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# China's Diplomatic Leverage on North Korean Provocations: Effect of High-Level Meetings Between China and North Korea on North Korean Missile and Nuclear Tests

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## Abstract

Nuclear and missile tests by North Korea, which directly threaten China's national interests, regional stability, and economic development, have consistently irritated China. Since the 1950s, China and North Korea have held high-level meetings aimed at discussing and improving their bilateral relationship. Using empirical analysis, this study attempts to examine the impact of these meetings on North Korea's missile and nuclear tests. The study argues that as the frequency of high-level meetings between China and North Korea increases, North Korea's provocative actions decrease. The high-level meetings serve to address the issue of incomplete information, create avenues for economic aid and cooperation, and reduce the likelihood of future nuclear and missile tests. The empirical findings indicate that while high-level meetings with or without the presence of top leaders can lead to a reduction in missile tests by North Korea, only summits between China and North Korea have a significant impact on the reduction of nuclear tests by North Korea.

**Keywords:** China; North Korea; high-level meeting; missile and nuclear test; incomplete information

## Introduction

Face-to-face exchanges between national leaders are more time-consuming, require greater effort, and entail greater political risk than non-face-to-face interactions such as telephone calls (Weilemann 2000, 17). Face-to-face high-level diplomatic visits have served as a means of reaffirming shared political goals or values, strengthening ties between states, instituting a new order, and averting future conflicts (Weilemann 2000, 18). China and North Korea held 40 summits between 1958 and 1991 as part of their formal socialist alliance agreement (Kim 2011, 259). These diplomatic meetings, facilitated by the personal rapport between political elites in both states, such as revolutionary comrades, have served as a means of aligning policies and gathering information between the two countries. This study aims to answer whether high-level meetings between China and North Korea effectively

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reduce North Korea's provocative actions, such as missile and nuclear tests. Prior literature has shown that China has utilized diplomatic meetings to dissuade North Korea from conducting missile or nuclear tests (Chambers 2005; Chon 2010; Kim 2011; Lee 2009, 2014). However, these studies have not examined whether high-level talks between the leaders of the two states curb North Korea's provocative actions. This study argues that high-level talks between China and North Korea can help restrain North Korea's missile and nuclear tests by addressing information gaps between the two countries, facilitating economic aid, guarding against future provocations, and mediating nuclear negotiations. The study relied on CSIS (Center for Strategic and International Studies) data on North Korea's nuclear and missile tests and visits made by high-ranking officials (the Minister of Foreign Affairs or higher) from China and North Korea between 1995 and 2019. The results of negative binomial regression models indicate that an increase in the number of high-level meetings, whether with or without a top leader, leads to a decrease in both the total number of missile and nuclear tests as well as the number of missile tests. However, only an increase in summit meetings provided opportunities to reach a substantial agreement on nuclear tests between the highest-ranking national leaders of both countries, reducing North Korea's nuclear tests. This study consists of six sections. The first section provides an overview of previous literature that examines the effect of China–North Korea high-level talks on North Korea's missile and nuclear tests. The second section elaborates on the four functions of high-level talks, while the third section discusses the theoretical background and hypotheses of the study. The fourth section describes the research design, while the fifth section reports the empirical findings. Finally, the sixth section concludes the entire work.

## Literature review

There is a dearth of literature on diplomatic meetings between China and North Korea. Furthermore, previous studies on the bilateral relationship between North Korea and China have not paid much attention to the impact of diplomatic meetings between North Korea and China on North Korea's provocative actions. Existing literature mostly emphasizes China's attempts to persuade North Korea to abandon its nuclear program and promote economic reforms through high-level meetings. However, the impact of high-level diplomatic visits on North Korea's missile and nuclear tests has not been the subject of a systematic empirical analysis.

Multiple studies have noted that China believes that North Korea's economic reform is crucial for long-term regional stability and to promote its denuclearization and cessation of provocations (Chambers 2005, 57; Ji 2001, 389; Kim and Lee 2002, 130; Lee 2010, 169; Liu 2003, 370; Shambaugh 2003, 48; Wang 2014, 13). Chinese leaders attempted to persuade North Korea's leadership to adopt China's "Reform and Open" model by showcasing China's economically advanced regions. However, this approach was ineffective in North Korea's embrace of economic reform and denuclearization. North Korea did not conform to the Reform and Open model, even criticized it later, and continued its nuclear weapons programs.

Several studies have documented China's efforts toward North Korea's denuclearization through high-level diplomatic talks with North Korean leaders (Chambers

2005, 55; Chon 2010, 2; Kim 2011, 259, Lee 2009, 52; 2014, 158). In June 2009, China successfully convinced North Korea, which had conducted missile and nuclear tests and violated the principles of the Six-Party Talks, to refrain from provocative actions and to join the Six-Party Talks by promising North Korea economic and political cooperation, such as aid, trade, and investment (Chanlett-Avery and Taylor 2010, 9; Easley and Park 2016, 661; Lee 2010, 166; Shi 2011, 354; Snyder 2016, 3; Song and Lee 2016, 21). Discussions between top leaders from both sides centered around Chinese companies' investments and contracts for joint projects in mining industries and infrastructure, such as ports, railroads, and highways in North Korea, as well as plans for special economic and trade zones in border areas (Lee 2009, 56–57).<sup>1</sup>

Lee (2009) and Chambers (2005) have demonstrated a positive correlation between China's aid to North Korea and the frequency of meetings between leaders of both states, which in turn led to North Korea's moderated attitude toward its denuclearization. For example, following Wu Bangguo's visit to North Korea, North Korean leaders exhibited moderate attitudes toward nuclear negotiations, vowing to resolve the nuclear crisis through diplomatic meetings such as the Six-Party Talks while also refraining from further provocations (Chambers 2005, 54; Lee 2009, 52).

China, acting as a key mediator, adopted a strategic approach to bring North Korea and the United States to the negotiating table on the nuclear issue through high-level visits (Carlin and Lewis 2008, 14; Kim and Lee 2002, 115; Lee 2010, 166; Liu 2003, 360; Song and Lee 2016, 16). By holding further diplomatic meetings with North Korean officials, China attempted to persuade North Korea to participate in the Six-Party Talks, thereby attempting to remain an important actor in the North Korean nuclear issue (Lee 2010, 166). In addition, North Korea and China have held high-level bilateral meetings to maintain their strategic balance.

### **Functions of high-level meetings**

High-level talks between Chinese and North Korean leaders serve four essential functions in the effort to reduce North Korea's nuclear and missile tests. These include improving bilateral relations, offering economic aid to maintain stability, mitigating future provocations, and participating in nuclear negotiations.

### **Improvement of the bilateral relationship**

High-level meetings between China and North Korea are primarily aimed at strengthening their bilateral relations. Leaders from both sides endeavor to improve bilateral relations when they meet. For instance, after the Cold War ended, the relationship between the two countries deteriorated when China normalized its relations with South Korea and Western countries. Prior to the normalization of relations with South Korea, China sent its Premier Li Peng and Minister of Foreign Affairs Qian Qichen to North Korea in 1991 and 1992, respectively, to explain why China required the normalization of relations with South Korea (Chung 2010, 3–4). However, these official Chinese visits to North Korea could not repair the relationship. Without summit meetings from 1991 to 1999, China found it difficult to exert pressure on North Korea not to develop nuclear weapons (Ji 2001, 397; Kim 2011, 259; Kong 2018, 78;

Lee 2010, 165; Song and Lee 2016, 9). However, after Kim Jong-il assumed power, North Korea held several high-level meetings with China in January 2001, April 2004, and January 2006 in an effort to restore its relations with China. Over time, China and North Korea have developed mutual trust, friendship, and support (Kim 2011, 258; Moore 2008, 9). Another example is from the early years of Xi Jinping's presidency. He was cynical of North Korea,<sup>2</sup> but as the Trump-Kim summit was announced, China attempted to approach North Korea to balance relations with the US by holding two meetings with Kim Jong-un and providing aid to North Korea since Xi Jinping did not want to lose leverage as a major player in the North Korean issues (Wang 2018, 273; Wortzel 2018, 11). Following his first meeting with Xi Jinping in March 2018, Kim Jong-un declared that North Korea would shift its focus to economic development and cease its nuclear and missile tests (Kim 2018, 36).

### *Economic aid and cooperation for stability*

The economic benefit brought about by the meetings between Chinese and North Korean leaders is an incentive to refrain from conducting missile and nuclear tests. If North Korea's missile or nuclear tests escalate tensions between the two countries, "there would be fewer or more strained interactions between high-level officials and this may result in less aid for Pyongyang" (Lee 2009, 52). During the meetings, China pledged to provide economic assistance and increase bilateral trade and investments in order to stabilize North Korean society and reform its economy over the long-term (Lee 2010, 169; 2014, 144; Moore 2008, 23). For instance, after Kim Il-sung visited China in 1991, he secured 1.25 million tons of petroleum from China (Lee 2009, 52). North Korea sent Nam Hong-Sung, the North Korean Vice Premier, in 1996 and Kim Young-nam, the Chairman of the Supreme People's Assembly of North Korea, in 1999 to China to request food and energy supplies during the economic crisis (Choo 2008, 346; Ji 2011a, 77; Lee 2010, 165). China provided North Korea with grains worth 48 million dollars, such as corn (15 million dollars), rice (13 million dollars), and corn (10 million dollars) (Choo 2008, 364; Ji 2011a, 77). Chinese leaders have persuaded North Korean leaders to follow the Chinese Reform and Open model by showing them economically advanced regions. For instance, when Kim Jong-il visited China, Chinese leaders urged him to reform and open the North Korean economy and to give up the development of nuclear weapons by bringing him to economically advanced regions, such as Beijing, Shanghai, and Shenzhen (Ji 2001, 389; Moore 2008, 23; Shambaugh 2003, 48). Furthermore, both countries agreed to construct joint economic zones, such as the Hwanggumpyong economic zone at the Yalu River estuary and the Rasun (Rajin-Sunbong) trade zone on the Northeast coast of North Korea (Lee 2014, 145). Chinese business elites have accompanied Chinese leaders on visits to North Korea and have promoted trade and substantial investments in North Korea, which has relied heavily on economic aid and cooperation from China (Lee 2009, 56–57). North Korea could not ignore China's denuclearization demand due to its increased reliance on China for trade and investment, which is a lifeline for the North Korean economy. Missile and nuclear tests have the potential to severely disrupt China's economic cooperation by compelling

China to delay or to suspend promised aid (Lee 2009, 59).<sup>3</sup> After high-level meetings, North Korea finds it difficult to conduct missile and nuclear tests that destabilize the region.

### ***Mitigation against future provocation***

Chinese and North Korean leaders held immediate meetings following nuclear or missile tests in an effort to prevent future provocations. During these meetings, China criticized North Korea's missile and nuclear tests and persuaded North Korea to refrain from conducting further tests, promising North Korea political and economic aid. China believed frequent talks with North Korean leaders could help ease tension surrounding the nuclear issue (Lee 2009, 158). For example, following North Korea's second nuclear test in June 2009, Wen Jiabao visited North Korea to embrace economic support and political cooperation in an effort to promote peace and stability in the region (Snyder 2016, 2–3). Similarly, after North Korea's missile test in April 2012, China made it a precondition for Kim Jong-un's visit to China that North Korea refrain from conducting a third nuclear test. However, North Korea rejected the demand, instead promising to notify China in advance of any future nuclear test. Despite this, China did not accept Kim Jong-un's visit (Kim 2013, 31). In February 2014, after North Korea conducted its third nuclear test in February 2013, Xi Jinping dispatched Vice Foreign Minister Liu Zhenmin to caution Pyongyang not to violate China's three goals of denuclearization, peace, and stability (Easley and Park 2016, 652–653; Snyder 2016, 3). While it appears that missile and nuclear tests often lead to high-level talks between the two sides, in some cases, these tests have prevented meetings between them, serving as a punitive measure against North Korea. For instance, despite conducting numerous missile and nuclear tests since 2012, Xi Jinping has not met Kim Jong-un, whereas he has met with Park Geun-hye six times during the same period (Snyder 2016, 3).

### ***Joining nuclear negotiations***

North Korea's participation in nuclear negotiations is paramount to resolving the North Korean nuclear issue. During meetings aimed at resolving the nuclear issue, China, as a mediator, has urged North Korea to rejoin the nuclear negotiations, such as the Six-Party Talks, and improve its relations with the US and South Korea (Lee 2010, 166). During their meetings, Chinese leaders consistently demanded that North Korean leaders participate actively in resolving the nuclear issue. For example, during a visit to North Korea in October 2003, Wu Bangguo, the Chairman of the Chinese National People's Congress, urged the North Korean leadership to attend the second round of the Six-Party Talks by promising 50 million dollars in aid. North Korea agreed to participate in the talks (Chambers 2005, 54), and since then, it has demonstrated a willingness to diplomatically resolve the nuclear crisis and has limited its provocative actions (Chambers 2005, 54). China has specifically proposed that North Korean leaders hold a high-level meeting with the US (Easley and Park 2016, 661; Liu 2003, 358). After another nuclear test in 2006, China dispatched the State Councilor of China, Tang Jiaxuan, and the Minister of Foreign

Affairs of China, Yang Jiechi, to North Korea to urge North Korean leaders to participate in the Six-Party Talks (Lee 2010, 166). Following the meeting, North Korean leaders agreed to rejoin nuclear talks and to refrain from nuclear and missile tests, demonstrating their moderate disposition (Chon 2010, 661).

### **Theory and hypothesis**

Because North Korea's meetings with China are largely opaque, we cannot assess exactly why we would observe the effect. But contact theory, issue linkage, and resolution of problems of asymmetric information provide possible mechanisms. Moreover, we also explore the role that the larger setting might play and how the effects of bilateral meetings are conditional on external threats (which offset the effects of meetings) and domestic instability and sanctions (which enhance the effects of meetings).

### **Contact theory**

Allport, Clark, and Pettigrew's (1954) contact theory argues that positive intergroup contact can work to reduce intergroup bias (Antonio 2001; Pettigrew 1998). In the case of China and North Korea, high-ranking meetings and direct communication between their respective leaders not only reduce negative prejudices but also foster mutual trust. As members of different groups harmonize their respective goals, cooperation becomes easier. Both sides may develop a shared in-group identity and mutual positive emotions (Gaertner et al. 2000; Pettigrew 1998). Neither China nor North Korea are able to achieve certain goals, such as regional stability for economic development and survival. Since the Reform and Open policy began, China has sought a stable regional environment for its steady economic growth. China inevitably needs North Korea's cooperation to maintain regional stability, as North Korea's development of nuclear weapons poses a major threat to regional stability. This has the potential to escalate regional tensions and result in military conflict and refugee crises. On the other hand, since the end of the Cold War, North Korea has struggled to survive due to its underdeveloped economy, which makes it difficult for the country to survive without China's support in the form of aid (food, medical supplies, natural resources), trade, and investment. Consequently, numerous opportunities exist for both nations to cooperate to ensure regional stability and survival. Frequent high-level meetings give China and North Korea an opportunity to align their preferences. For instance, North Korea can agree to refrain from conducting nuclear tests in exchange for China's economic aid and trade.

### **Issue linkage**

Issue linkage is a bargaining tactic used in negotiations that involves negotiating multiple issues concurrently to reach a mutual agreement (Haas 1980; Sebenius 1983, 282). High-level meetings attended by national leaders could potentially serve as a platform for promoting issue linkage. For instance, China and North Korea could negotiate a ban on nuclear tests along with the provision of economic aid through

high-level talks. The issue linkage helps countries reach probable alternative agreements by solving a distribution problem caused by different preferences between them. “When the benefits of an issue accrue primarily to a few actors and the costs fall disproportionately on others, adding another issue to the negotiations can redistribute the benefits and allow all participants to experience some gain” (Poast 2012, 282). Chinese leaders have made efforts to convince North Korea’s leadership to participate in nuclear negotiations and denuclearize the peninsula by promising economic support during high-level talks. For example, in July 2003, Hu Jintao dispatched the Chinese Vice Foreign Minister, Dai Bingguo, to urge North Korea’s Kim Jong-il to join the Six-Party Talks, promising 10,000 tons of oil as an incentive (Carlin and Lewis 2008, 14; Liu 2003, 360; Song and Lee 2016, 16). Wu Bangguo, the chairman of the National People’s Congress of China, also visited North Korea in October 2003 and promised increased economic cooperation and a 50 million dollar aid package on the condition that North Korea participate in the Six-Party Talks. Additionally, summit meetings between Kim Jong-il and Hu Jintao in October 2005 and January 2006 resulted in China providing economic assistance and bilateral trade to North Korea. During the 2005 summit, Hu Jintao promised 2 billion dollars to North Korea over five years (Lee 2010, 166), and Kim Jong-il agreed to participate in the Six-Party Talks scheduled for November 2005 (VOA 2005).

### ***Incomplete information***

Realism in International Relations attributes international military disputes to information distribution, as both parties often lack accurate information about their opponents’ intentions and capabilities (Morrow 1989, 942). States facing an uncertain adversary tend to augment their military capabilities, take risks, or attempt to change the status quo. “If both states are fully informed militarized conflict is costly, the probability of conflict is zero” (Reed 2003, 634). Military hostilities can easily be averted if a challenger state and a defender state are informed of each other’s best offer. Nevertheless, in reality, there is a considerable gap between observable measures of military capability and actual military capability, which prevents both parties from accurately assessing their relative powers and leads them to be overconfident in their understanding of their counterpart’s military ability (Fearon 1995, 381; Morrow 1989, 943). Due to the problem of inadequate information, a challenger makes an unacceptable offer to a defender because it miscalculates its own bargaining leverage. Consequently, the defender’s rejection of the offer results in a military conflict (Reed 2003, 634).

Moreover, rational leaders may try to misrepresent their state’s military capability and willingness to attack their counterpart in an effort to strike a better bargain by concealing or exaggerating these aspects. This insufficient information about the opponent’s military secrets and special capabilities makes it difficult for leaders to predict a war’s precise outcome. Thus, leaders who lack sufficient information about confidential military secrets and the special capabilities of their adversary face a significant challenge in anticipating the exact outcome of a war. Furthermore, since neither state is aware of the confidential information the other leader possesses, the leaders of both states anticipate divergent outcomes of the conflict (Fearon 1995, 381; Morrow 1989, 942–943). The leader’s miscalculation

of the military capability and willingness of the opposing state increases the likelihood of war, as does the leader's overconfidence in winning the war (Fearon 1995, 395–396).

Visits by high-ranking officials between both states have been shown to be effective in reducing North Korea's provocative actions by resolving the issue of incomplete information. These visits have served as a channel for communication and information gathering, enabling the leaders of both countries to exchange information and ideas on pressing issues such as nuclear negotiations, economic cooperation, and a change in leadership. Specifically, such meetings can reduce North Korea's missile and nuclear tests by resolving the issue of incomplete information in three ways. First, when the leaders of the two states visit each other, they obtain a precise understanding of their counterparts' wants and needs. During these meetings, the leaders engage in mutual deliberations to articulate their respective needs and present requests for the desired provisions to their counterparts. This has been demonstrated in many high-level meetings between China and North Korea, which have resulted in commitments to economic cooperation and the resumption of nuclear negotiations (Chanlett-Avery and Taylor 2010, 9; Lee 2010, 166; Snyder 2016, 3; Shi 2011, 354). Since the reform and opening-up, China has prioritized the pursuit of peace and regional stability. China has hoped that North Korea will pursue economic development that is sustainable over the long term. However, North Korea's pursuit of nuclear weapons has posed a serious threat to China's regional stability and could potentially result in the country's collapse and a devastating war with severe collateral damage, such as an influx of refugees, the loss of the buffer zone, and the destruction of economic infrastructure in Northeast provinces (Bondaz 2015, 33; Jeong 2012, 37; Kim and Lee 2018, 42; Lee 2010, 169). Since the end of the Cold War, North Korea, which has relied heavily on China for its survival, has actively pursued economic cooperation with China through trade, investment, and food and energy aid. In high-ranking meetings, both sides reaffirmed each other's expectations and attempted to accommodate each other's demands. In these meetings, Chinese leaders strongly urged Kim Il-sung and Kim Jong-il to adopt the Chinese economic reform model, opposed North Korea's missile and nuclear tests, and eventually convinced the North Korean leadership to rejoin multilateral negotiations (Aoyama 2017, 150; Bondaz 2015, 33; Lee 2010, 169; Liu 2003, 370; Park 2016, 36; Shin 2018, 298; Yang 2003, 3). As a condition for rejoining the Six-Party Talks, Chinese leaders have promised economic aid, trade, and investment (Aoyama 2017, 150; Bondaz 2015, 33; Lee 2009, 145; Park and Park 2017, 379). Bilateral trade has seen an upswing following summits and other high-level meetings between both sides, resulting in Chinese state-owned and private companies signing investment contracts in North Korea's mining and infrastructure sectors (Jung and Rich 2016, 318; Lee, Kim, and Lee 2016, 25; Lee 2009, 56–57). For example, "after Kim Jong-il and Jiang Zemin exchanged visits in 2001, the trade between the two countries increased 51.6% over the previous year" (Jeong 2012, 37).

Second, high-level official meetings between China and North Korea allow Chinese leaders to gain insights into North Korea's plans for missile and nuclear tests and take steps to counteract them.<sup>4</sup> For example, North Korea promised to inform China well in advance of any future nuclear tests following China's request



to stop a nuclear test as a condition of Kim Jong-il's visit to China in 2012 (Kim 2013, 31). In 2016, when North Korea notified China of its plan to launch a satellite, Wu Dawei, the Special Representative for Korean Peninsula Affairs, visited North Korea in February 2016 to prevent any provocative behavior by North Korea (Park 2016, 36).

Third, high-level talks enable China to act as a mediator in resolving the issue of incomplete information between the US, South Korea, and North Korea. Since the early 2000s, China has attempted to mediate nuclear negotiations, as exemplified by hosting and facilitating the Six-Party Talks and by conveying each party's opinions and ideas to its counterparts. China's mediation enables the US, South Korea, and North Korea to exchange ideas and determine each other's best offers and demands. This reduces the likelihood of provocative actions by North Korea by facilitating the exchange of ideas among these countries. For example, in March 2003, during a high-level meeting between China and North Korea, the Chinese Vice Premier, Qian Qichen, persuaded Kim Jong-il to participate in a trilateral nuclear forum with the US scheduled for April 2003 (Kim 2018, 23–24). However, Kim Jong-il accepted China's proposal for the trilateral nuclear meeting with "the precondition that a bilateral US–DPRK dialogue must be held within the trilateral setting" (Carlin and Lewis 2008, 14). Following the meeting, China dispatched Vice Foreign Minister Wang Yi to the US to convince the Bush administration to hold trilateral and bilateral meetings in Beijing. The US agreed with China's proposal for a trilateral forum but refused North Korea's precondition for bilateral talks (Carlin and Lewis 2008, 14–15). China eventually hosted the Six-Party Talks in September 2003 in Beijing and acted as an intermediary between the US and North Korea (Kim 2018, 23–24; Yang 2003, 3). In 2006, China and North Korea exchanged delegations to discuss the possibility of rejoining the Six-Party Talks. Hu Jintao met the Vice Chairman of the North Korean Assembly, Yang Hyong-sop, and urged North Korea to return to the negotiations (Cheow 2006, 34). As a result of these high-level exchanges, North Korea made minor concessions to the US and South Korea (Szalontai 2015, 185). "In September, Kim Jong Il told Chinese Special Envoy Dai Bingguo that Pyongyang was willing to participate in bilateral and multilateral talks for the sake of denuclearization" (Szalontai 2015, 185). Therefore, the two hypotheses below should be tested to see if the high-level meetings are effective.

H1: *An increase in high-level meetings between North Korea and China is likely to reduce North Korea's missile tests.*

H2: *An increase in high-level meetings between North Korea and China is likely to reduce North Korea's nuclear tests.*

### **Additional conditions in the impact of high-level visits on the reduction of provocation**

The development of nuclear weapons by North Korea has been subjected to sanctions by the UN and other countries, including South Korea, the US, China, and Japan. These sanctions have isolated North Korea from the international community,

making it difficult for the country to survive. However, North Korea has relied on China, its largest aid provider and trading partner, to cope with the sanctions. Whenever sanctions become harsher, North Korea tends to restrain its provocations and engage in high-level meetings with Chinese leaders to obtain economic support. Therefore, the rise in sanctions on North Korea increases the likelihood that high-level meetings between China and North Korea will reduce its missile and nuclear tests.

As North Korea views the US and its allies, such as South Korea and Japan, as adversaries in Northeast Asia, their hostile behavior against North Korea poses the most serious threat to its survival. When faced with increased military threats or attacks by these three countries, North Korea is more likely to depend on China for its survival. Through high-level meetings, North Korean leaders may seek diplomatic and military support from Chinese leaders against these threats. In exchange for such assistance, Chinese leaders may demand that North Korea refrain from conducting missile and nuclear tests. Thus, the US and its allies' threats and attacks against North Korea maximize the effect of high-level visits between China and North Korea in limiting North Korea's provocative actions.

Internal instability in North Korea might maximize the impact of high-level meetings between both states on the decrease in missile and nuclear tests by North Korea. Protests, strikes, boycotts, and civil violence stemming from socioeconomic crises may lead North Korea to seek assistance from China. Due to its isolation from the international community, North Korea has experienced domestic turmoil, including economic crises, prompting it to seek economic aid from China through meetings with Chinese leaders. China could use economic aid as leverage to convince North Korea to refrain from conducting missile or nuclear tests. For this reason, when domestic instability rises in North Korea, high-level visits are more likely to be effective in controlling North Korea's provocative actions.

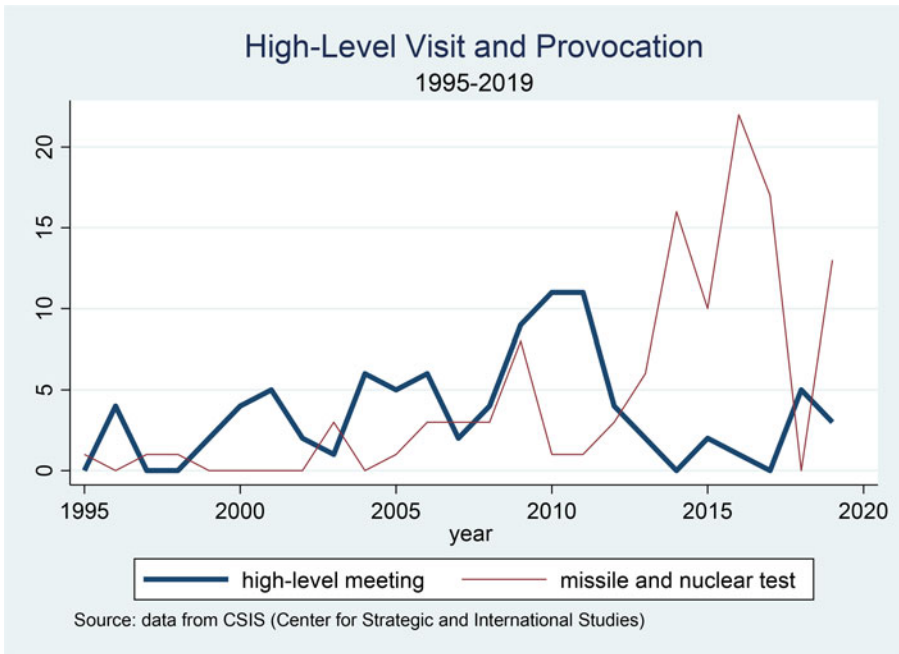
*H3: An increase in high-level meetings between North Korea and China, coupled with harsher sanctions against North Korea, is likely to reduce North Korea's missile and nuclear tests.*

*H4: An increase in high-level meetings between North Korea and China, along with severe threats from the US and its allies against North Korea, is likely to reduce North Korea's missile and nuclear tests.*

*H5: An increase in high-level meetings between North Korea and China, with greater internal instability in North Korea, is likely to reduce North Korea's missile and nuclear tests.*

### High-level visits and provocation

Graph 1 depicts the correlation between high-level visits between Chinese and North Korean leaders and the frequency of missile and nuclear tests conducted by North Korea from 1995 to 2019. The bold blue line represents the number of high-level meetings, while the red line represents the number of missile and nuclear tests conducted



**Graph 1.** High-Level Visit between China and North Korea and Provocation of North Korea (1995–2019)

by North Korea. Generally, the two lines demonstrate an inverse relationship; as the frequency of visits between the leaders of both nations increased, North Korea conducted fewer missile and nuclear tests. Between 1995 and 2019, the average number of high-ranking meetings between China and North Korea was 3.56 per year. Table 1 shows that North Korea conducted 7.15 missile and nuclear tests annually when there were three or fewer high-level meetings between Chinese and North Korean leaders in a calendar year. On the contrary, when the number of high-level visits climbed to more than three per year, the number of missile and nuclear tests conducted by North Korea dropped to 1.67. Therefore, North Korea's provocations were significantly constrained by the high-level visits of officials and leaders from both sides.

Between 1999 and 2002, both sides held an average of 3.25 high-level meetings per year, which included three summits. During this period, North Korea refrained from conducting any missile or nuclear tests that could jeopardize regional stability. Relations between China and North Korea, which had deteriorated since the end of the Cold War, were normalized during this time. North Korea, which was experiencing economic hardships, dispatched Kim Young-nam, the Chairman of the Supreme People's Assembly of North Korea, to China to secure economic aid (Ji 2011a, 77; Lee 2010, 165). China provided North Korea with grains worth 48 million dollars (Choo 2008, 364; Ji 2011a, 77). During Kim Jong-il's visits to China in 2000 and 2001, Chinese officials took him on tours of industrial and commercial regions such as Beijing, Shanghai, and Shenzhen, urging him to push for economic reforms (Lee 2010, 169; Shambaugh 2003, 48).

**Table 1.** Average number of provocations of North Korea

	High-level meetings $\leq 3$	High-level meetings $> 3$
Average Number of Missile and Nuclear Test	7.15	1.67

Note: Source from CSIS.

In 2004 and 2005, North Korea conducted only one missile test, while there were 11 high-level visits, including two summit meetings between the two countries. While China pushed for the denuclearization of North Korea and provided economic aid, North Korea curbed its provocative actions. In 2004, Wu Bangguo, the Chairman of the Standing Committee of the National People's Congress, visited North Korea and persuaded Kim Jong-il to participate in nuclear negotiations in April 2004 (Chambers 2005, 54). In October 2005, during a summit meeting between Hu Jintao and Kim Jong-il, Hu Jintao promised Kim Jong-il 2 billion dollars in economic aid (Lee 2010, 166). Moreover, North Korea received a sizeable amount of investment and joint projects from Chinese enterprises that accompanied the Chinese delegation (Lee 2009, 56–57).

The years 2010 and 2011 marked the leadership transition in North Korea from Kim Jong-il to Kim Jong-un. During this period, North Korea conducted only one missile test and one nuclear test, which could be attributed to the fact that leaders from both countries held a record number of high-level meetings, including three summits, totaling 22 meetings. Kim Jong-il visited China twice during this period in an effort to strengthen ties with China, reaffirm Chinese leaders' support for his son, Kim Jong-un, and establish new strategic cooperation with China (Chanlett-Avery and Taylor 2010, 10, 15; Kim 2011, 257–258; 2013, 23; Lee 2009, 155; Noesselt 2014, 1315; Shi 2011, 354; Song and Lee 2016, 22). "Following Kim Jong-il's death in December 2011, Beijing voiced support for Kim Jong-un in an effort to legitimize the new leader and shore up his regime" (Chanlett-Avery and Taylor 2010, 15). During these meetings, however, leaders from both sides discussed economic cooperation. Kim Jong-il visited several cities in Jilin and Heilongjiang provinces, sites of economic cooperation between the two countries, as well as industrial cities in central China, such as Nanjing and Yangzhou (Song and Lee 2016, 22). Furthermore, Hu Jintao and Kim Jong-il agreed to establish two special economic zones in Hwanggumpyong on the Yalu River estuary and Rasun (formerly Rajin-Sunbong) on the northeast coast of North Korea (Lee 2009, 145).

During the early Kim Jong-un years (2012–2017), China-North Korea relations deteriorated, resulting in no summits, with only 1.5 high-level visits per year. This freezing of relations coincided with North Korea conducting 74 nuclear or missile tests, averaging 12.33 per year, significantly increasing regional tensions that China sought to avoid. Provocative actions by North Korea also serve to reinforce the perception of the country as a pariah state, leading Chinese policymakers to be more cautious and cognizant of the need to maintain a safe distance from it while resolving long-standing special relations. Xi Jinping preferred to have a "normal state-to-state relationship" with North Korea as opposed to "traditional special relations" (Kim

2017, 113; Shin 2018, 296). Furthermore, China attempted to teach Kim Jong-un to respect China's preferred norms by requiring Kim Jong-un not to conduct nuclear or missile tests as a condition of visiting China in April 2012 (Easley and Park 2016, 665). North Korea did not agree to these conditions, and while it did agree to notify China in advance of any future nuclear test, China did not permit Kim Jong-un's visit to China (Kim 2013, 31). North Korea conducted 74 missile and nuclear tests between 2012 and 2017, averaging 12.33 per year. Although Xi Jinping did not plan to meet Kim Jong-un, he dispatched Vice Foreign Minister Liu Zhenmin to North Korea in February 2014 to communicate China's objectives of denuclearization, peace, and stability in the region (Easley and Park 2016, 652–653; Snyder 2016, 3).

## **Research design**

### ***Unit of analysis***

This study utilized statistical analysis as its primary methodology. The analyses were conducted at a nation-state level since the work focused on examining the impacts of high-level talks between North Korea and China on North Korea's provocative behavior. The analysis covers a 25-year period from 1995, the beginning of the Kim Jong-il regime, to 2019. The director of the CIA (Central Intelligence Agency) estimated that North Korea seceded to produce nuclear weapons at the end of the Kim Il-sung regime (Davenport 2020). It is reasonable to analyze the provocative actions of North Korea since the Kim Jong-il regime. This work relies on monthly data.

### ***Dependent variable***

The study used the numbers of missile tests, nuclear tests, and the combined total of both tests in a given month as the dependent variables. The CSIS (Center for Strategic and International Studies) (2019) provided data on North Korea's nuclear and missile tests from 1984 to 2020.

### ***Independent variable***

The independent variable in the study is the visits of high-ranking officials from both states. High-level visits are "a meeting between Chinese and North Korean officials at the level of the Minister<sup>5</sup> of Foreign Affairs or above" (The CSIS 2017). This project applied the numbers of summit meetings, high-level meetings without a top leader, and meetings that involve one top leader in given months as independent variables. Of these, meetings between top national leaders (president and supreme leader) are considered more significant in the realm of diplomacy than other high-level meetings. This is particularly true in the case of North Korea, an authoritarian regime where all political power is concentrated around the top national leader and the ruling party (Geddes, Wright, and Frantz 2014). Therefore, given that the top leader of an authoritarian regime wields the strongest decision-making power compared to democracies, summits can result in substantial commitments without domestic constraints (Weilemann 2000, 18). Data for high-level visits between both states were taken from the CSIS Beyond Parallel (The CSIS 2017).

### *Control variable*

There are three control variables, namely, North Korea's internal instabilities, sanctions imposed on North Korea, and military attacks against North Korea. The diversionary theory of war posits that external disputes foster domestic cohesion by uniting an in-group (Coser 1956). National leaders attempt to deflect citizens' attention from internal troubles by engaging in brief warfare (Levy 1989). Internal instability may precipitate external military actions. For example, one of the reasons for North Korea's decision to pursue nuclear programs was the great famine it had suffered. North Korea was beset by a major economic crisis in the late 1980s and early 1990s, toward the end of the Cold War, as its biggest aid provider, the Soviet Union, collapsed and its major trade partners, the socialist states in Eastern Europe, underwent system transitions. In a bid to maintain its regime's stability, North Korea withdrew from the NPT (Non-Proliferation Treaty), leading to the first North Korean nuclear crisis in 1993 (Ahn 2011, 178–179). The variables pertaining to internal instability include civilian activities such as protest, strike, and boycott, and violent actions such as fight, combat, assault, terrorism, and genocide with or without conventional and unconventional military forces within North Korea including in given months.

The second control variable is economic sanctions (embargos or boycotts) and administrative sanctions (formal decrees, laws, or policies aimed at curbing civilians' rights, not otherwise) on North Korea in a given month. Sanctions against North Korea may have the contrary effect of increasing the number of missile and nuclear tests in an attempt to have the sanctions lifted. For example, following the passage of sanctions against North Korea by the UN Security Council on March 7, 2013, which included a ban on financial transactions, North Korea engaged in a great deal of bellicose rhetoric and actions. This included invalidating the armistice agreement with South Korea on March 11, threatening to attack US military bases in Japan and Guam on March 21, severing the last remaining military communication lines with South Korea on March 27, declaring a "state of war" against South Korea on March 30, resuming operations at the nuclear complex in Yongbyon on April 2, moving missiles to the east coast, and eventually conducting three missile tests from May 18 to May 20 (Kim and Martin-Hermosillo 2013, 103).

Moreover, external threats or attacks against North Korea play a crucial role in the country's provocative actions, as these threats increase the likelihood of North Korea's provocations. The balance of threat theory suggests that a state attempts to balance external threats for its national security (Walt 2010, 10). Thus, when North Korea perceives a threat from other countries, it is likely to engage in provocative actions against its enemy in order to balance the threat. The US and its allies, South Korea and Japan, should exercise caution in their antagonistic military behaviors toward North Korea as their threats against the country are deemed more severe than threats from other states, posing a greater threat to North Korea's security. Bernhardt and Sukin (2021) found in their empirical analyses that the US–South Korea joint military drills have led to increased provocations from North Korea, including warnings, threats, cross-border violence, and missile or nuclear tests. As the US–South Korea joint military exercises, involving numerous numbers of personnel, field maneuvers, or conventional combat exercises, have posed a serious threat against North Korea, its

provocative actions have not been deterred, even it counteracted with aggressive actions (Bernhardt and Sukin 2021, 882–883). In addition to direct military attacks, this study considers indirect threats, such as blockades and movement restrictions imposed by the US, South Korea, and Japan in a given month, as external threats. The Integrated Crisis Early Warning System (ICEWS) (Boschee et al. 2015) provided data<sup>6</sup> on domestic instability in North Korea, sanctions on North Korea, and foreign military threats and attacks against North Korea. This research aggregated intensities<sup>7</sup> for each control variable (domestic instabilities, sanctions, and foreign military threats) on a monthly basis, and since these intensities were negative numbers, the project converted them to positive numbers for convenience.

## Result

Table 2 presents statistical results for the combined number of North Korean missile and nuclear tests. Models I, III, and V are negative binomial regression models,<sup>8</sup> while Models II, IV, and VI are negative binomial regression models with a robustness model. It is important to note that there may be a time lag between the high-level meetings and North Korean nuclear or missile tests since both require time for decision-making. Thus, a time lag of one or two months was set. Models III and IV are lagged by one month, while Models V and VI are lagged by two months. Regarding high-ranking meetings without a top leader, Model II shows a significant negative relationship with total provocation. The coefficient is  $-0.6434$ , meaning that a high-level meeting between Chinese and North Korean leaders reduces the number of missile and nuclear tests by 0.64. The high-level meetings without a top leader also reduced the number of total provocative actions. In Model V and VI, high-level visits with a top leader showed a significant negative relationship with missile and nuclear tests. The coefficients suggest that a high-level visit with a top leader decreases North Korean missile and nuclear tests by  $-0.8508$ . This indicates that high-ranking meetings, which include at least one top leader, have a greater impact on provocations by North Korea than normal high-level meetings. Summits also negatively correlate to missile and nuclear tests by North Korea in Model II, with a coefficient of  $-14.4080$ , suggesting that a summit reduces such tests by 14.41. The effect of the China-North Korea summits on North Korean nuclear and missile tests is noteworthy. North Korean nuclear and missile tests significantly decrease after a meeting between Chinese and North Korean top leaders. All three kinds of high-level meetings have a significant impact on reducing total North Korean missile and nuclear tests. These results demonstrate that diplomatic approaches between the two countries can moderate North Korea's provocative behavior. In high-level meetings, North Korea and China share their opinions and preferences and compromise on their own principles. Besides, as China makes a chance of negotiation among participant countries of nuclear negotiations by transferring information that China obtains in bilateral meetings with North Korea, they have more opportunities to make compromise for nuclear issues by understanding each other. In the meetings, Chinese leaders encouraged North Korean leaders to participate in nuclear negotiations and promote economic reforms by committing to economic collaborations such as aid, trade, and investment (Carlin and Lewis 2008, 14; Lee 2009, 52; Liu 2003, 360; Song and Lee 2016, 16).

**Table 2.** Statistical results for North Korean total provocation (missile + nuclear tests)

	Model I	Model II	Model III ( <i>t</i> – 1)	Model IV ( <i>t</i> – 1)	Model V ( <i>t</i> – 2)	Model VI ( <i>t</i> – 2)
High-level meeting	–0.6434 (0.5411)	–0.6434** (0.3823)	0.1028 (0.4490)	0.1028 (0.3780)	–0.4497 (0.5258)	–0.4497 (0.6639)
One summit	–0.5480 (0.4214)	–0.5480 (0.4101)	–0.5011 (0.4090)	–0.5011 (0.3939)	–0.8508* (0.4643)	–0.8508** (0.4290)
Summit	–14.4080 (646.4625)	–14.4080*** (0.3289)	–0.2792 (0.7315)	–0.2792 (0.7192)	0.3112 (0.6215)	0.3112 (0.8105)
Internal instability	0.0046 (0.0053)	0.0046 (0.0030)	0.0068 (0.0047)	0.0068** (0.0030)	0.0057 (0.0043)	0.0057* (0.0031)
Sanctions	0.0024** (0.0010)	0.0024*** (0.0008)	0.0034*** (0.0011)	0.0034*** (0.0010)	0.0027** (0.0012)	0.0027** (0.0011)
Attack to N. Korea	0.0036* (0.0021)	0.0036** (0.0015)	0.0018 (0.0020)	0.0019 (0.0022)	0.0002 (0.0026)	0.0002 (0.0019)
Constant	–1.2135*** (0.1807)	–1.2135*** (0.1838)	–1.357*** (0.1928)	–1.3567*** (0.2167)	–1.1491*** (0.1941)	–1.1491*** (0.1907)
Observation	300	300	299	299	298	298

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



In terms of control variables, domestic instability in North Korea showed a significant positive relationship with North Korean missile and nuclear tests in Models IV and VI. Domestic instability prompted North Korea to conduct more missile and nuclear tests, meaning North Korea's provocation served as a means to divert citizens' discontent. Sanctions on North Korea had a significant positive impact on its missile and nuclear tests in all models, suggesting that North Korea conducts more missile and nuclear tests when it is under sanctions in an attempt to have them lifted. These findings imply that sanctions on North Korea lead to increased aggression from North Korea. In Models I and II, the US and its allies' military threats and attacks against North Korea had a significant positive relationship with North Korean missile and nuclear tests. This suggests North Korea is likely to attempt provocative actions when threatened by the US and its allies. These results demonstrate that North Korea does not shy away from escalating tensions with the US and its allies by limiting missile and nuclear tests when threatened by them in order to maintain a balance of threat.

Table 3 displays the empirical results of the missile tests that North Korea conducted. A negative binomial regression was performed on Models I, III, and V, whereas a negative binomial regression with a robustness model was performed on Models II, IV, and VI. Models III and IV lagged by one month, and Models V and VI lagged by two months. In Model II, high-level meetings between China and North Korea, without a top leader, had a significant negative relationship with missile tests conducted by North Korea. The coefficient of  $-0.9497$  indicates that a high-level visit without a top leader reduces about 0.95 North Korean missile tests. Models III–VI show that high-ranking visits that include one top leader, also have a significant impact on reducing the number of missile tests by North Korea. The largest coefficient ( $-1.0794$ ) indicates that a high-ranking visit which includes one top leader decreases one missile test by North Korea. The coefficient demonstrates that a high-ranking visit with one top leader is more effective than normal China–North Korea high-level meetings in limiting North Korean missile tests. Furthermore, China–North Korea summits are negatively associated with North Korean missile tests in Model II and are statistically significant. The coefficient of  $-14.2602$  indicates that a summit can reduce more missile tests by North Korea than other kinds of high-level meetings. Overall, an increased number of these high-level visits between Chinese and North Korean leaders limited the number of missile tests by North Korea, supporting the first hypothesis.

Regarding control variables, Models IV and VI reported that domestic instability in North Korea had a significant positive relationship with North Korean missile tests. This suggests that domestic problems in North Korea led it to conduct missile tests as a way to divert citizens' attention from sociopolitical issues. Sanctions imposed on North Korea were found to have a positive relationship with missile tests across all six models. The regime conducted more missile tests when faced with sanctions from foreign countries. External military threats and attacks against North Korea also had a significant positive relationship with missile tests in Model II. Greater military threats and attacks against North Korea prompted North Korea to conduct more missile and nuclear tests. These findings confirm that North Korea has pursued missile development as a means to counter perceived external threats from hostile states.

**Table 3.** Statistical results for North Korean missile test

	Model I	Model II	Model III ( <i>t</i> – 1)	Model IV ( <i>t</i> – 1)	Model V ( <i>t</i> – 2)	Model VI ( <i>t</i> – 2)
High-level meeting	–0.9497 (0.6355)	–0.9497** (0.4812)	–0.0102 (0.4862)	–0.0102 (0.3936)	–0.5378 (0.5726)	–0.5378 (0.6278)
One summit	–0.5996 (0.4559)	–0.5996 (0.4509)	–1.0794** (0.5362)	–1.0794* (0.5636)	–0.9132* (0.5019)	–0.9132* (0.4720)
Summit	–14.2602 (618.6993)	–14.2602*** (0.3326)	–0.1786 (0.7539)	–0.1786 (0.7194)	0.4092 (0.6487)	0.4092 (0.8096)
Internal instability	0.0052 (0.0058)	0.0052 (0.0032)	0.0076 (0.0051)	0.0076** (0.0030)	0.0065 (0.0045)	0.0065** (0.0030)
Sanctions	0.0023** (0.0012)	0.0023** (0.0010)	0.0033*** (0.0011)	0.0033*** (0.0010)	0.0027** (0.0012)	0.0027** (0.0012)
Attack to N. Korea	0.0031 (0.0022)	0.0031* (0.0017)	0.0018 (0.0021)	0.0018 (0.0023)	0.0005 (0.0027)	0.0005 (0.0019)
Constant	–1.2486*** (0.1948)	–1.2486*** (0.1912)	–1.3952*** (0.2021)	–1.3952*** (0.2251)	–1.2537*** (0.2061)	–1.2537*** (0.2055)
Observation	300	300	299	299	298	298

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The statistical results for North Korean nuclear tests are presented in [Table 4](#). Models I, III, and V are negative binomial regressions, and Models II, IV, and VI are negative binomial regressions with a robustness model. Models III and IV are lagged by one month, and Models V and VI are lagged by two months. The results indicate that high-level meetings without a top leader had a significant positive relationship with nuclear tests by North Korea in Model II. The coefficient was 0.9965, meaning that such meetings increased nuclear testing by about one, which is inconsistent with the expectation. High-ranking visits without the top leader did not decrease North Korea's nuclear tests; they increased them. This result proved that diplomatic approaches without the top leader did not significantly moderate North Korea's nuclear tests. Diplomatic meetings involving one top leader had mixed relationships with North Korea's nuclear tests. Four models showed negative relationships, and the other two showed positive ones; however, none of the models were statistically significant. Meetings without a top leader and those with one top leader did not have a significant effect on limiting North Korea's nuclear tests. However, summit meetings had a significant negative relationship with total nuclear tests in Models II, IV, and VI. With the largest coefficient ( $-14.2483$ ), the China–North Korea summit remains the most effective means of reducing North Korean nuclear tests. These statistical findings confirm that meetings between the top leaders of China and North Korea effectively limited North Korea's nuclear tests. Given that top leaders in both countries have absolute political power and authority, they play a significant role in negotiations on North Korean nuclear tests. These findings support the second hypothesis.

The domestic instability in North Korea has a significant negative relationship with the nuclear tests in Model VI. This is rather surprising since the results confirmed that domestic instability does not lead the North Korean leadership to conduct nuclear tests as a diversion tactic. Results for sanctions, foreign threats, and attacks against North Korea are consistent with the original expectations. They are positively associated with nuclear tests and are statistically significant. North Korea conducted more nuclear tests in response to sanctions and military threats and attacks from the US and its allies. Hence, external economic and administrative sanctions and military threats and attacks prompted North Korea to react aggressively in order to maintain the balance of threats.

[Table 5](#) presents the effect of interaction terms on North Korea's total provocations (missiles and nuclear tests). In Models II, III, V, and VI, the interaction term between the total number of China–North Korea high-level meetings and sanctions on North Korea showed a significant negative relationship with provocative actions (missiles and nuclear tests) by North Korea. High-level visits between leaders of both states decreased North Korean missile and nuclear tests when the country was subjected to sanctions. The findings confirm that diplomatic visits between China and North Korea significantly reduce North Korean provocations in the face of sanctions. As North Korea seeks China's assistance in overcoming international sanctions, such as economic aid, investments, and trade, through high-level visits with China, it inevitably restrains its provocative actions. These results support the third hypothesis.

The interaction terms between high-ranking visits between leaders of China and North Korea and attacks and threats from the US and its allies are associated with North Korean missile and nuclear tests, but these relationships are not statistically

**Table 4.** Statistical results for North Korean nuclear test

	Model I	Model II	Model III ( <i>t</i> – 1)	Model IV ( <i>t</i> – 1)	Model V ( <i>t</i> – 2)	Model VI ( <i>t</i> – 2)
High-level meeting	0.9965 (0.8102)	0.9965* (0.5322)	0.6868 (0.8879)	0.6868 (0.9189)	0.6071 (1.0791)	0.6071 (1.0905)
One summit	–0.3046 (0.9887)	–0.3046 (0.8277)	0.9441 (0.5965)	0.9441 (0.6249)	–0.3809 (1.0249)	–0.3809 (1.0527)
Summit	–12.9971 (1334.485)	–12.9971*** (0.5556)	–13.8959 (1891.428)	–13.8959*** (0.4797)	–14.2483 (1983.673)	–14.2483*** (0.4627)
Internal instability	–0.0081 (0.0223)	–0.0081 (0.0143)	–0.0568 (0.0430)	–0.0568 (0.0404)	–0.0997 (0.0670)	–0.0997** (0.0504)
Sanctions	0.0031*** (0.0010)	0.0031*** (0.0006)	0.0023** (0.0011)	0.0023* (0.0012)	0.0032* (0.0017)	0.0032** (0.0014)
Attack to N. Korea	0.0077** (0.0036)	0.0077** (0.0030)	0.0063 (0.0050)	0.0063* (0.0037)	–0.0067 (0.0126)	–0.0067 (0.0092)
Constant	–4.2753*** (0.5375)	–4.2753*** (0.5824)	–3.8962*** (0.5044)	–3.8962*** (0.4676)	–3.1116*** (0.4261)	–3.1116*** (0.3581)
Observation	300	300	299	299	298	298

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table 5.** The effect of interaction terms on North Korean total provocation (missile + nuclear tests)

	Model I	Model II	Model III ( <i>t</i> – 1)	Model IV ( <i>t</i> – 1)	Model V ( <i>t</i> – 2)	Model VI ( <i>t</i> – 2)
Total meeting × sanctions	–0.00134 (0.00126)	–0.00134* (0.000747)	–0.00296* (0.00179)	–0.00296 (0.00201)	–0.00515* (0.00293)	–0.00515*** (0.00188)
Internal instability	0.00506 (0.00546)	0.00506* (0.00305)	0.00641 (0.00465)	0.00641** (0.00303)	0.00562 (0.00420)	0.00562* (0.00324)
Sanctions	0.00293** (0.00121)	0.00293*** (0.000895)	0.00430*** (0.00119)	0.00430*** (0.000824)	0.00404*** (0.00133)	0.00404*** (0.00107)
Attack	0.00372* (0.00209)	0.00372** (0.00153)	0.00197 (0.00200)	0.00197 (0.00222)	0.000419 (0.00255)	0.000419 (0.00196)
Constant	–1.390*** (0.175)	–1.390*** (0.180)	–1.439*** (0.175)	–1.439*** (0.190)	–1.294*** (0.178)	–1.294*** (0.181)
Observations	300	300	299	299	298	298
	Model VII	Model VIII	Model IX ( <i>t</i> – 1)	Model X ( <i>t</i> – 1)	Model XI ( <i>t</i> – 2)	Model XII ( <i>t</i> – 2)
Total meeting × attack	–0.00490 (0.00411)	–0.00490 (0.00311)	–0.00835 (0.00660)	–0.00835 (0.00547)	–0.00699 (0.00666)	–0.00699 (0.00647)
Internal instability	0.00529 (0.00549)	0.00529* (0.00310)	0.00669 (0.00472)	0.00669** (0.00297)	0.00547 (0.00427)	0.00547* (0.00323)
Sanctions	0.00235** (0.00102)	0.00235*** (0.000837)	0.00354*** (0.00105)	0.00354*** (0.00100)	0.00295** (0.00120)	0.00295** (0.00116)

(Continued)

Table 5. (Continued.)

	Model VII	Model VIII	Model IX ( <i>t</i> – 1)	Model X ( <i>t</i> – 1)	Model XI ( <i>t</i> – 2)	Model XII ( <i>t</i> – 2)
Attack	0.00460** (0.00227)	0.00460*** (0.00163)	0.00255 (0.00209)	0.00255 (0.00202)	0.00106 (0.00269)	0.00106 (0.00190)
Constant	–1.372*** (0.175)	–1.372*** (0.179)	–1.399*** (0.179)	–1.399*** (0.195)	–1.246*** (0.184)	–1.246*** (0.181)
Observations	300	300	299	299	298	298
	Model XIII	Model XIV	Model XV ( <i>t</i> – 1)	Model XVI ( <i>t</i> – 1)	Model XVII ( <i>t</i> – 2)	Model XVIII ( <i>t</i> – 2)
Total meeting × internal instability	–0.0380** (0.0179)	–0.0380*** (0.0128)	–0.0432** (0.0215)	–0.0432** (0.0217)	–0.0612** (0.0270)	–0.0612* (0.0329)
Internal instability	0.00690 (0.00574)	0.00690** (0.00324)	0.00801 (0.00487)	0.00801*** (0.00283)	0.00686 (0.00439)	0.00686** (0.00281)
Sanctions	0.00256** (0.00104)	0.00256*** (0.000848)	0.00345*** (0.00103)	0.00345*** (0.000956)	0.00295** (0.00116)	0.00295*** (0.00112)
Attack	0.00418** (0.00213)	0.00418*** (0.00154)	0.00208 (0.00202)	0.00208 (0.00212)	0.000496 (0.00259)	0.000496 (0.00190)
Constant	–1.347*** (0.174)	–1.347*** (0.178)	–1.361*** (0.177)	–1.361*** (0.193)	–1.191*** (0.180)	–1.191*** (0.181)
Observations	300	300	299	299	298	298

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

significant (Model VII–XII). When North Korea faced attacks and threats from the US and its allies (South Korea and Japan), the China–North Korea high-ranking meeting could not deter North Korea’s missile and nuclear tests. As the US and its allies’ aggressive actions threatened North Korea, Chinese leaders could not convince North Korean leaders not to engage in provocative actions despite engaging in high-level meetings. China’s offer of diplomatic and military support to North Korea during high-level bilateral meetings, contingent upon the cessation of its missile and nuclear tests, appears ineffective. These findings prove that North Korea perceives a greater threat from the hostile behavior of the US and its allies than from sanctions imposed by foreign countries. Thus, North Korean leaders remain impervious to the appeals by Chinese leaders to refrain from conducting missile and nuclear tests during high-level meetings. These results reject the fourth hypothesis.

In models XIII to XVIII, statistical analyses were conducted to determine the relationship between the interaction terms (high-level meetings between China and North Korea and instability in North Korea) and its missile and nuclear tests. The impact of the interaction term on North Korea’s provocations is negative and statistically significant. The rise in domestic instability in North Korea maximizes the impact of the high-level visits between leaders of both countries in terms of controlling North Korea’s missile and nuclear tests. During times of heightened instability in North Korea, Chinese leaders find it easier to convince North Korean leaders to refrain from conducting missile and nuclear tests due to the latter’s reliance on economic aid from China to stabilize their socioeconomic situation by avoiding provocative actions. These findings support the fifth hypothesis.

Regarding control variables, there is a positive and statistically significant relationship between internal instability and North Korean nuclear and missile tests. This implies that when North Korea experiences internal instability, it tends to engage in hostile behavior. This behavior can be interpreted as a strategy to divert citizens’ attention away from domestic difficulties, such as the economic crisis. Furthermore, sanctions on North Korea have a significant positive relationship with its offensive actions. The sanctions on North Korea increase North Korean missile and nuclear tests, as the country may use provocations as a means to lift sanctions. The impact of external threats or attacks by the US and its allies on North Korea is positive and statistically significant. Due to the perceived threat posed by these countries’ hostile actions, North Korea increases its nuclear and missile tests. Based on the idea of “balance of threat,” North Korea seeks to balance the threat posed by the US and its allies to its national security by increasing its nuclear and missile tests (Walt 2010, 10).

## **Conclusion**

This study used monthly data to empirically analyze how high-level talks between North Korea and China influence missile and nuclear tests by North Korea. As socialist allies, leaders from both countries have held regular diplomatic meetings, which have served as a communication channel for gathering information and adjusting policies. The contact theory, issue linkage, and the incomplete information problem served as the theoretical foundation for this study. According to the contact theory, high-level meetings between both sides can reduce negative bias by fostering

cooperation toward a common goal. Based on issue linkage, high-level meetings could create a platform to negotiate multiple issues, and finally reach a mutual consent. Moreover, in light of the problem of incomplete information, diplomatic meetings can facilitate the exchange of opinions and ideas, which can lead to harmonizing policies on both sides. China seeks regional stability to ensure sustainable economic development, while North Korea relies on China's assistance for its survival. High-level meetings between North Korea and China have had a significant impact on reducing North Korea's motivations for provocative actions, as these meetings facilitated mutual understanding and policy harmonization. In order to restrain North Korea from conducting nuclear and missile tests, high-level talks serve four functions: improving bilateral relations, providing economic aid for stability, preventing future provocations, and participating in nuclear negotiations. However, the existing literature on the China–North Korea relationship has not fully explored the diplomatic effects of high-level meetings on North Korea's missile and nuclear tests.

Statistical findings demonstrate that all three types of high-level meetings (high-ranking meetings without a top leader, meetings involving one top leader, and summits) significantly limit the number of nuclear and missile tests by North Korea. The increase in bilateral visits coincided with a decrease in North Korea's missile and nuclear tests. North Korea and China can avoid provocative acts by harmonizing their opinions during high-level meetings because they are aware of each other's preferences and best offers due to information sharing. Moreover, these meetings can mitigate North Korean provocations by improving bilateral relations, providing economic aid, exerting pressure, and facilitating adjustments to the relationships between participating countries in nuclear negotiations.

Regrading nuclear tests, summit meetings have proven to be most effective in preventing North Korea from conducting nuclear tests. These summits are attended by top national leaders, who have the highest decision-making authority, and are, therefore, the most effective way to negotiate the North Korean nuclear issue. These summits facilitate top national leaders to discuss the issues directly and better understand each other's ideas and intentions, leading to a reduced likelihood of nuclear tests by North Korea after the summits.

Empirical findings for the interaction terms confirm that the impact of the high-level meetings on reducing provocations by North Korea is maximized under certain conditions. Regarding the total number of provocations, which include missile and nuclear tests, as sanctions, attack, and threat against North Korea and internal instability in it intensify, high-level meetings have proven to be more effective in limiting the country's provocative actions.

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**Competing interest.** The author declares none.

## Notes

1. The Wukang Group, China's largest resources trading company, obtained the right of developing the Yongdeung mine, the biggest coal mine in North Korea during Hu Jintao's visit in 2005 (Lee 2009, 56). North Korea agreed a joint development of oil fields in the West Sea with the China National Offshore



Oil Corporation Ltd. (CNOOC) when North Korean vice premier was visiting China in December 2005 (Lee 2009, 57). Kim Jong-Il and Hu Jintao formed an agreement for cooperation in education, the software industry, and tourism and a joint project of two special economic and trade zones at Hwanggumpyeong island in the Yalu River between North Korea and China and Rason in the Northeast coast of North Korea (Kim 2013, 36; Kong 2018, 81; Lee 2014, 144–145; Yoon and Lee 2013, 25).

2. Xi Jinping preferred “normal state-to-state relations” with North Korea over “traditional special relations” (Kim 2017, 113; Shin 2018, 296). After North Korea’s missile test in April 2012, China made it a condition for Kim Jong-un’s visit to China that North Korea not conduct a third nuclear test. North Korea rejected the demand and promised to notify China well in advance of any future nuclear tests, but China did not approve of Kim Jong-Un’s visit (Kim 2013, 31). After North Korea conducted its third nuclear test in February 2013, China curtailed its diplomatic and military engagements with North Korea (Park and Park 2017, 373). In February 2014, Xi Jinping was unwilling to meet Kim Jong-un and instead sent vice foreign minister Liu Zhenmin to inform North Korea of China’s intentions, including denuclearization, peace, and stability (Easley and Park 2016, 652–653; Snyder 2016, 3). As North Korea conducted two missile tests in 2014, “by the end of 2015, Xi had met seven times with South Korean President Park Geun-hye but never with Kim Jong-un” (Easley and Park 2016, 665). This punishment appears to be explicitly aimed at North Korea’s young leader to demonstrate to him the importance of respecting Chinese norms, which he had disregarded since succeeding his father, Kim Jong-il, in December 2011.

3. North Korea conducted missile tests on February 7, 2016. China suspended financial aid, forbade North Korean ships from entering the port of Dandong in the Liaoning province of China, prohibited money transfers to North Korea, and froze North Korean assets in China (Khun 2016, March 18; Hong 2016, February 25).

4. Kim Yong-nam, the speaker of the North Korean parliament, visited China in June 1999 to seek Jiang Zeming’s backing for military actions against South Korea in the West Sea, but Jiang Zeming declined. A week after Kim Yong-nam’s visit to China, military officials from both sides reached an agreement that North Korea must notify China of any military actions against South Korea (Ji 2011a, 77).

5. Table A1 reveals a list of positions of participating officials in high-level meetings is in Appendix.

6. “Event data consists of coded interactions between socio-political actors (i.e., cooperative or hostile actions between individuals, groups, sectors and nation states). Events are automatically identified and extracted from news articles by the BBN ACCENT event coder. These events are essentially triples consisting of a source actor, an event type (according to the CAMEO taxonomy of events), and a target actor. Geographical-temporal metadata are also extracted and associated with the relevant events within a news article” (Lautenschlager 2015a, 1).

7. “The number is used to represent the amount of *hostility* or *cooperation* implied by the event type, where negative numbers represent hostile actions and positive numbers represent cooperative actions;  $-10$  represents the most hostile of hostile events, while  $+10$  represents the most cooperative of cooperative events. Values of 0 are interpreted as being neutral” (Lautenschlager 2015b, 3).

8. Poisson distribution can be used for analysis of count data that is a positive integer. However, the Poisson distribution assumes that the expected value and variance of a random variable are the same. However, if the actual observations do not, that is, if the mean value and the variance differ (overdispersion), it becomes difficult to fit the observations to the model. In this case, the negative binomial distribution can be used.

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## Appendix

Table A1. Positions of participating officials in high-level meeting

Country	China	North Korea
Position	Acting General Secretary of Communist Party of China	Alternate member of the Politburo
	Alternate Member of the Central Politburo	Chairman of the Supreme People's Assembly
	Chairman of Central Advisory Commission	Chairman of the Standing Committee of the Supreme People's Assembly
	Chairman of Communist Party of China	Chief of General Staff Department of Korean People's Army
	Chairman of the People's Republic of China	First Secretary of Workers' Party of Korea
	Chairman of the Standing Committee of the National People's Congress	General Secretary of Workers' Party of Korea
	Director General of General Political Department of the People's Liberation Army	Head of the Supreme People's Procuratorate
	Director of International Affairs Department of Workers' Party of Korea	Member of Central Committee of the Workers' Party of Korea
	Director of National Commission on Science and Technology	Minister of Foreign Affairs
	Head of International Liaison Department of the Communist Party of China	Member of National Defense Committee
	Member of the Central Politburo	Member of Politburo of Workers' Party of Korea
	Member of the Politburo Standing Committee of Communist Party of China	Member of the Presidium of the Supreme People's Assembly
	Minister of Defense	Member of the Political Bureau of the Central Committee of the Workers' Party of Korea
	Minister of Foreign Affairs	Minister of Defense
	Minister of Trade	Minister of People's Armed Forces
	Vice Chairman of Communist Party of China	Minister of Trade
	Vice Chairperson of the National Committee of the Chinese People's Political Consultative Conference	Premier
	Premier	President
	President	President of the Presidium of the Supreme People's Assembly
	Secretariat of the Communist Party of China	Prime Minister

(Continued)

**Table A1.** (Continued.)

Country	China	North Korea
	Secretary of Central Political and Legal Affairs Commission	Secretary of Central Committee of the Workers' Party of Korea
	Secretary of the Secretariat of the Communist Party of China	Secretary of Democratic Front for the Reunification of the Fatherland
	State Councilor	Vice Chairman of the National Defense Commission
	Vice Chairperson of the National Committee of the Chinese People's Political Consultative Conference	Vice Director of the General Political Bureau of the Korean People's Army
	Vice Premier	Vice Premier
	Vice President	Vice President
		Vice President of Presidium of the Supreme People's Assembly

Note: Source from CSIS.

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