

Perceptions, Assumptions, and Options in Deterrence Strategy and Response Policy

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Summary

Using conventional force to respond to a limited nuclear attack by a smaller state would have a minimal effect on U.S. general deterrence strategy. However, initial failure of extended deterrence would cause fears of future failures of extended deterrence leading to assurance failures and proliferation. We believe maintaining an ambiguous deterrence strategy is beneficial in considering adversary perceptions, and that a conventional response isn't necessarily detrimental to an ambiguous U.S. strategy. To evaluate the effects of a conventional response to a limited nuclear attack, we analyzed four scenarios: North Korea using an electromagnetic pulse nuclear weapon (EMP) against South Korea and Japan; North Korea using an EMP against South Korea, Japan, and Guam; North Korea using a tactical nuclear weapon against South Korea and Japan; and North Korea using a tactical nuclear weapon against South Korea, Japan, and Guam. We used a cost-benefit framework assessing the costs and benefits of restraint in not using a nuclear weapon, and the costs and benefits of action in using conventional weapons. Based on the costs and benefits, we evaluated whether it was more beneficial to maintain an ambiguous response strategy or develop a more publicized one for the purposes of the U.S. public, ally, and adversary perception.

Three effects stood out as we analyzed that a conventional response would not be detrimental to the U.S. general deterrence strategy.

1. Restraint can show strength and set a precedence based on the benefits of soft power as one of the most powerful nations in the world chose not to use nuclear weapons.
2. The choice not to use nuclear weapons indicates that they should only be used when essential.
3. The U.S. made that choice because it had the capability to inflict devastating costs with conventional power, achieving the objective of its deterrence threat.

However, the fact that the U.S. had to follow through on its deterrence threat because a nuclear weapon was launched creates an uncertain environment and a domino effect that will most likely lead to regime change, instability, and proliferation.

To mitigate the possible effects of conflict on the Korean Peninsula, we recommend maintaining an ambiguous policy to make an adversary's decision-making calculus as difficult as possible, while still considering the possibility of a conventional response to a limited nuclear attack by a small state. We also recommend strengthening ties with regional actors in the area, first by increasing ally inclusion in military strategy discussions and exercises, and second by incorporating powerful neighbors in deterrence strategy discussions and post-conflict reconstruction if deterrence fails.

Introduction

People fear World War III will start with an exchange of nuclear weapons. But what happens if the United States changes the paradigm? The public, allies, and adversaries believe if a nuclear weapon is launched at the United States, the United States will respond with nuclear weapons. When discussing a United States response to an electromagnetic pulse (EMP) weapon by North Korea, Joseph Cirincione stated that the United States would not just say that they should respond in kind to an EMP attack, but instead, would “answer with an overwhelming, devastating nuclear counter attack”¹. Joshua Pollack, a senior research associate at the James Martin Center for Nonproliferation Studies said that he “assumes the United States response to any nuclear use would be nuclear.”² Seeing that experts in proliferation are convinced of a nuclear response by the United States, it is likely that these opinions have had at least some degree of influence on public thought. A 2002 CCFR survey found that 22% of Americans think the United States should never use nuclear weapons, 55% think that the United States should use nuclear weapons only in response to a nuclear attack, and 21% said that, under certain circumstances, the United States should use a nuclear response even if it has not suffered a nuclear attack³. Public thought on the subject of nuclear responses have not changed dramatically as the same survey taken in 2010 elicited similar results.

Ally and adversary perceptions are also key considerations. The ‘nuclear umbrella’ is a security cooperation in which participating states consent to the use of nuclear weapons in their defense, with extended deterrence being the intended effect of this umbrella⁴. For certain United States allies, including South Korea and Japan, this nuclear umbrella maintains the perception of a nuclear response by the United States. These allies could have strong reservations about a conventional response to a nuclear attack under the premise of the nuclear umbrella. Similarly, adversaries understand the second strike capabilities of the United States and the concept of mutually assured destruction (MAD)^{5,6}. Many argue that MAD has kept the world from nuclear war, even as it causes weapons development⁷. In 2000, Kim Jong Il acknowledged that if he launched a ballistic missile attack against the United States that they would “fire back with thousands of missiles and we would not survive”, however he wanted the United States to know that he had the capability⁸. While nuclear weapons are now in the mix, and Kim Jong Un has still

¹ Majumdar, D. September 2017. *How would the U.S. military respond if North Korea attacked with tactical nuclear weapons?* The National Interest. Retrieved from <http://nationalinterest.org/blog/the-buzz/how-would-the-us-military-respond-if-north-korea-attacked-22183>.

² Ibid.

³ Brown, C. n.d. *Public opinion about using nuclear weapons*. Roper Center. Retrieved from <https://ropercenter.cornell.edu/public-opinion-using-nuclear-weapons/>

⁴ ILPI. April 2016. *Nuclear umbrella and umbrella states*. Retrieved from <http://nwp.ilpi.org/?p=1221>

⁵ Isachenkov, V. March 2018. *Putin shows new Russian nuclear weapons: 'It isn't a bluff'*. AP News. Retrieved from <https://thediplomat.com/2018/02/making-sense-of-chinese-reactions-to-the-us-2018-nuclear-posture-review/>

⁶ Wang, R. February 2018. *Making sense of Chinese reactions to the US 2018 Nuclear Posture Review*. The Diplomat. Retrieved from <https://thediplomat.com/2018/02/making-sense-of-chinese-reactions-to-the-us-2018-nuclear-posture-review/>

⁷ Klein, J.J. Fall 2014. *Towards a Better U.S. Nuclear Strategy*. *Journal of Strategic Security*, 7(3): 84-94.

⁸ Rhodes, Richard. 2010. *The Twilight of the Bombs: Recent Challenges, New Dangers, and the Prospects for a World Without Nuclear Weapons*. New York: Vintage Books. Print.

not formally acknowledged United States power in the same way as his predecessor, it is likely that this knowledge is still part of North Korea's decision-making.

With the current state of tenuous international relations, the value of a state's strategic deterrence and extended deterrence are of the utmost importance. With public, ally and adversary perceptions in mind, our research will address the following question: does it hurt United States deterrence and extended deterrence strategies to respond to a limited nuclear attack with conventional forces? Through our analysis, we determined that using conventional weapons to respond to a limited nuclear attack by a smaller state would have a minimal effect on general United States deterrence strategy. However, the initial failure in extended deterrence that resulted in an attack on United States allies would cause fears of future failures in extended deterrence, which would lead to assurance failures and proliferation. In evaluating the difference in a public deterrence policy versus an ambiguous policy, we believe that maintaining an ambiguous deterrence strategy is beneficial in considering adversary perceptions and decision making, and that using a conventional response isn't necessarily detrimental to U.S. deterrence strategy. While the world would see the United States use conventional means to respond to a limited nuclear attack, this does not necessarily mean that the entirety of U.S. deterrence strategy has been revealed or that this response option is applicable to other scenarios.

Scope and Context

While larger nations, such as Russia and China have continued to be potential threats based on their weapons arsenals size and capabilities, the international focus has been on North Korea and Iran as the threat of their nuclear arsenals are growing and emerging. North Korea in particular is of increasing concern because of their recent ballistic missile tests with possible intercontinental ranges and estimated knowledge about the quantity and capabilities of its nuclear arsenal⁹. However, both North Korea and Iran are smaller and less developed than other nuclear powers, which can change the paradigm of the mutually assured destruction theory and the United States' response options. For the purposes of this paper, we extrapolate a possible set of scenarios based on the current situation and analyze a hypothetical situation in which North Korea has launched a limited nuclear attack at Japan, South Korea, or Guam in conjunction with a conventional attack in order to reunify the Korean Peninsula. We define limited attacks to be the use of either an electromagnetic pulse (EMP) weapon (a non-blast attack) or a tactical nuclear weapon (a blast attack) with a yield of 100 kilotons or less. We assume that these attacks were carried out to their full intention. Determining whether or not intention versus outcome is a factor in United States response options would be a consideration for future research. If North Korea were to launch a limited nuclear attack, we assume United States air and missile superiority could punish North Korean actions through the use of conventional means while causing almost equivalent damage as nuclear means. We focus on North Korea due to its current

⁹ Associated Press. November 2017. *A Look at This Year's North Korean Nuclear and Missile Tests*. Retrieved from <http://time.com/5040375/north-korea-nuclear-missile-tests-2017/>

relevance to international relations and because it is a smaller nation with nuclear capabilities and uncertain interests in the region. We focus on a smaller state such as North Korea because we believe that the United States may respond differently to a nuclear attack from a smaller adversary versus an attack by a larger adversary such as Russia or China, a topic outside the scope of our research. In the scope of our research, we will assess four slightly different scenarios involving the two different types of limited nuclear attack mentioned above, as well as the recipient of the attack being either United States allies, or United States allies as well as a United States territory. The scope of this research is specific and does not include the implications of a conventional response to a large-scale nuclear attack or the implications of a nuclear response to a limited nuclear attack.

Deterrence Strategy and Current Policies

In order to provide a basis of understanding for United States' current deterrence policy and nuclear doctrine, it is important to outline key components of deterrence strategy, what deterrence is, and whether the method (i.e. nuclear weapons) or the outcome (i.e. imposing devastating costs) of a deterrent threat makes it credible. The central idea of the Deterrence Operations Joint Operating Concept (DOJOC) is to influence an adversary's decision-making calculus through various means to undertake operations that will decisively influence this calculus¹⁰. A continuously changing strategic environment requires new concepts and approaches to the problem of deterrence. Rather than relying on the premise of inflicting devastating consequences on potential foes, both offenses and defenses are necessary to deter states, as well as non-state actors, through denying the objectives of their attacks and responding with overwhelming force when necessary¹¹. Many assume United States policy is nuclear deterrence instead of simply deterrence. However, if the United States inflicts devastating costs, does it matter if they did it with nuclear weapons? Military objectives can change over time and must be considered in conjunction with means and other applications of national power. In a constantly changing environment, the means necessary to properly deter an adversary will vary significantly depending on the situation and the desired outcome¹². In deciding the "means" of military response, many have addressed the ways in which the United States would respond to a nuclear attack. In a response to a question by The DCNF, Bruce Klingner stated that "nuclear strategy is evolving away from an automatic 'they use nukes, we use nukes' response," and added that "it may not be an automatic nuclear response if we can accomplish our objectives through other means"¹³.

¹⁰ Department of Defense. December 2006. *Deterrence Operations Joint Operating Concept (DO JOC)*.

¹¹ The National Security Strategy of the United States of America. March 2006. Retrieved from <https://www.state.gov/documents/organization/64884.pdf>

¹² Department of Defense. December 2006. *DO JOC*.

¹³ Majumdar, D. September 2017. *How would the U.S. military respond if North Korea attacked with tactical nuclear weapons?* The National Interest. Retrieved from <http://nationalinterest.org/blog/the-buzz/how-would-the-us-military-respond-if-north-korea-attacked-22183>.

It is the current policy of the United States to retain and maintain its nuclear deterrent indefinitely until verifiable nuclear disarmament is achieved worldwide. The highest priority of this policy is to “deter potential adversaries from nuclear attack of any scale”¹⁴. It also commits to strengthening bilateral and regional security, which includes our commitment to extended deterrence for our regional allies. Included in our strategy is the provision that, should deterrence fail, the United States will inflict unacceptable consequences to convince potential adversaries that they cannot “escalate their way out of a failed conventional aggression” while also assuring our allies of the extended deterrence guarantee^{15,16}. In considering the United States’ response to a limited nuclear attack, the implications for this current strategy and the credibility of our deterrence and extended deterrence are central.

In theory the United States should respond in some form to a limited nuclear attack, whether it be against an ally, a United States territory, or the homeland. The United States holds bilateral treaties with both South Korea and Japan, signed in 1953 and 1960, respectively. Both of these treaties state that if either Party were to be attacked in the territories under the administration of Japan or in the Pacific area, that each Party would act to meet the common danger¹⁷. With these bilateral treaties in mind, we can be almost certain that the United States would respond in some way if either Japan or South Korea were to be attacked by North Korea. However, these bilateral agreements do not specify in what way the United States would be required to respond, leaving room for interpretation and flexibility in response options.

Proportionality should be a key consideration in determining a proper and effective response. According to rule 14 of international humanitarian law, launching an attack in which there is expected loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, that would be excessive in relation to the military advantage is prohibited¹⁸. With this in mind, it is vital that our response is in proportion to North Korea’s attack and is executed in a manner necessary for the military advantage of the United States and its allies.

Ultimately the United States would only considering using nuclear weapons in the most extreme circumstances in which they would be necessary to defend the vital interests of the United States and its allies. It is in the interest of the United States and of all other nations to extend the nearly 65-year record of nuclear non-use for as long as possible¹⁹.

Methodology

In order to come to our conclusions, we used a cost-benefit framework to analyze the implications of not using a nuclear weapon versus using conventional weapons. We assessed the costs and benefits of restraint in not using a nuclear weapon and the costs and benefits of action

¹⁴ Department of Defense. February 2018. *Nuclear Posture Review Report*.

¹⁵ Office of the Deputy Assistant Secretary of Defense for Nuclear Matters. 2016. *Nuclear Matters Handbook*, Chapter 1. Retrieved from https://www.acq.osd.mil/ncbdp/nm/NMHB/chapters/chapter_1.htm

¹⁶ Department of Defense. February 2018. *Nuclear Posture Review Report*.

¹⁷ U.S. Department of State. N.d. *U.S. Collective Defense Arrangements*. Retrieved from <https://www.state.gov/s/l/treaty/collectivedefense/>

¹⁸ International Committee of the Red Cross. N.d. *Rule 14. Proportionality in Attack*. Retrieved from https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_cha_chapter4_rule14

¹⁹ Department of Defense. April 2010. *Nuclear Posture Review Report*.

of using conventional weapons. While these two scenarios seem similar, the distinction between restraint and action is necessary. In order to evaluate these costs and benefits, we created four slightly different scenarios. Within the the two attack types of an EMP and a tactical nuclear weapon, we also distinguished between North Korea attacking the United States' allies of Japan and South Korea and attacking allies as well as the U.S. territory of Guam. We added Guam to these scenarios in order to determine if there are any additional costs and benefits associated with a United States territory, which has nuclear capabilities, being the target of a nuclear attack. We then evaluated the effect on the United States strategic deterrent value and extended deterrent value based on the costs and benefits associated with each scenario. With perceptions being as crucial as they are in deterrence, we also evaluated how having a public and clear nuclear strategy versus an ambiguous nuclear strategy would alter the perceptions of the United States' public, allies, and adversaries. Additionally in each scenario, we tried to address the secondary and tertiary effects of United States action and restraint, such as increased nuclear proliferation in the region and regime change within North Korea.

Cost-Benefit Analysis

Table 1 summarizes the costs and benefits of restraint of not using a nuclear weapon if North Korea uses an EMP against South Korea and Japan. Table 2 outlines the costs and benefits of action of using conventional weaponry if North Korea uses an EMP against South Korea and Japan. Table 3 shows any additional costs and benefits considered for the other three scenarios. Table 4 compares the effects of a public versus ambiguous response strategy in terms of public, ally, and adversary perceptions. The points outlined in each table will be expounded upon below.

Costs of Restraint - The costs of restraint tend to have a cascading effect. To begin with, not using a nuclear weapon could be considered by others as weak. Most of the global public believes that the United States maintains a nuclear deterrent strategy to a nuclear threat; that nuclear weapons use is a red line. We saw the importance of credibility during the Cuban Missile Crisis. Kennedy refused to initially take the diplomatic approach because he had warned Khrushchev that the United States would not tolerate offensive capability buildup in Cuba²⁰. He

²⁰ U.S., Department of State, *Bulletin*, Volume XLVII, No. 1213 (September 24, 1962), p. 450. (Read to news correspondents on September 4, by Pierre Salinger, White House Press Secretary.)

Not Using a Nuclear Weapon	
Cost of Restraint	Benefit of Restraint
<ul style="list-style-type: none"> ● Other states view the US as weak ● Other states conclude the US is incapable of launching a nuclear weapon ● South Korea and Japan become apprehensive about US alliances ● Other states proliferate <ul style="list-style-type: none"> ○ Allies ○ Adversaries ● US public responds negatively 	<ul style="list-style-type: none"> ● Nuclear fallout decreases ● China and Russia feel less threatened ● US sets norm of only using nuclear weapons when essential

Table 1: Possible costs and benefits of restraint of not using a nuclear weapon in response to an EMP attack on South Korea and Japan.

believed United States credibility depended on the threat or use of force²¹, otherwise the Soviet Union would become more powerful in the international sphere. In another example of red line politics, former President Obama has faced criticism over his lack of response to Syria’s chemical weapons use. Foreign policy experts especially believe that not following through on the red line threat was detrimental to United States credibility^{22,23}. And despite Russia’s plan to get Assad to remove his chemical weapons, attacks continued to happen in Syria²⁴. However, other journalists and researchers have stated that Obama’s restraint was a good decision. It did lead to some cooperation with Assad and most of the chemical weapons being removed from Syria²⁵. Congress and the United States public also agreed with the decision²⁶. Another report indicates the Russia saw the restraint as a “moment of reason” and the lack of response had no effect on future Russian actions including the incursion into Ukraine²⁷.

²¹ Allison, G. September 1969. Conceptual Models and the Cuban Missile Crisis. *The American Political Science Review*, 63(3): 689-718.

²² Sink, J. October 2014. *Panetta: Obama’s ‘red line’ on Syria damaged US credibility*. The Hill. Retrieved from <http://thehill.com/policy/international/219984-panetta-obamas-red-line-on-syria-damaged-us-credibility>

²³ Engel, P. January 2016. *Former US defense secretary: Obama hurt US credibility when he backed down from his red line on Syria*. Business Insider. Retrieved from <http://www.businessinsider.com/robert-gates-syria-red-line-obama-2016-1>

²⁴ Kimball, D., & Davenport, K. November 2017. *Timeline of Syrian Chemical Weapons Activity, 2012-2017*. Arms Control Association. Retrieved from <https://www.armscontrol.org/factsheets/Timeline-of-Syrian-Chemical-Weapons-Activity>

²⁵ Chollet, D. July 2016. *Obama’s red line, revisited*. Politico Magazine. Retrieved from <https://www.politico.com/magazine/story/2016/07/obama-syria-foreign-policy-red-line-revisited-214059>

²⁶ Newport, F. September 2013. *In US, opponents say action in Syria not America’s concern*. Gallup News. Retrieved from <http://news.gallup.com/poll/164306/opponents-say-action-syria-not-america-concern.aspx>

²⁷ Ioffe, J. March 2016. *How Russia saw the ‘red line’ crisis*. The Atlantic. Retrieved from <https://www.theatlantic.com/international/archive/2016/03/russia-syria-red-line-obama-doctrine-goldberg/473319/>

However, if United States credibility is threatened and they choose to respond with a conventional weapon, other states could conclude that the United States is incapable of launching a nuclear weapon. The United States hasn't tested a nuclear weapon since 1992²⁸. They've signaled their resolve by launching nuclear capable missiles and performing flyovers with nuclear capable bombers. But with outdated technology, some scientists wonder if the weapons still work and how the U.S. should update their arsenal. Even signaling with nuclear capabilities after an incident, states could wonder if the nuclear weapons themselves work. However, some would argue that the nuclear weapon part is easy; showcasing the asset capabilities is more important. In the 1960s, two recent PhD physicists with no background in nuclear weapons knowledge were able to design an implosion bomb on paper after three years of work. Considering the actual detonation, dropping one piece of highly enriched uranium into another would cause a high-level nuclear explosion²⁹.

Continuing the cascading effect, United States allies could question the reliability of the United States nuclear arsenal and nuclear umbrella. South Korea and Japan put faith in the bilateral treaties established with the United States, and in United States' assurances of nuclear defense. They stopped development in the past in part because of the United States agreement to protect them³⁰. The assumption being made is that the United States would protect them with nuclear weapons if necessary. They could become angry if the United States doesn't follow through with the expected response. And despite any of the United States' assurances, South Korea and Japan could develop their own nuclear weapons programs to supposedly strengthen the deterrent threat in the region. If proliferation begins in the region, other states might investigate nuclear capabilities if they feel their security is threatened, while China would most likely increase its arsenal³¹.

Shifting to domestic consequences, the United States public could also become angry at the lack of an expected response. Again this is making the assumption that the majority of the American public assumes if a country attacks the United States with nuclear weapons, the United States will respond with nuclear weapons. With the money, time, and energy put into the program, they most likely expect nuclear response options.

Benefits of Restraint - The most immediate benefit of restraint is decreasing the amount of nuclear fallout in the region. Nuclear fallout caused significant humanitarian and environmental costs when tests were being performed and the bombs were dropped on Hiroshima and

²⁸ CTBTO. N.d. *23 September 1992 - Last U.S. Nuclear Test*. Retrieved from <https://www.ctbto.org/specials/testing-times/23-september-1992-last-us-nuclear-test>

²⁹ Rhodes, Richard. 2010. *The Twilight of the Bombs: Recent Challenges, New Dangers, and the Prospects for a World Without Nuclear Weapons*. New York: Vintage Books. Print.

³⁰ Ibid.

³¹ Narang, V. 2014. *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict*. New Jersey: Princeton University Press. Print.

Nagasaki³². With an EMP attack, the nuclear fallout would be less but a nuclear response by the United States would dramatically increased the amount.

The next possible benefit would be a diminished threat to China and Russia, who do not want a nuclear confrontation to occur on the Korean Peninsula. Currently, both countries have made compromises and held discussions to try and limit tensions in the region. They have denounced acts by the United States, South Korea, and North Korea as being too aggressive and provocative³³. China has agreed to place sanctions on North Korea, and has also tried to make it clear to North Korea that it will not support them if they strike first³⁴. Neither country wants a reason for the United States to enter into a nuclear war so close to their territory. If the United States uses a conventional weapon, they might perceive that the United States also doesn't want to risk the surrounding region, or provoke one of the larger nuclear powers.

Lastly, the United States actions could set a new norm in the international community concerning nuclear weapons use. Restraint is an important part of strategy and deterrence. An adversary has to know that the response will be limited in some way, that their actions only cause a certain amount of cost, as previously signaled with the deterrent threat. Otherwise they have no incentive to stop. Roger Myerson used a game theory model to show that restraint is just as important as resolve in making America secure. He also proposes one argument where stronger nations have more opportunities for profitable aggression so there is more need for restraint to maintain stability around the world³⁵. As one of the most powerful nations in the world, showing restraint by not using nuclear weapons could indicate United States' resolve to only use nuclear weapons when essential, setting a precedence for other nations to do the same. This can lend itself to greater soft power of the United States, which Nye argues is becoming increasingly important in today's world³⁶.

³² Warner, F. 1988. *Consensus and Uncertainties: The Environmental Effects of Nuclear War*. Environment, 30(5), 2-8.

³³ Reuters. July 2017. *Russia and China Tell North Korea, U.S., and South Korea to Embrace De-escalation Plan*. Retrieved from <https://www.reuters.com/article/us-russia-china-xi-northkorea/russia-and-china-tell-north-korea-u-s-and-south-korea-to-embrace-de-escalation-plan-idUSKBN19P1Q7>

³⁴ Albert, E. February 2018. *The China - North Korea Relationship*. Council on Foreign Relations. Retrieved from <https://www.cfr.org/background/china-north-korea-relationship>

³⁵ Myerson, R. July 2017. *Force and Restraint in Strategic Deterrence: A Game-Theorist's Perspective*. Retrieved from <http://home.uchicago.edu/~rmyerson/research/restrain.pdf>

³⁶ Nye, J. 1990. Soft Power. *Foreign Policy*, 80: 153-171.

Using Conventional Means	
Cost of Action	Benefit of Action
<ul style="list-style-type: none"> ● More resources are used ● More military personnel are at risk ● Longer conflict is possible, allowing for further damage to US and ally assets and personnel ● Capability is uncertain <ul style="list-style-type: none"> ○ Ability to reach underground bunkers/arsenals ○ EMP effects ● Russia and China view the response as pretext for US expansion ● US public responds negatively 	<ul style="list-style-type: none"> ● US achieves deterrence objective <ul style="list-style-type: none"> ○ Overwhelming force ○ Devastating results ● Environment is safer for boots-on-the-ground, and post-war work ● US executes more precise targeting <ul style="list-style-type: none"> ○ Less collateral damage

Table 2: Possible costs and benefits of action of using conventional means in response to an EMP attack on South Korea and Japan.

Costs of Action - Though not using a nuclear weapon has its benefits, using conventional weapons in its place has its costs. While ground and air troops would already be involved in the conflict due to the bases the United States has in the region, a conventional attack would most likely require a greater mobilization of troops. More mobilization means more resources are used, more military personnel and civilians are at risk, and more time passes for North Korea to continue its attacks. A letter from the Pentagon to inquiring lawmakers didn't provide details on estimated casualties and the military's capabilities, but it implied that costs would be high, especially if North Korea considers using chemical and biological weapons in the face of an assault³⁷.

Uncertainty exists on whether the conventional capabilities will be diminished from the EMP attack, whether conventional weapons will be able to penetrate North Korean defenses, and whether a conventional attack will entrench the United States in another long conflict. During one subcommittee meeting in 1997, the deputy director of the Defense Special Weapons Agency stated that the military has hardened its vital assets to EMP effects. However, other non-vital

³⁷ Lamothe, D., & Morello, C. November 2017. *Securing North Korean nuclear sites would require a ground invasion, Pentagon says*. The Washington Post. Retrieved from https://www.washingtonpost.com/world/national-security/securing-north-korean-nuclear-sites-would-require-a-ground-invasion-pentagon-says/2017/11/04/32d5f6fa-c0cf-11e7-97d9-bdab5a0ab381_story.html?utm_term=.017cde996177

assets and commercial infrastructure aren't necessarily hardened³⁸. The actual effects of an EMP attack are difficult to predict, including the secondary and tertiary effects on military capabilities, despite some of them being hardened. Others say that conventional weapons are inadequate at reaching North Korea's nuclear capabilities. Retired Air Force Col. Sam Gardiner, who ran war games for over 20 years, states conventional weapons are limited at reaching North Korea's tunnels and only nuclear hard-target kill weapons stand a chance of destroying its nuclear capabilities³⁹. Many fear a repeat of the Korean war because we lack complete intelligence on North Korea's capabilities and its terrain, so it could take longer to infiltrate to the country and destroy its arsenals. The United States public will be especially upset if we enter into another war like the previous Korean or Vietnam Wars and didn't use nuclear weapons to finish it early. In one study, 60% of Americans favor using a nuclear weapon to prevent a United States invasion of Iran involving the death of at least 20,000 U.S. troops, even when told the cost would be 2 million Iranian civilian lives⁴⁰.

Another argument, counter to a previous point, is that invading North Korea with ground troops and air forces could be seen as threatening to China and Russia. Yes, the United States would not be using nuclear weapons, but they would be moving closer to Chinese and Russian territories. Russia's Deputy Foreign Minister condemns President Trump's rhetoric toward North Korea and emphasized that an attack would have serious repercussions⁴¹. One Korean expert says China would rather deal with the current regime than a possible reunified Korean Peninsula with the United States at its doorstep⁴². The Singapore Ambassador stated that if North Korea attacked first, China would most likely not get involved, but that it understood how such a war would jeopardize China's core interests⁴³. While a lot of the current statements from Russia and China threaten action if the United States attacks first, their push for a peaceful and diplomatic solution in the region indicates their resolve to stop United States military action in any form, even as a response⁴⁴.

Benefit of Action - The first possible benefit is that the United States can demonstrate its capability to execute a deterrence threat and cause devastating results using overwhelming conventional forces, therefore achieving its objective and acting as an example for future

³⁸ House of Representative Military Research and Development Subcommittee. 16 July 1997. *Threat Posed by Electromagnetic Pulse (EMP) to U.S. Military Systems and Civilian Infrastructure*. Retrieved from http://commdocs.house.gov/committees/security/has197010.000/has197010_1.HTM

³⁹ Woolf, C. August 2017. *The only effective arms against North Korea's missile bunkers are nuclear weapons, says a top war planner*. PRI. Retrieved from <https://www.pri.org/stories/2017-08-10/only-effective-arms-against-north-koreas-missile-bunkers-are-nuclear-weapons-says>

⁴⁰ Parker, C. August 2017. *Public opinion unlikely to curb a U.S. president's use of nuclear weapons in war, Stanford scholar finds*. Stanford News. Retrieved from <https://news.stanford.edu/2017/08/08/americans-weigh-nuclear-war/>

⁴¹ O'Conner, T. September 2017. *Russia: U.S. war with North Korea 'is not an option'*. Newsweek. Retrieved from <http://www.newsweek.com/russia-us-war-north-korea-not-option-669127>

⁴² Tarabay, J. December 2017. *Russia's power play in North Korea aimed at both China and US*. CNN. Retrieved from <http://www.cnn.com/2017/09/01/asia/russia-north-korea-analysis/index.html>

⁴³ Kausikan, B. September 2017. *What would China do if North Korea and the United States go to war?* Retrieved from <http://www.scmp.com/week-asia/geopolitics/article/2111039/what-would-china-do-if-north-korea-and-united-states-go-war>

⁴⁴ Tarabay, J. *Russia's power play in North Korea aimed at both China and US*. CNN.

deterrence. However, a possible consequence of overwhelming force is regime change, which could have unintended repercussions. The United States offers a public policy of not desiring regime change in order to promote stability in the region⁴⁵. They do not want North Korea to become the next Iraq especially considering its neighbors to the north. But strategically, military officials are most likely considering it as an option, especially if North Korea attacks first. Looking at secondary and tertiary effects, regime change would not be ideal, even if the United States deemed it necessary. China has stated that if North Korea attacks first, it will remain neutral in the conflict unless the United States tries to overthrow the regime⁴⁶. Including China in a conflict will escalate costs. If the regime collapses, the occupation of North Korea could be similar to the one in Iraq, with continued guerilla fighting, questionable authority of the nuclear and WMD arsenals, and an unsecure region leading to increased proliferation.

Other possible benefits include a relatively safer environment for boots-on-the-ground and post-war work, and less collateral damage. If nuclear weapons aren't used, the amount of fallout decreases, leading to less health and environmental effects. Fallout can cause radiation sickness, death, cancer, climate perturbations, famine, and other long-term effects⁴⁷. Considering the United States troops, ally troops, and millions of civilians in the region, the United States has a strong incentive to stop this type of catastrophe in the region. Comparatively, while wars do cause high civilian casualties, precision bombing and direct engagement would hopefully limit the collateral damage, and be more discriminatory in the targets chosen.

Scenario Comparisons - In evaluating the other scenarios, very subtle differences were considered. They are supported by a lot of the evidence outlined above, but subtly emphasize other parts of the problem. In concerning Guam, one cost of restraint, whether an EMP or tactical attack, would be a credibility question since North Korea directly attacked United States nuclear capabilities. This factor would reemphasize what was stated above, about other states possibly concluding that the United States is incapable of launching a nuclear weapon. Guam is home to a naval base for nuclear capable submarines, an air force base with B2 Spirit bombers capable of carrying tactical and strategic nuclear weapons,^{48, 49} and the largest munitions stockpile in the world⁵⁰. If North Korea directly attacks these capabilities and the United States doesn't use them, do adversaries believe that North Korea was successful and that the United States can't use them?

⁴⁵ Sokolsky, R., & Miller, A. August 2017. *Regime change in North Korea: Be careful what you wish for*. 38North. Retrieved from <http://www.38north.org/2017/08/rsokolskyamiller080217/>

⁴⁶ *China to remain neutral if North Korea attacks first*. August 2017. Aljazeera. Retrieved from <http://www.aljazeera.com/news/2017/08/china-remain-neutral-north-korea-attacks-170811064530204.html>

⁴⁷ Warner, F. 1988. Consensus and Uncertainties: The Environmental Effects of Nuclear War. *Environment*, 30(5), 2-8.

⁴⁸ Letman, J. September 2017. *Why U.S. bases make Okinawa, Guam nuclear targets*. Aljazeera. Retrieved from <http://www.aljazeera.com/indepth/features/2017/09/bases-okinawa-guam-nuclear-targets-170906121731012.html>

⁴⁹ The National Interest. October 2017. *Why the B-1B lancer bomber could be America's best option against North Korea*. Retrieved from <http://nationalinterest.org/blog/the-buzz/why-the-b-1b-lancer-bomber-could-be-americas-best-option-22592>

⁵⁰ Hicks, R. August 2014. *36th MUNS home to largest munition stockpile*. Andersen Air Force Base. Retrieved from <http://www.andersen.af.mil/News/Article-Display/Article/638458/36th-muns-home-to-largest-munition-stockpile/>

Scenario Comparisons			
	Scenario 2 - EMP vs allies + Guam	Scenario 3 - Tactical vs allies	Scenario 4 - Tactical vs allies + Guam
Cost of Restraint (Nuclear)	<ul style="list-style-type: none"> Decreases credibility because of a direct attack on nuclear capabilities 	<ul style="list-style-type: none"> Decreases ally assurances because of blast-for-blast perceptions 	<ul style="list-style-type: none"> Decreases credibility because of a direct attack on nuclear capabilities Decreases ally assurances because of blast-for-blast perceptions
Benefit of Restraint (Nuclear)	X	<ul style="list-style-type: none"> Stops perpetuation of tactical nuclear use in conflict 	<ul style="list-style-type: none"> Stops perpetuation of tactical nuclear use in conflict
Cost of Action (Conventional)	X	X	X
Benefit of Action (Conventional)	X	<ul style="list-style-type: none"> Emphasizes capability to inflict proportional consequences without nuclear weapons 	<ul style="list-style-type: none"> Emphasizes capability to inflict proportional consequences without nuclear weapons

Table 3: Additional costs and benefits that could occur based on scenario changes. The X's indicate areas where we could not determine any additional costs or benefits; instead the effects are very similar to those seen in Tables 1 and 2. Scenario two is when North Korea launches an EMP attack against South Korea, Japan, and Guam. Scenario three is when North Korea launches a tactical nuclear weapon against South Korea and Japan. Scenario four is when North Korea launches a tactical nuclear weapon against South Korea, Japan, and Guam.

A tactical attack causes other considerations, whether it includes Guam or not. First, United States allies believe in the commitment of the nuclear umbrella as mentioned above. Considering the cost of action, if an actual nuclear blast attack occurs and the United States responds with conventional means, they might not view that as a proportional response. However, if the United States was able to demonstrate that it can inflict a proportional consequence using conventional means even if a tactical nuclear weapon is used, then it can emphasize a new precedence and possibly change the perceptions of allies and adversaries, being a benefit of action as mentioned before. A possible benefit of restraint would be stopping the perpetuation of tactical nuclear use for the remaining conflict. While the United States didn't

respond with nuclear weapons to the initial nuclear attack, North Korea could refrain from continuing to use nuclear weapons for fear that the United States might escalate. However, the argument could be made that North Korea wouldn't fear such a repercussion since the United States didn't initially use nuclear weapons, and similar to Syrian chemical weapons, they will continue to use them.

	Public Policy	Ambiguous Policy
United States Public	<ul style="list-style-type: none"> • Better understanding of conventional capability • Less outrage at unforeseen response option 	<ul style="list-style-type: none"> • Specific expectation of a nuclear response to a nuclear attack • Confusion/outcry possible
United States Allies	<ul style="list-style-type: none"> • Increased cooperation in response strategy • Better understanding of proportional effects: Essential vs. existential 	<ul style="list-style-type: none"> • Specific expectations based on the nuclear deterrence umbrella • Increased insecurity if expected response is not executed
United States Adversaries	<ul style="list-style-type: none"> • Improved defense strategy preparation • “Easier” decision-making calculus 	<ul style="list-style-type: none"> • Complicated decision-making calculus

Table 4: Advantages and disadvantages of having public or ambiguous policies concerning response options compared to the United States public, ally, and adversary perceptions. Changes in perception usually influence the effect of deterrence.

As we've talked about throughout this paper, the public, ally, and adversary perceptions are important to U.S. deterrence strategy and the costs and benefits of response options. As described earlier, the United States has a rather vague policy concerning its nuclear weapons use so that it can tailor its strategy to each adversary or situation⁵¹. We wondered how it would change the possible costs and benefits if the United States adopted a more public policy, outlining a conventional response as a military option. We determined it would benefit the public perception by exposing them to a better understanding of U.S. conventional capabilities so they wouldn't express as much outcry at a conventional response option. It would also benefit ally perceptions by having open dialogue about proportional effects and by having third party accountability concerning strategy options. However, a public policy would not be beneficial regarding the adversary perceptions since they could better prepare a defense strategy. An

⁵¹ Department of Defense. February 2018. *Nuclear Posture Review Report*.

ambiguous policy complicates an adversary's decision-making calculus, increasing the risk of taking an action against the United States.

We determined that the benefits of an ambiguous policy outweigh the benefits of a public policy because of how important adversary perceptions are. While the public and ally perceptions are important to consider, the public would most likely have a negative attitude toward the use of conventional means anyways because of the costs to U.S. troops, and the United States can reassure allies behind closed doors, which we assume they already do. An ambiguous policy allows the United States to be flexible in rhetoric, posturing, and options, so long as they indicate their resolve to respond, to better deter countries like North Korea.

Overall Assessment

The benefits that stood out to us were:

1. Restraint can show strength and set a precedence based on the benefits of soft power as one of the most powerful nations in the world chose not to use nuclear weapons.
2. The choice not to use nuclear weapons indicates that they should only be used when essential.
3. The U.S. made that choice because it had the capability to inflict devastating costs with conventional power, achieving the objective of its deterrence threat.

The major costs that stood out to us were:

1. The possibility of a long and bloody conflict.
2. The possibility of escalation to a U.S.-China-Russia conflict due to regime change.
3. The possibility of proliferation in the region.

The reason we distinguished these factors is because we believe them to have the most weight on United States decision-making calculus. We believe the benefits contribute to United States general deterrence strategy. The possibility of establishing a new precedence that other powerful countries could follow, if determined successful, would be a major victory in the fight against nuclear proliferation and weapons use. We also believe the major possible costs outlined will most likely occur whether a conventional or a nuclear strategy is used. Conflict will cause instability in the region, leading to major uncertainty concerning the future of North Korea and the tensions between the actors involved.

We also believe that maintaining an ambiguous policy aids United States general deterrence strategy when considering the importance of the adversary's perceptions.

Conclusions and Policy Recommendations

We determined that general deterrence depends more on the outcome versus the means. The United States would most likely be able to carry out its deterrent threat and inflict devastating costs on North Korea, without using nuclear weapons. In doing this, the hope is a new norm will be established and other small states will see the futility in nuclear proliferation and nuclear use. However, the nuclear attack itself could make it difficult to assure nuclear credibility if its capability is questioned. The attack is also an example of deterrence failure, so despite United States efforts at assurance, actors in the region, including United States allies, could turn to proliferation to protect themselves.

Based on our assessment and conclusions, we recommend maintaining an ambiguous policy, while still considering a conventional response option to a limited nuclear attack. We also recommend including regional actors in strategy discussion. The United States should continue to incorporate its allies in military planning and exercises, while also reaching out to other powers like China and Russia to discuss boundaries and post-conflict possibilities.