau \in [0, 1]$  is determined by the properties of the stochastic process.

Then we can write formulas for the cutpoints separating the categories of  $E$ 's types as the costs of punishment at which  $E$  is indifferent between punishing one violator and rewarding the rest, on the one hand, and either tolerating or rewarding all violators, on the other hand:

$$p_E^H = s + \frac{\delta - \delta^{\hat{t}}}{1 - \delta}N(\tau s + (1 - \tau)r)$$

$$p_E^L = r + \frac{\delta - \delta^{\hat{t}}}{1 - \delta}N(\tau s + (1 - \tau)r)$$

By construction, when  $p_E \leq p_E^L$ ,  $E$  prefers punishing one violator and rewarding the rest to any other response; when  $p_E^L < p_E \leq p_E^H$ ,  $E$  prefers rewarding all violators to any other response; and when  $p_E > p_E^H$ ,  $E$  is best off from tolerating all violators. This rationalizes  $E$ 's strategy and completes the proof that “uncertain enforcement” is in equilibrium.

Notice that the condition for  $E$  to resort to punishment instead of reward is similar to the condition for  $E$  to punish violation in the enforcement equilibrium of our original model (stated as Proposition 2 in the main paper). The two are nearly equivalent in the special case as  $\hat{t} \rightarrow \infty$ . Essentially, the enforcement equilibrium discussed in the main paper is equivalent to the uncertain enforcement equilibrium presented here whenever  $E$ 's

reputation of being low-cost (and thus willing to punish violators) or mid-/high-cost (and thus going to tolerate or reward violation) lasts forever. It is easy to see that the same comparative statics apply to both models: holding constant the stochastic process determining  $E$ 's type in each round,  $E$  is more likely to punish than reward in a given round whenever  $s$ ,  $r$ ,  $p_E$ ,  $N$ , or  $\delta$  are higher. The last two comparative statics correspond to Hypothesis 4 in the main paper.

## **B Proofs of Propositions**

Proposition 1: First take the strategies of all the potential violators in any particular subgame as given: they will always violate. We will show that the enforcer's strategy in that subgame is optimal. If the enforcer gets a chance to intervene, her choice does not affect the future behavior of any potential violator, by construction. Thus  $E$  strictly prefers rewards over penalties since  $-r > -p_E$ . Now take  $E$ 's strategy and those of all but one potential violator as given, so that we can show that the remaining potential violator's strategy is best. That violator's choice does not affect the future behavior of any other potential violator or of the enforcer, after the current round. Not violating yields a payoff of 0 in this round, while instead violating gets  $\tau s + (1 - \tau)r > 0$ , so violation is strictly preferred.

Proposition 2: By Proposition 1, the given profile of strategies constitutes a subgame-perfect equilibrium for any subgame in which a violator has been rewarded or tolerated, so we need only consider subgames in which neither has yet occurred. Suppose  $E$  has the chance to intervene against a single state that has violated. Rewarding him gives an

immediate payoff of  $-r$ , and leads every subsequent state to violate while  $E$  responds, when given a chance to intervene, with a reward. The continuation value of this for  $E$ , from the next round onward, is, for each potential violator,  $V \equiv \tau s + (1 - \tau)[r + \delta V] = \frac{1}{1 - (1 - \tau)\delta} [\tau s + (1 - \tau)r]$ . Since there are  $N$  potential violators in this subgame, the total continuation value for  $E$  is  $NV$ . If instead  $E$  were to use penalties, she would receive an immediate payoff of  $-p_E$ , and no state would subsequently violate, yielding a continuation value of 0. The second condition in the proposition is thus equivalent to  $E$  preferring penalties over rewards in this subgame.

In any subgame in which  $E$  has the chance to intervene against  $i > 1$  states that have simultaneously violated, her optimal response is determined by the same condition as in the proposition, except with  $p_E - r$  multiplied by  $i$ . These conditions are irrelevant for equilibrium since the version stated in the proposition is sufficient to stop a violator from deviating on his own.

Backing up to the previous subgame, consider the choice of a potential violator. If he does not violate, he receives a continuation value of 0. If he does, his continuation value is  $\tau s - (1 - \tau)p_V$ , where the first term is if  $E$  is not given the chance to intervene and the second term is if she is. The first condition in the proposition is thus equivalent to any potential violator preferring compliance in this subgame.

## C Event Order for Large-N Analysis

Because there are instances where enforcer responses and/or proliferation behaviors happened in the same year, we had to determine the order in which these occurred so as to



correctly code which events came after others. Below we list all the same-year events in the temporal order we used for all our analysis, along with justifications for that order.

1942: The US started pursuit, then Germany was attacked, then the USSR started exploration. US began pursuit on January 19 (Bleek, 2017, 9). The attack on Germany happened in October (Fuhrmann and Kreps, 2010, Appendix, 6). USSR began exploration “late that year” (Bleek, 2017, 10).

1943: The USSR started pursuit, then Germany was attacked. The former happened in February (Bleek, 2017, 10), while the latter occurred in February, April, and the most visible attack (a joint US-UK bombing raid) in November (Fuhrmann and Kreps, 2010, Appendix, 6, 11).

1945: Germany was attacked, then Germany’s exploration ended, then the US acquired, then Japan’s exploration ended and France’s, Sweden’s, and Switzerland’s started. The attack on Germany occurred in March and April (Fuhrmann and Kreps, 2010, Appendix, 11), and its exploration ended with the war in Europe on May 8. US acquisition is dated to the Trinity test on July 16. Japan’s exploration ended with the war in Asia on August 15. France’s exploration began on October 8 (Bleek, 2017, 11), Switzerland’s when its Atomic Energy Committee was established (Bleek, 2017, 33) in November (Cerutti, 2012, 73). Sweden also started exploring after war ended (Jonter, 2016, 41).

1949: Israel started exploration, then the USSR acquired, then Yugoslavia started exploration. We conservatively assume Israel’s start came before the Soviet test (the reverse order would support H1), based on the influence the US bomb had on Israeli scientists (Rabinowitz, 2014, 72–73). The Soviet test was on August 29. Yugoslavia’s exploration began in September (Potter, Miljanic and Slaus, 2000).

1952: The UK acquired, then China started exploration. While the UK test occurred in October, Prime Minister Churchill announced it in February (Daniel, 1952). China began exploring in May (Bleek, 2017, 12).

1964: China acquired, then India and Indonesia started pursuit. China's first test was October 16, Indonesia started November 15 and India on November 27 (Bleek, 2017, 17, 38).

1967: Indonesia ended and Taiwan began exploration, then Israel acquired, then Japan started exploration. While Indonesia signed a safeguards agreement on June 19, the decision to end exploration arguably happened in 1966 with Sukarno's replacement with Suharto, the latter not a supporter of the program (Cornejo, 2000, 38, 41). Recent research reveals Taiwan actually began its Hsin Chu program in 1966, not 1967 (Albright and Stricker, 2018, 10). Israel acquired in May (Bleek, 2017, 14). Japan began exploration later that year, as implied by the working of a commission to explore nuclear weapons "for two and a half years beginning in 1967" and ending with a final report in 1970 (Kase, 2001, 58).

1969: South Africa started and Switzerland ended exploration, then West Germany made a late-stage deal, then South Korea started exploration. South Africa's exploration began with the decision "to build a secret pilot scale uranium enrichment plant" (Bleek, 2017, 14) in February (Albright and Stricker, 2016, 8). Switzerland ended its program by signing the NPT on June 24, and West Germany "codified a tacit bargain with the United States in which it renounced nuclear weapons" by doing the same on November 28, though the deal had been negotiated over the previous months (Gerzhoy, 2015, 124). South Korea began "in late 1969" (Siler, 1998, 59) but Bleek (2017, 22) notes the first concrete actions

seemed to have happened in early 1970.

1974: India acquired, then Iran and Yugoslavia started exploration and South Africa started pursuit. India's test was on May 18, while Iran's exploration is coded as beginning with an interview the Shah gave in which he said Iran would have nukes "sooner than it is believed" (Bleek, 2017, 28). That interview occurred on June 23 (Burr, 2009). Tito first announced a decision to resume exploring nuclear weapons in a meeting of government officials "in early June" (Potter, Miljanic and Slaus, 2000). South Africa's pursuit is coded as beginning with Prime Minister Vorster's decision to develop a nuclear explosive capability (Bleek, 2017, 15), which occurred after a successful test of a scale model of a gun-type device in May (Albright, 1994).

1978: Taiwan made a late-stage deal, then Argentina and Romania started exploration. Taiwan committed itself to nonproliferation in 1976 (Bleek, 2017, 39), although prolonged negotiations with the US over specific activities Taiwan would not be allowed to engage in continued until September 1978 (Burr, 2007b). Argentina is reported to have started exploring in October 1978 (Benjamin, 1978) and Romania in late (most likely December) 1978 (Gheorghe, 2014, 327).

1979: Iran ended exploration, then Iraq was attacked, then South Africa acquired. Iran's first exploration ended with the Shah's overthrow in February (Bleek, 2017, 28), while the first attack on Iraq's program, Israel's sabotage of French facilities producing reactor cores for Iraq (Fuhrmann and Kreps, 2010, Appendix, 4), occurred on April 6 (Perlmutter, Handel and Bar-Joseph, 2003, 53). It was "not until the second half of 1979" that South Africa had a viable weapon design and enough enriched uranium (Albright, 1994).

1980: North Korea started pursuit, then Iraq was attacked, then Egypt ended. The former is coded on beginning construction of a larger reactor at Yongbyon (Bleek, 2017, 20), but new sources have this construction starting in 1979 (IAEA, 2014). Israel assassinated a key Egyptian scientist assisting Iraq's program on June 14 (Perlmutter, Handel and Bar-Joseph, 2003, xxxvii) and bombed a related facility in Rome in August 1980 (Perlmutter, Handel and Bar-Joseph, 2003, 61). Iran launched an air raid on Osirak in September (Fuhrmann and Kreps, 2010, Appendix, 3). Egypt's exploration ended in December (Bleek, 2017, 36).

1981: South Korea made a deal, then Iraq was attacked, then Iraq started pursuit. South Korea completed a bargain with the US to stop its pursuit of nuclear weapons early in 1981 (Siler, 1998, 75–78). Iraq's Osirak facility was struck in June, and Bleek codes it as beginning pursuit soon after (Bleek, 2017, 27).

1987: Taiwan restarted exploration and Yugoslavia ended, then Pakistan acquired. Taiwan's restart of exploration is coded on the basis of its decision to build a plutonium reprocessing facility (Bleek, 2017, 40), but recent research shows this happened much earlier, in 1983 (Albright and Stricker, 2018, 157). Yugoslavia ended its program on July 7 (Potter, Miljanic and Slaus, 2000). The exact timing of Pakistan's acquisition is not publicly known, with (Bleek, 2017, 16) stating that "one could make a plausible case for coding this one or several years later", so we assume it came last.

1991: Iraq was attacked, then Algeria ended and Ukraine started exploration. The Gulf War took place from January 17 to February 28. Algeria ended its exploration by agreeing to place its facilities under IAEA safeguards (Bleek, 2017, 45) in the spring (Burr, 2007a). Ukraine only became independent in the latter half of the year.

1994: We treat the Agreed Framework and Budapest Memorandum as late-stage deals made simultaneously with North Korea and Ukraine, respectively. They were simultaneously negotiated and formalized within less than two months of each other ([US Congress, 1995](#), 67, 74-75).

2003: Iraq was attacked, then deals were made with Iran and Libya simultaneously. The Iraq War's invasion phase ran from March 20 to April 30 ([Rayburn and Sobchak, 2019](#), 81). We treat the EU-3 deal with Iran and the US/UK deal with Libya as simultaneous, since they were negotiated at the same time and announced within two months of each other ([Sauer, 2015](#), 106; [Braut-Hegghammer, 2008](#), 55).

## **D Robustness Checks for the Large-N Analysis**

We first show that our results are robust to allowing for the possibility that audience countries may learn more from some responses than others. We consider four different ways of weighting the counts of recent enforcer responses. First, *Time* assigns more weight to more recent responses within the five-year window. *v-clear* more heavily weights responses that target a proliferant with more similar nuclear infrastructure to the audience country, based on the *v-Clear* measure by [Smith and Spaniel \(2020\)](#). This version allows for the possibility that states might learn more from proliferants who rely on the same relevant infrastructure in pursuing nuclear weapons. *Ideal Pt.* aims to capture preference similarity of the audience country with the response target. In this variant, responses to countries that tend to vote similarly with the audience country in the UN General Assembly receive a larger weight ([Bailey, Strezhnev and Voeten, 2017](#)). Finally, *Polity* assigns more weight

Table 1: Audience behavior within 5 years following a tolerated **proliferation**

<b>Proliferant</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>US 1945</b>	France 1945, Sweden 1945, Switzerland 1945, Norway 1947, India 1948, Israel 1949, Yugoslavia 1949	-
<b>USSR 1949</b>	Yugoslavia 1949, China 1952, Yugoslavia 1953, France 1954	-
<b>UK 1952</b>	China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955, Australia 1956, W. Germany 1957	-
<b>France 1960</b>	N. Korea 1962, India 1964, Indonesia 1964	Norway 1962, Yugoslavia 1962
<b>China 1964</b>	India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967, S. Africa 1969, S. Korea 1969	India 1966, Indonesia 1967, Switzerland 1969
<b>Israel 1967</b>	Japan 1967, S. Africa 1969, S. Korea 1969, Libya 1970, S. Korea 1970, India 1972, Pakistan 1972	Switzerland 1969, Sweden 1970, Japan 1972
<b>India 1974</b>	Iran 1974, S. Africa 1974, Yugoslavia 1974, Brazil 1975, Iraq 1975, Argentina 1978, Romania 1978	Taiwan 1976, Iran 1979
<b>S. Africa 1979</b>	N. Korea 1980, Iraq 1981, Algeria 1983, Iran 1984	Egypt 1980, S. Korea 1981
<b>Pakistan 1987</b>	Iran 1989, Ukraine 1991	Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990, Algeria 1991
<b>N. Korea 2006</b>	-	-
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, USSR 1942, USSR 1943, Taiwan 1987, N. Korea 1995, Syria 1997, Syria 2002, Iran 2005	Italy 1958, W. Germany 1958, Australia 1973, Yugoslavia 1987, N.Korea 1994, Ukraine 1994, Iran 2003, Libya 2003, Iran 2015
<b>1939–2018</b>	<b>41***</b> of 54	16 of 25
expected	29.0	13.4
p-value	.0007	.9
<b>1945–2018</b>	<b>41***</b> of 46	16 of 25
expected	26.7	14.5
p-value	.000005	.8
<b>1969–2018</b>	<b>19***</b> of 24	12 of 19
expected	13.0	10.3
p-value	.01	.8
<b>1976–2018</b>	<b>8</b> of 13	9 of 15
expected	6.3	7.3
p-value	.3	.9

Table 2: Audience behavior within 5 years following an **attack**

<b>Attack</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>Germany (1942-45)</b>	USSR 1942, USSR 1943, France 1945, Sweden 1945, Switzerland 1945, Norway 1947, India 1948, Israel 1949, Yugoslavia 1949	-
<b>Iraq (1979-81)</b>	N. Korea 1980, Algeria 1983, Iran 1984	Egypt 1980, S. Korea 1981
<b>Iran (1984-88)</b>	Taiwan 1987, Ukraine 1991	Yugoslavia 1987, Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990, Algeria 1991
<b>Iraq 1991</b>	Ukraine 1991, N. Korea 1995	Algeria 1991, N. Korea 1994, Ukraine 1994
<b>Iraq 2003</b>	Iran 2005	Iran 2003, Libya 2003
<b>Syria 2007</b>	-	-
<b>Iran (2010-12)</b>	-	-
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955, Australia 1956, W. Germany 1957, N. Korea 1962, India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967, S. Africa 1969, S. Korea 1969, Libya 1970, S. Korea 1970, India 1972, Pakistan 1972, Iran 1974, S. Africa 1974, Yugoslavia 1974, Brazil 1975, Iraq 1975, Argentina 1978, Romania 1978, Iraq 1981, Iran 1989, Syria 1997, Syria 2002	Italy 1958, W. Germany 1958, Norway 1962, Yugoslavia 1962, India 1966, Indonesia 1967, Switzerland 1969, Sweden 1970, Japan 1972, Australia 1973, Taiwan 1976, Iran 1979, Iran 2015
<b>1939–2018</b>	<b>16***</b> of 54	12 of 25
expected	28.4	13.1
p-value	.0006	.7
<b>1945–2018</b>	<b>14***</b> vs 46	12 of 25
expected	24.2	13.2
p-value	.002	.7
<b>1969–2018</b>	<b>7***</b> of 24	12 of 19
expected	15.8	12.5
p-value	.0002	.7
<b>1976–2018</b>	<b>7*</b> of 13	<b>12</b> of 15
expected	10.0	11.5
p-value	.06	.5

Table 3: Audience behavior within 5 years following a **late-stage deal**

<b>Deal</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>W. Germany 1969</b>	S. Korea 1969, Libya 1970, S. Korea 1970, India 1972, Pakistan 1972, Iran 1974, S. Africa 1974, Yugoslavia 1974	Sweden 1970, Japan 1972, Australia 1973
<b>Taiwan 1978</b>	Argentina 1978, Romania 1978, N. Korea 1980, Iraq 1981, Algeria 1983	Iran 1979, Egypt 1980, S. Korea 1981
<b>S. Korea 1981</b>	Algeria 1983, Iran 1984	
<b>Ukraine 1994</b>	N. Korea 1995, Syria 1997	
<b>N. Korea 1994</b>	Syria 1997	
<b>Iran 2003</b>		
<b>Libya 2003</b>	Iran 2005	
<b>Iran 2015</b>		
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, USSR 1942, USSR 1943, France 1945, Sweden 1945, Switzerland 1949, Norway 1947, India 1948, Israel 1949, Yugoslavia 1949, China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955, Australia 1956, W. Germany 1957, North Korea 1962, India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967, S. Africa 1969, Brazil 1975, Iraq 1975, Taiwan 1987, Iran 1989, Ukraine 1991, Syria 2002	Italy 1958, W. Germany 1958, Norway 1962, Yugoslavia 1962, India 1966, Indonesia 1967, Switzerland 1969, Taiwan 1976, Yugoslavia 1987, Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990, Algeria 1991, N. Korea 1994, Ukraine 1994, Iran 2003, Libya 2003, Iran 2015
<b>1939–2018</b>	17 of 54	<b>6*</b> of 25
expected	20.9	9.7
p-value	.9	.09
<b>1945–2018</b>	17 of 46	<b>6**</b> of 25
expected	19.3	10.5
p-value	.8	.05
<b>1969–2018</b>	<b>17</b> of 24	<b>6***</b> of 19
expected	14.9	11.8
p-value	.25	.007
<b>1976–2018</b>	<b>9</b> of 13	<b>3***</b> of 15
expected	7.6	8.7
p-value	.3	.003



Table 4: Audience behavior within 3 years following a tolerated **proliferation**

<b>Proliferant</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>US 1945</b>	France 1945, Sweden 1945, Switzerland 1945, Norway 1947, India 1948	-
<b>USSR 1949</b>	Yugoslavia 1949, China 1952	-
<b>UK 1952</b>	China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955	-
<b>France 1960</b>	N. Korea 1962	Norway 1962, Yugoslavia 1962
<b>China 1964</b>	India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967	India 1966, Indonesia 1967
<b>Israel 1967</b>	Japan 1967, S. Africa 1969, S. Korea 1969, Libya 1970, S. Korea 1970	Switzerland 1969, Sweden 1970
<b>India 1974</b>	Iran 1974, S. Africa 1974, Yugoslavia 1974, Brazil 1975, Iraq 1975	Taiwan 1976
<b>S. Africa 1979</b>	N. Korea 1980, Iraq 1981	Egypt 1980, S. Korea 1981
<b>Pakistan 1987</b>	Iran 1989	Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990
<b>N. Korea 2006</b>	-	-
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, USSR 1942, USSR 1943, Israel 1949, Australia 1956, W. Germany 1957, India 1972, Pakistan 1972, Argentina 1978, Romania 1978, Algeria 1983, Iran 1984, Taiwan 1987, Ukraine 1991, N. Korea 1995, Syria 1997, Syria 2002, Iran 2005	W.Germany 1958, Italy 1958, Japan 1972, Australia 1973, Iran 1979, Yugoslavia 1987, Algeria 1991, N. Korea 1994, Ukraine 1994, Iran 2003, Libya 2003, Iran 2015
<b>1939–2018</b>	<b>31*</b> of 54	13 of 25
expected	25.7	11.9
p-value	.09	.7
<b>1945–2018</b>	<b>31**</b> of 46	13 of 25
expected	23.6	12.8
p-value	.02	.6
<b>1969–2018</b>	<b>12*</b> of 24	9 of 19
expected	8.6	6.8
p-value	.1	.9
<b>1976–2018</b>	3 of 13	7 of 15
expected	4.2	4.9
p-value	.8	.9

Table 5: Audience behavior within 3 years following an **attack**

<b>Attack</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>Germany (1942-45)</b>	USSR 1942, USSR 1943, France 1945, Sweden 1945, Switzerland 1945, Norway 1947, India 1948	-
<b>Iraq (1979-81)</b>	N. Korea 1980, Algeria 1983, Iran 1984	Egypt 1980, S. Korea 1981
<b>Iran (1984-88)</b>	Taiwan 1987, Ukraine 1991	Yugoslavia 1987, Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990, Algeria 1991
<b>Iraq 1991</b>	Ukraine 1991	Algeria 1991, N. Korea 1994, Ukraine 1994
<b>Iraq 2003</b>	Iran 2005	Iran 2003, Libya 2003
<b>Syria 2007</b>	-	-
<b>Iran (2010-12)</b>	-	-
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, Israel 1949, Yugoslavia 1949, China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955, Australia 1956, W. Germany 1957, N. Korea 1962, India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967, S. Africa 1969, S. Korea 1969, Libya 1970, S. Korea 1970, India 1972, Pakistan 1974, Iran 1974, S. Africa 1974, Yugoslavia 1974, Brazil 1975, Iraq 1975, Argentina 1978, Romania 1978, Iraq 1981, Iran 1989, N. Korea 1995, Syria 1997, Syria 2002	Italy 1958, W. Germany 1958, Norway 1962, Yugoslavia 1962, India 1966, Indonesia 1967, Switzerland 1969, Sweden 1970, Japan 1972, Australia 1973, Taiwan 1976, Iran 1979, Iran 2015
<b>1939–2018</b>	<b>13***</b> of 54	<b>12</b> of 25
expected	24.3	11.3
p-value	.001	.5
<b>1945–2018</b>	<b>11***</b> of 46	<b>12</b> of 25
expected	20.5	11.1
p-value	.003	.4
<b>1969–2018</b>	<b>6***</b> of 24	<b>12</b> of 19
expected	13.0	10.3
p-value	.004	.3
<b>1976–2018</b>	<b>6*</b> of 13	<b>12</b> of 15
expected	8.8	10.1
p-value	.09	.2

Table 6: Audience behavior within 3 years following a **late-stage deal**

<b>Deal</b>	<b>Program Acceleration</b>	<b>Program Deceleration</b>
<b>W. Germany 1969</b>	S. Korea 1969, Libya 1970, S. Korea 1970, India 1972, Pakistan 1972	Sweden 1970, Japan 1972
<b>Taiwan 1978</b>	Argentina 1978, Romania 1978, N. Korea 1980, Iraq 1981	Iran 1979, Egypt 1980, S. Korea 1981
<b>S. Korea 1981</b>	Algeria 1983, Iran 1984	
<b>Ukraine 1994</b>	N. Korea 1995, Syria 1997	
<b>N. Korea 1994</b>	Syria 1997	
<b>Iran 2003</b>		
<b>Libya 2003</b>	Iran 2005	
<b>Iran 2015</b>		
<b>None</b>	US 1939, Germany 1939, UK 1940, Japan 1941, UK 1941, US 1942, USSR 1942, USSR 1943, France 1945, Sweden 1945, Switzerland 1949, Norway 1947, India 1948, Israel 1949, Yugoslavia 1949, China 1952, Yugoslavia 1953, France 1954, China 1955, Egypt 1955, Israel 1955, Italy 1955, Australia 1956, W. Germany 1957, N. Korea 1962, India 1964, Indonesia 1964, Brazil 1966, Taiwan 1967, Japan 1967, S. Africa 1969, Iran 1974, S. Africa 1974, Yugoslavia 1974, Brazil 1975, Iraq 1975, Taiwan 1987, Iran 1989, Ukraine 1991, Syria 2002	Italy 1958, W. Germany 1958, Norway 1962, Yugoslavia 1962, India 1966, Indonesia 1967, Switzerland 1969, Australia 1973, Taiwan 1976, Yugoslavia 1987, Taiwan 1988, Romania 1989, Argentina 1990, Brazil 1990, Algeria 1991, N. Korea 1994, Ukraine 1994, Iran 2003, Libya 2003, Iran 2015
<b>1939–2018</b>	14 of 54	5 of 25
expected	15.5	7.2
p-value	.7	.2
<b>1945–2018</b>	14 of 46	5 of 25
expected	14.3	7.8
p-value	.6	.2
<b>1969–2018</b>	14 of 24	5* of 19
expected	11.0	8.7
p-value	.2	.07
<b>1976–2018</b>	9* of 13	3** of 15
expected	5.7	6.6
p-value	.06	.05

to responses to proliferants that have similar Polity scores. Focusing on *Program Start* as the dependent variable, the results are presented in Table 7.

In general, the weight assigned by audience country  $i$  to a specific response to country  $j$  is  $w_{ij} = \frac{\bar{\delta} - \delta_{ij}}{\bar{\delta}}$ ,  $w_{ij} \in [0, 1]$ , where  $\bar{\delta}$  is the maximum dyadic distance in the sample in that weighting scheme. For instance, in regime type similarity weighting, the maximum regime difference in the sample is 20 based on the Polity scores, between a fully autocratic country with a score of -10 and a full democracy with 10.  $\delta_{ij}$  is the dyadic distance between the audience country  $a_i$  and the response country  $r_j$  in that weighting dimension.

Tables 8 through 12 present various additional robustness checks to Table 2 of the main paper. These consider all audience countries instead of just those that manifested interest in atomic energy (Table 8); measuring responses by dummy variables instead of counts (Table 9); all observations from 1939 on (Table 10); only observations from 1969 on (Table 11); and only observations from 1976 on (Table 12).

Table 13 shows that our results hold strongly when we include as controls only the variables that Bell (2016) found to be good predictors of proliferation behavior: major power status, recent involvement in militarized interstate disputes, and a rival's pursuing nuclear weapons.

## **E Why Deal Results Are Inconclusive**

We present a simple simulation exercise that demonstrates how strategic behavior by enforcers can lead to inconclusive statistical support for our hypothesis that a late-stage deal should encourage proliferants. We will choose some round numbers and work out a nu-

Table 7: Proliferation Behavior Soon After Enforcer Responses, Weighted Response Counts, Program Start

	<b>Unweighted</b>	<b>Time</b>	<b>v-clear</b>	<b>Ideal Pt.</b>	<b>Polity</b>
Toleration	0.675* (0.055)	1.238** (0.016)	1.501*** (0.000)	1.261* (0.097)	1.682*** (0.000)
Attacks	-0.515 (0.119)	-0.606 (0.107)	-0.265 (0.307)	-0.513 (0.203)	-0.469* (0.083)
Deals	-0.349 (0.300)	-0.087 (0.847)	0.139 (0.800)	0.202 (0.726)	0.565 (0.358)
Interstate Conf	0.391*** (0.002)	0.424*** (0.002)	0.415*** (0.001)	0.617** (0.014)	0.276* (0.100)
Civil Conf	-0.052 (0.598)	-0.053 (0.571)	-0.065 (0.570)	-0.087 (0.627)	-0.044 (0.671)
Nuclear Rival	2.391*** (0.000)	2.326*** (0.000)	1.963*** (0.000)	2.937*** (0.000)	2.115*** (0.000)
GDP per capita	-0.019 (0.469)	-0.024 (0.408)	-0.033 (0.423)	-0.003 (0.886)	-0.027 (0.374)
Polity	-0.041 (0.347)	-0.047 (0.275)	-0.031 (0.449)	-0.094 (0.216)	-0.069 (0.102)
Constant	-5.533*** (0.000)	-5.741*** (0.000)	-6.003*** (0.000)	-6.776*** (0.000)	-6.097*** (0.000)
Observations	4582	4582	2982	3227	3947

Logistic regression with standard errors clustered on audience countries. For each coefficient, p-values are reported in parentheses. Sample of countries that manifested interest in atomic energy, post-1945.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 8: Proliferation Behavior Soon After Enforcer Responses, Response Counts, All Audience Countries, post-1945

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	0.552** (0.020)	0.512 (0.161)	0.752*** (0.003)	0.585*** (0.009)	-1.028*** (0.000)	-1.065*** (0.000)	0.004** (0.021)
Attacks	-0.497** (0.024)	-1.267** (0.011)	-0.473** (0.048)	-0.674*** (0.004)	0.318*** (0.007)	0.340*** (0.005)	-0.002** (0.028)
Deals	-0.263 (0.313)	0.267 (0.441)	-0.404 (0.221)	-0.128 (0.547)	-0.970** (0.023)	-0.935** (0.029)	0.001 (0.287)
Constant	-5.748*** (0.000)	-6.322*** (0.000)	-6.031*** (0.000)	-5.438*** (0.000)	-1.931*** (0.000)	-1.980*** (0.000)	-0.000 (1.000)
Observations	9956	10224	9953	10224	475	475	10423

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

All countries, post-1945. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 9: Proliferation Behavior Soon After Enforcer Responses, Response Dummies, post-1945

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	1.636*** (0.000)	1.431** (0.017)	2.181*** (0.003)	1.756*** (0.001)	-0.963*** (0.010)	-1.026*** (0.008)	0.009** (0.013)
Attacks	-1.004*** (0.005)	-1.627*** (0.008)	-1.090*** (0.003)	-1.228*** (0.000)	0.737** (0.034)	0.817** (0.026)	-0.009*** (0.006)
Deals	0.123 (0.769)	0.854** (0.047)	-0.264 (0.584)	0.244 (0.435)	-1.042 (0.102)	-1.023 (0.117)	0.006* (0.083)
Constant	-5.968*** (0.000)	-6.573*** (0.000)	-6.402*** (0.000)	-5.756*** (0.000)	-2.186*** (0.000)	-2.233*** (0.000)	0.000 (0.952)
Observations	5413	5681	5410	5681	475	475	5880

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

Sample of countries that manifested interest in atomic energy, post-1945. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 10: Proliferation Behavior Soon After Enforcer Responses, Response Counts, post-1939

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	0.316 (0.140)	0.209 (0.559)	0.441* (0.061)	0.275 (0.242)	-0.789*** (0.004)	-0.826*** (0.005)	0.004 (0.174)
Attacks	-0.531*** (0.001)	-1.113*** (0.002)	-0.518*** (0.003)	-0.651*** (0.000)	0.331*** (0.008)	0.354*** (0.005)	-0.004*** (0.005)
Deals	-0.583** (0.027)	-0.045 (0.887)	-0.769** (0.018)	-0.461** (0.040)	-0.790* (0.059)	-0.754* (0.074)	-0.001 (0.645)
Constant	-4.462*** (0.000)	-5.111*** (0.000)	-4.609*** (0.000)	-4.136*** (0.000)	-2.284*** (0.000)	-2.334*** (0.000)	0.006 (0.141)
Observations	5461	5744	5458	5744	501	501	5952

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

Sample of countries that manifested interest in atomic energy, post-1939. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 11: Proliferation Behavior Soon After Enforcer Responses, Response Counts, post-1969

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	1.002*** (0.006)	0.683** (0.020)	1.321*** (0.002)	0.952*** (0.001)	-0.491 (0.285)	-0.491 (0.285)	0.004 (0.234)
Attacks	-0.657* (0.058)	-1.287*** (0.004)	-0.587 (0.146)	-0.856** (0.012)	0.171 (0.191)	0.171 (0.191)	-0.002 (0.118)
Deals	-0.104 (0.699)	0.034 (0.922)	-0.163 (0.666)	-0.074 (0.716)	-1.282*** (0.000)	-1.282*** (0.000)	0.002 (0.124)
Constant	-5.586*** (0.000)	-5.441*** (0.000)	-6.168*** (0.000)	-5.071*** (0.000)	-1.701*** (0.000)	-1.701*** (0.000)	-0.000 (0.998)
Observations	4491	4616	4487	4616	274	274	4766

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

Sample of countries that manifested interest in atomic energy, post-1969. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Table 12: Proliferation Behavior Soon After Enforcer Responses, Response Counts, post-1976

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	0.454 (0.353)	0.703 (0.201)	0.944* (0.067)	0.768** (0.047)	-0.727 (0.155)	-0.727 (0.155)	0.001 (0.830)
Attacks	-0.344 (0.323)	-1.078*** (0.009)	-0.349 (0.461)	-0.633* (0.077)	0.222 (0.135)	0.222 (0.135)	-0.001 (0.465)
Deals	0.020 (0.943)	0.060 (0.896)	0.065 (0.856)	0.035 (0.893)	-1.552*** (0.003)	-1.552*** (0.003)	0.003** (0.041)
Constant	-5.906*** (0.000)	-5.780*** (0.000)	-6.508*** (0.000)	-5.411*** (0.000)	-1.630*** (0.000)	-1.630*** (0.000)	-0.002 (0.556)
Observations	4059	4132	4057	4132	200	200	4266

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

Sample of countries that manifested interest in atomic energy, post-1976. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

merical example based on the strategic behavior predicted by our model.

Suppose that, over the course of 100 years, audience size randomly varies from 1 to 20 each year. Our theory argues that when the enforcer faces a proliferant, she takes the audience size into account in choosing a response, with larger audiences pushing the enforcer toward attacking over making a deal.

In our model, the Enforcer is sometimes forced to tolerate proliferation, either because a state's program is not discovered in time or because the enforcer finds intervention infeasible. Assume for the sake of this exercise that this occurs with probability .1. If toleration is not chosen, when the audience size is greater than 5, the enforcer prefers attacking with .25 probability and does not attack otherwise. With audience sizes 5 or less, the enforcer chooses deals with .35 probability. While the exact toleration, attack and deal probabilities are not essential for the results below, these values are chosen to make overall response



Table 13: Proliferation Behavior Soon After Enforcer Responses, Response Counts, with only controls from Bell (2016)

	<b>Program</b>	<b>Pursue</b>	<b>Explore</b>	<b>Accel.</b>	<b>Decel.</b>	<b>End</b>	<b>Status Ch.</b>
Toleration	0.878*** (0.004)	0.498 (0.247)	1.146*** (0.001)	0.732** (0.011)	-0.973*** (0.002)	-1.028*** (0.003)	0.006* (0.071)
Attacks	-1.056*** (0.002)	-1.440** (0.039)	-1.154*** (0.003)	-1.133*** (0.003)	0.326*** (0.005)	0.352*** (0.002)	-0.003** (0.027)
Deals	0.040 (0.879)	0.366 (0.298)	-0.034 (0.923)	0.159 (0.487)	-0.940** (0.030)	-0.894** (0.044)	0.001 (0.365)
MIDs in last 5 yrs	0.117*** (0.000)	0.087*** (0.000)	0.127*** (0.000)	0.077*** (0.000)	-0.060** (0.037)	-0.081** (0.026)	0.001** (0.031)
Rival pursuit NW	1.486*** (0.001)	1.939*** (0.001)	1.220** (0.044)	1.528*** (0.001)	0.252 (0.697)	0.455 (0.441)	0.012 (0.314)
Major Power	1.200 (0.294)	1.741** (0.023)	1.279 (0.220)	1.476** (0.046)	-	-	0.010 (0.624)
Constant	-6.134*** (0.000)	-6.634*** (0.000)	-6.541*** (0.000)	-5.686*** (0.000)	-1.597*** (0.000)	-1.579*** (0.000)	-0.003 (0.480)
Observations	4647	4884	4644	4884	393	393	5070

Logistic regression with standard errors clustered on audience countries, except Status Ch., which is linear regression.

Sample of countries that manifested interest in atomic energy, post-1976. For each coefficient, p-values are reported in parentheses.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

counts similar to our actual data set (on average, these parameters result in approximately 10, 8, and 16 toleration, deal, and attack response-years, respectively.)

For the audience members observing the enforcer’s responses, suppose that the equation below is the data generating process governing their decision to start a program or not:

$$\begin{aligned}
 y &= 1.5 - Attack + Deal + Toleration + \varepsilon \\
 Start &= 1 \quad \text{if} \quad y \geq 0 \\
 Start &= 0 \quad \text{otherwise}
 \end{aligned}$$

where  $\varepsilon$  is distributed  $N(0,2)$ . Thus, by construction, each enforcer response type has the same magnitude of effect on an audience country’s likelihood of starting a program. In our simulations, we randomly generate data sets of enforcer responses and audience behavior, and run a probit regression of program starts on the three enforcer response variables. We generate 100,000 different such data sets and at each iteration record the coefficients and t-scores of the response variables.

Figure 1 captures the significance of the response coefficients from these simulations. The blue, red, and green curves are the densities of the t-scores for Toleration, Attack, and Deal responses, respectively, based on 100,000 iterations. The vertical red dashed lines mark the t-scores of -1.96 and 1.96 to capture significance thresholds. As it is seen from the figure, while Attack and Toleration coefficients are predominantly significant in the expected directions (99.6% and 83% of the time, respectively), the Deal coefficient is positive and significant in only about 28.6% of iterations. Furthermore, the Deal coefficient is

in the opposite direction of the true coefficient in the data generating process in 16.5% of iterations. With Attacks and Tolerations, this only occurs with 0.001% and 0.379% of the simulated data sets.

In conclusion, due to the fact that the enforcers strategically select their response type as a function of the perceived audience size, finding statistical support for the Deal hypothesis is more difficult compared to the other two response types.

Figure 1: Selecting responses by audience size suppresses the estimated effect of deals when all three responses are assumed to have similar effects in the data generating process.

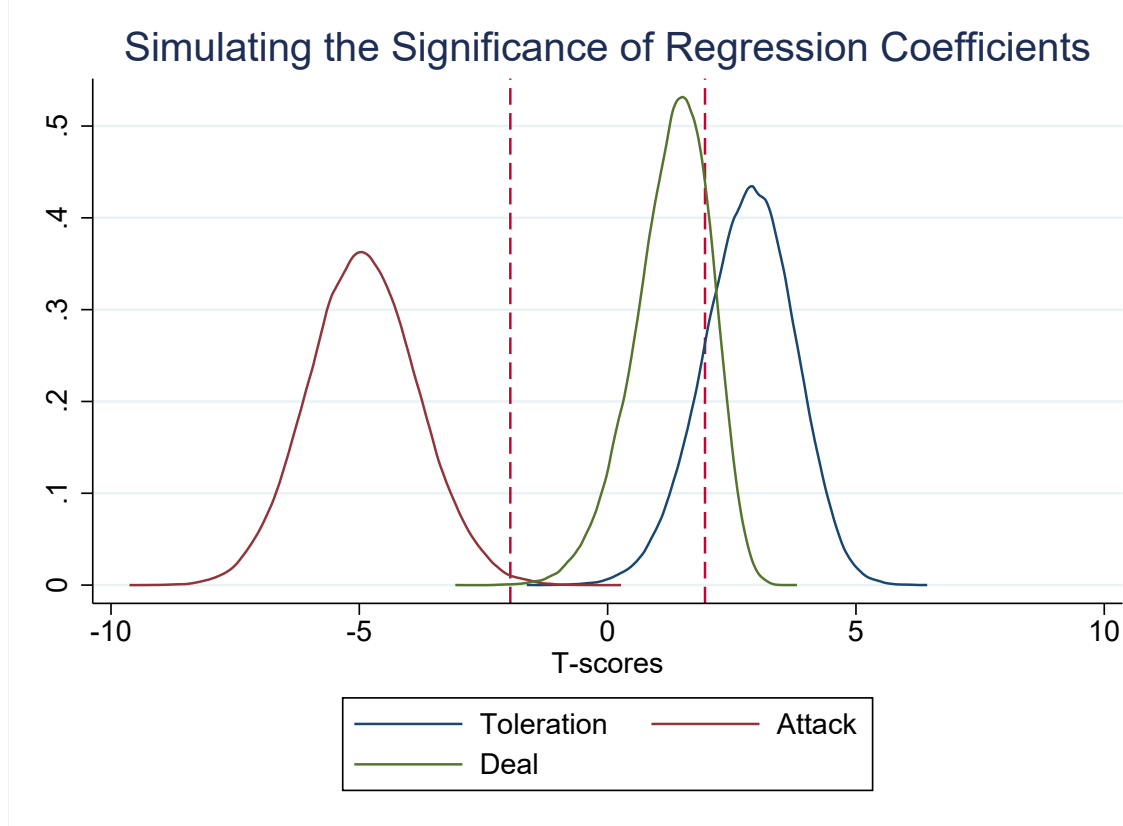


Table 14: Results from Case Evidence

Hypothesis	Supportive	Contrary	Inconclusive
1: Toleration encourages audience	21	1	
2: Attack discourages audience	5	2	1
3: Deal encourages audience	3	1	
4: Audience affects enforcer choice	19	2	
total	48	6	1

## F Case Evidence

This section first explains how we went about finding cases on which to test our theory, and the criteria we use for evaluating whether each case supports or refutes our theory. We then turn to documenting the primary and secondary sources we used as evidence for each case. Table 14 summarizes the results. Most cases offer corroboration of our hypotheses, although there are some exceptions. The systematic nature of our empirical investigation shows that the evidence we have chosen is not merely anecdotal or cherry-picked to be favorable to our theory.

### Approach to Finding and Evaluating Cases

The universe of cases for testing our predictions about potential proliferants' behavior (H1–3) is the set of reactions to each enforcer response by the audience of potential proliferants present for that response. However, documented evidence on nuclear decision-making by potential proliferants is available only for the states that are known to have seriously considered seeking nuclear weapons: the 31 states coded as exploring or pursuing a nuclear weapons program by Bleek (2017), as well as the post-Soviet nuclear-inheriting states Belarus, Kazakhstan, and Ukraine (Budjeryn, 2016). This set of 34 states

is almost surely not the entire audience for enforcer responses. It excludes, for instance, states rumored but not (yet?) convincingly documented to have considered seeking nuclear weapons, such as Myanmar, Nigeria, Saudi Arabia, Spain, Turkey, United Arab Emirates, and Venezuela.<sup>1</sup> However, we are reasonably confident these 34 states constitute a large majority of the true audience.

We thus proceeded by searching the available primary and secondary sources on each of these 34 states' nuclear decision-making, focusing on the several years following each enforcer response. We performed both broad- and narrow-scope searches, using progressively more specific keywords on search engines, archival catalogs, and digital archives. We were able to survey primary and secondary sources in several languages—including Arabic, Chinese, English, Farsi, French, Portuguese, Russian, and Serbo-Croatian—but other sources were outside our reach because of linguistic limitations. The bulk of the evidence we cite is in English, primarily because English-speaking governments have declassified more archival records related to nuclear proliferation, but also because the academic scholarship produced in the Anglophone world on this topic has grown dramatically in the past twenty years.

We included testimonies from contemporary decision-makers, official documents, and intelligence estimates, as well as other scholars' assessments that a response had an impact on a proliferant's decision. We counted as relevant evidence only sources that mention the influence of a *specific* enforcer response on a *specific* audience member. General concerns that toleration would lead to more proliferation, or that pursuing nuclear weapons might lead to being attacked, were common in the documents but are insufficient to count as

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<sup>1</sup>This list is drawn from Bleek (2017) and the Nuclear Threat Institute's list of country profiles, available at <https://www.nti.org/countries/>.

evidence for our theory because they can too easily be attributed to other mechanisms, as we explain below.

Supportive evidence consists of proliferants witnessing enforcer responses and inferring that they would receive the same treatment, and thus being encouraged (after a toleration or deal) or discouraged (after an attack) in their own nuclear pursuits. Instances where proliferants appear to have been encouraged by an attack or discouraged by a deal or toleration—whether because they instead inferred that they would receive *different* treatment or for any other reason—constitute evidence against our theory.

Throughout, we are careful to distinguish our theory’s mechanism from two others by which enforcer responses might affect subsequent proliferation. A state acquiring nuclear weapons (as a result of a toleration) might encourage another to try because the former now presents a more severe security threat to the latter, or because the latter anticipates receiving assistance with nuclear technology from the former. Conversely, a state that is stopped from acquiring nuclear weapons (as a result of an attack or deal) may discourage others because the security threat is thereby made less pressing or because a new source of nuclear assistance does not arise. These mechanisms are independent of expectations about enforcer responses and hence distinct from our theory.

To illustrate, we count France’s decision to accelerate its nuclear weapons program in reaction to the toleration of the 1952 British nuclear test as supporting H1, because France neither feared Britain’s nuclear weapons nor believed that Britain would assist its own program. By contrast, we count Yugoslavia’s decision to decelerate its program in reaction to the toleration of the 1960 French nuclear test as refuting H1. We counted Libya’s 2003 decision to decelerate its program in reaction to the US attack on Iraq as

confirming H2, since Iraq and Libya were not enemies and there is no sign that Libya anticipated receiving assistance from a nuclear Iraq. North Korea's decision to accelerate in reaction to the 2003 invasion of Iraq—perhaps because it saw an opportunity to rush to complete the program before it could be detected and attacked—is evidence against H2. Finally, Iran's acceleration in reaction to the 1994 US deal with North Korea supports H3, while Australia's deceleration in reaction to the 1969 late-stage deal with West Germany refutes it.

The universe of cases for testing our prediction about enforcers' choices of response (H4) is the set of all responses to proliferation by enforcers. This set consists of nine instances of toleration (we set aside the US acquisition of nuclear weapons in 1945, since there was not yet any other enforcer), seven attacks (we treat multiple attacks on the same nuclear program in consecutive years as a single case), and eight late-stage deals, drawn from the compilations cited in the main paper. We examined the enforcer's internal deliberations leading up to each response as well as the rationales offered in its aftermath.<sup>2</sup> In some cases, we see explicit consideration of whether to attack or make a deal, while in other cases, we have evidence only on deliberations over whether to try to stop a proliferant (by whatever means) or not (that is, to tolerate it). If, for either kind of case, the evidence does not indicate that the enforcer recognized and seriously considered the possible audience effect of its response, then this is contrary to H4. If the enforcer anticipated a substantial audience effect, but was motivated by this to tolerate the program or to make a deal rather than attack, then this also contradicts H4. Only evidence that an enforcer's

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<sup>2</sup>Note that although H4 is about the choice between attacking or making a deal, it can be tested even in cases where the enforcer chose to tolerate a proliferant. In those cases, enforcers often considered trying to stop a program, sometimes explicitly via an attack or a deal, before settling on toleration. Thus we can still evaluate whether and how the perceived audience affected those considerations.

choice was motivated by the anticipated influence it would have on a perceived audience of near-term potential proliferants, in the direction our theory predicts, constitutes support for H4.

We hasten to admit that we could not find relevant evidence (whether supportive or contrary to the theory) for some cases, and even for those where we could, the evidence is sometimes subject to interpretation.<sup>3</sup> Deliberations over pursuing nuclear weapons or attacking a state to stop its pursuit are among the most sensitive matters of government policy, and consequently there are some cases for which the available documentary record is too sparse to support an evaluation of our theory. Even given relevant evidence, it must be borne in mind that policymakers often dissemble in public statements about these matters, and are not always forthright about them even in private discussion. Moreover, they do not always cleanly distinguish different arguments for some preferred policy, forcing us to synthesize multiple pieces of evidence in order to discern whether our theorized mechanism is at play. Other interpretations of some of our cases are possible, though in most of those cases we suspect that any other interpretation would not be contrary to our theory so much as less clearly supportive of it. Even if those arguable cases were removed, the

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<sup>3</sup>We could not find relevant evidence for any potential proliferant reactions to 11 of the 24 enforcer responses observed: the toleration of Pakistan in 1987 and North Korea in 2006; the attacks on Nazi Germany in 1942–45, Iran in 1984–88 and 2010–12, and Syria in 2007; the deals with Libya in 2003, Iran in 2003 and 2015, South Korea in 1981, and Taiwan in 1978. The reasons why seem clear to us. The Germany and Iran 80s attacks were by states not (yet, in the case of the US) perceived as enforcers of nonproliferation (a concept which did not even exist yet in 1942–45). The Pakistan toleration and South Korea and Taiwan deals were negotiated privately and not revealed until many years later and thus were probably difficult for the audience to observe. The North Korea toleration, Syria and Iran 2010s attacks, and Iran and Libya deals are quite recent, so that any reactions are not yet in public view.

We also could not find relevant evidence for the enforcer's choice of response in 3 of the 24 cases: the attacks on Iran in 1984–88 and 2010–12 and the deal with Iran in 2003. We are aware of no information about Iraq's deliberations of whether to attack Iran's nuclear facilities during their war in the 1980s. The 2010s US-Israel attacks on Iran's program and the 2003 deal made with it by the EU-3 are too recent to have relevant evidence declassified.



remainder would still weigh heavily in favor of our theory, because there are so few cases where the evidence contradicts our theory.

The limitations described above are common in the study of nuclear politics and indeed most high-stakes realms of international relations. The field has grappled with these challenges from its inception and has made steady progress toward drawing better inferences from an expanding volume of evidence. We provide the first systematic investigation and fullest available set of cases dealing with the impact enforcers' responses to violations of the nuclear order had on the proliferation decisions of audience members.

## **1942–45 attacks on German nuclear program**

### **H4 contradicted: Norway/UK/US**

Norway, the UK, and the US all engaged in attacks on nuclear facilities under German control during World War II. In secondary sources on these attacks, we found no discussion of these countries considering any audience for their response to the German program.<sup>4</sup> The sole and overwhelming concern was instead to prevent Nazi Germany from developing an atom bomb. Although the US sought to seize or dismantle all vestiges of the German program as the war ended, this seems to have been motivated entirely by the desire to deny these resources to other states, and not by any need to demonstrate the will to enforce nonproliferation. This case therefore contradicts H4.

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<sup>4</sup>We drew these from the appendix to [Fuhrmann and Kreps \(2010\)](#).

## **1949 toleration of Soviet nuclear acquisition**

### **H4 contradicted: US**

It is well known that the US considered attacking the USSR to prevent it from acquiring nuclear weapons. However, we could find no evidence that US deliberations entertained the possibility that it would affect other states' expectations about how nuclear pursuits would be responded to. Instead the discussion focused solely on the threat posed to the US by a Soviet nuclear arsenal.

### **H1 supported: China**

Beijing was aware of the risk that the US would attack to stop its communist adversaries from acquiring nuclear weapons. The Soviets had repeatedly informed their Chinese counterparts that the United States might strike the USSR, including with nuclear weapons.<sup>5</sup> Indeed, some American policy-makers publicly advocated launching a preventive war, including atomic attacks, against China.<sup>6</sup> But Mao Zedong also understood that there were limits to the power of the enforcer. He dismissed the Americans' most valuable military asset—their nuclear arsenal—as a “paper tiger.”<sup>7</sup> The Soviets' successful nuclearization reinforced Mao's belief that the US was a weak enforcer. His statement to Ye Long, a staff member, that “The United States has it, and the Soviet Union has it, so we can do a

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<sup>5</sup>Shaoqi Liu, “Cable, Liu Shaoqi to Mao Zedong, July 18, 1949,” in *Jianguo Yilai Liu Shaoqi Wengao*, vol. 1 (Beijing: Zhongyang wenxian chubanshe, 2005), 30–37.

<sup>6</sup>Dwight Eisenhower, “Memorandum of a Conversation, The White House, Washington, D.C.,” January 27, 1955, China, Vol. II, *Foreign Relations of the United States, 1955-1957*, <https://history.state.gov/historicaldocuments/frus1955-57v02/d45>.

<sup>7</sup>Zedong Mao, “Talk with the American Correspondent Anna Louise Strong, August 06, 1946,” in *Mao Zedong Xuanji* (Beijing: Renmin chubanshe, 1996), 1191–92.

little bit”<sup>8</sup> suggests that he expected China to follow the same path as the USSR and proceed unobstructed to joining the nuclear club. After watching a movie of the first Soviet nuclear test, Mao Zedong called this event an “eye-opener,”<sup>9</sup> as it shattered the American “nuclear monopoly”. According to Shen Zhihua, “the Soviet Union’s possession of the atomic bomb is an encouragement to the CCP,”<sup>10</sup> as it proved the futility of “U.S. atomic blackmail.” As Mao stated, “so long as there are nuclear powers, we shall try to possess nuclear weapons.”<sup>11</sup> If China followed in the Soviets’ footsteps and acquired nuclear weapons, “the United States cannot annihilate the Chinese nation with its small stack of atom bombs.”<sup>12</sup> When Mao came back from his visit to Moscow, he said that “it would be good if China also had such weapons.” Later, the Chinese leadership underscored that as long as other countries acquired nuclear weapons, “China has every right to test and produce her nuclear weapons.”<sup>13</sup> As H1 predicts, the Soviet test’s toleration encouraged China to attempt violating the nuclear order, evidenced in the launch of the Chinese nuclear weapons program in 1952.

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<sup>8</sup>Maodong Cui, “Máo zédōng Hé Shí Tí chū Zhōngguó Yào Yǒu Yuánzǐ dàn? Shǐ jiān Zhēn de Hěn Zǎo,” *Zhōngguó jūn wǎng zònghé*, www.81.cn, October 18, 2018.

<sup>9</sup>Cui.

<sup>10</sup>Zhihua Shen, “Yuánzhù yǔ xiànzhì: Sūlián yǔ zhōngguó de héwǔqì yánzhì (1949-1960) ài sīxiǎng,” *www.aisixiang.com*, November 19, 2004, <http://m.aisixiang.com/data/4670.html>.

<sup>11</sup>Alice Langley Hsieh, “Communist China and Nuclear Force,” in *The Dispersion of Nuclear Weapons*, ed. R. N. Rosecrance (New York, N.Y.: Columbia University Press, 1964), 158, <https://doi.org/10.7312/rose93320-010>.

<sup>12</sup>John Wilson Lewis and Litai Xue, *China Builds the Bomb* (Stanford, CA: Stanford University Press, 1991), 37.

<sup>13</sup>Hsieh, “Communist China and Nuclear Force,” 172.

### **H1 supported: Yugoslavia**

Given the background of hostile relations between Belgrade and Washington, Yugoslavia would be at least as exposed as the USSR to the actions of the United States as an enforcer. The toleration of the Soviet test encouraged Josip Broz Tito to pursue an atomic arsenal, because as he put it: “If the Russians and the Americans had the atomic bomb, Yugoslavia must have it too!”<sup>14</sup> As H1 predicts, the Yugoslav leadership expected its own violation of the nuclear order to be tolerated, as shown in the 1949 decision to “develop the capability to build nuclear weapons.”<sup>15</sup>

### **H1 supported: France**

Paris also believed the United States to be a weak enforcer. High-ranking officials described the Americans as “not realizing the advantage their [nuclear] monopoly might have given them.”<sup>16</sup> Moscow did not fear Washington’s reaction when it tested its first nuclear weapon, because it “realized that if the new, all-powerful arsenal was ever to be brandished—or even used—it would only be to defend objectives that were absolutely vital.”<sup>17</sup> Since a violation of the nuclear order did not constitute such a threat to the United States, the USSR’s nuclearization was tolerated. As Stephen Meyer notes, the Soviet nuclear test added “a motive condition” to the French nuclear program, prompting a “moderate nuclear

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<sup>14</sup>Dragomir Bondžić, *Između Ambicija i Iluzija: Nuklearna Politika Jugoslavije 1945-1990* [Between Ambition and Illusion: Yugoslavia’s Nuclear Politics 1945-1990] (Beograd: Institut za savremenu istoriju, 2016), 100.

<sup>15</sup>William. C Potter, Djuro Miljanic, and Ivo Slaus, “Tito’s Nuclear Legacy,” *Bulletin of the Atomic Scientists* 56, no. 2 (2000): 64.

<sup>16</sup>Richard Clayton Peer, “De Gaulle’s Force de Dissuasion,” *Air Force Magazine*, June 1964.

<sup>17</sup>Pierre Marie Gallois, *The Balance of Terror: Strategy for the Nuclear Age* (Houghton Mifflin, 1961), 66.

propensity” for the 1949-1955 period.<sup>18</sup> Frederic Joliot Curie, the head of the French nuclear program, stated that the 1949 Soviet nuclear test “provide[d] us with a magnificent example,” proving that the Americans could not stop the progress of Soviet science and the acquisition of atomic bombs.<sup>19</sup> One of Joliot Curie’s top aides, Lew Kowarski, indicated that the Soviet test made it obvious that “the pretence of an important ‘secret’ in the pre-1948 atomic science and technology” can no longer be kept up.<sup>20</sup> “This fact is bound to bring about a more relaxed attitude in the Americans and the British.”<sup>21</sup> Truman’s revelation of the Soviet nuclear test “gave the impression that the secrecy surrounding much atomic knowledge was to be lifted rather soon, at least for Western Europe.”<sup>22</sup> In other words, if the Americans tolerated the Soviet nuclear test, they were expected to do the same for other countries, including France. French decision-makers indicated that the nonproliferation rules that applied to a country like the USSR also applied to itself.<sup>23</sup> As H1 predicts, the French leadership expected its own violation of the nuclear order to be tolerated, based on the Americans’ response to the Soviet test.

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<sup>18</sup>Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (University of Chicago Press, 1986), 121.

<sup>19</sup>Michel Pinault, *Frédéric Joliot-Curie* (Paris: Odile Jacob, 2000), 458.

<sup>20</sup>Dominique Pestre, “Prehistory of CERN: The First Suggestions (1949-June 1950),” *Studies in CERN History* (Geneva: CERN, 1984), 11, <https://cds.cern.ch/record/151764/files/CERN-CHS-3.pdf>.

<sup>21</sup>Pestre, 11.

<sup>22</sup>Pestre, 11.

<sup>23</sup>Dimitri Kitsikis, “L’Attitude Des Etats-Unis à l’égard de La France de 1958 á 1960,” *Revue Francaise de Science Politique* 16, no. 4 (1966): 696–697.

## 1952 toleration of British nuclear acquisition

### H4 supported: US

The Truman Administration vigorously tried “to prevent the UK from having any nuclear program at all.”<sup>24</sup> U.S. Secretary of State Henry Stimson recognized that if the British acquired atomic weapons, it would prompt other countries to get nuclear weapons.<sup>25</sup> American officials noted that some of its allies, such as Canada, would find it disturbing if the British acquired atomic weapons given Washington’s otherwise tough nonproliferation policy.<sup>26</sup> If Britain nuclearized, other countries would also try to get them because they would draw the conclusion that the United States would not try to prevent them from doing so, given its selective proliferation policy.<sup>27</sup> American officials recognized that France, for instance, might “urge that she be made a member of the family” and demand the equal treatment as Britain.<sup>28</sup> As Andrew Pierre underlines, “America’s discrimination in favor of Britain further increased the incentive for the French to follow suit.”<sup>29</sup> Despite its opposition to an independent British nuclear arsenal, the United States eventually had

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<sup>24</sup>Margaret Gowing, *Independence and Deterrence: Britain and Atomic Energy, 1945-1952 Volume 1: Policy Making* (London: Macmillan, 1974), 292, <https://link.springer.com/openurl?genre=book&isbn=978-1-349-15528-6>.

<sup>25</sup>Henry Stimson, “Memorandum by the Secretary of War (Stimson) to President Truman, September 11” (General: Political and Economic Matters, Vol. II: Foreign Relations of the United States. Diplomatic Papers 1945, 1945), 41–44.

<sup>26</sup>Arneson R. Gordon, “Memorandum by R. Gordon Arneson to the Secretary of State, March 1, 1949,” *National Security Affairs, Foreign Economic Policy, Vol. 1, Foreign Relations of the United States 1949 440* (Washington, D.C.: Government Printing Office, 1976), 513–14.

<sup>27</sup>Shane J. Maddock, *Nuclear Apartheid: The Quest for American Atomic Supremacy from World War II to the Present* (Chapel Hill, NC: UNC Press, 2010), 3.

<sup>28</sup>Gordon, “Memorandum by R. Gordon Arneson to the Secretary of State, March 1, 1949,” 440.

<sup>29</sup>Andrew J. Pierre, *Nuclear Politics: The British Experience with an Independent Strategic Force, 1939-1970* (London: Oxford University Press, 1972), 214.

to tolerate Britain's entry into the nuclear club.<sup>30</sup> The US recognized that tolerating the British program would have the negative consequence of encouraging other states, so this case supports H4.

### **H1 supported: France**

France counted on help from the United States to set up its nuclear program. This help did not transpire, as the Americans, together with the British and the Canadians, decided to keep their atomic knowledge secret.<sup>31</sup> The French forged ahead cautiously, seeking assistance from other suppliers and relying on their own expertise and nuclear materials.<sup>32</sup> The British nuclear test had a catalyzing effect on France's nuclear pursuits. As French policy-makers admitted, they "didn't always know the nature of American opposition."<sup>33</sup> They understood, however, that the United States allowed the British to acquire nuclear weapons, so the French hoped to be able to do the same.<sup>34</sup> The leadership in Paris would not accept a situation in which what was allowed to the Soviets and the British was not allowed to the French.<sup>35</sup> As Dominique Mongin notes, "in October 1952, the explosion of the first British experimental nuclear weapon (in Australia), which came only four years after the British officially announced their intention to manufacture them, generated re-

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<sup>30</sup>Kevin Ruane, *Churchill and the Bomb in War and Cold War* (Bloomsbury Publishing, 2016), 208; Georges-Henri Soutou, *Documents Diplomatiques Français 1954*, vol. II (Paris: Imprimerie nationale, 1987), document 29.

<sup>31</sup>Claude Carlier, "La France face à trois révolutions technologiques : le moteur à réaction, le missile balistique et la bombe atomique," *Guerres mondiales et conflits contemporains* 238, no. 2 (2010): 71, <https://doi.org/10.3917/gmcc.238.0065>.

<sup>32</sup>Carlier, 72.

<sup>33</sup>André Bendjebbar, *Histoire Secrète de La Bombe Atomique Française*, Collection "Documents" (Paris: Cherche Midi, 2000), 190.

<sup>34</sup>Bendjebbar, 230.

<sup>35</sup>Bendjebbar, 259.

newed interest in France for the military applications of nuclear power.”<sup>36</sup> Richard Gott described the French as being “encouraged by Britain’s example” when it began pursuing atomic weapons in 1954.<sup>37</sup> As H1 predicts, the French leadership expected its own violation of the nuclear order to be tolerated, given the Americans’ muted response to the British test.

### **H1 supported: Italy**

Italy resented the US policy of atomic secrecy in the aftermath of the Second World War, given the contribution of Italian scientists like Enrico Fermi to the American nuclear weapons program. The leadership in Rome objected to the different treatment the United States demonstrated towards the British, which led to an “Anglo-Saxon monopoly.”<sup>38</sup> When Washington tolerated the British nuclear test, it sent a signal that its previous “policy of denial had failed.”<sup>39</sup> If the United States planned to allow only Britain to acquire nuclear weapons, Italy found this preferential treatment towards the British unacceptable.<sup>40</sup> As Leopoldo Nuti points out, when the leadership in Rome set the train in motion for launching an atomic weapons program, first with the creation of the National Nuclear Research Council (CNRN), one of the main drivers was apparently “the need to ensure for Italy an equal footing” with the other nuclear powers.<sup>41</sup> The decision to take part in the

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<sup>36</sup>Dominique Mongin, “Genèse de l’armement nucléaire français,” *Revue historique des armées*, no. 262 (March 15, 2011): 3.

<sup>37</sup>Richard Gott, “The Evolution of the Independent British Deterrent,” *International Affairs* (Royal Institute of International Affairs 1944-) 39, no. 2 (1963): 251, <https://doi.org/10.2307/2611300>.

<sup>38</sup>Leopoldo Nuti, “‘Me Too, Please’: Italy and the Politics of Nuclear Weapons, 1945–1975,” *Diplomacy & Statecraft* 4, no. 1 (March 1993): 120.

<sup>39</sup>Susanna Schrafstetter and Stephen Robert Twigge, *Avoiding Armageddon: Europe, the United States, and the Struggle for Nuclear Nonproliferation, 1945-1970* (Westport, CT: Praeger, 2004), 3.

<sup>40</sup>Nuti, “‘Me Too, Please,’” 121.

<sup>41</sup>Nuti, 117.



negotiations with France and Germany for a joint nuclear weapons program was in large part driven by the desire to force Washington's hand to treat Rome the same way it treated London. Historian Rodolfo Mosca explicitly identified the United Kingdom (and France) as the two countries Italy sought to re-establish a balance with.<sup>42</sup> The equal treatment Rome expected meant that Italy's violation of the nuclear order would be tolerated, just like Britain's was, which is congruent with H1.

### **H1 supported: Australia**

Australia provided the location for Britain's first nuclear weapon test. In exchange, the United Kingdom agreed to provide Australia with technical information.<sup>43</sup> But the United States intervened and prevented the British from delivering on their promise by virtue of the Quebec Agreement.<sup>44</sup> Thus, the leadership in Canberra was aware of the United States' role as a nonproliferation enforcer. Nevertheless, seeing that Washington did not stop the UK's nuclear acquisition, Prime Minister Robert Menzies established the Australian Atomic Energy Commission a month after the British test.<sup>45</sup> In 1956, Defense Minister Philip McBride concluded "that the effectiveness of all three Australian Services would be considerably increased if they were equipped with low yield KT nuclear weapons."<sup>46</sup> He went on to recommend that "an initial approach be made to the United Kingdom for

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<sup>42</sup>Nuti, 134.

<sup>43</sup>Julian Schofield, *Strategic Nuclear Sharing* (London: Palgrave Macmillan UK, 2014), 82.

<sup>44</sup>Lorna Arnold and Mark Smith, *Britain, Australia and the Bomb: The Nuclear Tests and Their Aftermath*, 2nd ed (Basingstoke [England] ; New York: Palgrave Macmillan, 2006), 22.

<sup>45</sup>Christine Leah, *Australia and the Bomb* (Springer, 2014), 21.

<sup>46</sup>Philip A. McBride, "Procurement of Nuclear Weapons for the Australian Forces" (Introduction and procurement of nuclear weapons for the Australian forces, November 1956), A1196, National Archives of Australia, <https://recordsearch.naa.gov.au/SearchNRRetrieve/Interface/ViewImage.aspx?B=1379559>, cited in James Joseph Walsh, "Bombs Unbuilt : Power, Ideas and Institutions in International Politics" (Thesis, Massachusetts Institute of Technology, 2001), 46, <http://dspace.mit.edu/handle/1721.1/8237>.

agreement to obtain low-yield K.T. nuclear weapons to be held by Australia.”<sup>47</sup> The Australian official recognized that London might refuse, so he proposed a back-up plan: “If an initial approach to the United Kingdom is unsuccessful, it would be desirable for a similar approach to be made to the United States.”<sup>48</sup> That McBride viewed such a proposal as plausible suggests that Australia had inferred from the UK toleration that it might expect the same from the US. This inference is also apparent in the Defense Minister’s discussion of NATO arrangements. The United States not only tolerated Britain’s entry to the nuclear club, but also let London make proposals regarding defense with atomic weapons at the NATO level. McBride expected whatever understanding the United States reached with its NATO allies to serve as “a basis for an approach by Australia under bilateral arrangements.”<sup>49</sup> As a result, in January 1958, Australia’s military chiefs made an informal request for nuclear weapons information from the UK, followed by another proposal for a transfer of nuclear warheads in 1961.<sup>50</sup> Since the British refused to provide Australia with atomic bombs and the request to the US never materialized, the leadership in Canberra briefly experimented with the indigenous development of nuclear weapons. The Australian case corroborates H1, as the toleration of the British entry into the nuclear club shaped the expectations of the leadership in Canberra regarding its own nuclear trajectory.

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<sup>47</sup>McBride, “Procurement of Nuclear Weapons for the Australian Forces” cited in Walsh, “Bombs Unbuilt,” 46.

<sup>48</sup>McBride, “Procurement of Nuclear Weapons for the Australian Forces” cited in Walsh, “Bombs Unbuilt.”

<sup>49</sup>McBride, “Procurement of Nuclear Weapons for the Australian Forces.”

<sup>50</sup>Schofield, *Strategic Nuclear Sharing*, 82.

## **H1 supported: China**

The Chinese leadership took note of the British test but the direct evidence for the role this toleration played in Beijing's rationale to violate the nuclear order is sparse. Shane Maddock notes that the Chinese pursued atomic weapons "after Washington allowed Britain to develop the bomb."<sup>51</sup> In other words, the fact that the United Kingdom could not be prevented by the United States from getting nuclear weapons prompted Beijing to emulate London. Maddock's assessment suggests support for H1: Britain's toleration encouraged the PRC to accelerate its nuclear weapons program.

## **1960 toleration of French nuclear acquisition**

### **H4 supported: US/USSR**

Both the US and the USSR expected France's nuclearization to prompt several members of the audience to follow suit. Their main concern was the Federal Republic of Germany, one of France's NATO allies. According to CIA analysts, "assuming that France initiates weapons production on a unilateral basis, it is almost certain that West Germany would follow suit, despite existing agreements to forego such production."<sup>52</sup> High-ranking officials in the Kremlin noted that in 1959-1960, when "General de Gaulle's ideas regarding independent French nuclear weapons were already known," "West Germany was also demanding access to nuclear weapons."<sup>53</sup> The problem of French atomic weapons and the

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<sup>51</sup>Maddock, *Nuclear Apartheid*, 7.

<sup>52</sup>CIA, "Memorandum for the Director of Central Intelligence, 'Nuclear Weapons Production in Fourth Countries - Likelihood and Consequences,'" May 24, 1957, CIA-FOIA, <https://www.cia.gov/library/readingroom/docs/CIA-RDP80B01676R000600010016-0.pdf>.

<sup>53</sup>Vasilii Kuznetsov, "Discussion between Soviet Deputy Foreign Minister Vasilii Kuznetsov and the SED Politburo (Fragment), October 14, 1963" (History and Public Policy Program Digital Archive,

example Paris might set for other countries had been preoccupying the United States since World War II. The French were counting on U.S. help to get their nuclear program started, but soon realized that the Americans were keen to prevent France from even launching an atomic project.<sup>54</sup> When France proved undeterred, the United States tried to integrate the French nuclear program into various multilateral schemes that would also accommodate the Germans, and possibly a number of other European states, such as Italy, the Netherlands, and Belgium, without adding to the number of independent nuclear arsenals. Charles de Gaulle, who returned to the helm of French politics in 1958, refused to abandon the pursuit of nuclear weapons and instead, forced the hand of the Americans and the Soviets to accept France as the 4th nuclear power in 1960.<sup>55</sup> The superpowers recognized that tolerating the French acquisition would have the negative consequence of encouraging other states, so this case supports H4.

### **H1 supported: West Germany**

The Federal Republic of Germany (FRG) agreed to forsake atomic weapons in 1954 when it signed Protocol III to the revised Treaty of Brussels. Nevertheless, as early as 1957, it started looking into the possibility to become a nuclear power, either in cooperation with the French and the Italians or through the Multilateral Force within NATO. In 1958, the West German Foreign Minister Heinrich von Brentano “stated the determination of

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October 14, 1963), J IV 2/2-900, Stiftung Archiv der Parteien und Massenorganisationen der DDR, <https://digitalarchive.wilsoncenter.org/document/113079>.

<sup>54</sup>Alex Wellerstein, “Patenting the Bomb. Nuclear Weapons, Intellectual Property, and Technological Control,” *Isis* 99, no. 1 (March 2008): 57–87; Bendjebbar, *Histoire Secrète de La Bombe Atomique Française*, 310–14.

<sup>55</sup>Frédéric Bozo, *Two Strategies for Europe: De Gaulle, the United States, and the Atlantic Alliance*, trans. Susan Emanuel (Lanham, MD: Rowman & Littlefield Publishers, 2002), 33.

the FRG to fully equip its armed forces with atomic and rocket weapons.”<sup>56</sup> Brentano’s mention that “the final decision on the Bundeswehr atomic armament has already been made” was couched in terms of “equipping the united armed forces of NATO with atomic weapons.”<sup>57</sup> But the French nuclear test in February 1960 raised the possibility for the West Germans to follow “the same route de Gaulle had taken,” despite the awareness that the FRG had undertaken clear nonproliferation commitments.<sup>58</sup> Bonn’s insistence on being equal to Paris suggests that West Germany expected its violation of the nuclear order to be tolerated the same way France’s was. Adenauer and other German high-ranking officials could state that “the Federal Republic could not countenance that its armed forces should not have nuclear weapons,” because the “[Eisenhower] administration was receptive to ideas of controlled proliferation of nuclear weapons in the Alliance,” a conclusion the West Germans could draw from the toleration of the United Kingdom and France.<sup>59</sup> Moreover, since the Soviet Union had met with de Gaulle soon after France joined the nuclear club and offered him a nuclear cooperation agreement, the FRG’s determination to defy the USSR provides an indication that Bonn thought the Soviet Union was not going to respond with a military strike to a West German violation of the nuclear order. Nikita Khrushchev had shifted from a hard-line approach against “West German access to nuclear weapons in any form” in the second half of the 1950s to a more permissive stance in 1960. In several conversations with the West German Ambassador to Moscow, Hans Kroll,

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<sup>56</sup>Mikhail A. Shalin, “Memorandum to Georgy M. Pushkin, Head of the Department of Information of the Communist Party of the Soviet Union on the May 7, 1958 Session of the NATO Council,” May 19, 1958, Fond 5, Opis 51, Delo 2, Listy 7-13, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii.

<sup>57</sup>Shalin.

<sup>58</sup>Matthias Küntzel, *Bonn & the Bomb: German Politics and the Nuclear Option* (Pluto Press, 1995), 22.

<sup>59</sup>Hans-Peter Schwarz, *Konrad Adenauer: From the German Empire to the Federal Republic, 1876-1952* (Berghahn Books, 1995), 449.

Khrushchev first confronted the FRG diplomat about Bonn's desire to get atomic weapons and then stated that "we oppose the [atomic] armament of the Bundeswehr."<sup>60</sup> But then Khrushchev indicated that if Soviet-West German relations soured over issues like German nuclearization and the peace treaty with East Germany the Soviets were proposing at the time, it would not be the end of the world. "Time will pass, the ocean will settle within its shores, and relations will improve again."<sup>61</sup> Such statements could have led Bonn to regard the Soviet Union as a weak enforcer.<sup>62</sup> West Germany is conventionally coded as having explored nuclear weapons between 1957 and 1958. Schwarz's biography of Konrad Adenauer indicates that he thought about building nuclear weapons as late as 1963.<sup>63</sup> If we accept Schwarz's coding, the West German case corroborates H1, as the toleration of the French entry into the nuclear club shaped the expectations of the leadership in Bonn regarding how its own nuclear pursuits would be treated.

### **H1 contradicted: Yugoslavia**

In the early 1960s, Yugoslavia halted its pursuit of atomic weapons. The leadership in Belgrade decided to invest in atomic energy only for "economic and scientific purposes."<sup>64</sup> The justification given for this decision invoked the achievements of France

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<sup>60</sup>"Minutes of Conversation between Nikita Khrushchev and Hans Kroll," October 18, 1960, Fond 52, Opis 1, Delo 586, Listy 105-106, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii; "Minutes of Conversation between Nikita Khrushchev and Hans Kroll," April 24, 1961, Fond 52, Opis 1, Delo 586, Listy 132, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii.

<sup>61</sup>"Minutes of Conversation between Nikita Khrushchev and Hans Kroll," April 24, 1961.

<sup>62</sup>William Taubman, *Khrushchev: The Man and His Era* (W. W. Norton, 2004), 288; Douglas Selvage, *The Warsaw Pact and Nuclear Non-Proliferation, 1963-1965*, vol. 32 (Washington, DC: Woodrow Wilson International Center for Scholars, 2001), 2.

<sup>63</sup>Gene Gerzhoy, "Alliance Coercion and Nuclear Restraint: How the United States Thwarted West Germany's Nuclear Ambitions," *International Security* 39, no. 4 (2015): 113, [https://doi.org/10.1162/ISEC\\_a\\_00198](https://doi.org/10.1162/ISEC_a_00198).

<sup>64</sup>Bondžić, *Između Ambicija i Iluzija*, 107.

and Britain. The Yugoslavs compared themselves with these two states whose nuclear acquisition the enforcers tolerated, and concluded that they could not accomplish the same feat—Yugoslavia was simply not powerful enough.<sup>65</sup> After witnessing the enforcers' toleration of French nuclearization, the Yugoslav leadership denounced the French atomic tests and decided to decelerate its nuclear weapons program.<sup>66</sup> The Yugoslav case therefore contradicts H1.

## **1964 toleration of Chinese nuclear acquisition**

### **H4 supported: US/USSR**

Both the United States and the Soviet Union expected China's nuclearization to prompt several members of the audience to follow suit. They expected the Chinese nuclear test to prompt a number of China's rivals to seek nuclear weapons. Among them, the most likely candidates included India, Taiwan, Japan, and South Korea.<sup>67</sup> However, CIA analysts also believed China's nuclearization would lead Indonesia to seek nuclear weapons, as Sukarno himself professed, despite the fact that China posed no pressing threat to Indonesia.<sup>68</sup> The Americans predicted that the Chinese nuclear test would set in motion a proliferation cascade as proliferants would come to believe that the proliferation environment was more

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<sup>65</sup>Bondžić, 107.

<sup>66</sup>Ahmed Bedjaoui, "Freedom Filmmakers: Pioneers in the Information Battle," in *Cinema and the Algerian War of Independence : Culture, Politics, and Society*, ed. Ahmed Bedjaoui, Palgrave Studies in Arab Cinema (Cham: Springer International Publishing, 2020), 62.

<sup>67</sup>CIA, "National Intelligence Estimate 100-4-60, 'Likelihood and Consequences of the Development of Nuclear Capabilities by Additional Countries,'" September 9, 1960, CIA-FOIA, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB155/prolif-5.pdf>; Vasiliy S. Yemelyanov, *Problemy Nerasprostraneniya Yadernogo Oruzhiya* (Moskva: Nauka, 1981), 46.

<sup>68</sup>Central Intelligence Agency, "Indonesia's Effort to Acquire an Atomic Bomb" (Freedom of Information Act Electronic Reading Room, September 29, 1965), CIA-RDP79T00472A000600010003-2, CREST, <https://www.cia.gov/readingroom/document/cia-rdp79t00472a000600010003-2>.

permissive. For instance, decision-makers in Washington thought that their allies in Asia would become emboldened to ask the United States for nuclear weapons, an action that could only be possible if these countries did not expect getting punished by the enforcer.<sup>69</sup> This attitude, U.S. decision-makers believed, would take hold in countries like Taiwan, Pakistan, the United Arab Republic, Israel, and West Germany.<sup>70</sup> The Soviets also learned that Indonesia would seek nuclear weapons in the aftermath of the Chinese nuclear test.<sup>71</sup> They worried that Chinese possession of a nuclear weapon would “lead to proliferation of nuclear weapons in the West, especially their possession by West Germany.”<sup>72</sup>

The United States considered stopping China from acquiring nuclear weapons by using force.<sup>73</sup> Nevertheless, the leadership in Washington had decided against such action because it was not willing to incur “the great political costs or high military risks” involved in such an operation.<sup>74</sup> As State Department officials recognized, a preventive strike may

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<sup>69</sup>George C. Denney, “Memorandum to Secretary of State, ‘Probable Consequences of a Chinese Communist Nuclear Detonation,’ INR Research Memorandum R-17” (National Security Archive, May 6, 1963), RG 59, Bureau of Far Eastern Affairs, Assistant Secretary for Far Eastern Affairs Subject, Personnel, and Country Files, 1960–1963, box 21, CSM-Communism, National Archives and Records Administration.

<sup>70</sup>Denney; Roswell Gilpatric, “Report by the Committee on Nuclear Proliferation,” January 21, 1965, National Security File, Committee File, Committee on Nuclear Proliferation, Report (Final, 12/21/65), Box 8, Lyndon B. Johnson Library.

<sup>71</sup>Andrey Gromyko, “Minutes of Conversation between Andrey Gromyko and Swaran Singh,” November 28, 1964, Fond 100, g. 1965 [sic!], Opis 52, papka 219, delo 7, listy 81-83, Arkhiv vneshnei politiki Rossiyskoi Federatsii (AVPRF).

<sup>72</sup>Thomas L. Hughes, “Memorandum from to the Secretary of State, ‘Soviet Attitude toward Chinese Communist Acquisition of a Nuclear-Weapons Capability,’ Secret” (National Security Archive, September 11, 1963), RG 59, Bureau of Far Eastern Affairs, Assistant Secretary for Far Eastern Affairs Subject, Personnel, and Country Files, 1960-1963, box 21, CSM-Communism, National Archives and Records Administration, <https://nsarchive.gwu.edu/document/20334-national-security-archive-doc-11c-memorandum>.

<sup>73</sup>William Burr and Jeffrey T. Richelson, “Whether to ‘Strangle the Baby in the Cradle’: The United States and the Chinese Nuclear Program, 1960–64,” *International Security* 25, no. 3 (January 1, 2001): 54–99, <https://doi.org/10.1162/016228800560525>.

<sup>74</sup>Walt Rostow, “Report from Walt Rostow, Policy Planning Staff, U.S. Department of State, to McGeorge Bundy, ‘The Bases for Direct Action Against Chinese Communist Nuclear Facilities’” (National Security Archive, April 22, 1964), 1, National Security File, Countries, box 237, China Memos Vol. I 12/63-9/64 [2 of 2], Lyndon B. Johnson Library, <https://nsarchive2.gwu.edu/nukevault/ebb488/docs/Doc%2016%204-22->



not stop China from building the bomb as it could miss key facilities in the Chinese nuclear weapons program.<sup>75</sup> American policy-makers also thought to offer China a deal in the form of a formal agreement on non-proliferation but the leadership in Beijing refused to take part in it.<sup>76</sup> Ultimately, the United States had to tolerate China's nuclearization. That both superpowers recognized and seriously considered the negative consequences of being seen to do so by other potential proliferants provides support for H4.

### **H1 supported: India**

Until the Chinese nuclear test, India had embraced a policy of nuclear renunciation. India's first Prime Minister, Jawaharlal Nehru, had vowed not to use atomic energy for purposes of destruction.<sup>77</sup> According to a conversation between Soviet Foreign Minister Andrey Gromyko and Indira Gandhi, then Minister of Information and Broadcasting, "India could also have developed and exploded its own atomic bomb, but India did not want to do that" because of the nonproliferation regime.<sup>78</sup> But the Chinese nuclear test made some members of the Indian political elite believe that "India ended up in a disadvantageous situation."<sup>79</sup> To redress this imbalance, they demanded that "India begins production of

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64%20R%20Johnson%20bases%20for%20direct%20action.pdf.

<sup>75</sup>Rostow, "Report from Walt Rostow, Policy Planning Staff, U.S. Department of State, to McGeorge Bundy, 'The Bases for Direct Action Against Chinese Communist Nuclear Facilities.'"

<sup>76</sup>Dean Rusk and Paul Martin, "Proliferation of Nuclear Capability" (National Security Archive, December 4, 1963), 1, RG 59, Records of Executive Secretariat. The Secretary's and Undersecretary's Memoranda of Conversations, 1953-1964, box , Sec Memcons, National Archives and Records Administration, <https://nsarchive2.gwu.edu/nukevault/ebb488/docs/doc%2015%2012-4-63%20rusk%20memcon.pdf>.

<sup>77</sup>S. V. Chervonenko, "Minutes of the Meeting with the Indian Charge d'affaires to Beijing, Mehta," October 26, 1964, Fond 0100, g. 1964, Opis 57, papka 508, delo 7, listy 65-67, Arkhiv vneshnei politiki Rossiyskoi Federatsii (AVPRF).

<sup>78</sup>Andrey Gromyko, "Minutes of Conversation between Andrey Gromyko and Indira Gandhi," October 31, 1964, Fond 100, g. 1964, Opis 51, papka 215, delo 5, listy 16-18., Arkhiv vneshnei politiki Rossiyskoi Federatsii (AVPRF).

<sup>79</sup>Gromyko.

its own nuclear weapon.”<sup>80</sup> In the immediate aftermath of the Chinese test, the Indian government announced that “the position of India, in truth, still remains unchanged, that is, the Indian government as before is opposed to the production of nuclear weapons, even though it is becoming harder and harder for it to defend this position from the attacks of the opposition.”<sup>81</sup> The Indian government indicated that the absence of enforcer action on the proliferation front “can force such countries as India to reconsider its position on the issue of nuclear weapons.”<sup>82</sup> This suggests that when India decided to pursue nuclear weapons in the aftermath of the Chinese nuclear test, it was emboldened to do so by the enforcers’ acquiescence vis-à-vis Beijing. The Indian leadership probed the Soviets on its reaction to a possible Indian nuclearization, trying to elicit a promise from Moscow that it would maintain its “friendship and cooperation” with India, which in effect would serve as a toleration guarantee.<sup>83</sup> Moreover, the encouragement hypothesis is further strengthened by India’s own security assessment. After the Chinese test, Indian officials indicated that “India is not afraid of the 4-5 bombs that in a short period China will possess, as it has faith in itself, friends, and collective security for the defense of small and weak countries.”<sup>84</sup> Even if this was bluffing, and India did feel threatened by China, it does not invalidate our theory. The fact that New Delhi took into account the reaction of the enforcers when deciding to accelerate its own nuclear pursuits corroborates H1, as it shows that India expected its nuclearization to be tolerated in the same way China’s was.

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<sup>80</sup>Andrey Gromyko, “Minutes of Conversation between Andrey Gromyko and Indira Gandhi,” February 16, 1965, Fond 100, g. 1965, Opis 52, papka 219, delo 7, listy 14-17., Arkhiv vneshnei politiki Rossiyskoi Federatsii (AVPRF).

<sup>81</sup>Gromyko.

<sup>82</sup>Gromyko.

<sup>83</sup>S. V. Chervonenko, “Minutes of the Meeting with the Indian Charge d’affaires to Beijing, Mehta.”

<sup>84</sup>S. V. Chervonenko.

## **H1 supported: Indonesia**

Indonesia praised the Chinese nuclear test as “a matter worthy to be hailed not only by the Chinese people but by the Indonesian people as well.”<sup>85</sup> “President Sukarno warmly congratulated [Chinese] Ambassador [to Indonesia] Huang Zhen on the success of nuclear test in China” while other high-ranking officials in Jakarta “unanimously congratulated us [the Chinese] heartily and said that this was the first atomic bomb of the Asian countries and an extremely happy occasion for the Asians worthy of celebration. Chairul Saleh said that he was very happy to see China possessing the atomic bomb and he embraced Ambassador Yao.”<sup>86</sup> As Robert Cornejo notes, “Indonesian officials may have been inclined to view favorably the October test because Chinese statements about nuclear weapons appeared to support, rather than oppose, the bomb in other countries’ hands.”<sup>87</sup> In July 1965, President Sukarno stated that “God willing, in the near future, we will make our own atomic bombs.”<sup>88</sup> This was not because Indonesia expected to get nuclear assistance from China: as US intelligence analysts pointed out, China was an unlikely supplier to the Indonesian nuclear weapons program, since Beijing had neither the capacity nor the intention to let Jakarta acquire its own nuclear weapons.<sup>89</sup> The Chinese test instead served as an eye-opener for the Indonesian leadership about the weakness of the enforcers. On October 22, 1964, Indonesian Foreign Minister Subandrio met with China’s ambassador to Jakarta and

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<sup>85</sup>Robert M. Cornejo, “When Sukarno Sought the Bomb: Indonesian Nuclear Aspirations in the Mid-1960s,” *The Nonproliferation Review* 7, no. 2 (June 2000): 31–43, <https://doi.org/10.1080/10736700008436808>.

<sup>86</sup>“Cable from the Chinese Foreign Ministry, ‘Ambassador Yao, Please Set an Appointment with Subandrio’” (History and Public Policy Program Digital Archive, October 27, 1964), 105-01870-01, Archive of the Ministry of Foreign Affairs of the People’s Republic of China.

<sup>87</sup>Cornejo, “When Sukarno Sought the Bomb.”

<sup>88</sup>Central Intelligence Agency, “Indonesia’s Effort to Acquire an Atomic Bomb.”

<sup>89</sup>Central Intelligence Agency.

said that “on the whole, he completely supported the nuclear test in China. China should have its own nuclear weapons, otherwise the imperialists and the Soviet Union would monopolize nuclear weapons.”<sup>90</sup> The Americans’ and the Soviets’ inability or unwillingness to stop China from getting its own nuclear weapons encouraged Jakarta to begin its own nuclear pursuits. That Indonesia used China’s nuclear test as a precedent to justify its own nuclear pursuits was picked up by the Chinese Ministry of Foreign Affairs, which states that the Indonesian Foreign Minister Subandrio “is trying to use this [the Chinese test] as an opportunity to start negotiating with the United States and the Soviet Union.”<sup>91</sup> While the records of these negotiations are not currently available, the existing evidence suggests that Indonesia felt encouraged by the Soviet and American toleration of the Chinese nuclear test when it decided to start exploring nuclear weapons, which corroborates H1.

### **H1 supported: Japan**

The Japanese government condemned the Chinese test. In its aftermath, Prime Minister Eisaku Sato told US President Lyndon Johnson that “if Chicoms [Chinese Communists] had nuclear weapons, the Japanese also should have them.”<sup>92</sup> In other words, the Japanese leader expressed his expectation that if China was allowed to have nuclear weapons, Japan should also be allowed to have them. Sato’s statement shows that Japan felt so emboldened by the lack of a US and Soviet reaction to the Chinese nuclear test that it did not hesitate to

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<sup>90</sup>Zhongming Yao, “Cable from the Chinese Embassy in Indonesia, ‘Subandrio Met with Ambassador Yao for a Discussion on Nuclear Test’” (History and Public Policy Program Digital Archive, October 23, 1964), 105-01870-01, Archives of the Ministry of Foreign Affairs of the People’s Republic of China.

<sup>91</sup>“Cable from the Chinese Foreign Ministry, ‘Ambassador Yao, Please Set an Appointment with Subandrio.’”

<sup>92</sup>Kurt M. Campbell and Tsuyoshi Sunohara, “Japan: Thinking the Unthinkable,” in *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices* (Brookings Institution Press, 2004), 222, <https://www.jstor.org/stable/10.7864/j.ctt1vjqptv>.

explicitly manifest an interest in nuclearization in front of the enforcer. The United States viewed Japan's potential interest in nuclear weapons as stemming from the perception that the enforcers would tolerate further proliferation and not solely from the more severe security threat a nuclear-armed China posed. As a report by the Bureau of Intelligence and Research (INR) within the State Department noted, "while the Chinese nuclear detonation is not likely in the short term to be regarded as a challenge which demands a new Japanese response such as a nuclear deterrent or an Asian anti-communist alliance, by the latter sixties Japan may adopt a somewhat more self-assertive posture. [...] Continued nuclear proliferation and the public displays of might which Peiping may be expected to stage once its nuclear delivery systems are developed, may convince many reluctant Japanese that they should take practical protective measures."<sup>93</sup> In other words, the spread of nuclear weapons beyond China would prompt Japan to develop nuclear weapons because it signaled a more permissive environment. Japan is conventionally coded as exploring nuclear weapons between 1967 and 1972, when it conducted several studies to assess the costs and benefits of nuclearization.<sup>94</sup> The Soviets' and Americans' toleration of the Chinese nuclear test therefore dispelled Japan's inhibition regarding nuclear weapons and actually encouraged it to consider starting a nuclear weapons program, which provides support to H1.

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<sup>93</sup>Denney, "Memorandum to Secretary of State, 'Probable Consequences of a Chinese Communist Nuclear Detonation,' INR Research Memorandum R-17," 18.

<sup>94</sup>Yuri Kase, "The Costs and Benefits of Japan's Nuclearization: An Insight into the 1968/70 Internal Report," *The Nonproliferation Review* 8, no. 2 (June 2001): 55-68, <https://doi.org/10.1080/10736700108436850>.

## 1967 toleration of Israeli nuclear acquisition

### H4 supported: US/USSR

Both the United States and the Soviet Union expected Israel's nuclearization to prompt several members of the audience to follow suit because an Israeli nuclear test would signal that the non-proliferation attitude of the enforcers had become more permissive.<sup>95</sup> They expected both Israel's rivals and partners to seek nuclear weapons in response to a toleration of Israel's nuclearization. Among them, the most likely candidates included Arab states, but also countries like Pakistan and West Germany.<sup>96</sup> Motivated in part by these anticipated consequences, both the United States and the Soviet Union tried to prevent Israel from acquiring nuclear weapons. The US tried to pressure Israel into signing the Nuclear Nonproliferation Treaty, while the USSR resorted to inciting Egypt to attack Israel in order to create an opportunity to destroy Israel's nuclear program.<sup>97</sup> This case thus supports H4.

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<sup>95</sup>David Rodman, "American Arms Transfers to Israel, 1962–1970: The Nuclear Weapons Dimension," *Israel Journal of Foreign Affairs* 9, no. 3 (September 2, 2015): 485, <https://doi.org/10.1080/23739770.2015.1114769>.

<sup>96</sup>Gilpatric, "Report by the Committee on Nuclear Proliferation"; Ministerstvo inostrannykh del, "Zapiska Otdela Stran Blizhnego Vostoka MID SSSR o Namerenii Izrailya Imet' Atomnoye Oruzhiye," February 23, 1966, <https://www.alexanderyakovlev.org/fond/issues-doc/60070>; Leonid Brezhnev, "Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia," March 6, 1968, Fond 10, Opis 3, delo 30, listy 5-25, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii.

<sup>97</sup>For the US, see [Coe and Vaynman \(2015\)](#). For the USSR, see Isabella Ginor and Gideon Remez, *Foxbats Over Dimona: The Soviets' Nuclear Gamble in the Six-Day War* (Yale University Press, 2007).

## **H1 supported: Taiwan**

In the aftermath of the October 1964 Chinese nuclear test, the leadership in Taipei overhauled Taiwan's security strategy.<sup>98</sup> According to David Albright and Andrea Stricker, "the ROC government quickly formed plans for accelerating the development of its own nuclear deterrent."<sup>99</sup> But the acceleration did not take place until 1967, by which time the Taiwanese leadership gathered that the nonproliferation environment had become more permissive. The United States tolerated Israel's nuclear weapons program, so Taiwan decided to emulate Israel. According to Albright and Stricker, President Chiang followed Israel's model in its own "development and trajectory of Taipei's nascent nuclear weapons program."<sup>100</sup> That Taiwanese officials admitted they did what Israel had done before them indicates that the leadership in Taipei expected the enforcer to tolerate them, even if publicly they might express disapproval. The available evidence thus suggests support for H1.

## **H1 supported: South Korea**

South Korea initiated a covert nuclear weapons program in the second half of the 1960s. As the CIA noted in an assessment from 1978, the South Korean leadership "drew an analogy between the cases of South Korea and Israel" when deciding to pursue nuclear weapons.<sup>101</sup> President Park Cheung-Hee and some of his senior advisers concluded that

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<sup>98</sup>David Hurd Albright and Andrea Stricker, *Taiwan's Former Nuclear Weapons Program: Nuclear Weapons on-Demand* (Washington, DC: Institute for Science and International Security, 2018), 9.

<sup>99</sup>Albright and Stricker, 10.

<sup>100</sup>Albright and Stricker, 21.

<sup>101</sup>Central Intelligence Agency, "South Korea: Nuclear Developments and Strategic Decisionmaking" (Digital National Security Archive, June 1978), FOIA Release, p. 13.

“Washington would tolerate this work,” given that the United States had tolerated Israel’s nuclearization.<sup>102</sup> As stated in the CIA report, the South Korean leadership “conclude[d] that the United States – while opposing short-term weapons work in Korea – would eventually recognize and tolerate Korea’s need to have an independent nuclear capability.”<sup>103</sup> The fact that Seoul accelerated its nuclear weapons program in reaction to the toleration of Israel’s nuclearization and its expectation that it would be treated the same strongly supports H1.

### **H1 supported: Libya**

Israel’s nuclearization in 1967 represented one of the drivers for the Libyan regime’s decision to explore nuclear weapons.<sup>104</sup> The Libyan leadership dismissed the possibility of a strong reaction from the enforcers against Tripoli’s nuclear ambitions. For example, in 1970, Libyan leader Muammar Gaddafi asked Moscow to help it build an atomic weapon.<sup>105</sup> Former Soviet officials explicitly mention Israel when explaining Gaddafi’s decision to reach out to Moscow. Libya was Israel’s enemy and Israel was the Soviet Union’s enemy. Since the enemy of the enemy is “our friend,” Gaddafi believed the Soviets would acquiesce to Libya’s nuclearization, a view which the Soviets confirmed when they agreed to “organize the production of nuclear bombs in Libya.”<sup>106</sup> The Libyan case suggests that the toleration of Israel’s nuclearization by the two enforcers encouraged the

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<sup>102</sup>Central Intelligence Agency, “South Korea,” p. 13.

<sup>103</sup>Central Intelligence Agency, “South Korea,” p. 13.

<sup>104</sup>Målfrid Braut-Hegghammer, *Unclear Physics: Why Iraq and Libya Failed to Build Nuclear Weapons*, Cornell Studies in Security Affairs (Ithaca, NY: Cornell University Press, 2016), 138.

<sup>105</sup>Roland M. Timerbaev, “SSSR Soglasilsya Organizovat’ Proizvodstvo Yadernykh Bomb v Livii,” *Kommersant*, November 19, 2007, 45 edition, 80.

<sup>106</sup>Timerbaev, 80.



leadership in Tripoli to attempt to acquire its own atomic arsenal in expectation of the same treatment, consistent with H1.

### **H1 supported: Pakistan**

Pakistan watched Israel develop nuclear weapons and have its violation of the nuclear order tolerated thanks to “the West’s sympathies.”<sup>107</sup> Later, Pakistan made public its determination to emulate the Israeli example.<sup>108</sup> Pakistani leaders talked about how Israel was allowed to build a nuclear weapon, and compared the Israeli and the Pakistani nuclear pursuits.<sup>109</sup> They noted that if Israel could get the bomb, then Pakistan could achieve the same feat.<sup>110</sup> Pakistan’s pursuit of nuclear weapons suggests that the leadership in Islamabad felt encouraged by the enforcers’ toleration of the Israeli nuclear arsenal, which corroborates H1.

## **1969 deal with West Germany**

### **H4 supported: US/USSR**

Between the late-1950s and the late-1960s, the Federal Republic of Germany developed a robust nuclear program. Its leaders repeatedly made statements meant to create the impression that Bonn may choose to develop nuclear weapons. Soviet leaders believed that

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<sup>107</sup>Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, California: Stanford Security Studies An Imprint of Stanford University Press, 2012), 112, <https://doi.org/10.1515/9780804784801>.

<sup>108</sup>Mansoor Ahmed, *Pakistan’s Pathway to the Bomb* (Washington, D.C.: Georgetown University Press, 2022), 77, <http://press.georgetown.edu/book/georgetown/pakistans-pathway-bomb>.

<sup>109</sup>Ahmed, 36, 155, 208.

<sup>110</sup>Ahmed, 155.

the Federal Republic of Germany was actively working to produce atomic weapons.<sup>111</sup> Stopping West Germany from obtaining a nuclear arsenal was depicted as “the greatest international task” of the socialist bloc and the USSR.<sup>112</sup> Leonid Brezhnev asserted that West Germany’s nuclearization would lead “the most reactionary and aggressive” capitalist countries such as Israel and South Africa to try to acquire nuclear weapons.<sup>113</sup> Their acquisition of nuclear weapons would be the result of lack of effective measures to prevent proliferation.<sup>114</sup> In other words, these audience members would get nuclear weapons because they would see that West Germany was not prevented from doing so by the enforcers. The Soviets considered the military option to deal with a West Germany armed with nuclear weapons.<sup>115</sup> But then Moscow realized that “the most effective path to not allowing West Germany access to a nuclear [weapon]” was to offer it a deal through “an international treaty on the nonproliferation of nuclear weapons.”<sup>116</sup> This response to West Germany’s violation of the nuclear order was possibly related to audience considerations. Giving West Germany a late-stage deal would not lead to widespread proliferation as there were only two other countries witnessing it.<sup>117</sup> The Soviet offer of a late stage deal to

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<sup>111</sup>Brezhnev, “Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia.”

<sup>112</sup>Brezhnev.

<sup>113</sup>Brezhnev.

<sup>114</sup>Brezhnev.

<sup>115</sup>“Minutes of Conversation between Nikita Khrushchev and Herman Matern,” December 5, 1959, Fond 52, Opis 1, Delo 557, Listy 84-85, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii; “Minutes of Conversation between Nikita Khrushchev and Berthold Beitz,” May 14, 1963, Fond 52, Opis 1, Delo 586, Listy 201-203, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii; “Draft Response from the CPSU Politburo to the Federal Republic of Germany,” March 25, 1966, Fond 3, Opis 72, Delo 8, Listy 41-54, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii.

<sup>116</sup>Brezhnev, “Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia.”

<sup>117</sup>“Directives to Soviet Ambassadors and Other Representatives Abroad on Gromyko’s Official Visit to Japan,” August 18, 1966, Fond 3, Opis 72, Delo 36, Listy 58, Rossiyskiy gosudarstvennyy arkhiv noveyshey istorii.

West Germany therefore provides support for H4.

American intelligence analysts recognized that West Germany's nuclearization would be "unwelcome to other NATO countries" and countries in Eastern Europe, especially the Soviet Union.<sup>118</sup> The United States identified Norway, Netherlands, Belgium, and Italy as likely members of the audience for the USSR-US-West German deal. As the National Security Council noted, "none of them seeks national nuclear forces of its own" but they were directly "concerned about the consequences of German nuclear weapons," so if West Germany acquired an independent atomic arsenal, it would send a signal to these countries that the US attitude to nonproliferation was permissive.<sup>119</sup> The fact that Norway, Netherlands, Belgium and Italy were not seen as serious proliferants by the United States, given that they were not "seeking national nuclear forces" of their own, meant that their reaction to German nuclearization would not be severe. When considering its response to Bonn's weaponization, Washington envisaged four courses of action, ranging from no reaction to "all-out efforts to stop proliferation," including "forcing the FRG to take the pledge [of the Non-Proliferation Treaty] with threat of US security withdrawal as the club."<sup>120</sup> The United States knew that if this withdrawal was to happen, the "Soviets might try to step in, precipitating large-scale conflict."<sup>121</sup> The United States ultimately decided to offer West Germany a late stage deal for the same reasons as the Soviets—the NPT could be applied

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<sup>118</sup>CIA, "National Intelligence Estimate 100-4-60, 'Likelihood and Consequences of the Development of Nuclear Capabilities by Additional Countries.'"

<sup>119</sup>National Security Council, "Briefing Book on US-Soviet Non-Diffusion Agreement for Discussion at the Moscow Meeting" (National Security Archive, June 12, 1963), Box 276, Nuclear Energy Matters, Nuclear Diffusion Briefing Book, Volume I on US-Soviet Non-Diffusion Agreement 6/1963, JFK Presidential Papers, National Security Files, Carl Kaysen Files, <https://nsarchive2.gwu.edu/nukevault/ebb488/docs/Doc%2011A%20briefing%20book.pdf>.

<sup>120</sup>Gilpatric Committee, "Problems Concerning Alternative Course of Action," 1964, National Security File, Committee File, Committee on Nuclear Proliferation, Chron File, Box 5, Lyndon B. Johnson Library.

<sup>121</sup>Gilpatric Committee.

in equal measure to other proliferants that would seek to imitate West Germany, especially those in NATO and in the Warsaw Pact. Therefore, the American decision to strike a deal with West Germany provides support for H4.

### **H3 contradicted: Australia**

The deal with West Germany appears to have motivated Australia to end its own interest in nuclear weapons. The West German decision is explicitly invoked by the Australian leadership when Canberra endorsed the NPT and thus halted its nuclear pursuits.<sup>122</sup> The Australian case goes against H3, because the late-stage deal discouraged Canberra from pursuing nuclear weapons.

## **1974 toleration of Indian nuclear acquisition**

### **H4 supported: US/USSR**

Both the US and the USSR expected India's nuclearization to prompt several members of the audience to follow suit, as New Delhi's acquisition of nuclear weapons signaled that violators of the nuclear order could go unpunished.<sup>123</sup> The potential proliferants Washington and Moscow counted among the members of the audience included countries such as Japan, West Germany, Israel and Pakistan.<sup>124</sup>

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<sup>122</sup>Leah, *Australia and the Bomb*, 62–63.

<sup>123</sup>Balazs Szalontai, "The Elephant in the Room: The Soviet Union and India's Nuclear Program, 1967-1989," NPIHP Working Paper 1 (November 2011), <https://www.wilsoncenter.org/publication/the-elephant-the-room-the-soviet-union-and-indias-nuclear-program-1967-1989>.

<sup>124</sup>H. Daniel Brewster, "Memorandum to Herman Pollack. Subject 'Indian Nuclear Developments'" (History and Public Policy Program Digital Archive, January 16, 1973), Record Group 59, SN 70-73, AE 6 India, National Archives, <https://digitalarchive.wilsoncenter.org/document/113907>.

The United States tried to prevent India from joining the nuclear club because of the signal it would send to other proliferants that the nonproliferation environment had become more permissive. Decision-makers in Washington had long worried about the effects of an Indian nuclear test on other potential proliferants, and anticipated that acquiescing to India's nuclearization would embolden other countries. U.S. intelligence estimates made specific connections between India's weaponization and Brazil's nuclear pursuits as early as 1957: "Should another Latin American country, one of the lesser European nations (such as Spain, for example), any African country or India obtain or produce nuclear weapons, there would almost certainly be strong pressure upon the Brazilian government to acquire similar weapons."<sup>125</sup> The 1965 Gilpatric Committee forecast that "an Indian or Japanese decision to build nuclear weapons would probably produce a chain reaction of similar decisions by other countries, such as Pakistan, Israel and the UAR."<sup>126</sup> Several months before the test, American officials concluded that "apparent US acquiescence could lead [Japan, Germany, Israel], and others, to anticipate nothing more severe if they became Member No. 7 in the nuclear club."<sup>127</sup> Just after the test, they admitted that "as a result of the Indian nuclear test, other non-nuclear weapons states will tend to rethink their

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<sup>125</sup>Office of Intelligence Research, "OIR Contribution to NIE 100-6-57: Nuclear Weapons Production by Fourth Countries – Likelihood and Consequences - Part E - Latin America" (History and Public Policy Program Digital Archive, May 31, 1957), 5, Record Group 59, Special Assistant to the Secretary of State for Atomic Energy, Records Relating to Disarmament, 1948-1962, box 57, 2 15d: Armaments Nuclear Fourth Countries, 1956-57, National Archives and Records Administration, [https://digitalarchive.wilsoncenter.org/assets/media\\_files/000/018/260/18260.pdf](https://digitalarchive.wilsoncenter.org/assets/media_files/000/018/260/18260.pdf).

<sup>126</sup>Roswell Gilpatric, "Report by the Committee on Nuclear Proliferation," January 21, 1965, National Security File, Committee File, Committee on Nuclear Proliferation, Report (Final, 12/21/65), Box 8, Lyndon B. Johnson Library.

<sup>127</sup>H. Daniel Brewster, "Memorandum to Herman Pollack. Subject 'Indian Nuclear Developments'" (History and Public Policy Program Digital Archive, January 16, 1973), Record Group 59, SN 70-73, AE 6 India, National Archives, <https://digitalarchive.wilsoncenter.org/document/113907>.

decisions regarding independent nuclear weapons or nuclear explosives programs.”<sup>128</sup> A Special National Intelligence Estimate identified Brazil as one of the “potential third-generation proliferators” that would follow in India’s footsteps.<sup>129</sup> Washington urged New Delhi to sign the Non-Proliferation Treaty, but could not persuade it to do so as it was not willing to offer India the kind of security guarantees it requested, namely removing preventive strikes from its nonproliferation toolbox. Specifically, India wanted the NPT to include both positive and negative security assurances.<sup>130</sup> While the United States had put positive security assurances – in the form of extended nuclear deterrence – at the center of its nuclear alliances around the world, it refused to provide negative security assurances, which constitute guarantees that nuclear powers would not threaten to attack or threaten to attack non-nuclear powers.<sup>131</sup> Washington’s unwillingness to renounce the use of force against non-nuclear powers, including potential proliferants, amounted to an “all options are on the table” position. Eventually the United States had to acquiesce to the Indian Peaceful Nuclear Explosion, which in the context of the alternatives it had at that time, provides some support in favor of H4.<sup>132</sup>

The Soviet Union also tried to stop India’s nuclearization, for the same reasons as the

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<sup>128</sup>NSC Under Secretaries Committee, “National Security Study Memorandum (NSSM) 202 on Nuclear Proliferation” (History and Public Policy Program Digital Archive, May 23, 1974), 2, National Security Council Institutional Files, Study Memorandums (1969-1974), Box H-205, Richard M. Nixon Presidential Library, <https://digitalarchive.wilsoncenter.org/document/115172.pdf?v=052476afebd67557d3d04c7e39f552c6>.

<sup>129</sup>Central Intelligence Agency, “Special National Intelligence Estimate SNIE 4-1-74: Prospects for Further Proliferation of Nuclear Weapons” (History and Public Policy Program Digital Archive, August 23, 1974), 38, CIA-Mandatory declassification review request.

<sup>130</sup>George Bunn and Roland M. Timerbaev, “Security Assurances to Non-nuclear-weapon States,” *The Nonproliferation Review* 1, no. 1 (September 1, 1993): 12, <https://doi.org/10.1080/10736709308436519>.

<sup>131</sup>Bunn and Timerbaev, 11–12.

<sup>132</sup>George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 2001), 194; Szalontai, “The Elephant in the Room.”

United States, including the signal that New Delhi's entry into the nuclear club would send to other proliferants.<sup>133</sup> Moscow urged the Indian leadership to sign the NPT, while at same time proving unwilling to provide the negative security assurances India requested. The Soviet Union ultimately had to accept India's nuclearization in 1974, which corroborates H4.

**H1 supported: Brazil**

This case is discussed in the main paper.

**H1 supported: South Africa**

This case is discussed in the main paper.

**H1 supported: Yugoslavia**

This case is discussed in the main paper.

**H1 supported: Iran**

Shortly after India conducted its PNE, the Shah of Iran came out publicly in favor of nuclearization, stating that Iran would "without a doubt" acquire nuclear weapons, "and sooner than one would think."<sup>134</sup> The Shah also pointed out that if other nations acquired nuclear weapons, "then perhaps the national interests of any country at all would demand the same." The content and public nature of these comments suggest the leadership in

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<sup>133</sup>Brezhnev, "Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia."

<sup>134</sup>George H. Quester, "The Shah and the Bomb," *Policy Sciences* 8, no. 1 (1977): 22.

Tehran expected the enforcers to treat Iran the same way it had treated India, consistent with H1.<sup>135</sup>

## **1978 deal with Taiwan**

### **H4 supported: US**

Just a few years after the deal with Taiwan, in the context of evaluating subsequent proliferation trends, the CIA explicitly mentioned that the relaxation of nonproliferation norms by the United States towards Taiwan would increase the difficulty of denying other countries the acquisition of capabilities relevant to pursuing nuclear weapons.<sup>136</sup> The estimate asserts that permissiveness toward Taiwan's acquisition of nuclear-weapons-relevant capabilities would signal to other countries that the nonproliferation environment was becoming more lenient and encourage them to demand similar treatment.<sup>137</sup> Moreover, when pressing Taiwan to halt its nuclear pursuits, the US referred to similar demarches Washington had undertaken vis-à-vis South Korea, Brazil, Pakistan and Iran, which suggests that decision-makers in Washington thought about those proliferants as part of the audience that could try to emulate Taiwan's example.<sup>138</sup> The evidence showing that audience considerations played a role in the enforcer's response to the Taiwanese nuclear weapons program suggests support for H4.

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<sup>135</sup>“U.S. Embassy Paris Cable 15445 to Department of State, ‘Further Remarks by Shah on Nuclear Weapons,’ Unclassified” (National Security Archive, June 25, 1974), Mandatory Review Request, National Archives and Records Administration.

<sup>136</sup>Central Intelligence Agency, “National Intelligence Estimate NIE 4-82: Nuclear Proliferation Trends Through 1987” (History and Public Policy Program Digital Archive, July 1982), 23–24, <http://digitalarchive.wilsoncenter.org/document/116894>.

<sup>137</sup>Central Intelligence Agency, 24.

<sup>138</sup>Leonard Unger, “Nuclear Fuel Reprocessing Plants” (Digital National Security Archive, August 16, 1976), FOIA Release.



## 1979 toleration of South African nuclear acquisition

### H4 supported: US/USSR

Both the United States and the Soviet Union were concerned about the repercussions of a South African nuclear test on proliferation.<sup>139</sup> If Pretoria got the bomb, then a number of industrialized states would attempt to do the same.

The Soviet Union had opposed South Africa's nuclearization since the 1960s because it believed it would encourage other countries to get nuclear weapons.<sup>140</sup> According to a former Soviet spy infiltrated in the South African armed forces, Dieter Gerhardt, in 1976, as Pretoria was preparing to conduct a nuclear test, the Soviets approached the Americans and sought to secure their cooperation in stopping South Africa's nuclear weapons program.<sup>141</sup> One of the options the leadership in Moscow considered was a preemptive military strike, a move the United States rejected.<sup>142</sup> The Soviets also considered the distant possibility that Pretoria would sign the NPT, so a nuclear deal was the other option. Ultimately, because the cost of an attack was too high given U.S. opposition to a military strike, and since South Africa refused to adhere to the NPT, the Soviet Union had to tolerate South Africa's nuclearization. This decision corroborates H4.

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<sup>139</sup>Zdenek Cervenka and Barbara Rogers, *The Nuclear Axis: Secret Collaboration between West Germany and South Africa*, 1st Edition (New York: Times Books, 1978); Brezhnev, "Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia"; Christine Dodson, "Memorandum for: Secretary of State and Others, Subject: South Atlantic Nuclear Event" (National Security Archive, October 22, 1979), FOIA, National Archives and Records Administration, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB181/sa21.pdf>.

<sup>140</sup>Brezhnev, "Statement Made at the Meeting of the Political Consultative Committee of the Warsaw Pact, Sofia."

<sup>141</sup>David H. Albright and Andrea Stricker, *Revisiting South Africa's Nuclear Weapons Program: Its History, Dismantlement, and Lessons for Today*, 1st edition (Washington, DC: Institute for Science and International Security, 2016), 75.

<sup>142</sup>Albright and Stricker, 75.

### **H1 supported: Taiwan**

Taiwan resumed the exploration of nuclear weapons in 1987. Prior to that, the leadership in Taipei witnessed the South African nuclear test and the enforcers' lack of reaction to it. The Taiwanese expressed admiration and appreciation for South Africa's nuclear status in their conversations with the leadership in Pretoria. Taiwan wanted to send its scientists to Pretoria to learn from the South African experience, but first they thought they ought to "assess the pressure from the US and the potential consequences."<sup>143</sup> After doing so they went ahead and sent experts to South Africa, which suggests Taipei's belief that the pressure from the US was bearable and the consequences tolerable. Taiwanese attitudes vis-à-vis South Africa's nuclearization suggest that the 1979 test encouraged Taiwan to attempt a similar feat as South Africa.<sup>144</sup> Taiwan's exploration of atomic weapons in the aftermath of South Africa's nuclearization provides support for H1.

### **H1 supported: Pakistan**

Pakistan directly invoked South Africa's nuclearization when it justified its decision to acquire nuclear weapons. In 1979 former Prime Minister Zulfikar Ali Bhutto noted his unwillingness to accept a situation where other nations were allowed to get nuclear weapons while Pakistan was not, singling out the nuclear test conducted that year by South Africa and Israel.<sup>145</sup> If Pretoria could obtain nuclear weapons, so could Islamabad. Bhutto's successor, Muhammad Zia-ul-Haq subsequently decided to accelerate Pakistan's nuclear program. Bhutto's direct reference to South Africa's tolerated nuclearization provides

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<sup>143</sup> Albright and Stricker, *Taiwan's Former Nuclear Weapons Program*, 130.

<sup>144</sup> Albright and Stricker, 129.

<sup>145</sup> Shyam Bhatia, *Nuclear Rivals in the Middle East* (London: Routledge, 2017), 97.

support to H1.

## **1981 deal with South Korea**

### **H4 supported: US**

When the United States learned that South Korea was seeking sensitive atomic assistance from nuclear suppliers like France, it decided to take a “direct, early, and firm approach” to have the “best chance of success” at stopping Seoul from acquiring nuclear weapons.<sup>146</sup>

US intelligence analysts worried that permissiveness toward South Korea’s acquisition of nuclear-weapons-relevant capabilities would signal to other countries that the nonproliferation environment was becoming more lenient and encourage them to demand similar treatment.<sup>147</sup> Washington’s considerations provide support for H4.

## **1981 attack on Iraqi nuclear program**

### **H4 supported: Israel**

The United States noted the impact Israel’s attack on the Osiraq reactor would have on members of the audience such as Taiwan and Pakistan in the direction of discouraging their nuclear pursuits.<sup>148</sup> For its part, the Israeli leadership anticipated Iraq’s nuclearization would encourage other countries to get nuclear weapons, which is one of the reasons they decided to attack.

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<sup>146</sup>Henry A. Kissinger, “US Department of State Cable, ROK Plans to Develop Nuclear Weapons and Missiles” (History and Public Policy Program Digital Archive, March 12, 1975), National Security Adviser Presidential Country Files for East Asia and the Pacific, Box 11, Korea - State Department Telegrams, to SecState - NODIS (3), Gerald Ford Presidential Library, <https://digitalarchive.wilsoncenter.org/document/114616>.

<sup>147</sup>Central Intelligence Agency, 24.

<sup>148</sup>Albright and Stricker, Taiwan’s Former Nuclear Weapons Program, 192.

In the lead-up to the strike on Osiraq, the Israeli Chief of Staff, Rafael Eitan talked about the regional repercussions of an Iraqi nuclear capability. He stated that “if the Iraqis get the bomb it will be as though all the countries in this region are hanging from a light sewing thread, high above. Any attempt to use the nuclear bomb will lead immediately to the tearing of that thread and the crashing of states.”<sup>149</sup> This warning against Iraq had a regional audience. First, Israeli decision-makers sought to convey to the entire region that “Israel cannot allow itself to sit and wait until an Iraqi atomic bomb falls on our heads.”<sup>150</sup> The audience for the strike on Osiraq, according to Israeli leaders, included Syria and Iran: first Iraq gets the bomb, then Syria, followed by Iran.<sup>151</sup> The fact that Israeli decision-makers recognized the danger of the potential encouragement offered by Iraq’s nuclearization to members of the audience, and cited this a reason to attack in addition to the obvious security threat that would be posed to Israel by a nuclear-armed Iraq, provides support for H4.

## **H2 supported: Taiwan**

The Israeli attack on the Osiraq reactor served as a reminder for Taiwan that enforcers could resort to a military strike to halt Taipei’s nuclear exploration. According to David Albright, “this issue preoccupied Taiwan’s leaders” and prompted them to build up Taiwan’s nuclear infrastructure while stopping short of getting an atomic bomb.<sup>152</sup> This decision has been generally regarded as a deceleration of the Taiwanese nuclear weapons

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<sup>149</sup>Amos Perlmutter, Michael I. Handel, and Uri Bar-Joseph, *Two Minutes over Baghdad*, 2nd ed (London ; Portland, OR: Frank Cass, 2003), 97.

<sup>150</sup>Perlmutter, Handel, and Bar-Joseph, 98.

<sup>151</sup>Perlmutter, Handel, and Bar-Joseph, 98.

<sup>152</sup>Albright and Stricker, *Taiwan’s Former Nuclear Weapons Program*, 192.

program. This case provides suggestive evidence in support of H2.

## **1987 toleration of Pakistani nuclearization**

### **H4 supported: US/USSR**

The superpowers opposed the Pakistani nuclear weapons program and tried to stop it. In the late 1970s, officials in Washington believed Islamabad's nuclearization compromised the "integrity" of American nonproliferation policy.<sup>153</sup> Specifically, if the United States accepted Pakistan's entry into the nuclear club, then it would have to also be expected to tolerate other proliferants, such as South Africa, West Germany, or Japan.<sup>154</sup> Some top officials considered the use of force to stop Pakistan's program, precisely because of the precedent Pakistan would set for other potential proliferants.<sup>155</sup> This consideration of the negative consequences of tolerating Pakistan's acquisition provides support for H4.

## **1991 attack on Iraq**

### **H4 supported: US**

The public justification for the war was to force Iraq to withdraw from Kuwait, but, according to Jeffrey Richelson, President George H. W. Bush "raised the specter of the Iraqi pursuit of nuclear weapons as one justification for taking decisive action against Iraq."<sup>156</sup>

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<sup>153</sup>William Burr, "The Carter Administration's 'Damnable Dilemma': How to Respond to Pakistan's Secret Nuclear Weapons Program, 1978–1979," *Journal of Cold War Studies* 23, no. 1 (April 14, 2021): 4, [https://doi.org/10.1162/jcws\\_a\\_00980](https://doi.org/10.1162/jcws_a_00980).

<sup>154</sup>Burr, 4, 35.

<sup>155</sup>Burr, 35.

<sup>156</sup>Jeffrey T. Richelson, "Iraq and Weapons of Mass Destruction" (Washington, D.C: National Security Archive, 2004), <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB80/>.

In the years prior to the attack, the United States identified Iraq, Iran, Libya, and North Korea as countries that might pose a proliferation threat in the medium term, grouping Iraq and Iran together because of the influence they had on each other.<sup>157</sup> In other words, Iran and Iraq were each other's audiences, with the other proliferants listening in as well.

Just as in the case of other proliferants, the United States opposed Iraq's nuclearization partly because it would weaken the nonproliferation regime by affecting "global perceptions of such issues as [...] the likely reaction of powerful states [like the United States and the Soviet Union] to new arrivals in the nuclear weapons club."<sup>158</sup> Washington identified a number of countries in the Middle East as potential audience members.<sup>159</sup> In 1981, the National Foreign Assessment Center estimated that if Iraq tested a nuclear weapon, Egypt "would probably make a decision" to develop a weapons capability.<sup>160</sup> Official assertions in Washington that non-proliferation played an important role in the decision to attack Iraq in 1991 thus imply that the United States was not worried only about Iraq's own nuclearization but also about that of the audience members such as Egypt or Iran, supporting H4.

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<sup>157</sup>Central Intelligence Agency, "The Dynamics of Nuclear Proliferation: Balance of Incentives and Constraints," September 1985, 16, CIA-RDP88T00565R000600950003-9, CREST.

<sup>158</sup>Central Intelligence Agency, "National Intelligence Estimate NIE 4-82: Nuclear Proliferation Trends Through 1987" (History and Public Policy Program Digital Archive, July 1982), 9, <http://digitalarchive.wilsoncenter.org/document/116894>.

<sup>159</sup>Central Intelligence Agency, "National Intelligence Estimate NIE 4-82: Nuclear Proliferation Trends Through 1987"; Central Intelligence Agency, "The Dynamics of Nuclear Proliferation: Balance of Incentives and Constraints."

<sup>160</sup>National Foreign Assessment Center, "Egypt: Nuclear Program and the Non-Proliferation Treaty. An Intelligence Memorandum," September 1981, 2, CIA-RDP06T00412R000200400001-4, CREST, <https://www.cia.gov/readingroom/docs/CIA-RDP06T00412R000200400001-4.pdf>.

## **H2 supported: Algeria**

According to US intelligence reports, Algeria took note of the war against Iraq and reacted in ways that suggest it was expecting to become a target of a similar attack. The Algerians activated their anti-aircraft artillery and early warning radars to defend their most prominent nuclear facility – the El-Salam research reactor – during the first half of 1991.<sup>161</sup> Moreover, the Algerians expressed concern that after the attack on Iraq, Algeria would be next.<sup>162</sup> In the aftermath of the war, Algeria agreed to place the reactor under IAEA safeguards, thus ending its nuclear pursuits. The parallels the Algerians drew between Algeria and Iraq indicate that Algiers' decision to decelerate its nuclear program was influenced by the attack on Iraq, consistent with H2.

## **H2 supported: North Korea**

North Korea took note of the war against Iraq and threatened Washington with a preemptive strike “if circumstances called for it.”<sup>163</sup> The leadership in Pyongyang vowed to avoid Iraq's fate.<sup>164</sup> Despite the blustering rhetoric, North Korea reached a deal with the United States, which marked a deceleration in North Korea's nuclear weapons program. The explicit mention of the attack against Iraq by North Korea in the context of its deliberations

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<sup>161</sup>Intelligence and Research, “Talking Points on Algerian Nuclear Developments for Delivery to Senators Glenn and Roth (SGA), Senators Pell and Helms (SFRC), and Congressmen Fascell and Broomfield (HFAC)” (National Security Archive, July 29, 1991), Record Group 59, National Archives and Records Administration, <https://nsarchive2.gwu.edu/nukevault/ebb228/Algeria-18.pdf>.

<sup>162</sup>David Albright and Corey Hinderstein, “Algeria: Big Deal in the Desert?,” *Bulletin of the Atomic Scientists* 57, no. 3 (May 1, 2001): 45–52, <https://doi.org/10.2968/057003014>.

<sup>163</sup>Bureau of Intelligence and Research, “The Secretary's Morning Intelligence Summary,” March 29, 1994, Record Group 59, National Archives and Records Administration, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB421/docs/19940329.pdf>.

<sup>164</sup>Bureau of Intelligence and Research.

to slow down its nuclear pursuits provides suggestive evidence in support of H2.

## **H2 inconclusive: Ukraine**

In 1993, in the midst of internal deliberations in Kyiv regarding denuclearization, top Ukrainian officials directly invoked the treatment experienced by Iraq as a consideration for holding on to the nuclear weapons it inherited from the USSR.<sup>165</sup> General-Major Volodymyr Tolubko, who was one of the main proponents of keeping the inherited arsenal, cautioned Ukraine against having the same fate as Iraq in 1991 if it gave up nuclear weapons. This suggests that the US attack on Iraq initially encouraged Ukraine to want to keep the Soviet atomic arsenal. But the Iraqi experience also played a key part in the final decision to denuclearize. Ukraine did not want to pay the price Iraq had paid for its violation of the nuclear order.<sup>166</sup> Consequently, the leadership in Kyiv agreed to the Budapest Memorandum in 1994. As the attack on Iraq both encouraged and discouraged Ukraine's attempts to hold on to the Soviet atomic arsenal, we code this case as inconclusive for H2.

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<sup>165</sup>Mariana Budjeryn, "The Power of the NPT: International Norms and Ukraine's Nuclear Disarmament," *The Nonproliferation Review* 22, no. 2 (April 3, 2015): 220, <https://doi.org/10.1080/10736700.2015.1119968>.

<sup>166</sup>History and Public Policy Program Digital Archive, "Ministry of Foreign Affairs of Ukraine and State Committee of Ukraine for Nuclear and Radioactive Security, 'Possible Consequences of Ukraine Not Joining the Treaty on the Non-Proliferation of Nuclear Weapons (Analytical Report),' " April 21, 1993, Fond 1, delo 7058, Archive of the Ministry of Foreign Affairs of Ukraine.



## 1994 deal with North Korea

### H4 supported: United States

The US government recognized that the 1994 Agreed Framework with North Korea might be seen as rewarding bad behavior and thus set a dangerous precedent.<sup>167</sup> Specifically, it would signal to other proliferants that it paid off to defy the NPT.<sup>168</sup> Iran, Iraq, and Libya were often suggested as the most worrisome candidates for being influenced in this way,<sup>169</sup> with Iran of particular concern given the CIA's estimate that Tehran was "in the process of developing [an atomic] bomb."<sup>170</sup> The Clinton Administration dismissed these criticisms, arguing that "such analogizing is misguided" because the circumstances of each potential proliferant were so different from Pyongyang's that they did not lend themselves to a comparison with North Korea.<sup>171</sup> More specifically, Iraq's nuclear weapons program had just been put "out of business," Libya and Iran had "very rudimentary nuclear infrastructure," and other potential proliferants such as Syria were discounted.<sup>172</sup> Precisely because

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<sup>167</sup>US Congress, Security Implications of the Nuclear Non-Proliferation Agreement with North Korea: Hearing before the Committee on Armed Services, United States Senate, One Hundred Fourth Congress, First Session, January 26, 1995, S. Hrg 104-188 (Washington: U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1995), 8.

<sup>168</sup>US Congress, U.S. Policy toward North Korea: Hearing before the Subcommittee on East Asian and Pacific Affairs of the Committee on Foreign Relations, United States Senate, One Hundred Third Congress, Second Session, March 3, 1994, S. Hrg 103-553 (Washington: U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1994), 9.

<sup>169</sup>US Congress, Developments in North Korea: Hearing before the Subcommittee on Asia and the Pacific of the Committee on Foreign Affairs, House of Representatives, One Hundred Third Congress, Second Session, June 9, 1994 (Washington: U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1995), 13.

<sup>170</sup>US Congress, U.S. Policy toward North Korea, 35.

<sup>171</sup>US Congress, Security Implications of the Nuclear Non-Proliferation Agreement with North Korea, 17-18.

<sup>172</sup>US Congress, U.S. Nonproliferation Policy: Hearing before the Committee on Foreign Affairs, House of Representatives, One Hundred Third Congress, First Session, November 10, 1993 (Washington: U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1994), 13-14, 21; US Congress, Security Implications of the Nuclear Non-Proliferation Agreement with North Korea, 17-18;

the potential proliferants were not seen as serious near-term concerns, the administration argued the deal with North Korea would not “prompt would-be proliferators to try a similar breakout.”<sup>173</sup> Thus, the perception that the audience presented little near-term risk contributed to Washington’s decision to make a deal with North Korea rather than impose severe sanctions. The United States’ decision to offer North Korea a deal in the presence of a small audience provides support for H4.

### **H3 supported: Iran**

This case is discussed in the main paper.

### **H3 supported: Libya**

This case is discussed in the main paper.

## **1994 deal with Ukraine**

### **H4 supported: Russia/US**

When Ukraine inherited a portion of the Soviet atomic arsenal following the collapse of the USSR, it was feared that a decision by Kyiv to hold on to nuclear weapons would encourage further proliferation.<sup>174</sup> But the enforcers thought the size of the audience was small, given the peculiar pathway that led to Ukraine’s nuclear possession. The United

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Alexander H. Montgomery and Adam Mount, “Misestimation: Explaining US Failures to Predict Nuclear Weapons Programs,” *Intelligence and National Security* 29, no. 3 (2014): 373; Cullen G. Nutt, “Proof of the Bomb: The Influence of Previous Failure on Intelligence Judgments of Nuclear Programs,” *Security Studies* 28, no. 2 (March 15, 2019): 342, <https://doi.org/10.1080/09636412.2019.1551569>.

<sup>173</sup>US Congress, *Security Implications of the Nuclear Non-Proliferation Agreement with North Korea*, 14.

<sup>174</sup>Roman Popadiuk, *American-Ukrainian Nuclear Relations* (Washington, D.C.: Institute for National Strategic Studies, 1996), 9, 57.

States expected the collapse of the Soviet Union to result in proliferation, which meant that if Ukraine kept its nuclear arsenal, other successor states, such as Belarus and Kazakhstan, would do the same.<sup>175</sup> However, we found no evidence that Russia or the US perceived either Belarus or Kazakhstan to be able to acquire operational control over their inherited nuclear capabilities in the near term, unlike Ukraine, which they thought could do so in less than two years.<sup>176</sup> Objectively, the nuclear infrastructure and technological expertise present in Belarus and Kazakhstan were substantially inferior to those of Ukraine.<sup>177</sup> A 1993 Russian intelligence estimate of nuclear proliferation did not even mention Ukraine as one of the proliferants.<sup>178</sup>

The Americans and the Russians used a variety of tactics to induce Ukraine to give up its nuclear inheritance. According to the Ukrainians themselves, military action against Ukraine, especially by Russia, was a possibility.<sup>179</sup> But ultimately, the enforcers opted against a strike and offered Ukraine a public deal, in light of the limited number of proliferants that could demand the same treatment. The choice to make a deal with Ukraine, in anticipation that it would affect only an empty audience of near-term potential proliferants, support H4.

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<sup>175</sup>Yuri Kostenko, *Ukraine's Nuclear Disarmament: A History* (Harvard University Press, 2021), 10.

<sup>176</sup>Budjeryn (2016, 156).

<sup>177</sup>Budjeryn (2016, 54–58).

<sup>178</sup>Sluzhba vneshney razvedki Rossiyskoy Federatsii, *Novy Vyzov Posle "Kholodnoi Voiny": Rasprostraneniye Oruzhiya Massovogo Unichtozheniya* (Moskva: Sluzhba vneshney razvedki Rossiyskoy Federatsii, 1993), [https://fas.org/irp/threat/svr\\_nuke.htm](https://fas.org/irp/threat/svr_nuke.htm).

<sup>179</sup>Budjeryn, "The Power of the NPT," 214–15, 221.

### **H3 supported: North Korea**

North Korea took note of the nonproliferation negotiations with Ukraine and the concessions it thereby received. According to a December 1994 Congressional testimony, the “U.S. financial inducements and security assurances to Ukraine and Kazakhstan to gain then respective compliance to with non-nuclear norms did not go unnoticed in Pyongyang.”<sup>180</sup> Having observed the US and Russian deal with Ukraine, North Korea decided it could “conceal its true nuclear status and future intentions,” and so Pyongyang pursued nuclear weapons covertly.<sup>181</sup> North Korea’s post-1994 initiation of a covert uranium enrichment program, accelerating its nuclear efforts after freezing its plutonium-related facilities under the Agreed Framework, provides suggestive evidence that the deal with Ukraine encouraged Pyongyang, thus supporting H3.<sup>182</sup>

### **2003 attack on Iraq**

#### **H4 supported: US**

The US decision to invade Iraq was strongly encouraged by the influence this was anticipated to have on other potential proliferants. Ahsan Butt offers extensive documentation that “the United States fought Iraq mainly for its demonstration effect,” to instill fear in

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<sup>180</sup>United States Congress, ed., *Implications of the U.S.-North Korea Nuclear Agreement: Hearing before the Subcommittee on East Asian and Pacific Affairs of the Committee on Foreign Relations, United States Senate, One Hundred Third Congress, Second Session, December 1, 1994, S. Hrg 103–891* (Washington: U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1995), 67.

<sup>181</sup>James A. Bayer, “The North Korean Nuclear Crisis and the Agreed Framework: How Not to Negotiate with the North Koreans,” *Asian Perspective* 19, no. 2 (1995): 193–194.

<sup>182</sup>Larry A. Niksch, “North Korea’s Nuclear Weapons Development and Diplomacy,” *Congressional Research Service RL33590*, January 5, 2010, pp. 17–20.

other potential proliferants and induce them to forswear nuclear weapons.<sup>183</sup> Indeed, high-ranking officials within the Bush administration expressed concerns that tolerating Iraq's alleged nuclear pursuits would prompt other countries in the region, including Iran and Libya, to follow a similar path.<sup>184</sup> The invasion of Iraq was therefore intended to serve, according to Undersecretary of State John Bolton, as "a cautionary example of what can happen to other states that refuse to abandon their programs to build weapons of mass destruction".<sup>185</sup>

Moreover, the US believed that the audience of potential proliferants included states that might acquire nuclear weapons in the near future. In the lead-up to the invasion of Iraq, Bolton called Syria a rogue state "intent on acquiring weapons of mass destruction", alleged that Syria had undertaken "potential nuclear weapons efforts", and spoke of "Iran's ongoing interest in nuclear weapons" and Libya's "longstanding pursuit of nuclear weapons".<sup>186</sup> Fears that Tehran was quickly moving towards acquiring a nuclear weapon capability were compounded by revelations about the scale of uranium enrichment at Natanz, following IAEA visits in February 2003.<sup>187</sup> By the time the US invaded Iraq, the intelligence community had also learned that Libya had received centrifuge technology from the Khan network. This discovery prompted a revision of estimates about when Libya might have a nuclear weapon from 2015 to 2007.<sup>188</sup> As additional intelligence on the Khan network came in, US concerns about Libya's possible progress toward

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<sup>183</sup>Butt (2019).

<sup>184</sup>Rumsfeld (2011, 717).

<sup>185</sup>Sanger (2003).

<sup>186</sup>Bolton (2002); Nuclear Threat Initiative (2005).

<sup>187</sup>Corera (2006, 81).

<sup>188</sup>Iraq Intelligence Commission (2005, 257-260).

a nuclear weapon mounted over the course of 2002 and into 2003.<sup>189</sup>

The US decision to attack Iraq as a means of influencing a sizeable perceived audience of near-term potential proliferants provides support for H4.

### **H2 supported: Libya**

This case is discussed in the main paper.

### **H2 supported: Iran**

This case is discussed in the main paper.

### **H2 contradicted: North Korea**

North Korea witnessed the US-led war against Iraq in 2003 and Saddam Hussein's subsequent fall. The conclusion it drew from these events appears to have been that "powerful nuclear deterrence serves as the strongest treasured sword for frustrating outsiders' aggression," because "The Saddam Hussein regime in Iraq and the Gaddafi regime in Libya could not escape the fate of destruction after being deprived of their foundations for nuclear development and giving up nuclear programmes of their own accord."<sup>190</sup> To the extent that this public commentary well after the Iraq War is reflective of the North Korean government's internal reasoning, it suggests that the Iraq War encouraged rather than discouraged North Korea, contradicting H2.

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<sup>189</sup>Corera (2006, 169-172).

<sup>190</sup>Stephen Evans, "The Saddam Factor in North Korea's Nuclear Strategy," BBC News, September 9, 2016, sec. Asia, <https://www.bbc.com/news/world-asia-37321686>.

## 2003 deal with Libya

### H4 supported: US

The US made Gaddafi believe that a military attack on Libya was possible before offering him a deal in December 2003.<sup>191</sup> If the leadership in Tripoli did not show receptiveness to US demands to end its program, the Bush administration considered subjecting it to a preventive attack to stop Libya from acquiring nuclear weapons.<sup>192</sup> The United States took into account the reaction of possible audience members when it offered Libya a deal. The Bush Administration “pointed to Libya’s WMD rollback as a model for how other proliferators could make a ‘strategic choice’ to shift course and become accepted members of the international community.”<sup>193</sup> Nevertheless, no names of specific audience members were given. With Iraq’s pursuit just ended by war, Iran’s just halted by a deal, North Korea’s already resulting in nuclear acquisition<sup>194</sup>, and Syria’s still assessed as a long-term concern, the audience of near-term potential proliferants was very small. Syria’s public expression of support for the deal could have further signaled that the audience was

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<sup>191</sup>Jonathan B. Tucker, “The Rollback of Libya’s Chemical Weapons Program,” *The Nonproliferation Review* 16, no. 3 (November 1, 2009): 365, <https://doi.org/10.1080/10736700903255060>.

<sup>192</sup>Tristan A. Volpe, “Proliferation Persuasion: Coercive Bargaining with Nuclear Technology” (PhD Thesis, The George Washington University, 2015), 73.

<sup>193</sup>Tucker, 379.

<sup>194</sup>It is not entirely clear from the available sources exactly when North Korea first built a viable nuclear explosive, and the US assessment of when it did so also seems unclear and varies among different intelligence estimates (Montgomery and Mount, 2014, Appendix 22–25). As best we can tell, the US intelligence community consistently assessed that North Korea had obtained enough reprocessed plutonium for one or two bombs before the 1994 Agreed Framework, but did not acquire the capability to actually construct a working bomb until the end of the 1990s or early 2000s, perhaps as a result of receiving a design blueprint from the A.Q. Khan network (David E. Sanger, “North Korea’s Bomb: Untested but Ready, C.I.A. Concludes,” *New York Times*, November 9, 2003, p. 4). The first definitive statement that the CIA confidently believed North Korea had working nuclear weapons comes in mid-August of 2003, before the Libya deal was completed, so we assume the US did not consider North Korea as an audience member for this deal (Sanger).

small.<sup>195</sup>

Nonetheless, the US refused to offer an explicit quid pro quo of relaxing sanctions in return for Libya's abandonment of its program, even though it gave assurances that normalization of relations would be forthcoming if Libya held up its end of the deal.<sup>196</sup> There would be no reason to do this except to obscure the fact that the US was making concessions to Libya's interests in order to secure the end of its pursuit of nuclear weapons. The need to avoid encouraging other states to expect generous deals for giving up advanced nuclear weapons programs was in fact a primary concern for the US.<sup>197</sup> This case clearly supports H4.

## **2006 toleration of North Korean nuclear acquisition**

### **H4 supported: US**

The US opposed the North Korean nuclear weapons program in part because it would have encouraged other countries to obtain their own nuclear weapons.<sup>198</sup> Washington assessed that if North Korea obtained nuclear weapons, South Korea and Japan would be tempted to acquire them as well.<sup>199</sup> As Joel Wit, Daniel Poneman, and Robert Gallucci note, "if such a nuclear arms race were to begin, it might have a cascading effect. Taiwan, which had

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<sup>195</sup>John Hart and Shannon N Kile, "Libya's Renunciation of Nuclear, Biological and Chemical Weapons and Ballistic Missiles," in SIPRI Yearbook 2005: Armaments, Disarmament, and International Security (Stockholm: SIPRI Yearbook, 2005), 632.

<sup>196</sup>Corera (2006, 191–192).

<sup>197</sup>Corera (2006, 191–192, 224).

<sup>198</sup>Joel S. Wit, Daniel B. Poneman, and Robert L. Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Brookings Institution Press, 2004), 389, <https://www.jstor.org/stable/10.7864/j.ctt1gpcd97>; Jonathan D. Pollack, "Chapter Five: Nuclear Breakout," *Adelphi Series* 50, no. 418–419 (December 2010): 143, <https://doi.org/10.1080/19445571.2010.583554>.

<sup>199</sup>Wit, Poneman, and Gallucci, *Going Critical*, 389; Yoichi Funabashi, *The Peninsula Question: A Chronicle of the Second Korean Nuclear Crisis* (Brookings Institution Press, 2008), 303.



a rudimentary nuclear weapons program in the 1970s, could not be relied upon to stand idly by.”<sup>200</sup> In other words, Taiwan would be emboldened if a nuclear arms race emerged in East Asia, as it would expect the enforcer to treat it in the same way it treated North Korea, as well as South Korea, and Japan. The US consideration of the audience effect of its chosen response supports H4.

## **2007 attack on Syrian nuclear program**

### **H4 supported: Israel/US**

Israel discovered the clandestine construction by Syria of a reactor at Deir ez-Zor in the summer of 2006. After establishing the nature of the Deir ez-Zor, Israel decided to attack it before it became operational, scheduling the strike for the fall of 2007.<sup>201</sup> In the spring of 2007, the Israeli leadership informed the Bush Administration about its plan to destroy the reactor.<sup>202</sup> Prime Minister Ehud Olmert tried to persuade the Americans by pointing out that such a strike “would also send an unmistakable message to Tehran regarding Washington’s determination to prevent nuclear proliferation in the Middle East.”<sup>203</sup> Within the Bush administration, Vice President Dick Cheney agreed that “by destroying the Syrian nuclear reactor, Washington would be sending a powerful message not only to Damascus and Pyongyang but also to Tehran, whose nuclear program the administration strove to contain.”<sup>204</sup> While the leadership in Washington decided against getting involved in the

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<sup>200</sup>Wit, Poneman, and Gallucci, *Going Critical*, 389.

<sup>201</sup>Ori Wertman, “When Israel Destroyed Syria’s Nuclear Reactor: The Inside Story,” *Middle East Quarterly* 29, no. 2 (March 1, 2022): 2–3.

<sup>202</sup>Wertman, 4.

<sup>203</sup>Wertman, 4.

<sup>204</sup>Wertman, 7.

strike against the Syrian reactor, according to Olmert, President Bush replied by saying “the United States will not get in your way.”<sup>205</sup> The fact that Israeli and US decision-makers considered the effect the strike would have on the audience supports H4. That they came to opposite conclusions about the desirability of attacking might be driven by the fact that the audience of near-term proliferants was perceived to be small, but not empty—it consisted only of Iran.

## **2015 deal with Iran**

### **H4 supported: US**

The Obama Administration recognized the possibility that tolerating Iranian nuclear acquisition might lead other states like Egypt and Saudi Arabia to seek their own nuclear weapons.<sup>206</sup> A RAND report on the implications of the Iran deal also mentions the possibility that it might encourage nuclear pursuits by Saudi Arabia and the United Arab Emirates.<sup>207</sup> However, these states could not plausibly be viewed as near-term potential proliferants, as Saudi Arabia and the UAE would be starting from scratch in pursuing nuclear weapons, and Egypt would presumably gain little from its former nuclear program that was ended 35 years prior to the Iran deal.<sup>208</sup> The US consideration of the potential audience, as well as the absence of any near-term threat of proliferation from this audience, is consistent with the US decision to make a deal with rather than attack Iran, and thus supports H4.

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<sup>205</sup>Wertman, 8.

<sup>206</sup>Hillary Rodham Clinton, “New Iran and Syria2.Doc” (U.S. Department of State, n.d.), FOIA Release, [https://foia.state.gov/Search/Results.aspx?searchText=C05794498%20&collection=Clinton\\_Email](https://foia.state.gov/Search/Results.aspx?searchText=C05794498%20&collection=Clinton_Email).

<sup>207</sup>Kaplow and Gibbons (2015).

<sup>208</sup>Bleck (2017).

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