

Analysis of the Impact of U.S.-South Korean Military Activities on the DPRK's Nuclear Test Process

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Abstract: After the end of World War II, the Korean Peninsula was divided into two, and then the Korean War broke out, and the two Koreas were still in a state of "armistice." The North Korean nuclear issue and the large-scale U.S.-South Korean joint military exercises that have lasted for decades have made the situation in Northeast Asia, which is already in a security dilemma, even more complicated and volatile. By analyzing the timing of North Korea's nuclear tests and their backgrounds, it is easy to find that North Korea has never stopped researching nuclear weapons. However, every nuclear test has been conducted against the background of large-scale U.S.-South Korea joint military exercises. On the issue of resolving the DPRK's nuclear crisis, it is worth rethinking the way of resolving the DPRK's nuclear issue through sanctions and pressure. A study of the relationship between the DPRK's nuclear test and the U.S.-South Korea joint military exercises will help to ease the security dilemma between the two sides as well as the security situation in Northeast Asia. It will also serve as a reference for other nuclear proliferation issues in the international arena.

Keywords: North Korea Nuclear Weapons Issue, U.S.-South Korea Military Alliance, Security Dilemma, International Relations.

1. Introduction

On the Korean Peninsula, institutional and ideological confrontations, intertwined with great power conflicts of interest, further complicate the already tense situation. Since 1975, the US and South Korea have conducted multiple annual joint military exercises to deter North Korea, which responds by developing and testing nuclear weapons and missiles, creating a standoff. Neither side is willing to compromise, leading to an inevitable security dilemma that hinders peaceful reunification and potentially threatens to Northeast Asian security and stability. The stability of Northeast Asia directly impacts global peace and development. The paper includes four sections: literature review, theoretical framework, case analysis, and conclusion. The case analysis section examines North Korea's nuclear tests, its security environment at the time, and US-South Korea military actions to explore the impact of the security dilemma on North Korea's nuclear tests. This provides a perspective to understand the current North Korean nuclear issue, grasp its root causes, and promote the establishment of effective international agendas to alleviate decision-making dilemmas, thereby addressing the security issues on the Korean Peninsula. It also offers insights for resolving nuclear issues in other regions.

2. Literature Review

Scholars have extensively studied North Korea's nuclear issue and the US-South Korea military alliance. There are three main perspectives on North Korea's motivations for developing nuclear weapons. First, the security motive: Many scholars emphasize the significance of nuclear weapons for North Korea's national security. Hans Schattle posits that North Korea's nuclear program serves both offensive and defensive purposes, enhancing its ability to resist U.S. invasion and acting as the peninsula's key protector [1]. Juergen Kleiner asserts that any agreement with North Korean leaders is unattainable without corresponding security guarantees from the U.S. [2]. Second, the need to maintain internal stability: Some scholars highlight North Korea's use of nuclear weapons to secure domestic regime stability and legitimacy. Dennis Ross believes that for Kim Jong-un, nuclear weapons guarantee regime survival [3]. Mark Fitzpatrick emphasizes that North Korea's ruling elite views strategic weapons as crucial for maintaining authority [4]. Third, as a diplomatic tool for small states. Enhancing national prestige and gaining international respect are also possible motivations. Benjamin Habib argues that improving North Korea's diplomatic status on the international stage is one of its motivations for developing nuclear weapons [5].

Research on the US-South Korea military alliance is extensive. For example, Victor Cha analyzes the trilateral security cooperation framework between the US, South Korea, and Japan in his book "Alignment Despite Antagonism: The US-Korea-Japan Security Triangle"[6]. Former South Korean Foreign Minister Song Min-soon examines the role of the US-South Korea alliance in Northeast Asia and the developments among stakeholders on the Korean Peninsula in his article "Northeast Asia and the US-Korea Alliance: Why the Alliance is Crucial for the US and Northeast Asia"[7]. This paper argues that North Korea's primary motivation for nuclear development is national security, given that the regime is relatively stable and the influence of reactionary forces is limited. In contrast, soft power factors like international prestige are secondary motivations.

Despite the rich body of research, there is limited discussion on the impact of US-South Korea military cooperation on North Korea's nuclear tests. This paper aims to introduce a new perspective by addressing this issue.

3. Theory Framework

This article analyzes the impact of U.S.-South Korea military cooperation on North Korea's nuclear testing process through the lens of the security dilemma. The concept of the security dilemma, introduced by German-American political scientist John H. Herz in the mid-20th century, is a key concept in game theory. At its core, the security dilemma arises from mutual distrust and fear among states, often described as "Hobbesian fear." In an anarchic international system, where state survival and security are not guaranteed, such mutual distrust emerges. States assess the strategic intentions of others based not on their declared intentions but on their military capabilities. In the absence of shared strategic interests, mutual distrust is normal. When interests clash, it is natural to assume the other party has hostile intentions[8]. Therefore, the security dilemma can be understood as a consequence of the anarchic international system, leading to insecurity among states. The disparity in military capabilities exacerbates this insecurity, prompting each state to enhance its military power to improve its security. However, as one state increases its military capabilities, others perceive this as a threat to their security, leading them also to bolster their military strength. This creates a cycle of mutual fear and ongoing arms buildup[9].

4. Case Analysis

4.1. History of the North Korean Nuclear Test

Based on existing data, North Korea's nuclear program began early, tracing back to the end of the Korean War. During the Cold War, the Korean Peninsula, as a frontline of the Cold War, inevitably became a battleground for the arms race (resulting from the security dilemma), with both the U.S. and the Soviet Union deploying military forces in South and North Korea respectively. The Mutual Defense Treaty between the United States and the Republic of Korea, signed in 1954, fundamentally contributed to North Korea's sense of insecurity, becoming the root cause for its pursuit of nuclear technology[10]. With ongoing changes in the international landscape, particularly concerns over shifts in Soviet policy, North Korea increasingly felt heightened security threats. Around the time of the Soviet Union's dissolution, North Korea's insecurity significantly intensified, initially leading to efforts at détente. However, as the impact of the Soviet collapse subsided, this insecurity transformed into a resolute determination to develop nuclear weapons for self-preservation. After the end of the Cold War, as a small nation, North Korea could not match the U.S. in conventional military power and overall national strength. To safeguard its national sovereignty and the safety of its people, North Korea's resolve to develop nuclear weapons grew stronger, leading to an accelerated path of nuclear development.

4.2. Impact of U.S.-South Korea Military Exercises on North Korea's Nuclear Test

The joint military exercises between the United States and South Korea can be traced back to the post-Korean War era of the 1950s. In 1954, the United Nations Command, in collaboration with the U.S. Forces Korea Command, conducted "Focus Lens," the earliest joint command post exercise in history[11]. During the 1960s, the U.S. and South Korea gradually expanded their joint exercises. In 1976, they introduced joint special operations concepts, transitioning to what is now known as the ROK-U.S. Combined Exercises, which have continued to the present day. According to available data, these joint exercises are generally routine military actions rather than ad hoc events. However, the frequency and scale of these exercises vary. Frequent or exceptionally large-scale exercises significantly heighten North Korea's sense of insecurity, influencing its perception of the intentions and security posture of the U.S. and South Korea. Consequently, North Korea may choose to conduct nuclear tests following frequent or large-scale joint exercises to deter perceived threats.

Table 1: North Korea's Nuclear Tests

Nuclear Test Time	10/2006	05/2009	01/2013	01/2016	09/2016	09/2017	01/2024
Earthquake Magnitude	M4.1	M4.52	M4.9	M4.85	M5.1	M6.1	/
TNT Equivalent(kt)	0.5-1	2-3	6-7	6-7	11-12	160	/

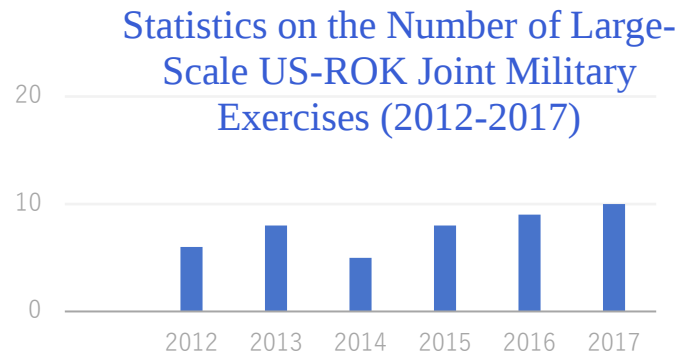


Figure 1: Statistics on the Number of Large-Scale US-ROK Joint Military Exercises (2012-2017) [12]

Table 1 shows the seven nuclear tests conducted by North Korea so far on October 9, 2006, May 25, 2009, February 12, 2013, January 6, 2016, September 9, 2016, September 3, 2017, and January 19, 2024. The latter five were selected for analysis in this paper due to data.

From the historical development of North Korea's nuclear weapons, it can be seen that its nuclear tests are not spur-of-the-moment decisions but rather part of a planned project. However, the timing of these tests is closely linked to the military cooperation between the United States and South Korea. It can be said that U.S.-South Korea military actions have driven North Korea's nuclear tests. Figure 1 summarizes the number of large-scale U.S.-South Korea joint military exercises from 2012 to 2017. Notably, the years in which North Korea conducted nuclear tests (2013, 2016, and 2017) were also the years with more frequent U.S.-South Korea joint exercises. More military exercises correlate with a more severe security dilemma and heightened tensions. The following is an analysis of North Korea's last five nuclear tests and the U.S.-South Korea military cooperation preceding these tests.

Firstly, before North Korea's third nuclear test, in commemoration of the 62nd anniversary of the Korean War, the US and South Korea conducted three consecutive military exercises in June 2012. These exercises, which explicitly targeted North Korean flags, heightened tensions between the two sides. On July 20, a spokesperson for North Korea's Foreign Ministry stated that due to the US's unchanged hostile policy, North Korea "had to reconsider the nuclear issue comprehensively." In August, the annual US-South Korea joint military exercise "Ulchi Freedom Guardian" commenced as scheduled. North Korea condemned these exercises as war drills aimed at invading the North, which imposed significant security pressure on Pyongyang. Consequently, North Korea sought to use nuclear tests as a deterrent to reduce the military actions of the US and South Korea and mitigate its sense of insecurity. In response, North Korea launched a satellite and conducted a nuclear test in January of the following year. Secondly, prior to the fourth nuclear test in 2015, South Korea formulated the "Mid-term Defense Plan," significantly increasing military spending for the next five years. In collaboration with the United States, South Korea developed "Operation Plan 5015" and exerted pressure on North Korea regarding human rights issues[13]. Moreover, the number of large-scale joint military exercises between the U.S. and South Korea in 2015 increased noticeably compared to 2014. In October, the U.S. and South Korea conducted a joint maritime exercise in which the U.S. deployed its latest nuclear-powered aircraft carrier, the USS Ronald Reagan. In light of these actions, North Korea perceived an escalating military pressure from the U.S. and South Korea, reinforcing its belief in the necessity to accelerate the development of nuclear deterrence. Consequently, North Korea conducted its fourth nuclear test in January 2016. Thirdly, before the fifth nuclear test, the U.S. and South Korea conducted the "Fool Eagle" and "Key Resolve" joint military exercises on March 7, 2016, involving various strategic weapons and discussing the feasibility of a "decapitation strike" on North Korea. This military exercise, the largest since the 2010 Cheonan

incident, continued until the end of April. On July 8, under the pretext of intercepting North Korean missiles, the U.S. and South Korea, despite opposition from China and Russia, announced the deployment of the THAAD missile defense system in South Korea. This put immense pressure on North Korea, prompting it to conduct its fifth nuclear test as a countermeasure, aiming to deter the U.S. and South Korea and alleviate its significant security concerns.

Before the sixth nuclear test, the leadership in the United States changed, with Trump replacing Obama and elevating the resolution of the North Korean nuclear issue to a priority[14]. In addition to conducting two large-scale annual military exercises, the US and South Korea increased the frequency of strategic weapon drills near the Demilitarized Zone (DMZ). They also practiced "decapitation" operations and strikes on nuclear facilities. In response to the escalating military threat from the US and South Korea, North Korea conducted its sixth nuclear test, which was 5 to 10 times more powerful than the previous test, significantly enhancing its nuclear deterrence capabilities[15]. At this point, North Korea's sense of insecurity decreased somewhat. When the peninsula was on the brink of war, North Korea extended conciliatory signals to the US and South Korea. Following the Trump-Kim summit on June 12, 2018, in Singapore, the US military announced an indefinite suspension of joint exercises with South Korea. This led to a historic easing of tensions on the Korean Peninsula. In 2019, the US and South Korea drastically reduced the scale of their joint military exercises. On March 2, 2019, they decided to terminate the "Key Resolve/Foal Eagle" and "Ulchi Freedom Guardian" exercises, restructuring and downsizing these drills. Consequently, the joint exercises became more low-key and less provocative towards North Korea. Despite having the capability to further develop nuclear weapons, North Korea shifted its focus to economic development due to the reduced threat. However, North Korea conducted a seventh nuclear test years later, citing severe security concerns. In November 2023, the US, South Korea, and Japan resumed joint exercises, formulating a "multi-year trilateral exercise plan" and conducting a three-day maritime drill near Jeju Island from January 15 to 17, involving nine warships. For North Korea, this signaled a significant threat, prompting it to conduct another nuclear test.

Through the analysis of US-South Korea military cooperation and North Korea's nuclear tests, this paper finds that such cooperation accelerates North Korea's nuclear development. This military collaboration increases North Korea's sense of urgency, as it may perceive a heightened security threat, prompting the government to expedite its nuclear weapons program to enhance national security. US-South Korea military cooperation could subject North Korea to greater regional pressure, leading it to conduct nuclear tests and missile launches to demonstrate its strength and deter potential adversaries.

5. Conclusion

In the current international community, while nuclear confrontation is less intense than during the Cold War, nuclear proliferation remains a common challenge. Some countries are attempting to develop nuclear weapons, posing threats to regional security and non-proliferation mechanisms. Exploring these countries' motivations for nuclear development helps us understand nuclear politics in a peaceful era. This paper, based on the theory of the security dilemma, analyzes the impact of US-South Korea military cooperation on North Korea's nuclear weapons development as a case study. Linking these findings to the current international context can help understand the behaviors of countries like Iran and Israel and provide recommendations for addressing nuclear proliferation. The occurrence of a security dilemma inevitably exacerbates tensions. Under such conditions, mechanisms for security dialogue can reduce the tensions caused by the security dilemma, enhance strategic trust between parties, and prevent further confrontation. In the anarchic international system, the security dilemma can only be mitigated, not eliminated. Therefore, strengthening communication and dialogue mechanisms within the international community is essential to counteract uncertainties.

This paper's limitations include a lack of scientific rigor and insufficient data support, which we hope to address in future research.

References

- [1] Schattle, H. (2017). *Toward an Incremental Pathway to Peace on the Korean Peninsula*. *Asia-Pacific Issues*, 134, 1-8.
- [2] Kleiner, J. (2005). *The Bush administration and the nuclear challenges by North Korea*. *Diplomacy and Statecraft*, 16(2), 203-226.
- [3] Ross, D. (2017, August 14). *On North Korea, China Holds the Keys*. *U.S. News & World Report*. <https://www.usnews.com/opinion/articles/2017-08-14/how-the-us-can-convince-china-to-address-north-koreas-nuclear-threat>
- [4] Fitzpatrick, M. (2013). *North Korea: Is Regime Change the Answer?* *Survival*, 55(3), 7-20.
- [5] Habib, B. (2011). *North Korea's nuclear weapons program and the maintenance of the Songun system*. *The Pacific Review*, 24(1), 43-64.
- [6] Cha, V. D. (2003). *America and South Korea: The Ambivalent Alliance?* *Current History*, 102(665), 279.
- [7] Mon-soon, S. (2008). *Northeast Asia and the ROK-US Alliance: Why the Alliance Is Vital for the Region and for the United States*. *American Foreign Policy Interests*, 30(2), 59-62.
- [8] Blits, J. H. (1989). *Hobbesian fear*. *Political Theory*, 17(3), 417-431.
- [9] Herz, J. H. (1950). *Idealist internationalism and the security dilemma*. *world politics*, 2(2), 157-180.
- [10] Wampler, R. (2003, April 25). *North Korea and Nuclear Weapons: The Declassified U.S. Record*. *nsarchive2.gwu.edu*. <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB87/>
- [11] Sam-yeol, J., Chang-gyu, K., Sung-hoon, C., & Kyung-rok, K. (2013). *60 years of the ROK-US alliance*. Seoul: Institute for Military Compilation, Ministry of National Defense, 171.
- [12] Song, S. (2020). *Post-Cold War U.S.-ROK Joint Military Exercise and its Impact on the Security Situation in Northeast Asia* (Master's thesis, Beijing Foreign Studies (Master's thesis, Beijing Foreign Studies University). Master's thesis. Master's thesis. <https://link.cnki.net/doi/10.26962/d.cnki.gbjwu.2020.000046>
- [13] Operation Plans [OPLAN]. (2016, July 3). *Www.globalsecurity.org*. <https://www.globalsecurity.org/military/ops/oplan-5015.htm>
- [14] Kim, D. (2016). *The Obama administration's policy toward North Korea: the causes and consequences of strategic patience*. *journal of Asian Public Policy*, 9(1), 32-44.
- [15] 38, N. (2017, September 3). *Sixth Nuclear Test Detected at Punggye-ri, Declared to be a Hydrogen Bomb | 38 North: Informed Analysis of North Korea*. the Henry L. Stimson Center. <https://www.38north.org/2017/09/nuke090317/>