# WEEK 8 PRESENTATION

AARON COLOSI

# BARGAINING OVER THE BOMB CHAPTER 4

WILLIAM SPANIEL

# BACKGROUND

- Nuclear proficiency is a state's potential ability to produce nuclear weapons

- Some believe greater nuclear proficiency allows a state to more easily coerce other states

- This chapter seeks to determine the effect nuclear proficiency has on militarized dispute reciprocation (meaning if state A attacks state B, will state B retaliate?)

# HYPOTHESIS 4.1

- "As a state's unrealized nuclear capability increases, the probability its opponents reciprocates militarized interstates disputes decrease"

- In other words, if sate A attacks state B, state B is less likely to retaliate if state A has a high nuclear capability

# HYPOTHESIS 4.2

- "The probability of dispute reciprocation is nonmonotonic in a stat's unrealized nuclear capability. As a state's unrealized nuclear capability increases initially, the probability of reciprocation decreases. However, further increases to nuclear capability eventually increase the probability of reciprocation"

- In other words, a state increasing its nuclear capability up to a certain level will decrease the likelihood its opponent will retaliate if attacked. Any increases in nuclear capability beyond this level will actually increase the chance the opponent retaliates if attacked.

# DATA

- Draws data from two main sources

- First source is the Correlates of War's MIDs data base.

- Second is v-CLEAR scores created by Smith and Spaniel

- v-CLEAR scores measure a state's nuclear capability starting in 1938 and ending in 2001

# DEPENDENT VARIABLE

- The dependent variable is whether a state reciprocated a MID

- This is a dichotomous variable where 1 means that a state did reciprocate, and 0 means a state did not reciprocate

# INDEPENDENT VARIABLES

- Nuclear Proficiency (as derived from v-CLEAR scores)

-  v-CLEAR scores aggregate a variety of factors to determine nuclear proficiency

- Problem is that some of these factors include actual possession of nuclear weapons systems, when the chapter only seeks to look at state's with the potential to proliferate (not those that already have nuclear weapons)

- To address this, two scores are used, the original v score, and a v score in which nuclear weapon possession is not considered

# CONTROL VARIABLES

- Capability Ratio ( a state's CINC score divided by it and its opponent's CINC score)

- Polity score (considers how authoritarian or democratic a state is)

- Log Distance between the states

- Major Power Status (weather the initiator and or the target are major powers)

- S-Score (Weighted) (controls for foreign policy similarity between states)

# MODELS

- Model 1 contains no controls

- Model 2 includes all controls except for nuclear weapons possession

- Model 3 explicitly accounts for this that predictor, and uses the v score that excludes nuclear weapons indicators

- Model 4 excludes the scores of states that posses nuclear weapons all together

| | Dependent Variable: Dispute Reciprocation | | | |
| | All Observations Included | | | No NWS |
| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Nuclear Proficiency | −0.275*** | −0.277*** | −0.288*** | −0.247*** |
| | (0.045) | (0.087) | (0.091) | (0.095) |
| Nuclear Weapons | | | −0.074 | |
| | | | (0.263) | |
| Initiator Polity | | −0.005 | −0.004 | −0.021** |
| | | (0.010) | (0.010) | (0.010) |
| Target Polity | | −0.023*** | −0.022*** | −0.013 |
| | | (0.008) | (0.008) | (0.009) |
| Logged Distance | | −0.126*** | −0.125*** | −0.153*** |
| | | (0.021) | (0.021) | (0.023) |
| S-Score (Weighted) | | −0.366* | −0.366* | −0.172 |
| | | (0.209) | (0.211) | (0.237) |
| Initiator Major Power | | 0.614*** | 0.671** | 1.445*** |
| | | (0.217) | (0.265) | (0.374) |
| Target Major Power | | 0.141 | 0.136 | 0.472** |
| | | (0.205) | (0.205) | (0.237) |
| Capability Ratio | | −0.326 | −0.364 | −0.791 |
| | | (0.428) | (0.429) | (0.488) |
| Logged Initiator GDP | | −0.084** | −0.079** | −0.065 |
| | | (0.039) | (0.039) | (0.043) |
| Constant | −0.004 | 2.298*** | 2.234*** | 2.146*** |
| | (0.055) | (0.730) | (0.740) | (0.815) |
| Observations | 1,925 | 1,248 | 1,248 | 1,032 |
| Log Likelihood | −1,306.608 | −810.197 | −809.696 | −658.873 |
| Akaike Inf. Crit. | 2,617.216 | 1,640.394 | 1,641.392 | 1,337.747 |

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$
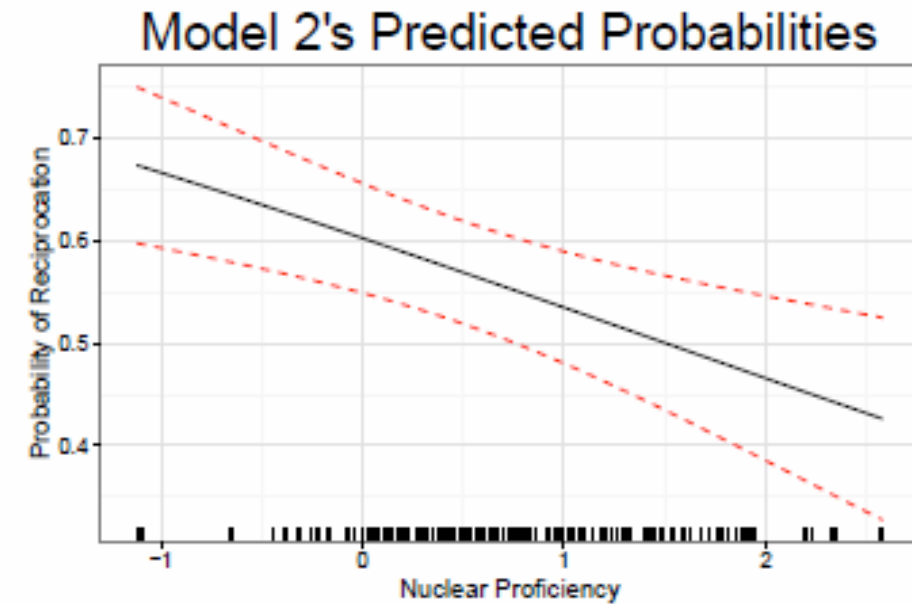
Table 4.1: Regression Table of Dispute Reciprocation.

Figure 4.1: Estimated Reciprocation Probability for Model 2

| | Dependent Variable: Dispute Reciprocation |
|---|---|
| | (5) |
| Nuclear Proficiency | −0.176* |
| | (0.104) |
| Nuclear Proficiency$^2$ | −0.168 |
| | (0.102) |
| Initiator Polity | −0.021** |
| | (0.010) |
| Target Polity | −0.014 |
| | (0.009) |
| Logged Distance | −0.150*** |
| | (0.023) |
| S-Score (Weighted) | −0.169 |
| | (0.237) |
| Initiator Major Power | 1.476*** |
| | (0.375) |
| Target Major Power | 0.464* |
| | (0.237) |
| Capability Ratio | −0.775 |
| | (0.489) |
| Logged Initiator GDP | −0.064 |
| | (0.043) |
| Constant | 2.211*** |
| | (0.817) |
| Observations | 1,032 |
| Log Likelihood | −657.534 |
| Akaike Inf. Crit. | 1,337.069 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

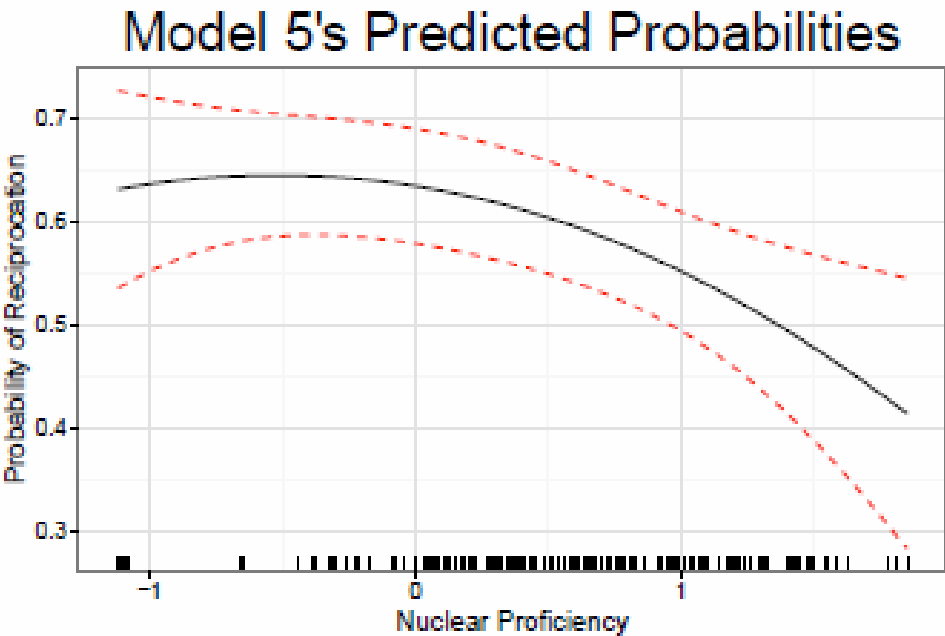Table 4.2: Regression Table Allowing for a Nonmonotonic Relationship

Figure 4.2: Estimated Reciprocation Probability for Model 5

# CONCLUSION

- States with a higher nuclear capacity see their dispute reciprocation rates drop by 26 percent. This information supports hypothesis 4.1

- As a result of this research, wee see that unrealized nuclear capacity accounts for substantial deterrent power

# CONCLUSION CONTINUED

- The author suggests that future research be conducted into whether or not unrealized nuclear capability also coerces concessions in situations other than MIDs

# BACKGROUND

- Scholars are in disagreement over the benefits and draw backs of nuclear capability in regards to bargaining

- Some believe nuclear latency can serve as a deterrent/ bargaining tool

- Others insist that only a deliverable nuclear weapon serves as a deterrent

- Still, others argue that a state's pursuit of nuclear latency actually increases the likelihood a state is attacked, as an opponent will launch a preventative war against them

- This article evaluates Virtual Deterrence Theory and Latency Provocation Theory in order to determine the costs/benefits of nuclear latency.

# HYPOTHESES TESTING VIRTUAL DETERRENCE THEORY

- H1 "States that acquire nuclear latency are less likely to be the target of MIDs"

- H2 "States that acquire nuclear latency are more likely to initiate MIDS"

- H3 "States that acquire nuclear latency are more likely to receive military assistance form the United States"

- H4 "States that acquire nuclear latency are more likely to receive economic assistance from the United States"

- H5 "States that acquire nuclear latency are more likely to experience success in the issuance of compellent threats against target states"

# HYPOTHESES TESTING LATENCY PROVOCATION THEORY

- H6 "States that acquire nuclear latency are more likely to be the target of MIDs"

- H7 "States that acquire nuclear latency are more likely to be the target of US-imposed economic sanctions"

# DATA/CODING

- Derived data from Fuhrmann and Tkach's Nuclear Latency Data set (which includes information on every country for every year from 1945 to 2012 regarding whether or not it operated and ENR)

- If a state was latent in a given year they were coded as 1 if not they were coded as 0

- If a state actually acquired a nuclear weapons, its data was censored for the years it possessed the nuclear weapons.

# DEPENDENT VARIABLES

- The study aims to identify the relationship between ENR operation and political, economic, and military outcomes. Thus 3 sets of dependent variables are analyzed

- 1 Alliances (including military assistance from U.S.)

- 2 Economics (including economic aid form U.S. and how likely the state is to face U.S. imposed sanctions)

- 3 Military outcomes (includes MIDs and the success of issued compllent threats)

# CONTROL VARIABLES

- Acknowledging that military or bargaining outcomes can be effected by a variety of circumstances, a multiple outside factors are controlled for

- Codes for whether a state has a defense pact with the US (as being a US ally may effects military outcomes)

- Codes for whether a state is receiving civilian nuclear aid from the US (as states receiving such aid would effect whether or not the US imposes sanctions)

- Also codes for a state's conventional military power and whether a rivalry exists between two states (as these factors will effect whether a MID occurs and how its resolved)

- Finally, controls fro a latent state's physical proximity to the other state, as evidence suggests that neighboring states fight more frequently

# FINDINGS

- Overall virtual deterrence theory is largely NOT supported by the data. Of the 5 hypothesis of virtual deterrence theory, only hypothesis 2 is supported by statistically significant data. For the other 4 hypotheses, the relationship is either not statistically significant, or the relationship is actually statistically significant the other direction (meaning the exact opposite of the hypothesis is likely true)

- On the other hand, the research gives great credence to latency provocation theory. Specifically, there is a positive and highly statistically significant association between nuclear latency, and the US cutting off econonmic aid and imposing sanctions on those states.

*The Benefits and Burdens of Nuclear Latency*

**Table 3.** Effect of latency on dispute and bargaining outcomes (RELOGIT)

| | *Model 1/6 (MIDsTarg)* | *Model 2 (MIDsInit)* | *Model 3 (Mil Aid)* | *Model 4 (Econ Aid)* | *Model 5 (Threat Success)* | *Model 7 (US Sanctions)* |
|---|---|---|---|---|---|---|
| Latency (no NWS) | 0.055 | 0.390* | −0.685*** | −0.167 | 0.974 | 1.150*** |
| | (0.195) | (0.203) | (0.234) | (0.173) | (0.792) | (0.217) |
| US NCA/123 | 0.193* | 0.443*** | 1.007*** | −0.178* | 0.252 | −0.285 |
| | (0.101) | (0.109) | (0.118) | (0.104) | (0.653) | (0.180) |
| Econ. openness | −0.004*** | −0.008*** | 0.001 | 0.004*** | −0.002 | −0.0013*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.005) | (0.002) |
| NPT era | 0.056 | 0.035 | 0.676*** | 0.618*** | −0.840 | 0.916*** |
| | (0.116) | (0.126) | (0.124) | (0.092) | (0.559) | (0.149) |
| Regime type | 0.020*** | 0.005 | −0.037*** | −0.006 | 0.034 | −0.014 |
| | (0.007) | (0.007) | (0.007) | (0.006) | (0.031) | (0.009) |
| NPT signatory | −0.011 | 0.247** | 0.496*** | 0.556*** | 0.366 | −0.007 |
| | (0.106) | (0.114) | (0.125) | (0.085) | (0.544) | (0.123) |
| GDP per capita | 0.000 | −0.000*** | −0.000* | −0.000*** | −0.000 | −0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.000) |
| Polity change | −0.03 | 0.022** | −0.008 | −0.017 | −0.096* | 0.078*** |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.056) | (0.014) |
| Rivalry | 0.730*** | 1.110*** | 0.178*** | 0.002 | 0.471 | 1.022*** |
| | (0.085) | (0.092) | (0.086) | (0.073) | (0.438) | (0.117) |
| CINC | 14.837*** | 4.174 | 5.382* | −6.176 | 15.677 | 5.210* |
| | (3.937) | (3.153) | (2.842) | (4.279) | (9.572) | (3.001) |
| US ally | −0.447*** | 0.053 | 1.004*** | 0.939*** | 0.005 | 0.416*** |
| | (0.094) | (0.103) | (0.095) | (0.094) | (0.522) | (0.153) |
| Borders | 0.067*** | 0.081*** | 0.067*** | 0.048*** | 0.031 | 0.055*** |
| | (0.014) | (0.016) | (0.017) | (0.014) | (0.091) | (0.019) |
| Time | −0.049*** | 0.035* | −1.416*** | −0.264*** | −0.034** | 0.201*** |
| | (0.020) | (0.020) | (0.220) | (0.019) | (0.158) | (0.024) |
| Time$^2$ | 0.002* | −0.002 | 1.142*** | 0.010 | 0.020* | −0.012*** |
| | (0.001) | (0.001) | (0.131) | (0.001) | (0.010) | (0.001) |
| Time$^3$ | −0.000* | 0.000 | −0.202*** | −0.000*** | −0.000* | 0.000*** |
| | (0.000) | (0.000) | (0.019) | (0.000) | (0.000) | (0.000) |
| Observations | 6,514 | 6,514 | 6,510 | 6,510 | 6,510 | 6,510 |

*Notes*: (1) Standard errors in parentheses. (2) Statistical significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

**Table 4.** Conditional effects of nuclear latency on allies versus nonallies

| | Allies | | | Non-allies | | |
|---|---|---|---|---|---|---|
| | Model 1 (Mil aid) | Model 2 (Econ aid) | Model 3 (Sanctions) | Model 1 (Mil aid) | Model 2 (Econ aid) | Model 3 (Sanctions) |
| Latency (no NWS) | −0.512*** | 0.003 | −0.169 | −0.165 | 0.380** | 1.042*** |
| | (0.183) | (0.148) | (0.245) | (0.245) | (0.192) | (0.186) |
| US NCA/123 | 0.923*** | 0.033 | −0.687*** | 0.243** | −0.106 | 0.287*** |
| | (0.107) | (0.105) | (0.157) | (0.099) | (0.075) | (0.094) |
| Econ. openness | −0.002 | 0.001 | −0.011*** | 0.001 | 0.002*** | −0.007*** |
| | (0.002) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| NPT era | 0.544** | 0.343*** | 1.665*** | 0.373*** | 0.480*** | 0.086 |
| | (0.154) | (0.129) | (0.186) | (0.096) | (0.068) | (0.095) |
| Regime type | −0.023*** | 0.004 | −0.016* | −0.021*** | −0.001 | 0.001 |
| | (0.007) | (0.007) | (0.009) | (0.005) | (0.004) | (0.006) |
| NPT signatory | 0.390** | 0.330** | −0.279* | 0.290*** | 0.344*** | 0.001 |
| | (0.164) | (0.133) | (0.159) | (0.089) | (0.060) | (0.083) |
| GDP per capita | −0.000 | −0.000*** | −0.000*** | −0.000 | −0.000*** | −0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Polity change | −0.021** | −0.012** | 0.044*** | 0.005 | −0.014** | 0.023*** |
| | (0.010) | (0.010) | (0.010) | (0.007) | (0.006) | (0.009) |
| Borders | 0.046*** | 0.005 | −0.117 | 0.040*** | 0.034*** | 0.068*** |
| | (0.017) | (0.014) | (0.021) | (0.013) | (0.009) | (0.013) |
| Rivalry | 0.124 | 0.305*** | 0.361*** | 0.084 | −0.123** | 0.498*** |
| | (0.086) | (0.088) | (0.109) | (0.066) | (0.050) | (0.069) |
| CINC | −4.184 | 8.968** | 14.945** | 4.501* | −4.471* | −1.021 |
| | (5.496) | (4.281) | (7.570) | (2.647) | (1.783) | (2.191) |
| Time | −1.081*** | −0.286*** | 0.146*** | −0.814*** | −0.133*** | 0.081*** |
| | (0.271) | (0.029) | (0.059) | (0.059) | (0.011) | (0.015) |
| Time$^2$ | 0.799*** | 0.024*** | −0.007 | 0.664*** | 0.004*** | −0.005*** |
| | (0.168) | (0.003) | (0.009) | (0.099) | (0.001) | (0.001) |
| Time$^3$ | −0.140*** | −0.000*** | 0.000 | −0.116*** | −0.000*** | 0.000*** |
| | (0.026) | (0.000) | (0.001) | (0.015) | (0.000) | (0.000) |
| Constant | 0.118 | 1.790*** | −1.682*** | −0.404*** | 0.555*** | −2.062*** |
| | (0.122) | (0.116) | (0.175) | (0.088) | (0.065) | (0.092) |
| Observations | 2,158 | 2,158 | 2,158 | 4,352 | 4,352 | 4,352 |

Note. (1) Standard errors in parentheses. (2) Statistical significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

# CONCLUSION

- Although the majority of the evidence seems to support latency provocation theory over virtual deterrence theory, the authors conclude that it is plausible that these two theories are not mutually exclusive, and latency may offer mixed results

- In other words in some instances nuclear latency may be beneficial to a state, while in others it will certainly be harmful

# POLICY IMPLICATIONS

- The authors suggest that their findings could help settle or at least improve the debate over the Joint Comprehensive Plan of Action (which is the Iran nuclear deal).

- They suggest that its critics shouldn't be concerned that it is allowing Iran to expand its latent nuclear capabilities. As evidenced by their research, nuclear latency is likely to bring far more negative consequences than positive ones, thereby deterring Iran from attempting to increase its nuclear capability

- On the other hand, since the evidence did support the hypothesis that increased nuclear latency emboldens the latent state, there should be concerns that Iran will act aggressive, and start more conflicts in the region.