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THE INTERACTION OF NORTH KOREA'S NUCLEAR AND CONVENTIONAL STRATEGIES

by

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North Korea has sought nuclear weapons because acquiring nuclear weapons can offset a state's inferior power in conventional warfare. North Korea seems to expect "nuclear substitution," which is defined as a situation in which countries with nuclear capabilities enjoy a higher level of security capability than before nuclear development, while reducing the burden of conventional power construction. However, this does not appear applicable to the North. In other words, even if the North is able to acquire nuclear weapons, the burden of conventional power development is not reduced. To grasp the situation, Pakistan can anticipate the North's behavior because Pakistan has similar security situations as North Korea in several aspects. Pakistan has not reduced its conventional power construction since its nuclear armament. This suggests that nuclear substitution may be insufficient; thus, Pakistan is developing a conventional strategy in terms of "nuclear-conventional strategy interaction," in which conventional forces play a pivotal role in implementing military strategies. This study supposes that the situation in North Korea is similar to that of Pakistan. North Korea could face a dilemma of additional costs for conventional power construction at a time when nuclear compensation is not as effective as expected. Therefore, this study focuses on why the North cannot expect nuclear substitution and which dilemmas are ahead for the North.

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THE INTERACTION OF NORTH KOREA'S NUCLEAR AND CONVENTIONAL STRATEGIES

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ABSTRACT

North Korea has sought nuclear weapons because acquiring nuclear weapons can offset a state's inferior power in conventional warfare. North Korea seems to expect "nuclear substitution," which is defined as a situation in which countries with nuclear capabilities enjoy a higher level of security capability than before nuclear development, while reducing the burden of conventional power construction. However, this does not appear applicable to the North. In other words, even if the North is able to acquire nuclear weapons, the burden of conventional power development is not reduced. To grasp the situation, Pakistan can anticipate the North's behavior because Pakistan has similar security situations as North Korea in several aspects. Pakistan has not reduced its conventional power construction since its nuclear armament. This suggests that nuclear substitution may be insufficient; thus, Pakistan is developing a conventional strategy in terms of "nuclear-conventional strategy interaction," in which conventional forces play a pivotal role in implementing military strategies. This study supposes that the situation in North Korea is similar to that of Pakistan. North Korea could face a dilemma of additional costs for conventional power construction at a time when nuclear compensation is not as effective as expected. Therefore, this study focuses on why the North cannot expect nuclear substitution and which dilemmas are ahead for the North.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACV	Air-Cushion Vehicle
BMD	Ballistic-Missile Defense
CAC	Chengdu Aircraft Industry Company
CRBM	Close-Range Ballistic Missile
CSD	Cold Start Doctrine
CTBT	Comprehensive Nuclear Test-Ban Treaty
DPRK	Democratic People's Republic of Korea
FSD	Full-Spectrum Deterrence
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
ISPR	Inter Services Public Relations
ISR	Intelligence, Surveillance, and Reconnaissance
KAMD	Korea Air and Missile Defense
KCNA	Korean Central News Agency
KMPR	Korea Massive Punishment and Retaliation
KPA	Korean People's Army
KWP	Korea Worker's Party
MBT	Main Battle Tank
MIRV	Multiple Independently targetable Reentry Vehicle
MRL	Multiple Rocket Launcher
NATO	North Atlantic Treaty Organization
NCA	National Command Authority
NCNA	Korean Central News Agency
NCWF	New Concept of Warfighting
NPR	Nuclear Posture Review
NPT	Non-Proliferation Treaty
NTI	Nuclear Threat Initiative
PAC	Pakistan Aeronautical Complex
PAF	Pakistan Air Force

ROK	Republic of Korea
SLBM	Submarine-Launched Ballistic Missile
SPA	Supreme People's Assembly
SUPARCO	Pakistan Space & Upper Atmosphere Research Commission
TDS	Tailored Deterrence Strategy
TEL	Transporter Erector Launcher
UAV	Unmanned Aerial Vehicle
UNC	United Nations Command
UNSC	United Nations Security Council
WMD	Weapons of Mass Destruction
WPK	Workers' Party of Korea

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I. INTRODUCTION

A. MAJOR RESEARCH QUESTION

Acquiring nuclear weapons can offset a state's inferior power in conventional warfare. This is called "nuclear substitution," and it refers to "a situation in which states, due to their nuclear capabilities, shoulder a lighter conventional burden and yet maintain a higher level of security than in the status quo ex ante."[1] Nuclear substitution aims to increase security capabilities with nuclear weapons and divert limited national resources consumed by an arms race to economic development.[2] Nuclear weapons, however, have gray zones; for instance, they may not be appropriate to use in low-level conflicts because they are over-destructive. Therefore, to cover the gray zone, nuclear states often develop either diversified nuclear capabilities, such as low-yield nuclear weapons (i.e., tactical nuclear weapons), or increased conventional capabilities. Indeed, conventional capabilities can provide an option for escalation management, which nuclear weapons cannot due to their destructive power.[3]

In the case of North Korea, its national resource shortage restricts not only its capacity to upgrade its military capabilities but also its military readiness in several ways: the lack of fuel would hinder military training, food scarcity could limit the persistence of North Korean forces in battle, and logistical shortages could prevent troops from marching. Needless to say, North Korea places top priority on building asymmetric weapons, such as nuclear weapons, but also other weapons of mass destruction (WMD) and cyber-attack capabilities. Although North Korea's general resource capacity is scarce, Kim Jong-un has expressed hopes to develop advanced weapons such as tactical nuclear weapons, nuclear submarines, multiple independently targetable reentry vehicles (MIRV), hypersonic

[1] Ahsan I. Butt, "Do Nuclear Weapons Affect the Guns-Butter Trade-Off? Evidence on Nuclear Substitution from Pakistan and Beyond," *Conflict, Security & Development* 15, no. 3 (2015): 232, https://doi.org/10.1080/14678802.2015.1055120.

[2] Butt, 231.

[3] Kristin Ven Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," *Journal of Strategic Studies* 44, no. 1 (2021): 10, https://doi.org/10.1080/01402390.2020.1818070.

missiles, and military reconnaissance satellites.[4] In fact, during the "Workers' Party of Korea's 75th anniversary," the North showed improved technical weaponry for North Korea's massive conventional arsenal. "Multiple launch rocket systems and short-range ballistic missiles were on display, as well as new mobile air defense radar vehicles and an entirely new tank design that contained anti-tank missiles and smoke rocket launchers."[5]

From the perspective of nuclear substitution, North Korea wants nuclear weapons to offset its conventional inferiority in relation to the ROK-U.S. alliance, but the North seems to spare no efforts to enhance its conventional capabilities despite obtaining nuclear weapons. In this sense, the major research intention in this thesis is to better understand the drivers of the evolution of North Korea's conventional capabilities, and especially the interactions of the nuclear and conventional aspects of its strategies. Specifically, is North Korea's conventional capabilities development consistent with a nuclear substitution strategy, or are there other drivers of its conventional capabilities' development?

This thesis asks several questions flowing from the primary question. Why does the North try to strengthen its conventional power even after obtaining nuclear weapons? What specific circumstances drive North Korea to enhance its conventional weaponry after the achievement of obtaining nuclear capabilities? How can we expect North Korea's nuclear and conventional strategies to interact and evolve in the near future? Existing research lacks an explanation for this case. Therefore, this thesis explores to answer about the above questions.

B. SIGNIFICANCE OF THE RESEARCH QUESTION

The international community has been exerting efforts to denuclearize North Korea ever since that country processed material to develop nuclear weapons at a facility in

[4] Choe Sang-Hun, "Kim Jong-Un Vows to Boost North Korea's Nuclear Capability as Leverage with Biden," *The New York Times*, January 9, 2021, sec. World, https://www.nytimes.com/2021/01/08/world/asia/kim-nuclear-north-korea.html.

[5] Josh Smith, "Analysis: North Korea's Kim Speaks Softly, Shows Off New Military Might," *Reuters*, October 11, 2020, https://www.reuters.com/article/us-northkorea-missiles-analysis-idUSKBN26W0CJ.

Yongbyon in 1992.[6] North Korea's denuclearization, however, seems to be an unachievable goal. As North Korea builds its nuclear arsenal, security in Northeast Asia becomes more unstable. Since North Korea's denuclearization is becoming less feasible, other countries need to prepare for North Korea's expanding nuclear deployments. Above all, it is necessary to understand what North Korea's nuclear strategy is. But, to do so, it is also necessary to investigate how North Korea's nuclear strategy and its conventional strategies interact.

The nuclear epoch can be divided into two nuclear ages: the first and second ages. The first age began when the United States dropped atomic bombs on Japan, on Aguest 6, 1945, and the first age shared the Cold War.[7] The second age is defined as "the spread of the atomic bomb for reasons that have nothing to do with the Cold War."[8] According to this definition, North Korea is categorized as one of the second nuclear age countries. Second nuclear age states are more dependent on nuclear weapons because they have inferior power in relation to their rivals, increasing concerns that the threshold for nuclear use will be lowered.[9]

The nuclear strategies of the United States and the Soviet Union during the Cold War present challenges in explaining the second nuclear era. Countries in the second nuclear age are typically limited in the establishment of the nuclear triad, the development of nuclear delivery vehicles, and the reinforcement of conventional power, which the United States and the Soviet Union did not face during the Cold War. Hence, it is more useful to study the strategies of other second age regional nuclear powers in various ways.

As North Korea's recent military parade has shown, the second nuclear age countries may steadily push for diversification of nuclear delivery vehicles, the development of new weapons, and the expansion of conventional forces. This thesis

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[6] Kelsey Davenport, "Chronology of U.S.-North Korean Nuclear and Missile Diplomacy," Arms Control Association, last modified July 2020, https://www.armscontrol.org/factsheets/dprkchron.

[7] Paul J. Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Times Books, 2012), 94.

[8] Bracken.

[9] Lawrence Freedman and Jeffrey Michaels, *The Evolution of Nuclear Strategy*, Fourth edition (London: Palgrave Macmillan, 2019), 586.

examines the North Korea case to contribute to explaining how a regional nuclear power behaves in the second nuclear age.

C. LITERATURE REVIEW

Most of the research about the second nuclear age focuses on why and how countries developed nuclear weapons. Also, some studies have approached how to achieve denuclearization and deter nuclear proliferation. By contrast, research on how second nuclear age states strategize to operate nuclear weapons has been relatively insufficient.

Although scholars do not know exactly what North Korea is planning to do, they can gain limited information on this topic from sources such as North Korea's declarations, Party Congresses, the Rodong newspaper, the official Korean Central News Agency (KCNA), and by observing missiles tests and military parades covered in the media.

1. North Korea's Nuclear Strategies

Studies of North Korea's nuclear strategy can be categorized into two different approaches: what is its nuclear deterrence strategy and how will North Korea behave with its nuclear weapons.

First, according to the *Department of Defense (DOD) Dictionary of Military and Associated Terms*, deterrence is defined as "the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs the perceived benefits."[10] With this definition, nuclear deterrence strategy can be defined as a strategy in which a nation uses its nuclear capabilities for influencing the behavior of other nations, generally rival countries, to prevent an attack upon itself.

Some analysts conclude that North Korea is likely to pursue limited deterrence.[11] Limited deterrence allows a state to preemptively use nuclear weapons and consider counterforce strikes. It makes every effort to avoid all sorts of assaults on a nation's defense

[10] Department of Defense, *DOD Dictionary of Military and Associated Terms* (Washington, D.C.: U.S. Department of Defense, 2021), 63.

[11] Andrew Futter, *The Politics of Nuclear Weapons* (United Kingdom: SAGE Publications, 2015), 76–77.

and keeps just a small number of nuclear weapons in reserve in case a crisis arises. Britain, France, India, Pakistan, and Israel follow limited deterrence.

In the context of limited deterrence, some nuclear deterrence strategy theories studied during the Cold War can provide some insight to estimate North Korea's nuclear strategy. For instance, in the perspective of the Cold War, North Korea's nuclear strategy may include 'launch on warning.'[12] During the Cold War, the United States tested its ability to launch on warning, sending a strong message to the Soviet Union that it would not tolerate any effort to disable its nuclear forces with a first strike. In other words, the United States could launch missiles before Moscow's missiles reached the U.S. territory. Paul J. Bracken insists North Korea will pursue the same strategy; although North Korea does not have the means to pre-emptively identify an actual attack, such as a satellite, it could launch a nuclear attack on South Korea or Japan if the United States shows signs of launching an attack on the North.[13] This can also be seen as a hostage strategy, taking the U.S. allies as a hostage to give the United States a warning message.

Another aspect of North Korea's nuclear deterrence strategy is simply the existence of nuclear weapons: existential deterrence. Existential deterrence is a concept developed on the assumption that if both adversaries maintain their nuclear survival capabilities, no one will be able to fully disarm their opponents, and thus some deterrence is possible regardless of the strategies adopted. In this perspective, the number of North Korea's nuclear weapons has nothing to do with deterrence effectiveness.[14] However, one study argued that, although in general nuclear states with poor nuclear capabilities are aimed at defensive deterrence, North Korea adopts an aggressive nuclear deterrence posture. Despite its overwhelmingly inferior nuclear capabilities relative to the United States, North Korea seems to pursue active deterrence against the United States and South Korea, provoking fears of nuclear war and increasing uncertainty in the first attack. As a result,

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[12] Bracken, *The Second Nuclear Age*, 189–191.

[13] Bracken, 194–95.

[14] Tae Hyun Kim, "North Korea's Nuclear Strategy: Active Existential Deterrence," *National Strategy* 22, no. 3 (2016): 5–36.

North Korea may exert efforts to instigate a sense of crisis, confusion, and fear against the South Korean people.[15]

Vipin Narang suggests a state may adopt one of three nuclear strategies described in terms of nuclear posture.[16] Narang defines nuclear posture as a combination of the types and numbers of nuclear warheads and delivery vehicles, regulations and procedures for using nuclear weapons, what targets they would be used against, and who commands and controls them.[17] He adds that the term of nuclear posture can be "thought of as nuclear strategy."[18] Narang distinguishes three postures: catalytic, assured retaliation, and asymmetric escalation. (1) Catalytic posture is encouraging a power that is friendly to one's side to intervene. (2) Assured retaliation is threatening nuclear retaliation after the other attack with nuclear weapons. (3) Asymmetric escalation is threatening to respond with nuclear weapons to attacks by an adversary's conventional forces.

North Korea may adopt the catalytic posture since North Korea believes that China is a strong supporter.[19] In the catalytic posture, the intention is to develop only a few nuclear weapons whose use can be expected to trigger the involvement of third-party assistance.[20] China is a longtime patron of North Korea and currently rivals the United States in diplomatic relations. Therefore, Narang argues that just as Pakistan expected U.S. arbitration in the conflict with India and pursued a catalytic stance, North Korea will expect China to take on a "certain role."[21]

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15 Kim, "North Korea's Nuclear Strategy."

16 Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict.*, Princeton Studies in International History and Politics (Princeton, New Jersey: University Press, 2014), 14–21.

17 Narang, 4.

18 Narang.

19 Vipin Narang, "Nuclear Strategies of Emerging Nuclear Powers: North Korea and Iran," *The Washington Quarterly* 38, no. 1 (January 2, 2015): 83.

20 Narang, *Nuclear Strategy in the Modern Era*, 22.

21 Narang, "Nuclear Strategies of Emerging Nuclear Powers," 84.

On the other hand, given North Korea's recent advances in the development of nuclear weapons, it is now believed that it has the technology to strike U.S. territory.[22] This development suggests a limit to defining North Korea's current nuclear posture as the catalytic one. Rather, given North Korea's imbalance in conventional capabilities facing the U.S. and South Korean troops in the South, North Korea's advances in nuclear capabilities support an aggressive asymmetric escalation posture.

In addition to these nuclear strategy perspectives, some research focuses on how North Korea will behave as its nuclear weapons deployments expand. Generally, given the historically reckless national characteristics of North Korea, some analysts assume that North Korea will increase provocations in order to advance its national interests as its nuclear weapons capabilities grow. No country that has obtained nuclear arsenals, however, has become exactly rash; that is, none of the eight countries that have acquired nuclear weapons so far has truly deviated from reasonable behavior.[23]

Specifically, Robert Carlin and Robert Jervis have noted that North Korea has not carried out any "reckless" provocations since its nuclear test in 2013, which was the North's third and considered its most successful; the only relatively recent "reckless" provocation was the Yeonpyeong Island incident (November 2010).[24] Also, Carlin and Jervis argued that North Korea is less likely to be exceptional among the existing nuclear states because North Korea has not shown irrational behavior with its nuclear weapons, such as coercively threatening neighbors or even using nuclear weapons.[25] Indeed, the possibility remains that North Korea's foreign policy will become more aggressive; but on

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[22] Ken Dilanian, Carol E. Lee, and Dan De Luce, "What Can Joe Biden Do About North Korea That Trump Didn't Do?," *NBC News*, April 17, 2021, https://www.nbcnews.com/politics/national-security/north-korea-has-more-nuclear-weapons-ever-what-should-biden-n1263983.

[23] Robert Carlin and Robert Jervis, "Nuclear North Korea: How Will It Behave?," *U.S.-Korea Institute at SAIS*, last modified October 2015, 14, https://www.38north.org/wp-content/uploads/2015/10/CarlinJervis-final.pdf.

[24] Carlin and Jervis, 7–11.

[25] Carlin and Jervis, 14.

the other hand, a larger and more secure nuclear weapons arsenal might also increase North Korea's sense of security and lead it to conduct itself more moderately.[26]

2. Nuclear and Conventional Interaction

The literature described previously analyzed North Korea's nuclear strategy based on its nuclear capabilities. The second nuclear age states, such as North Korea, have limited nuclear capabilities because they do not have as many resources as the United States and the Soviet Union had during the Cold War. Therefore, with limited nuclear capability, maximum deterrence will be pursued, and strategic research based on these limits of nuclear capability is meaningful. North Korea, however, cannot handle all levels of conflict on its forces with its weak nuclear powers. Nuclear weapons have gray areas. For example, low-intensity disputes cannot be suppressed with nuclear weapons because they are over-destructive for that level of conflict. Therefore, Kim Jong-un may wish to develop other capabilities, such as tactical nuclear weapons or conventional capabilities, in order to cover potential gray area conflicts. The interrelationship between strategies for conventional capabilities and nuclear strategies is a topic that prior research does not pay enough attention to.

A relevant study related to the relationship of North Korea's conventional and nuclear forces looks at how North Korea's nuclear weapons affect its overall military construction.[27] This research predicts North Korea's force planning by analyzing the nation of Pakistan. Pakistan has not reduced its conventional military power buildup since its nuclear armament; indeed, Pakistan has been expanding its conventional forces to counter India's new military strategy since the Kargil War.[28] This suggests how nuclear substitution may be insufficient; thus, Pakistan is developing a conventional strategy in terms of "nuclear-conventional strategy interaction," in which conventional forces play a

[26] Carlin and Jervis, 16.

[27] Tae Hyun Kim, "Nuclear Armed State's Military Strategy and Force Planning: Pakistan and Its Implication to North Korea," *Military History*, no. 108 (September 2018): 37–81.

[28] Kim, "Nuclear Armed State's Military Strategy and Force Planning," 60.

pivotal role in implementing military strategies.[29] This thesis investigates how much the situation in North Korea is similar to that of Pakistan. North Korea could face a troubling situation due to the additional costs necessary for constructing conventional power at a time when the nuclear compensation they possess is not as effective a deterrent as expected. Therefore, North Korea is likely to ponder how to combine its nuclear and conventional forces to cope with the various security threats it faces in constructing conventional forces.[30]

The study just cited is related to the core topic of this thesis. It focuses on how North Korea's nuclear weapons affect its overall military construction, however, it does not consider the effects on North Korea's conventional strategies, or the interactions of nuclear and conventional strategies. This thesis builds on such work by examining Pakistan, focusing on Pakistan's strategies in particular, in order to draw lessons to explain and predict North Korea's strategies.

By focusing on the interaction of nuclear and conventional strategies in a second nuclear age state, this thesis contributes to the existing literature on the subject. In the case of North Korea, given its high reliance on "nuclear substitution," it is also important to ask, how will the development of North Korea's nuclear forces affect its conventional strategies? This study of North Korea also addresses broader questions. If the purpose of gaining nuclear weapons is to compensate for a state's inferior conventional capabilities, why do regional nuclear power countries want to strengthen their conventional power even if they already possess nuclear weapons? Which dilemmas leads regional nuclear power nations to develop their conventional power after the achievement of obtaining nuclear capabilities? This thesis finds answers to the preceding questions.

D. POTENTIAL EXPLANATIONS AND HYPOTHESES

Acquiring nuclear weapons is attractive for national security in some ways: first, for small nations, they can offset their inferior conventional powers by obtaining nuclear

[29] Kim, 72.

[30] Kim, 73.

bombs due to their tremendous destructive effect; second, nuclear deterrence is regarded as more powerful and inexpensive than conventional deterrence; third, a nation expects that arms races would be avoided once it gets nuclear capabilities.[31] These beliefs, however, do not seem to be always true. For instance, the Kargil War of 1999 was an example of a conventional armed conflict between two nuclear-armed states, which means nuclear weapons failed to deter the war. This case illustrates the 'stability-instability paradox' in which nuclear weapons play a role in containing opponents at the strategic level but, precisely because of stability at that level, can provoke bold and offensive action at the tactical level of conventional conflict.[32] The Cold War contains some examples of this paradox, such as the Korean War, Vietnam War, Cuban Missile Crisis, and Afghanistan War, broke out despite the effort of nuclear deterrence by both the United States and the Soviet Union.

Because of the stability-instability paradox, nuclear substitution cannot be expected to provide complete deterrence in all cases. As a result, second age nuclear states may find that conventional capacity will remain pivotal in order to deal with some kinds of low-level conflicts. Due to the destructive nature of nuclear weapons, the threat to use nuclear weapons in low-intensity conflicts will not be highly credible; therefore, improving conventional power may be a priority to manage low-level conflicts. In other words, even if second age nations have nuclear weapons, they may need the development of advanced conventional power to support deterrence at lower levels.

In short, as North Korea develops its strategic nuclear capabilities while remaining conventionally weak, there are two possible outcomes regarding its nuclear and conventional strategies. One is that North Korea may feel that "nuclear substitution" increases its overall security, and it will feel less compelled to push conventional developments. The other, following the "stability-instability" paradox, is that strategic stability will free North Korea to behave more aggressively at lower levels of conflicts, and that it will develop its conventional capabilities and strategies for this purpose.

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[31] Butt, "Do Nuclear Weapons Affect the Guns-Butter Trade-Off?," 230.

[32] Hanbyeol Sohn, "Strategic Coercion toward Nuclear-Armed State: A Study on the 1999 Kargil War," *National Strategy* 23–4, no. 82 (2017): 32.

This thesis evaluates these alternative explanations by projecting what efforts North Korea will undertake to cover the nuclear gray zone after North Korea successfully gains strategic nuclear weapons. Specifically, the thesis assesses whether nuclear compensation will be expected, or whether North Korea will develop more options to cope with low-level conflicts. Finally, the thesis examines how the development of these further options in turn affects North Korea's nuclear strategy.

E. RESEARCH DESIGN

Since gathering credible data and information on North Korea is limited, it is difficult to observe its strategies. Also, many of its strategic developments still are in the future. Therefore, looking at a country's nuclear strategy in a secure environment that is similar to North Korea will help predict its nuclear strategy. Pakistan has similar security situations with North Korea in several aspects: (1) Pakistan has less conventional power than its rival India, (2) Pakistan has developed nuclear weapons to overcome its inferior military power compared to India, and (3) Pakistan seeks to use its nuclear weapons to dominate any level of conflict.[33] North Korea has similar characteristics: (1) North Korea's conventional capabilities are inferior to the joint forces between the U.S. and South Korea, (2) North Korea has developed its nuclear weapons to offset its weaker force, and (3) North Korea may try to get strong deterrence at other levels of conflict with a nuclear arsenal.[34] Therefore, this thesis will analyze Pakistan's nuclear strategy first, then it will draw lessons applicable to the North Korea case. These lessons will involve distinguishing both similarities and differences between both Pakistan and North Korea.

To explore Pakistan's nuclear strategy, this thesis will use previous studies to analyze what Pakistan's nuclear strategy is and how it has changed. Also, the conventional balance of force theory, which is a theoretical tool, will be used to describe the correlation between Pakistan's conventional capabilities and its nuclear strategy. This theoretical tool will be used to analyze how Pakistan has behaved to develop conventional capabilities after

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[33] Yogesh Joshi, *India and Nuclear Asia Forces, Doctrine, and Dangers*, South Asia in World Affairs Series (Washington, D.C.: Georgetown University Press, 2019).

[34] Woo-Taek Hong and Chang-Kwoun Park, *Analysis of North Korea's Nuclear Strategy*, 18–14 (Seoul: KINU, 2018).

acquiring nuclear weapons. Next, this thesis will suggest how North Korea is likely to act after succeeding nuclear weapons based on lessons from Pakistan's case. First, this thesis examines the reason why North Korea wants to acquire nuclear weapons; next, it analyzes North Korea's nuclear capabilities; then, it looks for what circumstances North Korea is more likely to face and how it may react to them.

II. PAKISTAN'S NUCLEAR STRATEGY

The long-standing rivalry between India and Pakistan is one of the main drivers of instability in South Asia. The rivalry is mostly focused on the ongoing Kashmir issue, as the Kashmir region was divided between the two states following independence from the colonial rule of Great Britain. Although more than 60 percent of Kashmir's population are Muslims, India governs the area and both states believe that their national identities in the contested region are significant.[35] Islamabad asserts that Kashmir is vital to Pakistan's identity as a Muslim state, whereas New Delhi maintains its importance as a secular, multi-ethnic state for Indian identity.[36] Further exacerbating tensions, India's conventional military strength is supplemented with nuclear capabilities, as they successfully tested nuclear explosives in 1974. Given India's conventional military dominance and its nuclear interests, Pakistan realized that its security concerns with India in Kashmir and elsewhere required a particular means for pressuring New Delhi; nuclear weapons. Therefore, Pakistan launched an effort to develop nuclear weapons after losing East Pakistan (now Bangladesh) in a war between Pakistan and India in 1971. After Pakistan conducted nuclear tests in 1998, it proceeded to obtain a nuclear arsenal.

Pakistan pursues a strong deterrent option with nuclear weapons to counter India's conventional capabilities. Since Pakistan acquired nuclear weapons in 1998, however, Pakistan has been involved in the Kargil war and several border skirmishes and military stalemates with India. Why does Pakistan continue to behave as though it faces serious threats if nuclear weapons offer ultimate security from existential military threats? Are nuclear weapons not able to become a certain deterrent option for Pakistan? Why is the geopolitical competition so strong even under the shadow of a nuclear stalemate? Why has Pakistan endeavored to enhance its conventional capacity despite possessing nuclear weapons? To explain the preceding questions, this chapter explores the history of

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[35] Sumit Ganguly, *Conflict Unending: India-Pakistan Tensions Since 1947* (New York: Columbia University Press, 2001), 3.

[36] John E. Peters et al., *War and Escalation in South Asia* (Santa Monica, California: RAND Corporation, 2006), 20, https://www.rand.org/pubs/monographs/MG367-1.html. Also available in print form.

Pakistan's nuclear weapons development, its nuclear strategy, and its nuclear and conventional capabilities. Then, it will analyze what drives Pakistan to enhance its conventional weaponry. This examination of Pakistan will be helpful in understanding North Korea, which is analyzed in-depth after this chapter.

A. THE HISTORY OF NUCLEAR WEAPONS DEVELOPMENT

When negotiations between Britain and India began after World War II, the Muslim League called for a "Partition plan" that was to establish an independent country in the Muslim-dominated Pakistan region.[37] The Indian Independence Act was enacted in August 1947 under the agreement of the Indian National Congress, the Muslim Federation, and the British Government, granting the independence of East and West Pakistan and India as autonomous territories within the Commonwealth of England.[38] During this separation India and Pakistan had a conflict in Kashmir in October 1947; as a result, Kashmir was separated into the Indian territory of Jammu Kashmir and the Pakistani territory of Azad Kashmir.

There had been several conflicts between India and Pakistan over Kashmir, and India overwhelmed Pakistan in 1965, in a conflict known as the the Second Indo-Pakistan War.[39] After the defeat, Zulfikar Ali Bhutto, then foreign minister of Pakistan, asserted that "If India builds the bomb, we will eat grass or leaves, even go hungry, but we will get one of our own. We have no alternative."[40] This claim became more than words after Pakistan's complete defeat in the Third Indo-Pakistan War over East Pakistan (now Bangladesh) in 1971, as Pakistan began developing nuclear weapons.[41] After the humiliating defeat, Bhutto built a basic nuclear facility with financial support provided by

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[37] Muhammad Qasim Zaman, *Islam in Pakistan: A History* (Princeton, New Jersey: Princeton University Press, 2018), 44.

[38] Suresh K. Sharma, *The Emergence of India and Pakistan* (New Delhi, India: Pergamon Press, 2007), 425.

[39] Ganguly, *Conflict Unending*, 51.

[40] Khushwant Singh, "Foreign Affairs: Pakistan, India and The Bomb," *The New York Times*, July 1, 1979, sec. Archives, https://www.nytimes.com/1979/07/01/archives/foreign-affairs-pakistan-india-and-the-bomb.html.

[41] Narang, *Nuclear Strategy in the Modern Era*, 58.

Saudi Arabia and Libya, and secured uranium enrichment technology from A. Q. Khan who returned to Pakistan in 1975 from a nuclear research institute that was in Europe.[42] As a result of India's 1974 nuclear test, Pakistan made efforts to develop nuclear weapons, and Bhutto later said in prison that "The Christian, Jewish, and Hindu civilizations have this capability. The communist powers also possess it. Only the Islamic civilization was without it, but that position was about to change."[43]

Meanwhile, the United States tried to halt Pakistan's nuclear program for fear of nuclear proliferation. The U.S. government made the Symington Amendment in 1976, which decided to stop U.S. aid to countries introducing nuclear fuel reprocessing facilities.[44] Pakistan, however, was able to be supported by China, which is India's regional rival. At that time, China was at odds with the Soviet Union and experienced armed conflict with India due to border disputes. In light of these circumstances, China decided to support India's rival Pakistan, providing massive economic and military assistance.[45] In fact, China was believed to have provided Pakistan with a scheme for a uranium fission design, which Pakistan tested in 1966 at its Lop Nur test site, dubbed "CHIC-4."[46] These plans would have significantly accelerated Pakistan's pursuit of nuclear weapons development.[47]

Pakistan's strategic value to the United States soared in the wake of the Soviet invasion of Afghanistan. In addition, Iran had been lost after the Islamic Revolution, which could damage security interests within the region. Indeed, defense planners in the Pentagon were concerned that the United States lost a number of observation facilities in Iran

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[42] Narang.

[43] Singh, "Foreign Affairs: Pakistan, India and The Bomb."

[44] United States Department of State, *U.S. Assistance to Pakistan (*Washington, D.C.: U.S. Department of State, 1986), http://libproxy.nps.edu/login?url=https://www.proquest.com/government-official-publications/u-s-assistance-pakistan/docview/1679128355/se-2?accountid=12702.

[45] Siddharth Ramana, *China-Pakistan Nuclear Alliance: An Analysis* (New Delhi, India: Institute of Peace and Conflict Studies, 2011), 4–5, http://www.ipcs.org/issue_briefs/issue_brief_pdf/SR109.pdf.

[46] Narang, *Nuclear Strategy in the Modern Era*, 59.

[47] Narang.

following the Islamic Revolution.[48] This prompted the "United States to seek improved intelligence and defense collaboration with Pakistan."[49] In 1981, President Reagan set two major goals: (1) expel the Soviets from Afghanistan and (2) decelerate Pakistan's nuclear program.[50] In an effort to achieve its goals in the region, the United States decided to assist Pakistan with $3.2 billion for six years (1982-87).[51] President Zia-ul-Haq responded that he would "never embarrass his friend," yet Zia had accelerated the enrichment project and enhanced security on the nuclear facility.[52] Meanwhile, when the United States intelligence identified the operation at Kahuta, which is a Pakistani nuclear installation, Zia claimed that "Kahuta cannot be a nuclear installation. Maybe it is a goat shed."[53] With China's support and the United States' acquiescence, nuclear reactors and plutonium reprocessing facilities were built, and nuclear weapons designs were completed. In the mid-1980s, Pakistan practically possessed nuclear weapons and reached the status of a nuclear threshold state.[54] After India conducted a series of five nuclear tests at the Pokhran areas in the state of Rajasthan on May 11 and 13, 1998, Pakistan carried out its nuclear tests on May 28 and 30, 1998, and acquired nuclear capabilities[55]

B. PAKISTANI NUCLEAR CAPABILITIES

Pakistan has been developing and expanding its nuclear program, which includes the creation of delivery systems, warheads, and a growing fissile materials manufacturing facility. Mobile launchers and underground facilities associated to nuclear weapons are

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[48] Robert Wirsing, *Pakistan's Security Under Zia* (London: Palgrave Macmillan, 1991), 240.

[49] Feroz Hassan Khan, *Eating Grass the Making of the Pakistani Bomb* (Stanford, California: Stanford University Press, 2012), 209.

[50] Khan, 209.

[51] Khan, 214.

[52] Khan, 215.

[53] Jeffrey Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea*, Illustrated edition (New York: Norton, 2006), 374.

[54] Freedman and Michaels, *The Evolution of Nuclear Strategy*, 595.

[55] Sumit Ganguly et al., *Nuclear Proliferation in South Asia: Crisis Behaviour and the Bomb*, Asian Security Studies (London: Routledge, 2009).

reported to be housed in Pakistani army battalion and Pakistan Air Force (PAF) bases.[56] Also, Pakistan has obtained and maintains an array of cruise and ballistic missiles, and has also sought to acquire multiple independently targetable re-entry vehicle (MIRV) technologies in order to respond to India's ballistic-missile defense (BMD) efforts. According to data collected by the Nuclear Threat Initiative on all the missile tests carried out by Pakistan, Pakistan commenced testing its missiles in 1989 and has conducted 98 tests as of February 18, 2020.[57] The NTI data indicated that thirty-one percent of these were of short-range ballistic missiles and 20 percent of these were of short-range cruise missiles.[58] The medium-range ballistic missiles that could reach the whole Indian land constituted 26 percent of the test.[59] From the NTI data, Pakistan has a greater focused on developing short-range missiles which formed 51 percent of the test, likely because short-range missiles would be better options in confrontations with India.[60] Short-range missiles carry an additional benefit, as they are less challenging to design and develop than intermediate- and intercontinental- range ballistic missiles, which comprise two or more stages.[61]

Pakistan's nuclear weapons stockpile is estimated to be 150 to 160 warheads (See Table 1). Pakistan has been expanding its uranium enrichment facilities and plutonium production reactors; that is, Pakistan is likely to increase its stockpile of nuclear weapons further over the next 10 years.[62] Furthermore, Pakistan continues to develop nuclear delivery vehicles. The Pakistan Air Force (PAF) deploys Mirage III/IV and F-16 A/B, which can deliver nuclear weapons. Pakistan is also increasing its arsenal of land-based

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[56] Hans M. Kristensen, Robert S. Norris, and Julia Diamond, "Pakistani Nuclear Forces, 2018," *Bulletin of the Atomic Scientists* 74, no. 5 (September 3, 2018): 348, https://doi.org/10.1080/00963402.2018.1507796.

[57] "India and Pakistan Missile Launch Databases," NTI, November 6, 2019, https://www.nti.org/analysis/articles/cns-india-and-pakistan-missile-launch-databases/.

[58] NTI.

[59] NTI.

[60] NTI.

[61] Adil Sultan, *Missile Developments in South Asia: A Perspective from Pakistan* (London: IISS, 2021), https://www.iiss.org/blogs/research-paper/2021/05/missile-developments-south-asia.

[62] Kristensen, Norris, and Diamond, "Pakistani Nuclear Forces, 2018," 348.

missiles, which mostly consist of short- and medium-range systems, and these land-based missiles can reach any point in the whole of India. Table 1 is the various types of nuclear delivery vehicles that Pakistan operates (see Table 1).[63]

Table 1. Pakistani nuclear forces, 2020.[64]

Type (US/Pakistani designation)	No. of launchers	Year first deployed	Range (km)	Warhead x yield (Kt)	No. of warheads
Aircraft					
F-16A/B	24	1998	1,600	1 x bomb	24
Mirage III/IV	12	1998	2,100	1 x bomb	12
Land-based missiles					
Abdali (Hatf-2)	10	2015	200	1 x 5–12 kt	10
Ghaznavi (Hatf-3)	16	2004	300	1 x 5–12 kt	16
Shaheen-1 (Hatf-4)	16	2003	750	1 x 5–12 kt	16
Shaheen-2 (Hatf-6)	18	2014	1,500	1 x 10–40 kt	18
Ghauri (Hatf-5)	24	2003	1,250	1 x 10–40 kt	24
NASR (Hatf-9)	24	2013	60-70	1 x 5–12 kt	24
Babur GLCM (Hatf-7)	12	2014	350	1 x 5–12 kt	12
Total	**156**				**156**

C. PAKISTANI NUCLEAR STRATEGY

As discussed in Chapter I, Narang identifies three categories describing "nuclear strategy in terms of nuclear posture": catalytic, assured retaliation, and asymmetric

63 Pakistan's nuclear weapon yields remain unknown. The nuclear tests in 1998 indicated a yield of up to 12 kt. It is conceivable that enhanced warheads with higher yields have been introduced since then. There is no publicly available evidence that Pakistan has produced two-stage thermonuclear bombs. Also, dual-capable aircraft and missiles are available. Cruise missile launchers may hold multiple missiles. This estimate assumes one warhead per launcher. Warheads are stored in separate storage facilities rather than being deployed on launchers; Stockholm International Peace Research Institute, *SIPRI Yearbook 2020: Armaments, Disarmament and International Security* (Stockholm, Sweden: Stockholm International Peace Research Institute, 2020), 372.

64 Source: Stockholm International Peace Research Institute, 372.

escalation. According to Narang's analysis, the Pakistani nuclear posture has shifted between two phases: catalytic posture and asymmetric escalation.[65] Pakistan's military power has been inferior to that of India since Pakistan was separated from the British Dominion; thus, the United States' intervention was pivotal for Pakistan to compete with India. Moreover, the Soviet Union offered military aid to India in 1980 as the United States collaborated with Pakistan, and the Soviet aid totaled $1.63 billion and included Mig-25 aircrafts and T-72 tanks.[66] By the mid-1980s, "India's military advantage over Pakistan was 2:1 in manpower, 2:1 in tanks, 4:1 in surface warships, and 3:1 in combat aircraft."[67] Therefore, given the relations between Pakistan and the United States after the late 1970s, the catalytic posture might be an attractive option for Pakistan to offset Pakistani conventional inferiority.[68] In the catalytic posture, it is assumed that the intention to develop nuclear weapons or the intention to use a limited number of nuclear weapons can induce the involvement of third-party assistance.

Indeed, the United States arbitrated in several conflicts between Pakistan and India. For instance, the United States was concerned that Pakistan would cross the threshold for nuclear use during the Brasstacks crisis in 1986–87.[69] In February 1986, Indian general Krishnaswami Sunderrajan (Sunderji) was appointed Chief of the Indian Army, and he instituted a series of military reforms, including reorganizing "the Indian infantry into mission-oriented formations" and planning "a full-fledged exercise in Rajasthan," which is adjacent to the border line.[70] In response, Pakistan countermobilized and the United States arbitrated to defuse the crisis. Yet, the Brasstacks crisis lacked proof of an impending nuclear conflict between the two countries or evidence that India feared a Pakistani nuclear assault. The United States may have been worried about the conflict due to Khan's

65 Narang, *Nuclear Strategy in the Modern Era*, 92.

66 Ganguly, *Conflict Unending*, 82.

67 Khan, *Eating Grass the Making of the Pakistani Bomb*, 216.

68 Narang, *Nuclear Strategy in the Modern Era*, 71.

69 Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security* 34, no. 3 (2009): 50.

70 Khan, *Eating Grass the Making of the Pakistani Bomb*, 221–22.

persistent warnings over the years, which was "Pakistan would move across several redlines that had been mutually agreed upon," and this concerning stance led to the U.S. intervention.[71]

Islamabad, however, no longer had the option to maintain this catalytic posture after the termination of almost $621 million in U.S. economic and military aid to Pakistan in October 1990 after its contentious nuclear program had deteriorated Pakistan-U.S. relations.[72] In 1999, Pakistan and India confronted each other over Kargil, and the international community was concerned that the war could escalate into a nuclear conflict because both countries conducted nuclear tests just a year before the dispute. Since Pakistani military capabilities were still weaker than India's military power, Muhammad Nawaz Sharif, the prime minister of Pakistan, began to seek U.S. intervention after a massive retaliation from India on July 2 in 1999.[73] Sharif requested U.S. President Clinton come to his aid in the Kargil War in order to overcome the disadvantageous situation against India, and he hoped to visit Washington personally.[74] Sharif took his family as well as a crew of intimate assistants to Washington on July 4, implying to the Americans that he may have had a one-way ticket or was concerned about a coup attempt.[75] Furthermore, President Clinton was informed that there was "disturbing evidence that the Pakistanis were preparing their nuclear arsenal for possible deployment."[76] The international community, however, was not favorable to Pakistan at that time. The primary external actors—the United States and China—had endeavored to improve relations with India, so both countries' ties with Pakistan became weak in 1998.[77] Therefore, Pakistan could not expect its patron's intervention. Sharif had to withdraw Pakistani troops because President

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[71] Narang, "Posturing for Peace?," 52.

[72] Narang, *Nuclear Strategy in the Modern Era*, 90; Farzana Shakoor, "Pakistan-U.S. Relations: 1988–1991," *Pakistan Horizon* 45, no. 2 (1992): 24.

[73] Khan, *Eating Grass the Making of the Pakistani Bomb*, 315.

[74] Khan, 313.

[75] Khan, 313.

[76] Bruce Riedel, "The 1999 Blair House Summit," in *Asymmetric War in South Asia*, ed. Peter R Lavoy (New York: Cambridge University Press, 2009), 136–37.

[77] Khan, *Eating Grass the Making of the Pakistani Bomb*, 317.

Clinton strongly insisted that Sharif could visit Washington only if he decided to withdraw back to the line of control (LOC).[78]

Thus, Pakistan had to abandon the catalytic nuclear posture and changed its nuclear posture to asymmetric escalation. This posture seeks to deter both conventional and nuclear conflicts against an adversary. The first use of nuclear weapons are considered if an opponent threatens the country's existence and nuclear capabilities, and when disputes arise, both tactical and strategic options may be immediately organized and launched, frequently via pre-delegated authority.[79] Pakistan has not only adopted a nuclear doctrine as the first use option, but also has endeavored to disperse the deployment of its nuclear capabilities its nuclear capabilities in order to increase the viability of nuclear capabilities.[80] Given Pakistani nuclear and conventional capabilities, Pakistan is likely to maintain an asymmetric escalation posture.

D. PAKISTANI NUCLEAR DETERRENCE STRATEGY

Pakistan has often claimed that its nuclear arsenal is purely meant to prevent military attack.[81] According to Mahmud Ali Durrani, the major four objectives of Pakistan's nuclear deterrence are:

- Deterrence of all types of foreign assault that pose a threat to Pakistan's national security.
- The development of conventional and strategic forces is required to increase the credibility of nuclear deterrent.
- Deterring India from waging pre-emptive strikes against the country's strategic forces by nuclear retaliation.
- Stabilization of South Asia's strategic deterrent.[82]

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[78] Khan, 314.

[79] Narang, *Nuclear Strategy in the Modern Era*, 77–78.

[80] Narang, 79.

[81] Bracken, *The Second Nuclear Age*, 173.

[82] Mahmud Ali Durrani, "Pakistan's Strategic Thinking and the Role of Nuclear Weapons," Sandia Natioanl Laboratories, 2004, 23, https://www.sandia.gov/cooperative-monitoring-center/_assets/documents/sand2004-3375p.pdf.

In practice, these aims and strategic aspects form Pakistan's nuclear deterrence strategy. Pakistan's nuclear strategy is based on numerous handouts provided by the national command authority (NCA) and the Inter Services Public Relations (ISPR).[83] Civilian strategists, senior current and retired government armed services personnel provide policy recommendations for conventional nuclear strategy.[84] Based on these sources, the following is a summary of the evolution of Pakistan's nuclear deterrence strategy.

Pakistan firstly adopted a principle of minimum deterrence.[85] The term of "minimum" means literally "few," and minimum deterrence refers to the fact that only a small number of nuclear forces are necessary to punish the invader with constrained second use, not first-use, nuclear strikes.[86] Pakistan soon realized that it could not decide how many weapons it needed to respond to "Indian military modernization and nuclear force structure developments."[87] Hence, Pakistan abandoned minimum deterrence and, in 1999, Prime Minister Nawaz Sharif introduced minimum credible deterrence.[88] Minimum credible deterrence seeks more ambiguity, with a non-fixed number of weapons, and dynamic deterrence.[89] The ambiguity plays a pivotal role to help achieve better stability.

To be specific, Pakistan maintains ambiguity on the "readiness, assembly, location of fissile material components, and the state of arming, fusing, and firing mechanisms."[90] Pakistani strategists think that ambiguity enhances the deterrent effect, since Pakistan's

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[83] Ashfaq Ahmed, "Pakistan Nuclear Doctrine from Minimum Deterrence to Full Spectrum Credible Minimum Deterrence (FSCMD)," *Pakistan Social Sciences Review* 3, no. II (December 2019): 87.

[84] Ahmed, 87.

[85] Ahmed, 91.

[86] Hans M Kristensen, Robert S Norris, and Ivan Oelrich, "From Counterforce to Minimal Deterrence: A New Nuclear Policy on the Path Toward Eliminating Nuclear Weapons," *Federation of American Scientists*, April 2009, 27.

[87] Ahmed, "Pakistan Nuclear Doctrine from Minimum Deterrence to Full Spectrum Credible Minimum Deterrence (FSCMD)," 91.

[88] Bruno Tertrais, *Pakistan's Nuclear and WMD Programmes: Status, Evolution and Risks*, Non-Proliferation Paper No.19 (Stockholm, Sweden: SIPRI, 2012), 2.

[89] Zafar Khan, "The Changing Contours of Minimum Deterrence in South Asia," *Policy Perspectives (Islamabad)* 13, no. 1 (2016): 81, https://doi.org/10.13169/polipers.13.1.0077.

[90] Khan, *Eating Grass the Making of the Pakistani Bomb*, 297.

conventional and nuclear capabilities are inferior to India's.[91] Pakistani minimum credible deterrence has four concepts: (1) to "avoid a nuclear arms race with India," (2) to allow Pakistan to reduce the fiscal costs associated with maintaining nuclear capabilities, (3) to maintain minimum stocks that may reduce the "fear of inadvertent an unauthorized launch and unforeseen incidents," and (4) to adopt a posture of minimum credible deterrence that "highlights that India produces an existential threat to Pakistan's security."[92]

Minimum credible deterrence, however, seemed not function in the Kargil war. Indeed, Pakistani nuclear capabilities failed not only to deter India from mobilizing and carrying out military actions, but it also could not acquire support from the international community. Pakistani leaders would have realized that the nuclear weapons cannot prevent Indian military behavior that falls short of the 'nuclear threshold.' In addition, India introduced a new "Cold Start" doctrine (CSD) in which soldiers stationed near the Pakistani border are tasked with launching a series of rapid attacks on Pakistani territory to gain land necessary for future offensive operations by bolstering their military positions. Having this capability would enable India to react quickly to a possible Pakistani aggression by launching a large-scale assault on Pakistan within 72–96 hours after getting an order to march.[93]

Pakistan's nuclear deterrence faced a credibility crisis when India changed its military doctrine, leading Pakistan to change its nuclear strategy.[94] It is possible that Pakistan's nuclear deterrence would have been undermined if it had not responded to the Indian challenge, but retaliation by attacks against strategic targets with large nuclear weapons could have been perceived as disproportionate and thus deficient in credibility.[95] In order to resolve this dilemma, Pakistani full-spectrum deterrence (FSD) was introduced

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[91] Feroz Hassan Khan, Ryan Jacobs, and Emily Burke, "Nuclear Learning in South Asia: The Next Decade," Report (Monterey, California: Naval Postgraduate School, June 2014), 74.

[92] Ahmed, "Pakistan Nuclear Doctrine from Minimum Deterrence to Full Spectrum Credible Minimum Deterrence (FSCMD)," 91–92.

[93] Zachary S. Davis, ed., *The India-Pakistan Military Standoff Crisis and Escalation in South Asia* (New York: Palgrave Macmillan U.S., 2011), 86, https://doi.org/10.1057/9780230118768.

[94] Narang, "Posturing for Peace?," 75.

[95] Sultan, *Missile Developments in South Asia*, 8.

to discourage conventional conflict at any level by threatening nuclear first use in reaction to aggression.[96] FSD includes the development of many distinct types of nuclear weapons to sufficiently deter India. To exercise minimalism in both high- and low-yield nuclear warheads of various ranges, the development of short- and long-range nuclear weapons has progressed to such a degree that they can penetrate all known forms of active and passive missile defense systems. With these capabilities, FSD means Pakistan would respond to a major conventional attack with nuclear weapons. Both short-range, low-yield weapons and long-range weapons are included in the full-spectrum to face the range of contingencies expected to be encountered with India.[97]

While the FSD inherently allows for the employment of offensive weapons to inflict unacceptable damage, the use of short-range weaponry is used to prevent India from pursuing restricted conventional warfare.[98] Pakistan deployed a nuclear-armed close-range ballistic missile (CRBM), known as Nasr, with the goal of discouraging India from utilizing its conventional military dominance against Pakistan in the future.[99] As Nasr's work has been viewed by some as supporting a 'nuclear warfighting strategy,' similarities have been drawn to NATO's confrontation with the Soviet Union's nuclear doctrine of "escalate to de-escalate."[100]

> Nasr has been developed to add deterrence value to Pakistan's Strategic Weapons Development programme at shorter ranges. …the test was a very important milestone in consolidating Pakistan's strategic deterrence capability at all levels of the threat spectrum. … in that hierarchy of military operations, the Nasr Weapon System now provides Pakistan with short-range missile capability in addition to the already available medium and long-range ballistic missiles and cruise missiles in its inventory.[101]

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96 Antoine Levesques, Desmond Bowen, and John H. Gill, *Nuclear Deterrence and Stability in South Asia: Perceptions and Realities* (London: IISS, 2021), 18.

97 Robert Einhorn and W. P. S. Sidhu, *The Strategic Chain Linking Pakistan, India, China, and the United States* (Washington, D.C.: Brookings Institution, 2017), 8.

98 Einhorn and Sidhu, 8.

99 Einhorn and Sidhu, 8.

100 Sultan, *Missile Developments in South Asia*, 9.

101 "No PR-94/2011-ISPR," ISPR, April 19, 2011, https://www.ispr.gov.pk/press-release-detail.php?id=1721.

Pakistan has adopted a wide range of military tactics, utilizing both conventional and strategic military assets, to complete the task. Pakistan undertook a series of Azm-e-Nau military exercises, which has helped the country build a more diverse and all-encompassing reaction to threat scenarios like India's CSD.[102] These exercises, occurring over a span of four years, featured several entities, and were aimed at reviewing and validating operating plans in line with the danger range, according to Pakistan's Inter Services Public Relations (ISPR).[103]

E. CHANGES IN CONVENTIONAL CAPABILITIES

Pakistan's major desire to build nuclear capacity has been to compensate for its lower conventional strengths than those of India. An equally compelling question is how conventional Pakistani capabilities have also evolved. This thesis will, in response to this issue, focus on the change in the conventional capacity of Pakistan since its nuclear tests in 1998. Figure 1 shows that Pakistan's military budget has consistently grown between 1985 and 2020, and the military budget almost quadrupled between 2001 and 2017.

[102] Einhorn and Sidhu, *The Strategic Chain Linking Pakistan, India, China, and the United States*, 37.

[103] "No PR-196/2012-ISPR," ISPR, September 12, 2012, https://ispr.gov.pk/press-release-detail.php?id=2142.

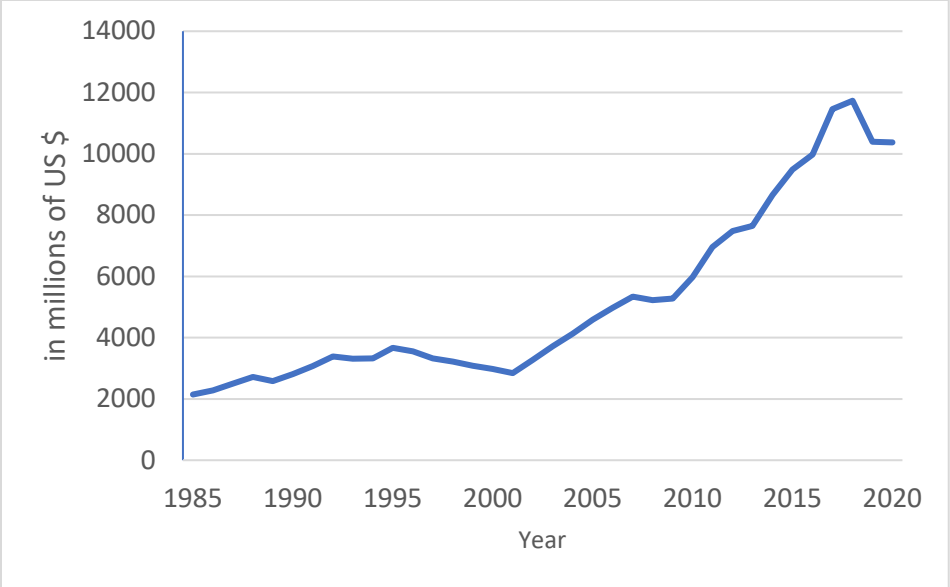

Figure 1. Military expenditure by Pakistan.[104]

What should be noted here is the change in Pakistani military expenditure starting in 1998, when Pakistan officially established its nuclear armament. This is because it can be seen whether the regional nuclear powers have reduced defense spending, judging that they have gained deterrence from possessing nuclear weapons; that is, did Pakistan achieve "nuclear substitution?" As seen in Figure 1, however, Pakistan's defense spending is still not decreasing. Pakistan's military expenditure fell slightly from about $3,200 million in 1998 when the nucleus was completed to $2,973 million in 2000, but since then, military expenditure has continued to increase.[105] Even more revealing, before 1998, military expenditure increased by an average of 3.4 percent, but after that, it increased by an average of 5.7 percent.[106] This shows that although Pakistan obtained nuclear weapons, this did not have the effect of reducing defense spending. Rather, Pakistan's increased rate of defense spending after 1998 suggests that obtaining nuclear weapons actually enhanced its perceived utility for conventional capabilities – the opposite of what "nuclear substitution"

[104] Source: Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database," SIPRI, accessed August 11, 2021, https://sipri.org/databases/milex.

[105] Stockholm International Peace Research Institute.

[106] Stockholm International Peace Research Institute.

would predict. This finding indicates the importance of examining why regional nuclear power states might continue to invest heavily in defense after possessing nuclear weapons.

Although Pakistan has managed to avoid an Indian full-scale military invasion, the continuing conventional imbalance and India's CSD led Pakistan to modernize and strengthen its conventional capability.[107] Indeed, as mentioned previously, between 2009 and 2013, the Pakistan Army held military exercises known as Azm-e-Nau; a major focus was to develop and execute a conventional counter to CSD.[108] Furthermore, Pakistan's spending on conventional naval capabilities is on the rise. The Pakistani navy is planning to strengthen surface fighting forces, patrol vessels, submarines, maritime patrol planes, and UAVs (in partnership with China).[109] This is both to increase fighting capacity and to protect nuclear weapons at sea. The Pakistan air force (PAF) has modernized its inventory and improved its accuracy and ISR capacity. In addition, the indigenous defense sector exports platforms, weapons, and ammunition. Pakistan and China enjoy significant cooperation on defense and industrial matters.[110]

The number of Pakistani troops increased from 587,000 in 1999 to 651,800 as of 2021, with the Army increasing from 520,000 to 560,000 and the Air Force increasing from 45,000 to 70,000.[111] Pakistan has also made efforts to develop its armored platforms and air power. For air power, the JF-17, which was jointly developed by the Chinese-Pakistan Aeronautical Complex (PAC) and Chengdu aircraft industry company (CAC) in 1999, was

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[107] Maimuna Ashraf, "Pakistan's Consolidating Conventional Deterrence: An Assessment," South Asian Voices, last modified February 14, 2020, https://southasianvoices.org/pakistans-consolidating-conventional-deterrence-an-assessment/.

[108] Meenakshi Sood, "Pakistan's (Non-Nuclear) Plan to Counter 'Cold Start,'" The Diplomat, last modified March 25, 2017, https://thediplomat.com/2017/03/pakistans-non-nuclear-plan-to-counter-cold-start/.

[109] Rajeswari Pillai Rajagopalan, "The China-Pakistan Partnership Continues to Deepen," The Diplomat, last modified July 9, 2021, https://thediplomat.com/2021/07/the-china-pakistan-partnership-continues-to-deepen/.

[110] IISS, "Chapter Six: Asia," *The Military Balance* 121, no. 1 (January 1, 2021): 290.

[111] IISS, *The Military Balance 1999*, vol. 99 (London: Routledge, 1999), 166–67; "Chapter Six," 289–93.

completed in August 2003 with the first flight of JF-17 entering service in March 2007.[112] Moreover on December 15, 2019, in China's South-West region of Sichuan, JF-17 Block III multi-role combat aircraft carried out its inaugural flight.[113] To develop armored platforms, for instance, reconstruction and upgrade of 160 major battle tanks type 85IIAP from 2019–2020 to 2021–2022. The development efforts can also be seen in the ongoing upgrading of the Al-Zarrar variant of Type-59 main fighting tanks.[114]

Pakistani conventional ballistic missile arsenals have emerged as essential components of the country's national security policy in order to balance the substantial conventional military advantages that India possesses. Indeed, Pakistan has been concentrating on a significant number of theater or battlefield-range missiles; for instance, SUPARCO designed the Hatf-1 in the 1980s, which may be nuclear armed but is primarily meant to serve a conventional role.[115] Pakistan's combined strategic forces allow it to target nearly everything in India, and they are working on sophisticated technologies like the neutralization of Indian missile defense.[116] With regards to Pakistan, there are indications of considerable cooperation with both North Korea and Iran on the development and spread of missile systems. Pakistan has received considerable technical support from China for its missile programs, and evidence clearly suggests close coordination on the development and spread of these weapons with both North Korea and Iran.[117]

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112 "JF-17 Thunder / FC-1 Xiaolong Multirole Combat Aircraft," Air Force Technology, accessed August 14, 2021, https://www.airforce-technology.com/projects/fc1xiaolongjf17thund/.

113 Franz-Stefan Gady, "Pakistan's JF-17 Block III Fighter Jet Makes Maiden Flight," The Diplomat, last modified January 6, 2020, https://thediplomat.com/2020/01/pakistans-jf-17-block-iii-fighter-jet-makes-maiden-flight/.

114 Usman Ansari, "Government Report Reveals Pakistan's Progress on Military Acquisitions Amid Financial Woes," *Defense News*, September 19, 2019, sec. Asia Pacific, https://www.defensenews.com/global/asia-pacific/2019/09/19/government-report-reveals-pakistans-progress-on-military-acquisitions-amid-financial-woes/.

115 Tertrais, *Pakistan's Nuclear and WMD Programmes: Status, Evolution and Risks*, 9.

116 "Missiles of Pakistan," Missile Threat, August 10, 2021, https://missilethreat.csis.org/country/pakistan/.

117 Husain Haqqani, "The Pakistan-North Korea Connection," Carnegie Endowment for International Peace, last modified October 26, 2002, https://carnegieendowment.org/2002/10/26/pakistan-north-korea-connection-pub-1104.

In the 1990s the connection between Pakistan and North Korea developed markedly, with the international world isolating Pakistan for its nuclear weapon use and strong links with the Taliban.[118] During this time Beijing was trying to improve ties with the United States, which were stressed by the deadly crackdown on the Tiananmen Square protests in 1989 and by the consequent Western embargo on weapons against China.[119] Therefore, the Chinese government declined sales of M-11 missiles to Pakistan. Instead, Pakistani Prime Minister Benazir Bhutto bought Rodong missiles from North Korea in the early 1990s. Pakistan provided 'civilian nuclear technologies' to Pyongyang in exchange and encouraged North Korean students to study in Pakistani institutions.[120]

F. PAKISTAN'S MOTIVATIONS TO ENHANCE ITS CONVENTIONAL CAPABILITIES

The nuclear substitution theory that describes the nexus between conventional capabilities and nuclear strategy contains an assumption. That is, for states facing conventionally more powerful adversaries, nuclear weapons are seen to be a more cost-effective alternative than conventional military deterrence measures. Conventional inferiority is not viewed as a variable, but rather as a given, and nations prioritize nuclear improvements over conventional in large part because they have no other choice.[121] In this view, nuclear weapons serve as a replacement for conventional weapons, and so countries with large stockpiles of nuclear weapons do not have to engage in conventional arms races against their enemies that they have little hope of winning.

Pakistan, however, seems to face a conundrum. Pakistani nuclear weapons cannot perfectly deter India's conventional military threats. For instance, Pakistani nuclear weapons did not deter the Indian army from marching to the LoC during the Kargil war in

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118 Samuel Ramani, "The Long History of the Pakistan-North Korea Nexus," The Diplomat, last modified August 30, 2016, https://thediplomat.com/2016/08/the-long-history-of-the-pakistan-north-korea-nexus/.

119 Oliver Bräuner, Mark Bromley, and Mathieu Duchâtel, *Western Arms Exports to China* (Stockholm, Sweden: SIPRI, 2015), 7, https://www-jstor-org.libproxy.nps.edu/stable/resrep19181.

120 Ramani, "The Long History of the Pakistan-North Korea Nexus."

121 Keir A. Lieber, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age*, Cornell Studies in Security Affairs (Ithaca, New York: Cornell University Press, 2021), 94, https://doi.org/10.1515/9781501749315.

1999. Also, Pakistani nuclear arsenals failed to deter India's military mobilization called Operation Parakram that was carried out in response to terror attacks on the Indian Parliament on December 13, 2001, and according to The Times of India, India deployed "approximately 500,000 troops along the LoC and the international border."[122] Thus, Pakistan faced a challenge of how to contain India's threats that do not stimulate the nuclear threshold. In response, Pakistan has judged that a balanced combination of non-nuclear means that can respond proportionally to those threats is also required.[123]

Indeed, Pakistani military planners seem to have foremost in mind this challenge of how Pakistan deters India's threats that occur beneath the level of the general nuclear deterrence threshold. The measure is to complement limited nuclear war strategies by enhancing conventional capabilities for managing conventional confrontations. These considerations affect the compensation of conventional inferiority by nuclear weapons.[124] Thus, Pakistan may seek conventional capabilities as the first line of defense against an Indian conventional military strike, making it the backbone of the country's overall deterrence posture.[125] Because Pakistan's nuclear weapons provided top-level deterrence but could not eliminate all causes of instability and war, Pakistan experienced an increased utility of conventional capabilities to deter Indian's further lower-level military behavior.

For instance, Pakistan's military actions during the 2001–2002 conflict with India proved this when India mobilized (Operation Parakram) to respond to the terrorist assault on the Indian Parliament on December 13, 2001.[126] Pakistan deployed its own armed troops promptly. Thus, Pakistan's army was able to arrive at their strike locations faster than their counterparts, eliminating any advantage India may have earned by attempting to

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[122] "Parliament Attack Had Brought India, Pak on Brink of Another War," *The Times of India*, February 10, 2013, https://timesofindia.indiatimes.com/india/parliament-attack-had-brought-india-pak-on-brink-of-another-war/articleshow/18424134.cms.

[123] Kim, "Nuclear Armed State's Military Strategy and Force Planning," 47.

[124] Kristin Ven Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," *Journal of Strategic Studies* 44, no. 1 (January 2, 2021): 10.

[125] Peter R Lavoy, "Pakistan's Nuclear Posture: Security and Survivability; Strategic Insights: February 2009," Report (Naval Postgraduate School, Monterey, California, 2009) 2.

[126] Lavoy, 2.

strike first across the border.[127] As a result, a dishonor for India's military and civil leadership, Operation Parakram failed to achieve the crucial element of surprise needed for a desperate attempt at coercive diplomacy.[128] According to The Print, about 800 Indians were killed as a consequence of accidents and border confrontations, and about $2 billion was spent on this.[129] Also, as of mid-January, Pakistani army deployments showed that Islamabad was well prepared to counter-strike at places of its choosing, thereby removing whatever advantage India would have earned by hitting first.[130]

Furthermore, as described earlier, for enhancing conventional capabilities, during 2009 and 2013, the Pakistan Army conducted military exercises known as "Azm-e-Nau" to develop and implement a conventional response to CSD.[131] In this military exercise, Pakistan introduced a new concept of warfighting (NCWF) that intends to improve force "mobilization time and inter-services cooperation, particularly between the Army and the PAF."[132] To succeed NCWF, Pakistan has been upgrading its conventional forces with the assistance of a number of military allies, the most important of which are China and the United States, as covered the previous chapter of this thesis. The Pakistani Army has also been conducting military drills along the border in critical places in the Punjab province, as well as shifting its defensive positions forward, closer to the Indian border.[133] The goal

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[127] Lavoy, 2.

[128] Muhammad Ali Baig, "Cold Start – Hot Stop? A Strategic Concern for Pakistan," *NDU Journal*, 2020, 81.

[129] H. S. Panag, "Operation Parakram: The War That Wasn't but Could Have Reined in Pakistan," *The Print*, January 3, 2019, sec. Opinion, https://theprint.in/opinion/operation-parakram-the-war-that-wasnt-but-could-have-reined-in-pakistan/172471/.

[130] Lavoy, "Pakistan's Nuclear Posture: Security and Survivability; Strategic Insights: February 2009," 2.

[131] Baig, "Cold Start – Hot Stop? A Strategic Concern for Pakistan," 93.

[132] In 2010, Pakistan Air Force High Mark, which saw over 20,000 soldiers of various departments taking part in Southern Punjab, Sialkot and Sindh, along Pakistan's East bottom with Independence, was carried out together with Azm-e-Nau III. In 2010. Since 1989, the 2010 exercises were the most important carried out by the Army; Sood, "Pakistan's (Non-Nuclear) Plan to Counter 'Cold Start.'"

[133] Meenakshi Sood, "Pakistan's Response to Cold Start Doctrine," *Centre for Land Warfare Studies* 94 (March 2017): 4, https://www.claws.in/static/IB94_Pakistan%E2%80%99s-Response-to-Cold-Start-Doctrine.pdf.

is to develop a comprehensive response to all threats including both the internal challenge from diverse terror organizations and the conventional threat of foreign invasion.[134]

In the meantime, Herman Kahn's famous study on escalation, which describes an increasingly escalating 44-rung ladder that states facing crisis might decisively embark on, shows that a country like Pakistan can take several non-nuclear measures before it reaches a nuclear war threshold.[135] For instance, Pakistan's repertory of escalation measures—more control-line shelling, hidden operations over the control-line, diplomatic maneuvers, major army mobilization, missile testing—falls well within what Kahn terms "sub crisis maneuvering" and "traditional crises."[136] Therefore, the advanced conventional capabilities are likely to give an alternative, "more flexible, or more credible option for escalation management."[137] Changes in conventional threats and capabilities may result in a shift in nuclear policy, decreasing reliance on limited nuclear alternatives. This is because they are concerned about the likelihood of managing escalation; hence, some countries may attempt to lessen their dependence on nuclear retaliation.[138]

G. CONCLUSION

The acquiring of nuclear weapons provides a pivotal step forward in the security of a state. Nonetheless, even nuclear nations confront a variety of challenges that do not stimulate the use of nuclear weapons; in such cases, the state having these issues would depend on conventional capabilities for deterrent.[139] As this chapter has analyzed, despite its nuclear armament, Pakistan has not perfectly enjoyed nuclear substitution. Islamabad's military expenditure has still increased and its endeavors to develop conventional capabilities have been ongoing even after the acquisition of nuclear weapons.

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[134] Sood, 4.

[135] Rohan Mukherjee, "Climbing the Escalation Ladder: India and the Balakot Crisis," War on the Rocks, last modified October 2, 2019, https://warontherocks.com/2019/10/climbing-the-escalation-ladder-india-and-the-balakot-crisis/.

[136] Mukherjee.

[137] Ven Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," 11.

[138] Ven Bruusgaard.

[139] Butt, "Do Nuclear Weapons Affect the Guns-Butter Trade-Off?," 250.

Pakistan seems realize that nuclear weapons do not eradicate the roots of instability and conflict. In fact, countries which employ nuclear threats to prevent conventional assaults are instead confronted with a problem called the "stability-instability paradox." In such cases, escalation deterrence threats will not be credible if a limited conventional assault does not lead to nuclear escalation.[140] That is, the paradox is that while deterrence stabilizes at the strategic nuclear level, it will destabilize at the lower level of conventional warfare; conventional attacks are difficult to dissuade "under the shadow of nuclear stalemate."[141] Even tactical nuclear weapons may not offer a credible deterrent to some forms of conventional threat. Ironically, for a conventionally inferior state, nuclear weapons can increase the value of conventional capabilities, rather than substituting for them.

The discovery here is two thoughts. The first is that Pakistan faces an increased incentive to develop its conventional capabilities despite acquiring nuclear weapons. The second is that the enhanced conventional capabilities are likely to provide another, "more flexible, or more believable additional means for escalation management." [142]

[140] Lieber, *The Myth of the Nuclear Revolution*, 95.

[141] Lieber, 95.

[142] Ven Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority," 11.

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III. NORTH KOREA'S CASE

North Korea has sought nuclear weapons because it perceives that nuclear weapon can bring an opportunity to strengthen a weak and poor nation that is incapable of matching the ROK-U.S. alliance either economically or with conventional military capabilities. According to CRS report no. IF10472, the DPRK has already "tested six nuclear bombs," built "dozens of nuclear weapons" and manufactured "hundreds of ballistic missiles for nuclear weapon delivery."[143] North Korea is a revisionist regional country aiming to rectify U.S. influence on the Korean Peninsula, in particular by being acknowledged as a nuclear weapon state and a peer of the United States.[144] Achieving such acknowledgment would seem to be a triumph for Kim Jong-un's regime, exhibiting its capability to resolve its own humiliated history and restore regional-power status. Within this perspective, the Kim regime seems to have three primary goals:[145]

- Guarantee regime existence and complete control over North Korea
- Attain peninsula domination — in other words, Korean reunification in some manner under regime control
- Make North Korea a regional great power capable of achieving the first two goals and even thwarting U.S. and Chinese dominance.

The three main goals of the regime are intertwined, and North Korea sees its nuclear weapons as essential to achieving these goals. Given the number of North Korea's conventional forces, the North is quantitatively superior to the South and U.S. conventional troops stationed in South Korea, but since its forces are of lower quality, the North is less

[143] Mary Beth D. Nikitin, *North Korea's Nuclear Weapons and Missile Programs*, CRS Report No. IF10472 (Washington, D.C.: Congressional Research Service, 2021), https://crsreports.congress.gov/product/pdf/IF/IF10472/20.

[144] Michael D. Cohen, *North Korea and Nuclear Weapons Entering the New Era of Deterrence Washington* (Washington, D.C.: Georgetown University Press, 2017), 47.

[145] Bruce W. Bennett et al., *Countering the Risks of North Korean Nuclear Weapons* (Santa Monica, California: RAND Corporation, 2021), xi.

likely to win in the event of a war.[146] Thus, acquiring nuclear weapons is an attractive option for the North to offset their inferior military capabilities and a keystone for the Kim's regime survival and deterrence against external threats require it.

North Korea has continued to argue that its nuclear development is aimed at countering "the constant threat" of the ROK-US coalition.[147] On October 20, 2017, North Korean Foreign Ministry official Choe Son Hui restated the Kim's regime's previous comments that the North's nuclear arsenal is aimed at preventing U.S. attacks and that maintaining its nuclear weapons is "a matter of life and death for us."[148] She added, "the current situation reinforces our awareness that we need nuclear weapons to defend a future assault."[149] Also, North Korea's party congress passed the "Law on Consolidating the Position of Nuclear Weapons State" on April 1, 2013. According to the state media (KCNA), nuclear weapons "serve the aim of deterring and repelling the enemy's aggression and assault against the North and striking lethal retaliation strikes at the strongholds of aggression until the world is denuclearized."[150]

What, then, is North Korea's nuclear strategy? To explore North Korea's potential nuclear strategy, this chapter introduces the historical background of DPRK's nuclear development, then look at the current nuclear capabilities of North Korea and examine the potential nuclear strategy of North Korea by analyzing the Law on Consolidating the Position of Nuclear Weapons State.

A. THE HISTORY OF THE DEVELOPMENT OF NUCLEAR WEAPONS

According to the 2020 Defense White Paper, "North Korea is the only country that has withdrawn from the Nuclear Non-Proliferation Treaty (NPT) in order to promote a

146 Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021.

147 Leo Byrne, "N. Korea 'Not Planning' Negotiations Over Nuclear Weapons," *NK News - North Korea News*, October 20, 2017, https://www.nknews.org/2017/10/n-korea-not-planning-negotiations-over-nuclear-weapons/.

148 Byrne.

149 Byrne.

150 "Law on Consolidating Position of Nuclear Weapons State Adopted," *KCNA*, January 4, 2013.

nuclear weapons program, and it possesses a rapidly evolving nuclear arsenal."[151] The website 38 NORTH explains that Pyongyang continues to be outside the Comprehensive Nuclear Test-Ban Treaty (CTBT) and has frequently broken "the international norm against nuclear testing, conducting tests in 2006, 2009, 2013, two tests in 2016, and one in 2017."[152] As North Korea's nuclear efforts have become more evident, many UN Security Council resolutions have been enacted denouncing the North Korean military and economy.

For North Korea, the acquisition of nuclear weapons has a variety of purposes besides security: (1) the national goal as a strong and prosperous nation, (2) provide leadership legitimacy to preserve the Kim regime and the nation, (3) establish North Korea as a regional great power, (4) decouple the ROK-U.S. alliance, (5) enhance coercive diplomacy, and (6) augment warfighting capability.[153] Also, in terms of domestic and bureaucratic politics, North Korea seems to pursue nuclear weapons due to domestic parochial and bureaucratic interest; i.e., for the achievement of its regime.[154] Whatever the reason, given that the reckless national characteristics of North Korea, it seems to be a rational assumption that North Korea will increase provocations in order to gain its national interests after it gains nuclear weapons.

In the early 1950s, North Korea started its nuclear program. The government set up the Atomic Energy Research Institute, and the Academy of Sciences in December 1952, although nuclear activity only began with the establishment of cooperation agreements between the Soviet Union and North Korea.[155] In February 1956, Pyongyang signed the Charter of Foundation of the Joint Nuclear Research Institute of the Soviet Union and shortly thereafter began sending scientists and technicians to the URSS for training. The

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151 *2020 Defense White Paper* (Seoul: Ministry of National Defense, 2020), 363.

152 "Sixth Nuclear Test Detected at Punggye-Ri, Declared to Be a Hydrogen Bomb," 38 NORTH, last modified September 3, 2017, https://www.38north.org/2017/09/nuke090317/.

153 Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 7–12.

154 Scott D. Sagan, "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security* 21, no. 3 (1996): 72, https://doi.org/10.2307/2539273.

155 *2020 Defense White Paper*, 362.

agreement on the peaceful use of nuclear energy, including the provision of Soviet assistance for the establishment of a nuclear research facility at Yongbyon, North Pyongan Province, was signed in 1959 between North Korea and the Soviet Union.[156]

In the early 1980s, North Korea built "uranium milling plants, a fuel rod manufacturing complex and a nuclear reactor of 5 MW(e)," and research and developing institutes, which were substantial expansion among indigenous peoples.[157] At the same time, North Korea started to experiment with the high explosive tests necessary for the construction of a nuclear weapon trigger mechanism. By the mid-80s, North Korea had started to build a 50MW(e) nuclear reactor in Yongbyon and develop its uranium processing facility.[158]

On January 30, 1992, North Korea signed an agreement with the International Atomic Energy Agency (IAEA) to implement its accession to the Nuclear Nonproliferation Treaty (NPT), and on April 10, 1992, this was ratified by the Supreme People's Assembly.[159] Under the provisions of the agreement, the initial declaration of its nuclear installations and materials was submitted by North Korea and access was granted for the IAEA inspectors to verify the statement's "completeness and correctness."[160] Three nuclear sites would open in North Korea for international inspection according to Ch'oe Chong Sun, Head of North Korea's Foreign Affairs Office of the Ministry of Atomic Energy. The installations contain a 5-MW research reactor built in 1986 and the present

156 *2020 Defense White Paper*, 362.

157 "North Korea Nuclear Overview," The Nuclear Threat Initiative, October 11, 2018, https://live-nuclear-threat-initiative.pantheonsite.io/analysis/articles/north-korea-nuclear/.

158 "North Korea Nuclear Technology & Nuclear Weapons Program," NTI, accessed August 18, 2021, https://www.nti.org/countries/north-korea/.

159 IAEA, *Agreement of 30 January 1992 Between the Government of the Democratic People's Republic of Korea and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, INFCIRC/403 (Vienna, Austria: International Atomic Energy Agency, 1992), https://www.iaea.org/sites/default/files/infcirc403.pdf.p

160 "Joint Declaration of South and North Korea on the Denuclearization of the Korean Peninsula," NTI, accessed August 18, 2021, https://www.nti.org/learn/treaties-and-regimes/joint-declaration-south-and-north-korea-denuclearization-korean-peninsula/.

50-MW and 200-MW reactors, however, North Korea denied accessing for international inspection to the reprocessing facilities.[161]

After the IAEA was refused access to known waste sites in North Korea through early 1993, the Agency requested special ad hoc inspections by the United Nations Security Council (UNSC); in response, North Korea declared on March 12, 1993, that it intended to withdraw from the NPT.[162] The 5MW(e) reactor at Yongbyon continued to function in North Korea; furthermore, North Korean engineers began to remove the spent-fuel rods of the reactor on May 14, 1994, without IAEA inspectors supervision.[163] This move led to a worsening crisis when the U.S. government of President Bill Clinton stated that it would petition for economic penalties from the UNSC. Pyongyang replied that economic measures would be considered an act of war.[164] To defuse the crisis, the United States and North Korea signed the Agreed Framework. Under this deal, Pyongyang pledged to freeze its illegal plutonium weapons program in exchange for help.[165] In 2002, however, the Agreed Framework broke down. North Korea withdrew from the NPT and begun operating its nuclear facilities anew in January 2003; since then, North Korea continuously has endeavored to acquire nuclear arsenals.[166]

B. NORTH KOREA'S NUCLEAR CAPABILITIES

North Korea began its first nuclear test in 2006 and conducted a total of six nuclear tests by September 2017. The first nuclear test in October 2006 was estimated to have an explosive capacity of 0.5 kilotons, and the estimated yield was 140–250 kilotons at the

161 NTI, "North Korea Nuclear Chronology," James Martin Center for Nonproliferation Studies, 2011, 560, https://media.nti.org/pdfs/north_korea_nuclear.pdf.

162 NTI, 521.

163 David E. Sanger, "North Koreans Say Nuclear Fuel Rods Are Being Removed," *The New York Times*, May 15, 1994, https://www.nytimes.com/1994/05/15/world/north-koreans-say-nuclear-fuel-rods-are-being-removed.html.

164 Davenport, "Chronology of U.S.-North Korean Nuclear and Missile Diplomacy."

165 IAEA, "Agreed Framework of 21 October 1994 Between the United States of Amercia and the Democratic People's Republic of Korea" (IAEA, November 2, 1994), https://www.iaea.org/sites/default/files/publications/documents/infcircs/1994/infcirc457.pdf.

166 Davenport, "Chronology of U.S.-North Korean Nuclear and Missile Diplomacy."

sixth nuclear test in September 2017.[167] To assess North Korea's nuclear capabilities, it is necessary to estimate how much plutonium and highly enriched uranium (HEU) North Korea is producing. It takes 2 to 6 kilograms to produce a single nuclear weapon with plutonium, and the South Korean Ministry of National Defense estimates that North Korea has about 50 kilograms of plutonium as of the end of 2020.[168] North Korea's HEU stockpile is unclear, but some research estimates it. Table 2 indicates the estimated HEU in North Korea's stockpile.

Table 2. Estimated HEU in North Korea's stockpile.[169]

Reference	HEU Stockpile (2016)	Annual Production Rate
Albright	175–645 kg	38–186 kg/year
Hecker	300–450 kg	150 kg/year

Based on this table, it can be estimated that North Korea has 30 to 60 nuclear weapons.[170] To complete being nuclear-armed, it is required to acquire not only nuclear weapons but delivery vehicles. North Korea has ballistic missiles as the means of delivery and continues to develop them. North Korea has begun testing missile development since 2012. In 2017, Hwasong-12, Hwasong-14, and Hwasong-15 were test-fired, which could threaten the mainland United States (see Table 3).[171] There is no information that can verify the warhead's re-entry technology into the atmosphere, which requires further confirmation.

167 Hans M. Kristensen and Robert S. Norris, "North Korean Nuclear Capabilities, 2018," *Bulletin of the Atomic Scientists* 74, no. 1 (January 2, 2018): 45, https://doi.org/10.1080/00963402.2017.1413062.

168 *2020 Defense White Paper*, 28.

169 Source: Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 35.

170 Bennett et al.

171 Michael Elleman, "Does Size Matter? North Korea's Newest ICBM," 38 NORTH, last modified October 21, 2020, https://www.38north.org/2020/10/melleman102120/.

Table 3. North Korean ballistic missiles.[172]

Western Name	North Korean Name	Fuel	Approximate Range (km)	Can it deliver Nuclear weapons?
KN-02	Hwasong-11	Solid	120–170	No
KN-09	Unknown	Solid	200	No
Scud B	Hwasong-5	Liquid	300	Yes
Scud C	Hwasong-6	Liquid	500	Yes
KN-18 (MaRV)	Unknown	Liquid	450+	Unknown
KN-24	Unknown	Solid	450	Probably Yes
KN-25	Unknown	Solid	400	Probably Yes
KN-23	Unknown	Solid	700	Yes
Scud-ER	Hwasong-9	Liquid	1,000	Yes
KN-11	Pukguksong-1	Solid	1,200	Yes
No Dong	Hwasong-7	Liquid	1,500	Yes
KN-15	Pukguksong-2	Solid	1,200–2,000	Yes
KN-26	Pukguksong-3	Solid	1,900	Yes
Musudan	Hwasong-10	Liquid	2,500–4,000	Yes
KN-17	Hwasong-12	Liquid	4,500	Yes
KN-08	Hwasong-13	Liquid	9,000	Yes
KN-14	Unknown	Liquid	6,700	Yes
KN-20	Hwasong-14	Liquid	10,000+	Yes
KN-22	Hwasong-15	Liquid	12,000	Yes

Note: MaRV = maneuvering reentry vehicle.

[172] Source: Kristensen and Norris, "Pakistani Nuclear Forces, 2018"; "North Korea – Missile Defense Advocacy Alliance," MDAA, last modified March 2019, https://missiledefenseadvocacy.org/missile-threat-and-proliferation/todays-missile-threat/north-korea/; "Missiles of North Korea," Missile Threat, last modified June 14, 2021, https://missilethreat.csis.org/country/dprk/; Bruce W. Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 30.

In the last decade, North Korea has acquired a large, more diversified, and rapidly increasing ballistic missile force, as shown in Table 3. The Scud series contains the most elementary missiles in North Korea. North Korean gained Scuds from the Soviet Union in the late 1970s. In addition to this, North Korea originally imported the Scud B, but North Korea has produced, deployed, tested, and proliferated the Scud C, D, and ER (extended range) missiles since the late 1970s.[173]

Despite this missile force, only a couple of North Korea's ballistic intermediate-range rockets may be near operational condition; also, there could be a limited operating capacity for an intercontinental ballistic missile (ICBM).[174] Only one ballistic missile in North Korea is believed to be suitably capable for nuclear operations—Nodong, a medium-range ballistic missile.[175] Given that North Korea is still in its infancy with nuclear warheads technology, however, the current operating ability of North Korea is still unknown.[176]

In 2018, there were no missile tests, but since 2019, many solid-powered short-range ballistic missiles and new submarine-launched ballistic missiles (SLBM) have been tested. North Korea has been testing a new rocket called the KN-23 -with solid fuel and an operating area of up to 700 kilometers-, which was similar to the Russian rocket known as the Iskander since 2019. In addition, it is far more precise than most other ballistic missiles in North Korea, and it may potentially deliver a nuclear warhead.[177] These rockets are all mobile rockets; i.e., they are all on a TEL, which makes it harder to target them. Moreover, as indicated in the Table 3, KN-23 can deliver nuclear arsenals. Furthermore, a total of nine types of ballistic missiles, including the new ICBM and the new submarine ballistic missile labeled "Pukguksong-4," were unveiled at the 75th anniversary of the party's establishment

173 Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 31.

174 Kristensen and Norris, "North Korean Nuclear Capabilities, 2018," 41.

175 Kristensen and Norris, 43.

176 Kristensen and Norris.

177 Geoff Brumfiel, "North Korea's Newest Missile Appears Similar to Advanced Russian Design," NPR, last modified May 8, 2019, https://www.npr.org/2019/05/08/721135496/north-koreas-newest-missile-appears-similar-to-advanced-russian-design.

in October 2020.[178] Also, the U.S. confidential intelligence assessment concluded that "North Korea has developed the technology to miniaturize a nuclear warhead to fit its ballistic missiles."[179] North Korea's nuclear weapons level has been tactical so far, but given its continued efforts and commitment to development, it may be only a matter of time before North Korea completes its nuclear program.

C. NORTH KOREA'S POTENTIAL NUCLEAR STRATEGY

North Korea's nuclear, missile, and conventional capabilities constitute a major threat to the United States and its Northeast Asian allies. These capabilities magnify the dangers of Pyongyang's history of seeking to accomplish its political aims via the menace or use of violence.

What motivates North Korea to seek such capabilities? Bennett et al. observe that the Pyongyang leadership has exerted extraordinary efforts to obtain nuclear weapons because it recognizes North Korea is "a weak and impoverished country that is unable to compete" in other ways against the ROK-US alliance.[180] Yet, somewhat paradoxically, they also dub the North as a revisionist regime attempting to achieve "peninsula dominance," seeking to expand its nuclear capabilities in part to be "recognized as a nuclear weapon state and a peer of the United States."[181] At least in the regime's own eyes, such recognition would be a singular triumph enabling the country to "overcome its own 'century of humiliation' and return to regional-power status."[182]

To investigate North Korea's motivations more deeply, the following questions are addressed in this chapter. First, what does North Korea want from the ROK-US alliance through its nuclear development policy and belligerent behavior? Second, how does North Korea's nuclear deterrence strategy connect with its policy and behavior?

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[178] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 29.

[179] Eleanor Albert, "What's the Status of North Korea's Nuclear Program?," CFR, last modified November 16, 2020, https://www.cfr.org/backgrounder/north-koreas-military-capabilities.

[180] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, x.

[181] Bennett et al.

[182] Bennett et al.

To evaluate how North Korea behaves is tough because North Korea has not released any details about its nuclear plan. Despite this, the regime's public comments can help one learn more. In 2012, for instance, North Korea amended its constitution to make it clear that it is a nuclear-weapons state.[183] Furthermore, the 2013 Law on Consolidating "the Position of Nuclear Weapons State," which many analysts think formalizes "official North Korean nuclear policy and strategy," was declared by the "Supreme People's Assembly (SPA) in 2013." It states:

1. The Democratic People's Republic of Korea's (DPRK) nuclear weapons are only defense assets as it has been forced to have access to them in order to cope with the continually growing U.S. hostile threat policy.
2. The DPRK's nuclear weapons are meant to discourage and repel the aggression and attack of the adversary and to strike with devastating retaliation assaults on the strongholds of aggressor till the international society is denuclearized.
3. The DPRK would take actual endeavors to strengthen nuclear deterrent and nuclear retaliatory strike capacity, both in terms of quality and quantity, in order to deal with the growing seriousness of the threat posed by opposing forces' hostility and assault.
4. The DPRK has put in place a system to restrict the illegal transfer of nuclear technology and equipment.
5. The DPRK will support international efforts to prevent nuclear proliferation and guarantee control of nuclear materials.
6. The DPRK is working hard to avert nuclear war and strongly supports international denuclearization initiatives.[184]

The Law on Consolidating the Position of Nuclear Weapons State illustrates the strategic direction in both its diplomatic and its military aspects of North Korea's nuclear arms employment. It also suggests certain parts of the nuclear doctrine, which is undoubtedly being discussed by a central leadership circle. The introduction of the law, as well as the subsequent evolution of the situation, suggests several things.

[183] K.J. Kwon, "North Korea Proclaims Itself a Nuclear State in New Constitution," CNN, last modified May 31, 2012, https://www.cnn.com/2012/05/31/world/asia/north-korea-nuclear-constitution/index.html.

[184] KCNA, "Law on Consolidating Position of Nuclear Weapons State Adopted."

First, the concept is not thought to have been designed by the military, instead it appears to have emerged from discussions by the North Korean regime, namely those conducted by Kim Jong-un and his supporters in the Workers' Party of Korea (KWP).[185] It is apparent that the military would be unable to create such a complete doctrine entirely on its own; only authorities of foreign relations or high-ranking diplomats could have understood how to use the doctrine, as well as the international messages and signals that are embedded within it.[186] It is likely that the doctrine was thoroughly scrutinized by "the Central Military Commission and the Politburo of the KWP" in collaboration with "the Ministry of Foreign Affairs," before being adopted by the SPA and promulgated as legislation.[187]

Second, in terms of operational planning, the Law on Consolidating the Position of Nuclear Weapons State makes it plain that for the time being, launch authority remains highly centralized, stating that "nuclear weapons of the DPRK can be utilized only by a final order of the Supreme Commander of the Korean People's Army...." [188] Furthermore, the Law visualizes that nuclear weapons will be used in a wider range of situations in the future, not only to dissuade and repel high-level assaults, but also to prevent and counteract lower-level hostility.

When it comes to the North using its nuclear weapons, the Korean Central News Agency (NCNA) reported Kim Jong-un as stating during a crucial ruling party meeting in January 2021 that "unless he is threatened, he would not use his nuclear weapons first."[189] North Korea, however, also frequently threatens to use its nuclear weapons first. Indeed,

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185 Cohen, *North Korea and Nuclear Weapons*, 34.

186 Cohen, 35.

187 With the Seventh Congress of the KWP in May 2016, it effectively re-established parts of the political culture of North Korea and changed the political system to supplement the leadership conduct of Kim Jong Un so that Suryeong, a supreme leader, could continue with more substantial policy reforms; Michael Madden, "Deciphering the 7th Party Congress: A Teaser for Greater Change?," 38 NORTH, last modified May 20, 2016, https://www.38north.org/2016/05/mmadden052016/; Ibid.

188 KCNA, "Law on Consolidating Position of Nuclear Weapons State," *KCNA*, April 1, 2013.

189 Hyung-jin Kim, "N. Korea Threatens to Build More Nukes, Cites U.S. Hostility," *AP NEWS*, January 8, 2021, sec. Asia Pacific, https://apnews.com/article/joe-biden-south-korea-north-korea-united-states-nuclear-weapons-dc3bc69cca0eeec4a83cda87549c522d.

during the joint ROK-U.S. military exercises in August 2021, these being joint exercises which occur annually, North Korea protested the joint exercises and warned that it would strengthen its preemptive strike capabilities.[190] It is unclear if the North's declarations are just propaganda or represent a genuine belief that the regime is under immediate risk. Since the North's inferior ISR assets could wrongly interpret ROK-US military behavior, North Korea could launch a preemptive nuclear attack by misunderstanding ROK-US combined military exercises or "signaling actions" as a preemptive attack on them.[191]

Third, the Nuclear Weapons State Law sends a statement about North Korea's nuclear strategy: assured retaliation. It is evident that, rather than the first use, North Korea has been seeking secure retaliatory attacks.[192] The assured retaliation strategy aims to dissuade assaults and coercion that endanger the regime; in particular, it hinges on the development of surviving second-strike nuclear forces that will survive receiving a first strike and credibly threaten the strategic objectives of an opponent and incur intolerable costs.[193] Generally, any state which adopts an assured retaliation strategy would maintain a position that its nuclear weapons would not be used first, and its weapons would not be used against non-nuclear armed nations.[194] What is ironic here is that the retaliation pursued by North Korea and the policy of the first use are incompatible with each other, but together seem aimed at promoting division between the U.S. and its allies and weakening U.S. extended deterrence.

The primary challenge with this strategy is the discrepancy in credibility to discourage low-yield conflicts against conventionally superior nuclear-armed opponents. Thus, it may appear ridiculous to threaten to destroy the cities of an opponent as the result of lower levels of aggression, especially if this threat, when carried out, would most

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[190] Timothy W. Martin, "Kim Jong Un's Sister Blasts U.s.'s 'Dangerous War Exercises,' Threatens to Bolster Military," *Wall Street Journal*, August 11, 2021, sec. World, https://www.wsj.com/articles/kim-jong-uns-sister-vows-to-boost-deterrence-after-being-ignored-by-u-s-11628579896.

[191] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 56.

[192] Cohen, *North Korea and Nuclear Weapons*, 36.

[193] Narang, *Nuclear Strategy in the Modern Era*, 17–18.

[194] Narang, 17–18.

certainly lead to nuclear retaliation. If the nuclear threat is not credible, a conventionally stronger opponent may not be deterred from using those strengths. North Korea obviously confronts the U.S.-ROK alliance, which is conventionally superior and is further supported by U.S. nuclear weapons. It might consider assured retaliation essential but inadequate for its political-military objectives against much stronger rivals.

In the meantime, Rand's report suggests that "North Korea's growing nuclear and missile capabilities increasingly enable the regime to launch a surprise preemptive strike, a retaliation second strike, and battlefield counterforce assaults."[195] According to Reuters' article, Kim Jong-un supervised multiple major "Scud and No Dong mobile missile test launches in 2016," simulating "preemptive nuclear airburst strikes" against South Korea's ports and airfields, which is supposed to be used by the U.S. military augmentation forces.[196] This attack on the South's ports and airfield which are utilized for the deployment of the U.S. and UN forces would lead to a delay of their arrival on the Korean Peninsula. The North could also subsequently threaten to launch its nuclear weapons on the South's major cities to force the ROK government to give up fighting a war.[197]

Also, if North Korea invades South Korea, the ROK-US combined forces would start a counterattack to block North Korea's conventional attacks and then push North Korean troops north of the DMZ.[198] North Korea may use some nuclear weapons to prevent the ROK-US coalition from advancing into its territory.[199] Furthermore, North Korean threats have extended beyond the Republic of Korea. To block the movement of troops and supplies to the peninsula, North Korea is strengthening its capacity to strike

[195] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 42.

[196] "Kim Jong Un Observes and Guides Ballistic Missile Drill," North Korea Leadership Watch, last modified July 20, 2016, https://nkleadershipwatch.wordpress.com/2016/07/19/kim-jong-un-observes-and-guides-ballistic-missile-drill/; Jack Kim, "North Korea Says Missile Test Simulated Attack on South's Airfields," *Reuters*, July 19, 2016, https://www.reuters.com/article/us-northkorea-missiles-idUSKCN0ZZ2WO.

[197] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, 45.

[198] Bennett et al., 46.

[199] Bennett et al.

Japan with nuclear weapons.[200] The North could threaten military assaults in order to pressure Japan into denying utilization of Japanese harbors, airbases, and camps for U.S. and United Nations Command (UNC) missions against North Korea.[201] Indeed, Kim Jong-un observed a missile launching drill in 2017 as part of a war strategy to "attack the bases of the U.S. aggressor troops in Japan."[202] If the North strikes U.S. and UNC bases on Japan, it will severely impede the flow of U.S. troops to the ROK. In addition, North Korea might target the American military installations on the island of Guam with nuclear attacks.

During the ROK-U.S. joint exercise named "Joint Foal Eagle" and "Key Resolve" in 2013, The Supreme Command of the Korean People's Army (KPA) warned that "The U.S. should not forget that the Anderson Air Force Base on Guam, where the B-52 takes off, and naval bases in Japan and Okinawa, where nuclear-powered submarines are launched, are within the striking range of the DPRK's precision strike means."[203] As an example, the North announced in 2017, "The KPA Strategic Force is now carefully examining the operational plan for making an enveloping fire at the areas around Guam with medium-to-long-range strategic ballistic rocket Hwasong-12 in order to contain the U.S. major military bases on Guam including the Anderson Air Force Base."[204] Indeed, Guam issued emergency instructions to assist people to prepare for a possible nuclear strike after North Korea's threat to launch missiles near the U.S. Pacific island.[205]

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[200] Kathleen J. McInnis et al., *The North Korean Nuclear Challenge: Military Options and Issues for Congress*, CRS Report No. R44994 (Washington, D.C.: Congressional Research Service, 2017), 15, https://sgp.fas.org/crs/nuke/R44994.pdf.

[201] North Korea has threatened to strike Japan into a "nuclear sea of fire"; Alexander Abad-Santos, "North Korea Says Tokyo Is Target No. 1," *The Atlantic*, last modified April 12, 2013, https://www.theatlantic.com/international/archive/2013/04/north-korea-targets-tokyo/316287/.

[202] North Korea Leadership Watch, "Kim Jong Un Supervises Missile Drill," North Korea Leadership Watch, March 6, 2017, http://www.nkleadershipwatch.org/2017/03/06/kim-jong-un-supervises-missile-drill/.

[203] "N. Korea Warns of 'Precision Strike' on U.S. Bases," *CBS*, April 5, 2013, https://www.cbsnews.com/news/n-korea-warns-of-precision-strike-on-us-bases/.

[204] Alex Horton, "Why North Korea Threatened Guam, the Tiny U.s. Territory with Big Military Power," *Washington Post*, August 9, 2017, https://www.washingtonpost.com/news/worldviews/wp/2017/08/09/why-north-korea-threatened-guam-the-tiny-u-s-territory-with-big-military-power/.

[205] Doina Chiacu, "Take Cover, Avoid Bomb Flash. Guam Issues Nuclear Guidelines," *Reuters*, August 11, 2017, sec. Aerospace and Defense, https://www.reuters.com/article/us-northkorea-missiles-guam-idUSKBN1AR1Z3.

In summary, the North's nuclear arsenal would give the regime substantial coercive abilities and enable a range of war scenarios that would be disastrous for South Korea and its neighboring states. Accordingly, North Korea is likely to choose to utilize its nuclear arms for coercion and deterrence because such a policy may be more successful in attaining North Korean goals and poses less danger to the Kim Jong-un regime.

Like in the case of Pakistan, North Korea does not appear to be pursuing a simple course of "nuclear substitution." The following section surveys its sustained conventional capabilities.

D. CONVENTIONAL CAPABILITIES

Even if North Korea's conventional military might has decreased during the 1990s, the country still outnumbers the South in terms of quantity. Nearly 1.3 million KPA soldiers are now on active service, more than double the ROK Armed Forces' number of 599,000.[206] In spite of this, much of the KPA's conventional weapons date back to the 1950s and 1970s, when they were either built in China or Russia, or they were adapted from older Chinese and Russian designs.[207] Even though a few of the KPA's weapons systems are up to date, the KPA as a whole has lagged behind regional military advances whereas the ROK military uses only a few older systems, and the vast majority of its military hardware has been modified and upgraded throughout the years. Any evaluation of the peninsula's military balance should take these qualitative factors into account.[208] For the North's land, naval, and air forces' basic components, the North has a numerical advantage, but a qualitative deficit compared to the South.

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206 IISS, *The Military Balance 2021* (London: Routledge, 2021), 277.

207 U.S. Department of Defense, *Military and Security Developments Involving the Democratic People's Republic of Korea 2017* (Washington, D.C.: U.S. Department of Defense, 2017), 10.

208 Kim Min-seok, "The State of the North Korean Military," in *Korea Net Assessment: Politicized Security and Unchanging Strategic Realities*, ed. Chung Min Lee and Kathryn Botto (Washington, D.C.: Carnegie Endowment for International Peace, 2020), https://carnegieendowment.org/files/Korea_Net_Assesment_2020.pdf.

1. Ground Force

Although North Korea's conventional forces are behind the times in terms of technology, they are nevertheless important to understand since they would be crucial in the event of a large-scale Korean Peninsula war.[209] The KPA Ground Force has 1.1 million members, which is more than double the magnitude of the South Army (roughly 464,000).[210] Under the command of the General Staff Department, the Ground Force consists of ten regular forward and rear-deployed corps, 91 Capital Defense Corps, one armored division, six mechanized divisions, and one artillery division.[211] The Ministry of National Defense and the General Political Bureau are in charge of the road construction corps and specialized construction units such as the military engineering corps, respectively.[212]

According to the 2020 Defense White Paper of South Korea, about 70 percent of KPA combat troops have been deployed close to South Korea in order to achieve a surprise attack.[213] In addition, to attack the Greater Seoul Metropolitan Area, North Korea has forward deployed 170 mm self-propelled artillery and 240 mm Multiple Rocket Launchers (MRLs).[214] Moreover, with the recent development of 300 mm MRLs and super-large MRLs equipped with extended range munitions and precision-guided bombs, North Korea is focused on strengthening its military capability.[215] This unit possesses about 6,900 tanks and armored vehicles, including recently produced tanks possessing better mobility and survivability, as well as armored vehicles possessing anti-tank guided missiles and mobile artillery.[216]

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209 Min-seok.

210 IISS, *The Military Balance 2021*, 274.

211 *2020 Defense White Paper*, 31.

212 *2020 Defense White Paper*.

213 *2020 Defense White Paper*.

214 *2020 Defense White Paper*.

215 *2020 Defense White Paper*.

216 *2020 Defense White Paper*.

2. Special Force

The KPA has one of the world's biggest special operations units. The number of units is somewhat unclear, with the ROK estimating that it has about 200,000 soldiers, while the IISS estimates that it has around 88,000 troops under the Special Forces Command.[217] The KPA designated the Special Operations Force as a distinct military organization in order to elevate the prestige of these forces; in detail, Sniper brigades of the front corps are structured in different ways according to unit and echelon, such the 11th Corps, special operation battalions of the Navy and Air and Anti-Air Force, and light infantry divisions and brigades of the front divisions.[218] As part of special warfare, its units are likely to "penetrate the forward and rear areas using wartime tunnels or various invasion means" such as submarines, air-cushion vehicles (ACV), AN-2 aircrafts, and helicopters to strike primary bases and infrastructure, assassinate high-ranking officials, and cause widespread disruption in the back area.[219]

3. Navy

With about 60,000 active-duty personnel, the Korean People's Navy is the KPA's second-smallest service. It is mainly a maritime security unit, lacking the gadgets and exercise necessary to execute operations beyond their territorial waters.[220] With regards to North Korea's naval forces, estimates of the country's fleet strength vary a bit. According to the ROK 2020 Defense White Paper, the North possesses approximately 740 navy surface vessels, but the IISS military balance assessment puts the number closer to 700.[221] The North Korean Naval Force may launch a surprise assault at any moment since 60 percent of its troops are stationed south of the Pyongyang-Wonsan border. Its ability to conduct deep-sea operations is constrained, however, due to the majority of its fleet being

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217 *2020 Defense White Paper*, 32; IISS, *The Military Balance 2021*, 274.

218 *2020 Defense White Paper*, 32.

219 *2020 Defense White Paper*.

220 IISS, *The Military Balance 2021*, 275.

221 *2020 Defense White Paper*, 26; IISS, *The Military Balance 2021*, 275.

tiny, fast boats.[222] The Najin-class frigates are the North Korean navy's only two large ships. Two SS-N-2 Styx anti-ship missiles and two 1960 Soviet-made 100-millimeter cannons are on board these ships, which were first deployed in the early 1970s.[223] Around 490 small, fast vessels, including "guided missile boats, torpedo boats, small patrol craft, and fire support patrol craft," make up the bulk of the surface forces. In addition to supporting ground operations, these ships also conduct coastal defense operations in support of the Ground Force.[224]

A total of 71 submarines of the Romeo and midget types comprises the navy's underwater assets.[225] Designed to disrupt shipping routes, place explosives on the seabed, and attack surface boats, they may also aid penetrations by special military forces.[226] Construction of new submarines capable of firing Submarine-Launched Ballistic Missiles (SLBMs) is being carried out by the North Korean Naval Force.[227] The amphibious-warfare vessels include 255 landing craft (some of which are fast) and about 135 hovercraft, but the bulk of the fleet consists of tiny, old high-speed missile boats, torpedo boats, patrol boats, and gunboats.[228] The North's Navy is aware that its naval weapons are outdated but has made little progress in the past 15 years.[229]

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222 *2020 Defense White Paper*, 33.

223 Joost Oliemans and Stijn Mitzer, "Kpa Navy Flag Ship Undergoing Radical Modernization," *NK News*, December 15, 2014, https://www.nknews.org/2014/12/kpa-navy-flag-ship-undergoing-radical-modernization/.

224 *2020 Defense White Paper*, 33.

225 IISS, *The Military Balance 2021*, 275.

226 IISS, 275.

227 Michael Elleman, "North Korea's Newest Submarine-Launched Ballistic Missile, Same as the Old One?," 38 NORTH, last modified January 15, 2021, https://www.38north.org/2021/01/north-koreas-newest-submarine-launched-ballistic-missile-same-as-the-old-one/.

228 IISS, *The Military Balance 2021*, 277; James Hackett, "The Conventional Military Balance on the Korean Peninsula," IISS, last modified June 11, 2018, 18, https://www.iiss.org/blogs/research-paper/2018/06/military-balance-korean-peninsula.

229 Hackett, "The Conventional Military Balance on the Korean Peninsula," 18.

4. Air Force

Two air sniper brigades and air defense units are part of the Air and Anti-Air Force Command in the North Korean Air Force.[230] A total of 1,580 aircraft from the North Korean Air Force are stationed in four distinct areas across the country.[231] With approximately 40 percent of its 810 combat mission aircraft stationed south of the Pyongyang-Wonsan Line, North Korea is poised to attack quickly and with minimal preparation.[232] The country also has the capability to infiltrate special warfare forces using AN-2 and helicopters, which it has done in the past. The North Korea Air Force possesses slightly more than 18 MiG-29 fighters, and they are classed as fourth generation combat aircraft.[233] The MiG-29 fighter jets were designed and built by the Soviet Union in response to the United States' F-15 and F-14 fighters in the 1980s; yet, in terms of performance, it falls short of the F-15K and KF-16 versions that are already in service with the Republic of Korea Air Force.[234] North Korea maintains 56 MiG-23s and 120 MiG-21s of the third generation of combat aircraft; also, 207 of North Korea's MiG-17s and MiG-19s are not even classified as second-generation combat aircraft.[235] The MiG-23 and MiG-21 can only participate in short-range combat.

North Korea's air defense system, which is headquartered in the Air and Anti-Air Force Command, is comprised of aircraft, surface-to-air missiles, anti-aircraft artillery, and radar air defense units, among other components. Surface-to-air missiles (SA-2 and SA-5), as well as anti-aircraft artillery, are concentrated in the Pyongyang area to form a densely layered air defense system.[236] Surface-to-air missiles SA-2 and SA-5 are positioned in frontline locations in the east and west, while SA-2 and SA-3 missiles and anti-aircraft

230 *2020 Defense White Paper*, 34.

231 IISS, *The Military Balance 2021*, 276.

232 *2020 Defense White Paper*, 34.

233 IISS, *The Military Balance 2021*, 276.

234 Min-seok, "The State of the North Korean Military."

235 IISS, *The Military Balance 2021*, 276.

236 *2020 Defense White Paper*, 34.

artillery are focused on Pyongyang.[237] A total of more than 50 ground-control-intercept and early warning radar sites are operated by the automated air-defense C3I system, which offers continuous surveillance of the whole nation.[238] There are fortified underground facilities at several significant early-warning radar locations, wherein the radars are elevated on hydraulic lifts for functions before being returned for maintenance and preservation.[239]

North Korea's clear efforts to sustain a broad range of conventional capabilities suggest that it is not satisfied with "nuclear substitution." The following section evaluates the motivations for the country maintaining and even expanding its conventional capabilities despite acquiring nuclear weapons.

E. REASONS WHY NORTH KOREA WANTS TO ENHANCE CONVENTIONAL POWERS DESPITE ACQUIRING NUCLEAR WEAPONS

North Korea seems to follow Pakistan's pattern to develop its conventional capabilities even after it succeeded in acquiring nuclear weapons. Indeed, North Korea presented a vast display of conventional weapons to celebrate the 75th anniversary of the foundation of the country's ruling Workers' Party of Korea (WPK). Several newly tested rocket launch systems and short-range ballistic missiles were on display, as well as new mobile air defense radar vehicles and a completely new tank design equipped with anti-tank missiles and smoke rocket launchers.[240] From the standpoint of nuclear substitution, North Korea seeks nuclear arms to compensate for its conventional inferiority to the ROK-U.S. alliance, but the North appears to increase its conventional powers even as it acquires nuclear weapons.

This counters the North's official policy of "Byungjin." Byungjin policy is to be able to focus on economic construction and improve people's lives by decisively increasing

237 *2020 Defense White Paper*, 34.

238 Hackett, "The Conventional Military Balance on the Korean Peninsula," 21.

239 Hackett, 21.

240 Smith, "Analysis."

the effects of war suppression and defense without additional defense costs."[241] In this regard, North Korea seems to undertake additional military expenditure in contradiction to the North's official policy.

In fact, North Korea is pursuing a combined effort of developing both its nuclear weapons and economy under Kim Jong Un. North Korea's founding father, Kim Il Sung, popularized the word Byungjin in 1962 as a militarist slogan in connection with the country's economic development, and Kim Jong Un's iteration of Byungjin seeks to portray North Korea's nuclear program as being committed concurrently with measures to modernize the North Korean economy.[242] Byungjin's equal priority on military security and economic growth, as Kim Jong Un's trademark foreign policy, indicates his efforts to establish a defense for his regime's security.[243] Also, Pyongyang underlined the validity of its Byungjin strategy of concurrently expanding its economic and nuclear weapons in its 2018 New Year's speech, emphasizing large scale production and operational deployment of nuclear weapons and ballistic launchers.[244] On April 20, 2018, North Korea, however, declared the successor of the Byungjin policy and officially adopted the "line to concentrate all efforts on building a socialist economy" as its new strategic line at the 3rd Plenary Meeting of the 7th Central Committee of the Workers' Party of Korea.[245]

In this sense, Kim Jong-un seems to consider that once North Korea acquires nuclear capabilities that provide a strategic balancer to compensate for the inferiority of its conventional force against the U.S.-ROK alliance, then the North can implement state-managed economic reforms. That is, Kim appears to think that reduced expenditure on conventional weapons may potentially free up resources for development and welfare,

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241 Seong-Whun Cheon, "The Kim Jong-un Regime's 'Byungjin'(Parallel Development) Policy of Economy and Nuclear Weapons and the 'April 1st Nuclearization Law'," *Korea Institute for National Unification*, April 23, 2013: 1–2, http://repo.kinu.or.kr/bitstream/2015.oak/2227/1/0001458456.pdf.

242 William Rooks, "Walking the Byungjin Line: North Korea in the Eurasian Century," *The Strategist*, last modified June 12, 2019, https://www.aspistrategist.org.au/walking-the-byungjin-line-north-korea-in-the-eurasian-century/.

243 Tan Er Win, "Byungjin and the Sources of Pyongyang's Paranoia," *International Journal of Korean Unification Studies* 28, no. 2 (December 2019): 100.

244 *2020 Defense White Paper*, 24.

245 *2020 Defense White Paper*, 24.

particularly in poorer areas.[246] North Korea, however, seems to be sustaining conventional capabilities despite its acquisition of nuclear weapons. Indeed, although the regime has had to deal with economic turmoil for 20 years, it has put resources into further conventional development, including upgrading older armored vehicles like T-62s as Chonma, Pokpoong, and Songun-variant main battle tanks (MBT) along with ongoing work, manufacturing, and implementation of long-range self-propelled artillery systems, 240 mm and 300 mm MRLs, and improved fire-control systems.[247] Pyongyang has also made some organizational changes, like splitting up at least three mechanized corps, one tank corps, and one artillery corps into divisions so that it can be more flexible when it goes to combat.[248] Additionally, Pyongyang has reorganized its military forces into divisions to improve operational agility; this includes reorganizing three mechanized corps, a tank corps, and an artillery corp.[249]

Figure 2 indicates the generally increasing military expenditure of North Korea between 1991 and 2018.

[246] Butt, "Do Nuclear Weapons Affect the Guns-Butter Trade-Off?," 230.

[247] Hackett, "The Conventional Military Balance on the Korean Peninsula," 16–17.

[248] Hackett.

[249] Hackett.

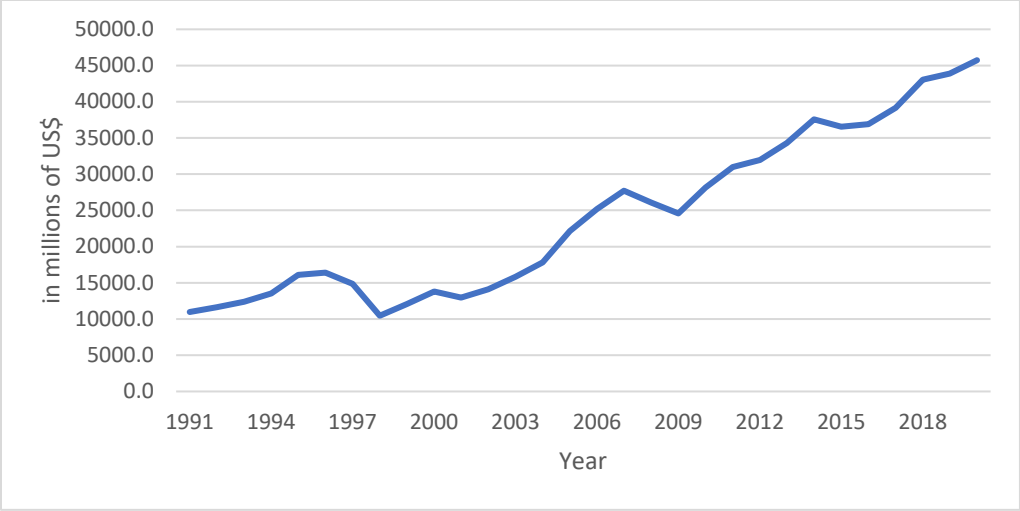

Figure 2. Military expenditure by North Korea.[250]

Notably, military expenditures decreased somewhat during 1994–1998 due to an "Arduous March," but since the end of the Arduous March in 1998, the North's military expenditure has grown by an average of 6.2 percent, which shows that acquiring nuclear weapons themselves has not led directly to reducing defense costs. Similarly to Pakistan, the evidence of defense spending seems to contradict adoption of a "nuclear substitution" strategy by North Korea following any of its nuclear tests beginning in 2006.

North Korea is likely to face similar challenges as Pakistan, which enhanced its conventional capabilities in response to India's CSD and in order to gain an option for escalation management. In response to the North's nuclear weapons, South Korea and the United States have improved their mutual "Tailored Deterrence Strategy (TDS)" joint deterrence and reaction capabilities to effectively protect against North Korea's nuclear and missile threats.[251] The TDS is a ROK–U.S. joint deterrence and response strategy tailored for the Korean Peninsula, considering the North Korean leadership's character

[250] Source: "SIPRI Military Expenditure Database."

[251] At the 45th SCM in October 2013, the South Korean Minister of National Defense and the U.S. Secretary of Defense agreed the Tailored Deterrence Strategy. It was the first time the United States used a deterrence approach with a single partner. They have a more developed strategy because they are tailoring it to the specifics of the Korean Peninsula. *2020 Defense White Paper*, 73.

traits and nuclear and missile acts of aggression.[252] It addresses both military and nonmilitary reaction options that may be deployed in all crisis situations, beginning with North Korea's threat to utilize nuclear weapons.[253] TDS is significant because it offers a bilateral reaction framework that allows the Republic of Korea and the United States to maximize deterrence and response effect against North Korean nuclear and missile threats.[254]

Also, South Korea developed a "3K" layered defense plan in responding to Pyongyang's growing nuclear strike capability, which included Kill Chain (preemptive attack), the Korea Air and Missile Defense (KAMD) system, and the Korea Massive Punishment and Retaliation (KMPR) system.[255] From the perspective of North Korea, these ROK efforts to enhance its doctrine are likely to affect the North's military plan; that is, the North may perceive it is required to strengthen its conventional capabilities as Pakistan has done.

The so-called "nuclear substitution effect," defined as a situation in which countries with nuclear capabilities enjoy a higher level of security capability than before nuclear development while reducing the burden of conventional power construction, does not sufficiently explain Pakistan's case. The assessment here indicates why North Korea is in a similar situation, and so why the North may be likely to follow Pakistan's example. In the end, if North Korea does not change fundamentally, it could fall into a vicious cycle of resource consumption amid a conventional arms competition it cannot hope to win.

F. CONCLUSION

North Korea has wanted nuclear weapons because it believes they would provide a chance to strengthen a weak and impoverished country that is incapable of competing with the ROK-U.S. alliance. North Korea is a revisionist regional nation seeking to reverse U.S.

252 *2020 Defense White Paper*, 73.

253 *2020 Defense White Paper*, 73.

254 *2020 Defense White Paper*, 73.

255 Bruce Klingner, "Enhance South Korean Military Capabilities Before OPCON Transfer," The Heritage Foundation, last modified December 2, 2019, 2, https://www.heritage.org/asia/report/enhance-south-korean-military-capabilities-opcon-transfer.

dominance on the Korean peninsula, particularly by being recognized as a nuclear weapon state and a U.S. peer.[256] Despite having a numerical advantage over South Korean and U.S. conventional troops stationed in the ROK, North Korea's conventional military forces are qualitatively inferior to the ROK and U.S. forces, putting the North Korean regime's existence at risk when engaged in battle. Thus, obtaining nuclear weapons is an appealing alternative for the North to compensate for their weak military capabilities, as well as a necessary component for the Kim regime's survival and a deterrent against foreign threats.[257]

The North has pursued this alternative aggressively. Since the 1980s, when the 5MWe reactor at the Yongbyon nuclear complex was activated, it is estimated that North Korea has had approximately 50 kg of weapon-grade plutonium produced by reprocessing spent fuel.[258] It is also thought to have a significant quantity of highly enriched uranium (HEU) as a result of its uranium enrichment program.[259] Given that six nuclear tests were performed between October 2006 and September 2017, it is believed that its capacity to miniaturize nuclear weapons has advanced significantly.[260]

Meanwhile, KCNA reported that "the Supreme People's Assembly (SPA) proclaimed the 2013 Law on Consolidating the Position of Nuclear Weapons State, which many experts believe formalizes official North Korean nuclear policy and strategy."[261] The Law on Consolidating the Position of Nuclear Weapons State demonstrates North Korea's strategic orientation in both diplomatic and military elements of nuclear weapons use. The Nuclear Weapons State Law conveys a message about North Korea's nuclear strategy: retribution is certain. The guaranteed retribution policy seeks to deter attacks and coercion that imperil the regime; it is predicated, in particular, on the development of surviving second-strike nuclear weapons that credibly threaten an opponent's strategic

256 Cohen, *North Korea and Nuclear Weapons*, 47.

257 Hackett, "The Conventional Military Balance on the Korean Peninsula," 11.

258 *2020 Defense White Paper*, 35.

259 *2020 Defense White Paper*, 35.

260 *2020 Defense White Paper*, 35.

261 KCNA, "Law on Consolidating Position of Nuclear Weapons State Adopted."

goals to impose unacceptably high costs.[262] The North's nuclear weapons seem to provide the government with significant coercive capabilities and allow for a variety of conflict scenarios that would be catastrophic for South Korea and its neighbors. As a result, North Korea is likely to use its "nuclear weapons for coercion and deterrence," as such a policy may be more successful in accomplishing North Korean goals while posing less danger to the Kim Jong-un regime.[263]

In addition, despite acquiring nuclear weapons, North Korea appears driven to continue developing conventional capabilities. Indeed, North Korea's new conventional weapons were on show to honor the 75th anniversary of the Workers' Party. Furthermore, despite 20 years of economic insecurity, the government has continued to invest in artillery systems, MRLs, and improved fire-control systems. This conventional development runs opposite to the North's traditional strategy of Byungjin, which seeks to strengthen the effect of war suppression and defense without increasing military spending. In sum, despite its extensive efforts to develop nuclear weapons for coercion and deterrence, there is no "nuclear substitution effect" in the North, and the country risks falling into a deadly cycle of resource consumption and military competition with South Korea.

[262] Narang, *Nuclear Strategy in the Modern Era*, 17–18.

[263] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, x.

IV. CONCLUSION

Attaining nuclear weapons is appealing to small countries for national security reasons in several ways: first, small countries can compensate for their inferior conventional power by acquiring nuclear weapons because of their considerable destructive effect; second, nuclear deterrence is perceived as more compelling and less expensive than conventional deterrence; and third, a country wishes that arms races will be mitigated once it acquires nuclear capabilities. These views, on the other hand, do not seem to apply to all cases. Due to the obvious stability-instability paradox, it is not possible to anticipate that "nuclear substitution" will offer total deterrence in all situations. Consequently, nuclear-weapons nations of the second age may discover that conventional capability will continue to be critical in dealing with some types of low-level confrontations. A threat to deploy nuclear weapons in low-intensity conflicts will not be particularly credible because of the destructive nature of nuclear weapons; consequently, strengthening conventional power may be a priority in order to control low-intensity conflicts. In other words, even countries possessing nuclear weapons may need the development of superior conventional power in order to maintain deterrence at lower levels. Indeed, the presence of higher-level nuclear deterrence can make lower-level conventional deterrence more feasible and attractive – the opposite of nuclear substitution.

A. COMPARING PAKISTAN AND NORTH KOREA

Pakistan's case supports the thoughts just described. Pakistan sought nuclear weapons in response to India's superior military conventional capabilities and to deter India's military provocation. First, Pakistan adopted a minimum credible deterrence strategy, but it changed to FSD to cope with India's CSD. Despite Islamabad's efforts to achieve military balance with India by obtaining nuclear capabilities, Pakistan appears to have come to the realization that nuclear weapons do not eliminate all threats of instability and war. Pakistan has not benefited entirely from nuclear substitution despite the fact that it has nuclear weapons. Pakistan is pursuing conventional capabilities as the state's additional defense against an Indian conventional military attack in order to deal with

dilemmas that nuclear weapons cannot solve. As part of its efforts to develop and successfully implement a conventional response to CSD, the Pakistan Army has introduced the NCWF, and Pakistan has modernized its conventional forces.

Likewise, North Korea seems to follow Pakistan's path. For the North, acquiring nuclear weapons is a tempting option to compensate for its limited defense assets, as well as a crucial component for the regime's existence and as a deterrent against external threats. In addition to sharing the motivation to obtain nuclear weapons, North Korea and Pakistan exhibit other similarities: (1) both countries are regarded as revisionist nations; (2) both countries face similar security circumstances by having inferior national power in comparison to their respective rival country; and thus, (3) both continue to endeavor to acquire nuclear weapons despite sanctions by the United States and international society; (4) both are likely to use nuclear weapons as a coercive means; and (6) both continue to enhance conventional capabilities even though they have achieved nuclear capabilities. Despite economic uncertainty, the two nations have continued to invest in obtaining new conventional assets and improving current weapons. The data indicate that, even though both countries acquired nuclear weapons, both also continued to increase their military expenditure.

Nonetheless, there are some key differences between these two nations. First, Pakistan aims only to match India whereas the North aims to match multiple countries such as the ROK, the United States, and potentially Japan. Second, even though both nations' motivation for acquiring nuclear weapons is similar in that nuclear weapons can offset their conventional military inferiority, for North Korea nuclear weapons represent more than military capabilities. Unlike Pakistan's nuclear weapons, which are limited to national security purposes, Pyeongyang's nuclear weapons are related to the survival of Kim's regime. This is because the two nations have different government systems; i.e., the nuclear weapons of North Korea ensure the dictator Kim's survival and his total control over North Korea.[264] Third, in terms of developing nuclear delivery vehicles, Pakistan focuses on short-range and medium-range missiles that aim only at India, but North Korea endeavors

[264] Bennett et al., *Countering the Risks of North Korean Nuclear Weapons*, 2021, xi.

to build an ICBM that can reach Washington, D.C., which means the North's nuclear weapons are not confined to threatening South Korea.

Although both countries' security situations and drivers for acquiring nuclear weapons are not exactly same, Pakistan's example indicates how North Korea's approach may proceed. North Korea faces similar challenges to Pakistan, and North Korea appears to be following Pakistan's example of feeling compelled to continue building conventional capabilities despite obtaining nuclear weapons. Indeed, North Korea's new conventional weapons were on display to commemorate the WPK, indicating these capabilities are also important to Kim's regime survival. In addition, despite economic instability, the regime has continued development of artillery systems, MRLs, and better fire-control systems. This conventional development counters the North's traditional Byungjin policy, which is to increase the impact of war suppression and defense without raising defense expenditures. In the end, there is no "nuclear substitution effect" in the North, and thus, North Korea may slip into a destructive spiral of resource consumption and weapons rivalry with South Korea.

B. NORTH KOREA'S CURRENT BEHAVIOR

As this thesis has argued, nuclear substitution cannot be assumed to offer total deterrence in all instances due to the stability-instability paradox. As a consequence, North Korea may discover that conventional capability remains critical for resolving some types of low-level confrontations. Because of the catastrophic nature of nuclear weapons, the threat of the North applying them in low-level conflicts is unlikely; hence, strengthening conventional capabilities may be a consideration for addressing small conflicts. Then, how likely is it that North Korea's conventional capabilities will gain parity with its nuclear capabilities in North Korean strategy?

One possible option that North Korea seems to pursue is linking conventional and nuclear-capable assets to their military plans.[265] This is called conventional-nuclear

[265] Justin Anderson and James R. McCue, "Deterring, Countering, and Defeating Conventional-Nuclear Integration," *Strategic Studies Quarterly*, Spring 2021, 29, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15_Issue-1/Anderson.pdf.

integration (CNI), which refers to "the deliberate and calculated decision by a state actor to combine conventional and nuclear-capable forces for the purpose of achieving strategic, theater, and/or tactical military objectives that it believes cannot be achieved solely by conventional forces."[266] Pyengyang may perceive CNI's capacity to exert pressure on ROK allies as a primary advantage, compelling alliance leaders to consider the likelihood of their people and military forces being attacked with nuclear-capable assets from the beginning of conflicts.[267] Also, the DPRK may possibly consider that integration provides them with a wider military capacity for addressing and manipulating future territorial disputes; to be specific, they may interpret CNI as affording them the ability to control nuclear threats in a local crisis or confrontation in a way that increases the scope or strength of their conventional capabilities.[268]

In the meantime, the DPRK has been accelerating its development of nuclear and conventional missiles, including theater-range missile such as the KN-15 MRBM and Hwasong-12 IRBM.[269] Especially, the KN-15, known as the Pukguksong-2, is a solid-propellant missile capable of delivering a nuclear or conventional warhead.[270] The North tested KN-15 and Hwasong-12 missiles with transporter erector launchers (TEL), prompting a lot of observers to believe that these weapons are operational and will be deployed in the near future.[271] North Korea has also executed drills in which nuclear-capable units demonstrated their capacity to assist integrated forces in the accomplishment of regional war-fighting aims.[272] Also, North Korea has stated that it will improve the quality of its precision guided tactical weapons in the future. On the Korean peninsula, the

266 Anderson and McCue, 31.

267 Anderson and McCue, 36.

268 Anderson and McCue, 37.

269 Mary Beth D. Nikitin, *North Korea's Nuclear Weapons and Missile Programs*.

270 Mary Beth D. Nikitin.

271 Ankit Panda, "North Korea Shows Increased Operational Confidence in the Hwasong-12 IRBM," The Diplomat, September 17, 2017, https://thediplomat.com/2017/09/north-korea-shows-increased-operational-confidence-in-the-hwasong-12-irbm/.

272 Anderson and McCue, "Deterring, Countering, and Defeating Conventional-Nuclear Integration," 33.

recently produced KN-24 and KN-25 missiles represent a substantial danger to ROK-U.S. forces. The KN-24 is a tactical weapon that has a mobility platform, solid propellant, and a payload that is reasonably substantial.[273] The guiding technology and in-flight mobility of the KN-24 are shown to accomplish pinpoint hits.[274] Experts from outside the country believe that DPRK will want the KN-24 to operate as a dual-capable weapon system.[275] If North Korea successfully deploys its new weapons and integrates them into the nuclear program, this will bring another challenge for ROK-U.S. combined force.

C. IMPLICATIONS FOR THE POLICIES OF AFFECTED COUNTRIES

One concern of this dual-capable posture is that it is more likely to escalate conflict through the entanglement of conventional and nuclear capabilities. For instance, nonnuclear strikes against an adversary's dual-use enabling capabilities, even though it is a conventional warfighting objective, might be misunderstood as operations designed to prepare for nuclear use in a conventional war between two nuclear-armed powers.[276] Such dual-capable missiles raise the possibility of a nuclear weapon being misidentified as a non-nuclear missile, or the converse. In a confrontation, if one state mistakenly believes nuclear-armed missiles are nonnuclear and attacks them, the targeted nation may incorrectly believe its nuclear forces are in danger and use them.[277] In other words, although the attacker does not intend to escalate to nuclear war, the defender may misinterpret the attack as an attempt to remove the defender's nuclear capabilities, which could bring an unintended escalation. Moreover, the attacker may hesitate to attack to prevent an unintentional escalation. These dual-capable options will bring another problem to target selection because striking a dual-capable platform is likely to lower the nuclear

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[273] Michael Elleman, "Preliminary Assessment of the KN-24 Missile Launches," 38 NORTH, March 25, 2020, https://www.38north.org/2020/03/melleman032520/.

[274] Michael Elleman.

[275] Mary Beth D. Nikitin, *North Korea's Nuclear Weapons and Missile Programs*.

[276] James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War.," *International Security* 43, no. 1 (2018): 68, https://doi.org/10.1162/isec_a_00320.

[277] James M. Acton, "Why Is Nuclear Entanglement So Dangerous?," Carnegie Endowment for International Peace, January 23, 2019, https://carnegieendowment.org/2019/01/23/why-is-nuclear-entanglement-so-dangerous-pub-78136.

threshold of North Korea. Therefore, ROK-U.S. combined military operation planners ought to reassess prepositioned targets that are likely to support dual-capable capabilities. To identify these targets, improving ISR capacity is more imperative than ever before.

Another possibility is that the North believes that intentionally intermingling conventional and nuclear forces at specified sites would protect the latter. Its goal is for the Joint forces of the ROK and the United States to either delay launching an assault against intertwined forces or shorten target lists in such a manner that the efficacy of attacks is reduced.[278] Against the combined forces, North Korea's capacity to buy time, and potentially even provide some degree of security, for its combined forces in theater may be considered a crucial step toward establishing a military balance.[279] The North's incorporation of nuclear and conventional capabilities, including for the sake of war-fighting planning, remains a major problem for ROK-U.S. policymakers and military commanders in the present and future.

D. STUDY LIMITATIONS AND FUTURE RESEARCH QUESTIONS

This study primarily focuses on why nuclear substitution is not the sole solution for some small countries, and why some countries continue to improve their conventional capabilities even if they acquired nuclear weapons. Specifically, this study has researched how North Korea may behave given the interaction between its conventional and nuclear weapons programs. To anticipate North Korea's behavior, the example of Pakistan's was studied, but future research should be extended to determine whether this Pakistan and North Korea comparison can apply to other regional nuclear states categorized as second nuclear age countries.

Also, this study is limited in disclosing how North Korea has been developing other dual-capable assets such as command, control, communications, and intelligence (C3I) because of the lack of open-source material. Another limitation is that this study does not address how to counter the North's CNI. Therefore, future research should explore how the

[278] Anderson and McCue, "Deterring, Countering, and Defeating Conventional-Nuclear Integration," 38.

[279] Anderson and McCue, 38.

ROK and U.S. combined military planners can build a strategy in response to North Korea's efforts to integrate its conventional capabilities and nuclear program. Also, it is imperative to research how this integration will affect North Korea's overall national strategy.

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