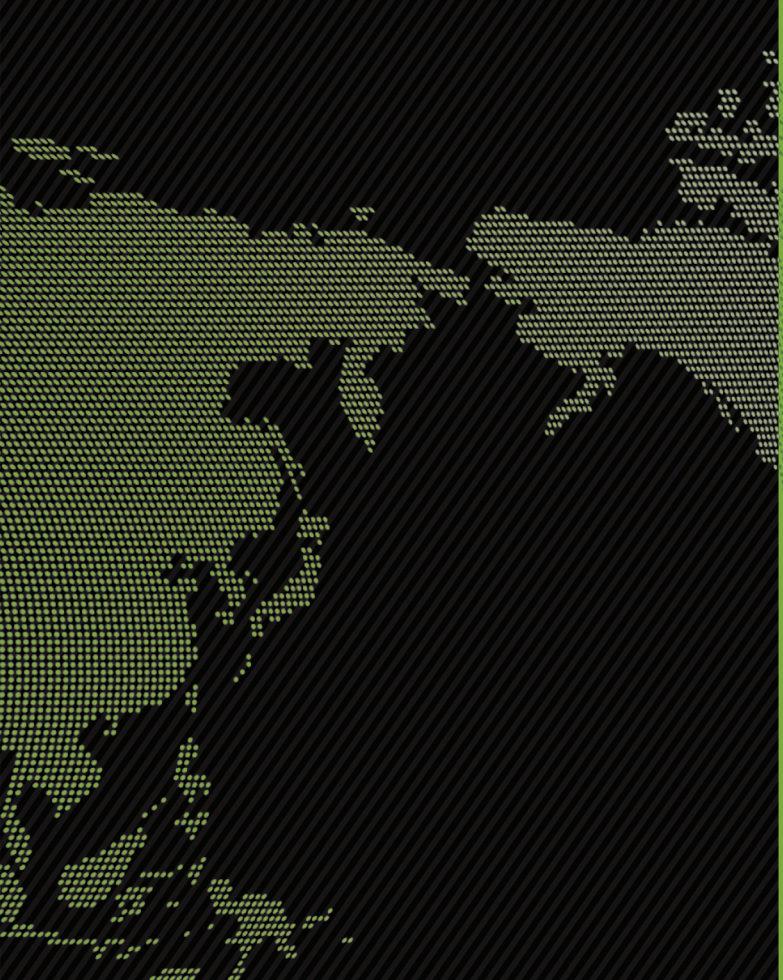
Study Series 2017-01

Implications of North Korea's Nuclear Advancement and Response Measures

Chung, Sung-Yoon *et al.*



Korea Institute for National Unification

Study Series 2017-01

Implications of North Korea's Nuclear Advancement and Response Measures

Chung, Sung-Yoon
Lee, Dong Sun
Kim, Sang Ki
Ko, Bong-Jun
Hong, Min

Korea Institute for National Unification

Implications of North Korea's Nuclear Advancement and Response Measures

Printed	August 2017
Published	August 2017
Published by	Korea Institute for National Unification (KINU)
Publisher	President, Korea Institute for National Unification
Editor	External Cooperation Team, Division of Planning and Coordination
Registration number	No.2-2361 (April 23, 1997)
Address	217 Banpo-daero(Banpo-dong), Seocho-gu, Seoul 06578, Korea
Telephone	(82-2) 2023-8208
Fax	(82-2) 2023-8298
Homepage	http://www.kinu.or.kr
Design/Print	Handesigncorporation Co. Ltd (82-2) 2269-9917
ISBN	978-89-8479-878-6 93340 : Not for sale 349.82-KDC6 / 327.1747-DDC23 CIP2017021492

CONTENTS

Korea Institute for National Unification

1. Introduction

1. Introduction

This research mainly aims to explore a strategic direction in response to the nuclear missile advancement of North Korea by evaluating its implications. To this end, the research primarily analyzes the nuclear capability and nuclear strategy of the Kim Jong-un regime and then utilizes such analysis to evaluate the implications of nuclear advancement over the next five years by categorizing them into the following dimensions: 1) international relations; 2) inter-Korean relations; and 3) South Korea and North Korea. This paper presents the implications of the research and sets a direction for future research by proposing principles and strategies for South Korea when responding to the DPRK's accelerated nuclear program.

Korea Institute for National Unification

2. Nuclear Capability and Nuclear Strategy of North Korea

2. Nuclear Capability and Nuclear Strategy of North Korea

A. North Korea's Nuclear Materials and Nuclear Weapon Stocks

Table 1 below shows the estimated stocks of nuclear materials in North Korea. The North is currently producing plutonium at the Yonbyon 5Mwe reactor. The facility is capable of producing 8 kg of plutonium per year when the reactor is operating at 100% of its rated power. But it is possible that only approximately 3-4 kg are being produced due to degradation of facilities. According to scientific analysis and opinions of experts at home and abroad, the DPRK is estimated to possess 19-48 kg of plutonium as of October 2016 and is expected to hold 31-64 kg of plutonium by 2020.

Possession and production of highly enriched uranium (HEU) can be categorized into three scenarios based on the number of centrifuges which are already in operation or are suspected to be in operation. Pyongyang is estimated to possess approximately 200 kg of HEU as of October 2010 based on the number of centrifuges that North Korea revealed to U.S. nuclear experts, Dr. Hecker and his colleagues in 2010 (Scenario A). Considering that North Korea doubled the size of the enrichment facility in Yongbyon in 2013,

the DPRK has probably acquired approximately 330 kg of HEU as of 2016. This figure is based on the assumption that the North was operating 4,000 centrifuges in mid-2013 (Scenario B). Scenario C would be that there is a secret enrichment facility in operation although there is no concrete information regarding this matter. North Korea has three flow forming machines, which are essential to produce rotors, and core components of centrifuges. As of 2016, the DPRK can acquire a stock of up to 570 kg of HEU and in 2020, the North can have a whopping 1130 kg of HEU.

<Table 1> Estimates of Nuclear Material Stocks in North Korea in 2016 and 2020

	2016		2020	
	Plutonium Stocks	High Enriched Uranium Stocks	Plutonium Stocks	High Enriched Uranium Stocks
Scenario A	19-48 kg	200	31-64 kg	360
Scenario B		330		650
Scenario C		570		1130

Table 2 and Table 3 illustrate the number of weapons that the North can hold based on the estimated stocks of nuclear material in the country. To manufacture a 15 kiloton nuclear weapon, 3-6 kg of plutonium and 10-40 kg of HEU are required. The amount of nuclear material used in each weapon vary depending on the loss rate of nuclear materials, warhead miniaturization capability, and characteristics of warheads in production.

<Table 2> Estimates of Nuclear Weapons in North Korea in 2016

	Number of Plutonium Bomb	Number of Uranium Bombs	Total Number
		Based on the Volume of Nuclear Materials Used (ranging from 10 to 40 kg)	
Scenario A	3 ~ 16	5 ~ 20	8 ~ 36
Scenario B	3 ~ 16	8 ~ 33	11 ~ 49
Scenario C	3 ~ 16	14 ~ 57	17 ~ 73

<Table 3> Estimates of Nuclear Weapons in North Korea in 2020

	Number of Plutonium Bombs	Number of Uranium Bombs	Total Number
		Based on the Volume of Nuclear Materials Used (ranging from 10 to 40 kg)	
Scenario A	5 ~ 21	9 ~ 36	14 ~ 57
Scenario B	5 ~ 21	16 ~ 65	21 ~ 86
Scenario C	5 ~ 21	28 ~ 113	33 ~ 134

Given some circumstances, however, the possibility cannot be ruled out that the North actually does not hold as much nuclear material as estimated above. Nuclear weapons estimates held by the regime are calculated under the assumption that North Korea has weaponized all of its the nuclear materials into warheads. It is likely that the actual number of nuclear weapons possessed by the North is smaller than the estimates, which are based on the assumption that the uranium enrichment facilities are in proper operation. Estimates of the current or future nuclear weapon stocks in North Korea are based on the stockpiles of HEU. Still, as it has been stated, another possibility cannot be ruled out that North Korea might have a difficulty in securing HEU. According to a report released by the Institute for Science and International Security in the United States in March 2016, “two of the fuel rods produced by the North failed and melted sometime between about

2012 and 2014, requiring a complicated cleanup" and "this raises serious reactor safety concerns." Given the details of North's fifth nuclear test, there could be a serious problem in North Korea's uranium enrichment. If Pyongyang had possessed several kilograms of HEU, then the North would not have conducted its fifth nuclear test with 20 kg of HEU. Instead, it would have used 40 kg of HEU and the test would have had an explosive power of 100 kilotons. Then the North could have claimed that it conducted a boosted fission bomb test successfully or carried out a hydrogen bomb test. Moreover, the DPRK could have then argued that the regime has achieved the advancement of an alleged hydrogen bomb test. There is a possibility that fuel might not be properly supplied due to issues with uranium enrichment. That can be another reason why a 100 MW light-water reactor is not currently in operation, besides the issues with security.

B. North Korea's Nuclear Warhead Manufacturing Capability

North Korea's nuclear capabilities in building nuclear warheads seem to have reached an upper intermediate level, compared to other powerful nuclear weapons states. With its nuclear technology, North Korea seems to have developed fission weapons and is now advancing its capability to produce fusion weapons (H-bomb). Pyongyang conducted the second and the third nuclear tests and has boasted the capability of the first generation fission weapon. Experts, however, cast doubt on its capability because the explosive power did not keep up with that of standard fission weapons. As the North has shown an explosive power of 10-30 kilotons in the

fifth nuclear test, it is fair to assume that the DPRK has acquired the skills of manufacturing a "standard nuclear bomb." Fission weapons normally have an explosive power of roughly 20 kilotons.

There is a possibility that North Korea is capable of manufacturing a first generation fission weapon and has partly acquired the skill of manufacturing a boosted fission weapon. South Korean, the US, and Japanese authorities presume that it is highly likely that the fourth nuclear test was a boosted fission test. The first reason is that Pyongyang is likely capable of producing tritium in the 5 MWe reactor, a key component in the design of a boosted fission weapon. The second reason is that the DPRK called this fourth nuclear test "a hydrogen bomb test." When a reactor with rods containing lithium-6 is in operation, the reactor can produce tritium which can be used for nuclear fusion. That leads to the assumption that North Korea conducted the fourth nuclear test with a mixture of tritium and deuterium. Regardless of Pyongyang's claim regarding a boosted nuclear fission bomb test, the North has clearly shown its ability to develop the first generation nuclear technology through the second, the third and the fifth nuclear tests. The next step for the DPRK would be to acquire the ability to manufacture an H-bomb. The regime could unreasonably insist that it has launched an H-bomb, not a boosted nuclear fission bomb, with the ultimate goal of producing a boosted nuclear fission bomb. Whether North Korea could be capable of manufacturing an H-bomb will be decided by its nuclear strategy but ultimately is very closely related to its possession of nuclear material.

C. North Korea's Nuclear Strategy

North Korea's nuclear strategy is being developed along with the advancement of its nuclear capability. The North has never identified what kind of nuclear deterrence posture it would retain. For the DPRK, seeking a maximum deterrence does not make any sense given its capability. It is because 1) Pyongyang is not capable of wiping out US nuclear forces through a preemptive strike and 2) the North cannot win a nuclear war against the U.S. Many experts argue that North Korea will aim to maintain a minimum deterrence posture. During his reign, Kim Jong-il put forward a minimum deterrence strategy regardless of actual nuclear capability and the effectiveness of the strategy. This is because the North concentrated its efforts to ramp up second strike capabilities (e.g., long-range missile development) rather than to acquire warfighting capability or first strike capability. As North Korea has emphasized that it has the ability to strike the U.S. mainland and officially made it clear since 2006 that it will not use nuclear weapons first, the DPRK has maintained its minimum deterrence posture.

However, it is difficult to ascertain if the Kim Jong-un regime is still pursuing minimum deterrence because the regime lacks the nuclear capability to maintain this posture despite its efforts. To adopt a minimum deterrence strategy, a state must have a certain level of nuclear forces. The nuclear power should have an ability to trigger a retaliatory strike against an adversary's first strike. Still, there is no clear answer to "how much is enough?" when it comes to nuclear deterrence. Given the number of nuclear weapons in each nuclear-armed state, North Korea should have a similar number of

weapons to retain a minimum deterrence posture. To illustrate, Pakistan puts forth efforts to have more stable nuclear power in place by possessing approximately 70 to 80 nuclear weapons. France and the United Kingdom possess at least around 130 nuclear weapons each.

As the previous research results show, the North is able to produce approximately 8 to 36 nuclear warheads and the number is expected to be 14 to 57 by 2020. In fact, the North is highly likely to hold the lower number of nuclear warheads because the figure is estimated under the assumption that it will utilize all the nuclear materials exclusively in manufacturing nuclear warheads. North Korea continues to seek advancements in intercontinental ballistic missile (ICBM), but it is not yet capable of threatening big cities and major industrial facilities in the U.S. As of 2016, Pyongyang has yet to completely secure warhead re-entry technology and does not have an absolute quantity of ICBMs. Still, it is predicted that by 2020, North Korea will not see a breakthrough in terms of the quantity and technological advancement for such technology. Recently, in particular, North Korea is focusing on building-up SLBM capabilities, but it would take more than ten years to build and retain the nuclear-powered submarine. It is questionable whether the North could deter the US from using nuclear weapons even if the regime could deploy a nuclear powered submarine.

Then what are the characteristics of the Kim Jong-un regime's current nuclear posture and what posture will it take in the future? Previously, the Kim Jong-il regime was overly confident about the impacts of its nuclear weapons and nuclear capabilities and pursued

a minimum deterrence posture regardless of its strategic impact and effect. However, through North Korea's second nuclear test in 2009 and until its third test in 2013, the actual nuclear posture of the North resembled more of a catalytic posture. Although North Korea lacked the nuclear capabilities to attain a minimum deterrence posture, it could actively induce China's engagement by leveraging China's strategic interests towards stability on the peninsula, acquiring stability and external balance of the regime. The DPRK maximized the political and diplomatic impacts based on the ambiguity of the regime's nuclear capability despite its insufficient nuclear capability to pursue nuclear deterrence strategy towards the U.S. It can be interpreted as a typical catalytic posture that Pyongyang could afford a loss on sanctions under the patronage of Beijing every time the North faces international sanctions after launching nuclear and long-range missiles.

Following the third nuclear test, however, the nuclear posture of the DPRK shifted from a catalytic posture to an asymmetric escalation posture, the most aggressive posture. The reasons are as follows:

First, the DPRK is now strengthening nuclear capability towards the ROK. In particular, the North is strengthening the capability of Scud and Nodong Missiles that can mount nuclear warheads. Pyongyang tested boosted fission weapons during the fourth nuclear test in 2016 and the missiles are capable of miniaturizing nuclear warheads. North Korea's intention is to directly target South Korea by mounting nuclear warheads on its medium-range missiles.

Second, the DPRK is putting emphasis on nuclear retaliation

against a conventional attack. Claiming South Korea-U.S. joint military exercises are serious provocations, the North repeatedly threatened to launch a preemptive nuclear attack. However, North Korea has not revealed its intention not to conduct a preemptive nuclear strike against a conventional attack. This can be understood in a broader sense that the regime is determined to use nuclear weapons in the event of a conventional attack by South Korea-U.S. joint military drills.

Third, a state aiming for an asymmetric escalation posture adopts the nuclear first-use doctrine. North Korea has put an option on the table to arbitrarily use nuclear weapons first whenever the regime needs to take military actions. The DPRK has justified its nuclear first-use doctrine since 2016 for the following reasons: 1) the US hostile policy toward the DPRK; 2) de facto state of war led by armistice system breakdown; and 3) the threat of a preemptive nuclear war from South Korea-U.S. joint military drills.

Fourth, keeping an asymmetric escalation posture effectively requires the establishment of a delegation-type nuclear command and control system. North Korean leader Kim Jong-un has an assertive and exclusive control over the nuclear command and control system. The DPRK especially stresses that the regime is always ready to fire its arsenal of nuclear weapons at anytime. That means that missiles can be launched at any time as soon as the leader makes political and military decisions because North Korea has reached the most advanced stage of preparation for nuclear missile launch. Under an authoritarian regime, Kim Jong-un directly controls the nuclear program, but the regime is putting efforts to maximize the effect of

delegation-type nuclear command and control system for the use and deployment of nuclear weapons.

Korea Institute for National Unification

3. Implications of North Korea's Advancement in Nuclear Capability

3. Implications of North Korea's Advancement in Nuclear Capability

A. Implications on International Community

North Korea's progress in nuclear capability affects the international community in more than one way. Major ramifications are as follows: first, it deters the Kim regime from reaching a "tentative agreement" with the U.S. With its capabilities to address nuclear attacks, arms races, and the nuclear domino, the U.S. does not have to rely on the DPRK's cooperation. Unless Pyongyang acquires secondary strike capabilities, which is highly unlikely, Washington will not seek an agreement on limiting nuclear weapons development. The lack of mutual trust is another obstacle. Also, Pyongyang's nuclear armament is short of neutralizing America's nuclear umbrella. The Kim regime would not dare to launch a nuclear attack on allies as long as it harbors the risk of unintended conflict escalation. The U.S. and its allies can contain the danger of war within an appropriate level by seeking various countermeasures to nuclear aggression from the DPRK.

North Korea's nuclear armament will consolidate regional alliances for the U.S. In the face of this threat, America's allies will find their ties with the U.S. a more useful security means than before. Looking

for greater influence, Washington would welcome requests for stronger protection from the allies. On the other hand, advancement of Pyongyang's nuclear capabilities will weaken its alliance with China in the short- to mid-term, while the regime's nuclear armament will promote competition and confrontation among neighboring nations. Military responses provoked by the nuclear threat aggravate the security dilemma and prompts unrealistic anticipation and subsequent disappointment for concerned countries. This situation, contrary to some people's concern, will not end up in a new Cold War.

The Kim Jong-un regime's nuclear armament is a grave threat to the international non-proliferation regime. North Korea withdrew the NPT and engaged in proliferation activities in the past. It also demands to be recognized internationally as a nuclear weapon state and threatens major non-nuclear weapon states. All this can cause a unique and significant shock to the non-proliferation regime, albeit its implications for the global non-proliferation regime will be limited. Threats posed by North Korea's nuclear weapons do not cross the borders of Northeast Asia, and the demonstration effect is weak. Moreover, challenges posed by Pyongyang's nuclear ambition spurs the international community's effort to maintain and consolidate the non-proliferation regime.

B. Implications on Inter-Korean Relations

The impact analysis on this issue focuses on two major questions. The correlations between North Korea's advance in nuclear capability

and the two Korea's respective bargaining power is one. How the dangerous technological progress affects the prospect of inter-Korean exchange and cooperation is the other. Pyongyang's military might have significantly strengthened thanks to progress in nuclear capabilities. This trend, however, does not indicate a reversal in power dynamic on the peninsula. South Korea's military spending and economic strength far outweigh those of Pyongyang and the U.S. provides deterrence as compensation for Seoul's renunciation on nuclear armament. Still, the overall disparity in military power may be closing between the two Koreas, approaching to balance.

Precedent studies explored the implications of the distribution of military power and nuclear asymmetry on bilateral relations at a global level. Based on those studies, one might deduce North Korea's advancing nuclear capability and the subsequent growth in military might encourage military provocations against the South, thereby increasing the likelihood of an inter-Korean military crisis. Also, precedent studies indicate increased military capabilities of Pyongyang may give the Kim regime a bigger bargaining power. There are contrasting views on the correlations between nuclear asymmetry and bargaining power, however. Some see the DPRK's nuclear warheads a good bargaining chip to pressure Seoul. Yet, it is also possible that nuclear weapons do not add up much to the owning party's bargaining power because of the low chance of actually using them.

An empirical investigation on the deductions above provides some lessons. First, a comparative analysis between North Korea's local provocations conducted before and after Pyongyang's third nuclear

experiment—the moment North Korea's advancement in nuclear capability appeared to begin—indicates that advanced nuclear capability and the subsequent growth in military might are unlikely to increase the odds for inter-Korean military confrontations. This empirical analysis differs from the conclusion of precedent studies, in part because South Korea has deterrence capabilities in terms of both conventional military power and comprehensive capabilities to conduct a war. Also, Pyongyang's main purpose of its nuclear programs is regime survival and maintenance, which also explains why there may be little correlations between Pyongyang's progress in nuclear armament and willingness for military provocation. This analysis's limit should be noted as well, that researchers did not have the sufficiently long period of observation to back their conclusion. Therefore, the authors recommend a careful approach on asserting a positive correlation between North Korea's nuclear advancement and inter-Korean military confrontation based on precedent studies.

Secondly, after observing the explosion of North Korean PMD series mines in the DMZ in August 2015 and the following negotiations between the two Koreas, one may suggest North Korea's nuclear capability advance and growth in military might may not give the Kim regime a greater pressure on the South or consolidate its bargaining power. The DPRK's nuclear weapons, therefore, may be a useful tool to enhance deterrence, but not an effective means of coercion on South Korea. First, because of the formidable power of the nuclear weapons, using them for aggression may entail far greater cost than benefit for the party that launches them, a fact all negotiating parties acknowledge. On the

other hand, the ROK's overall military capabilities surpass those of the DPRK, which also supports the view that the Kim regime can hardly gain the upper hand on the negotiating table in a time of crisis. This research has its limit as a study on a single case. Still, it is worth considering in formulating North Korea strategy in the future.

A takeaway from the analyses above is that the advanced nuclear weapons of North Korea do not necessarily lead to military provocations or coercion. Thus, there is little reason to believe the nuclear advancement is going to cast a shadow on the future of inter-Korean relations, exchange, and cooperation. Regarding the prospects for exchange and cooperation, the security dilemma is another concern. The security dilemma refers to a situation where a country's military reinforcement over security concerns results in undermining other countries' security. This concept explains how advancement in North Korean nuclear weapons poses a threat to South Korea even when it is not translated into aggressive actions, thereby undermining South-North exchange and cooperation. The security dilemma, however, does not occur without fail, and its degrees vary. When defense is the primary purpose of military reinforcement and the benefit of defense outweighs that of offense, a country's security efforts do not pose a significant threat to another's, making it less a challenge for international cooperation.

This study suggests the security dilemma caused by advancing North Korean nuclear capability obstructs inter-Korean exchange and cooperation only to a limited extent, and there is a chance of improved inter-Korean relations, resulting in an increase of

exchange and cooperation. Granted, Pyongyang may end up using nuclear arms either accidentally or out of misunderstanding. One cannot deny the very existence of the security dilemma, considering that Pyongyang's intention to develop nuclear weapons is in part obscure. Denuclearization is a worthy cause since nuclear advancement in North Korea is a key factor of instability and tension on the Korean Peninsula. Nevertheless, the authors would like to criticize the pessimistic view that the ROK is trapped in the security dilemma and therefore the future of South-North exchange and cooperation is bleak. In fact, under Kim Jong-un's leadership, many exchanges and cooperation programs have gotten reduced or postponed, although the regime's nuclear and missile capabilities have grown. It is also important exchanges and cooperation contribute to tension-easing and promotion of peace even in nuclear asymmetry.

C. Implications on Korea

While it is not a brand-new issue, the growing weight of North Korea's nuclear capability advancement calls for a new perspective. The political, economic, social as well as military, diplomatic and security implications of this issue necessitate formulating comprehensive yet concrete counter-policy for South Korea. The military needs to reevaluate deterrence capabilities that Korea has secured or can establish unilaterally so that it can deter nuclear provocations. In parallel, it is desirable to intensify discussion on how to strengthen public trust in the U.S. deterrence capabilities on the peninsula. One option is that South Korea, as an ally,

participates in Washington's planning, decision-making, and executing process concerning the use of nuclear weapons. That may include the formation of a consulting body similar to the Nuclear Planning Group, a pillar of NATO's old double-track decision-making system; summit-level consultation on when and how to use nuclear options and the establishment of encrypted communication facilities for such purpose; and the creation of new positions to plan and implement nuclear operations.

Response to nuclear threats from Pyongyang needs to be accompanied with a comprehensive analysis on South Korea's security landscape. Other than being exposed to nuclear threats from the North, the ROK is also surrounded by nothing but international powers. Such circumstances bring an innate dilemma for Seoul on how to strike a balance between current threats and future wars. In other words, on top of the immediate challenge from Pyongyang, the ROK also needs to address the military gap with surrounding nations. Reaching the right security balance between the two needs is a fundamental dilemma of South Korea that demands something more than simple discussion. In particular, the Korean government needs to consider the criticism that long-range artillery is a more practical and concrete threat from the North than the nuclear arms. Another argument not to be neglected is a call for enhanced intelligence sharing among Seoul, Washington, and Tokyo, which can be an effective measure against long-range missile attacks. If deemed necessary from the military perspective, the Korean government should start building the groundwork for trilateral intelligence sharing in earnest. The government may gain some foothold to this goal by hosting a strategic security dialogue with

Japan on international affairs and defense, and planning a joint military exercise with the U.S. and Japan.

When it comes to countering North Korea's nuclear reinforcement, public opinion has to be reflected to a certain extent so as to avoid service parochialism or inclination toward parochial interests in the ROK Armed Forces. South Korea's sense of helplessness about Pyongyang's nuclear asymmetry is an issue to be considered, considering the economic gap between the two Koreas and the size of the South Korean economy. The authors find this sentiment may have little to do with the budget size, but it is a result of a not-so-strategic way of thinking and budget distribution practices that have been unchallenged. The budget competition among service branches in the military became a practice in an environment quite political and bureaucratic. Critics have already pointed out the lack of scientific outlook in the defense spending and allocation plan in the Medium-term National Defense Plan, despite the government's requirement to do so. The Plan is an initiative to flesh out national defense policy and military strategy. Officers responsible for the Plan are also subject to criticism, in that their expertise may fall short of gaining public trust on the plan.

For example, previous budget requests for the military stressed security threats including North Korea's asymmetric threat and the possibility of a full-range provocation. But none is found in the requests any vision to respond to the key security issues and trends of the time. Thus, it is imperative to have an objective understanding, from a diplomatically and militarily strategic viewpoint, on what opportunities and challenges the ROK and the region are facing

now. Fostering experts and encouraging public discussion will help to achieve this goal. Also, in addition to the government-level meetings and cooperation, public diplomacy and other private channels for exchange need to be better exploited, as they are an opportunity to express Korea's concerns on North Korea's nuclear advancement.

As the guns and butter model demonstrates, putting resources into military capabilities always comes with some opportunity cost. Every country has different capabilities in resource mobilization. Korea's experience tells that service parochialism has had some adverse effects in ensuring effective response to North Korean threats, calling for the initiation of discussion on national defense reform. Unfortunately, previous discussions on this issue failed to produce constructive results in the past. To avoid the same mistake, there needs to be a public debate on what institutional mechanisms would be helpful in forging a consensus on such reform.

D. Implications on North Korea

Progress in nuclear weapon capability will have ramifications inside the Kim Jong-un regime as well. Political and diplomatic implications are visible in the DPRK's nuclear doctrine and national discourse on governance, among others. Following the advancement in its nuclear and missile technology, Pyongyang's nuclear doctrine has included specific details and taken a more aggressive tone. The doctrine, first appeared in 2003, found a shape over time through a memorandum published by the Ministry of Foreign Affairs of

North Korea, and "act on the status of self-defendant nuclear weapons state." Founding on the concept of self-defendant nuclear deterrence capabilities, the doctrine increasingly implies preemptive nuclear strikes. Serving as a means to keep the country in a permanent state of national emergency, the nuclear doctrine's goal has been defined as to safeguard the leadership.

Second, the nuclear advance of North Korea affects military strategy and international policy. Pyongyang has changed its military strategy to be more aggressive and concrete since the young Kim's rise to the power. The Strategic Rocket Forces, the missile and nuclear arms branch of the North Korean army, have been increasingly active. Since the Forces' establishment in 2012, missile provocations have increased in both number and degree. North Korea, eager to diversify its nuclear arsenal than ever before, is realigning conventional capabilities to the new war-fighting strategy that centers on nuclear arms and missiles. It also stresses the Party's and Leader's command and control authority on nuclear arms and missiles.

Third, North Korean nuclear advances also have an impact on the resource distribution, economic policy, social control, and marketization of the North. This aspect is perhaps best understood in the context of the formation and structuralization of the Party-military-industrial complex. This complex is a closed system that is built around the Defense Industry Apparatus of the Workers' Party. It also includes the Strategic Rocket Forces, nuclear-and-missile related special units, and local defense industry. The entire process of nuclear and missile development takes place inside the complex -

from the allocation and distribution of resource for nuclear and missile development; research and development; command and control structure; and experiments and practical use of the arms. Formed in the 1970s, the complex was the institutional hotbed for North Korea's advancing nuclear weapons capability. Under Kim Jong-un's leadership, more power and resources have been concentrated on the complex.

Last, the DPRK's South Korea policy is also affected. The aggressive nuclear policy is a favored bargaining chip of the young Kim's regime in handling inter-Korean relations. Today, South Korea policy is characterized as warlike and multifaceted, adopting various tactics such as dialogue, provocation, and peace offensive in a simultaneous manner. The Kim regime declared the importance of nuclear weapons as a means to prevent unification by absorption and institutional unification as well as a fundamental for its development strategy. North Korea's South policy will turn more belligerent as further technological advances are made, and will try to ward off Seoul's unification campaigns.

Korea Institute for National Unification

4. South Korea's Response

4. South Korea's Response

A. South Korea's Basic Response Principles

1) Call for Level-headed Strategic Assessment on Korea's Deterrence Capabilities

Today, there is little doubt the DPRK has an increasingly advanced nuclear capabilities and its nuclear strategy has taken a more hawkish approach, posing a greater direct security threat to South Korea. From a strategic prospective, however, it might be dangerous to overestimate the implications of North Korea's nuclear armament. There is an unrealistic argument that the DPRK's advancement in nuclear capability would nullify U.S. abilities to contain proliferation (including the nuclear umbrella), which may cause Pyongyang's miscalculation. Pyongyang, which has little understanding on how deterrence actually works, can be misguided by South Korean skeptics who dismiss America's nuclear deterrence capabilities. Overestimation on the impact of their military provocations would make the Kim regime act bolder and more belligerent. Worse, the DPRK would escalate its nuclear threat against the South, believing that their chance of success is high. Furthermore, North Korea may push nuclear development even harder, assuming strategic benefits of advancing nuclear

capability are bigger than they actually are. The more attractive North Korea finds by being a nuclear weapon state, the harder it will be to talk it into denuclearization. Even when Pyongyang is not convinced, the Kim regime can benefit from this skepticism, if this misguided belief becomes widely popular in the South. Driven by fear provoked by the false belief that America's deterrent capabilities are rendered useless, Koreans may turn to appeasement approach. Also, a growing suspicion on the effect of deterrence capabilities would undermine Korean people's accurate assessment on the benefits of the ROK-U.S. alliance, thereby weakening the alliance.

The ROK-U.S. alliance has sufficient capabilities to deter Pyongyang's nuclear attacks. After all, the allies can use nuclear and conventional weapons as a retaliatory strike capability. Deterrence by denial capabilities owned by the alliance is also significant. Indeed, the alliance's deterrence capabilities are sufficient to meet the challenges that might arise if Pyongyang keeps bolstering its nuclear arsenal. It is agreed that deterrence by punishment is the most reasonable answer to the North's nuclear forces. Deterrence by denial, in contrast, is a useful but unnecessary option. A hurried attempt to strengthen this secondary option would cause large and unnecessary military spending in time of an economic downturn. It would also divert the public attention from a more realistic threat, which is conventional military provocations - a dangerous mistake to make. On top of that, after witnessing Seoul's advancement in precision strike and missile defense capabilities, neighboring countries would feel uneasy and unstable and thus be prone to confront South Korea, perhaps unnecessarily. Therefore, if political and strategic

needs for stronger deterrence arise in South Korea, it will be a good choice to prioritize deterrence by punishment. An option to consider is nuclear sharing, a policy most prominently adopted by NATO. If Korea gains access to participate in U.S. nuclear operations, there will be greater trust on the ROK-U.S. alliance's ability to deter North Korea's nuclear threats by punishment. This approach also costs relatively little.

2) Cautions on Optimistic Views on Denuclearization

As DPRK's nuclear capability advances further, expectations and prospects are emerging on denuclearization, some of them optimistic. Many optimists express their hopes that Pyongyang and Washington may reach an agreement on denuclearization, and that Korea-China relations may play a bigger role. Unfortunately, this view is unrealistic or non-strategic in many aspects. First, an interim agreement between North Korea and the U.S. on nuclear freezing and non-proliferation is unlikely to be reached in the near future, since it's something neither side would welcome. Either too much anticipation or concern on such agreement, thus, would do more harm than good for South Korea. Excessive and misguided concern in the South can trigger suspicion over the U.S., damaging the two nations' ties. Second, an overly cautious attitude toward talks between Pyongyang and Washington may send the wrong message that ROK is against dialogue-based problem solving. Bearing exaggerated anticipation on the tentative agreement is no more desirable, however, since it is likely to end up a waste of diplomatic efforts. The tentative agreement, if prioritized in the ROK's North Korea

policy, may cause unnecessary tension with the U.S., who is reluctant to sign such a deal. It would unnecessarily make diplomatic efforts to gain support from other involved parties. Moreover, Korea's vain hope would present an opportunity for Pyongyang. By feigning its willingness to reach and implement a tentative agreement, the DPRK can draw benefits including loosened sanctions.

When it comes to North Korea's nuclear development, unrealistic expectations on each other only cause disappointment, deteriorating the lack of trust between parties. It should not be forgotten that overstressing the role of China in this matter is not always a strategically wise thing to do. South Korea's ties with China can stand on firm grounds when the smaller country correctly understands Beijing's interests. Therefore, Seoul needs to stay away from wishful thinking on China that might create a bubble in the Korea-China ties. Instead, it needs to face up to the reality, that Beijing is unlikely to pose a threat to the DPRK, its neighbor and also a useful buffer state. Putting too much hope on China's cooperation would not just prevent Seoul from finding feasible solutions for the matter, but harm its relations with Beijing.

3) Seoul's Role under International Non-Proliferation Regime

Nuclear provocations from Pyongyang have continued international sanctions on the North, which results in a dilemma, as national interests of involved countries increasingly overlap. Some observers suggest North Korea may be taking advantage of such situation, seeking the return of Cold-War style regional order. The return of

Cold War, in fact, is an unrealistic assumption that can take Pyongyang in the wrong direction. Prospects of a new Cold War in which North Korea, China, and Russia team up against South Korea, the U.S. and Japan might accelerate the regime's nuclear development. The return of the trilateral cooperation is beneficial for the DPRK. Thus, there's an incentive for the Kim regime to advance further its nuclear programs to secure support from the other two countries. Furthermore, if North Korea mistakenly believes a new Cold War has already been ushered in, it may become more provocative against the South, expecting solid support from China and Russia. Needless worries on a new Cold War can cause another damage: a security dilemma among the U.S., Japan, China and Russia. All this makes the reason why Koreans need to put an end to the widespread assumptions on a new Cold War before it spreads to other countries.

Against this backdrop, Korea needs to focus on the international non-proliferation mechanism in addressing the nuclearization of North Korea. Pyongyang's challenge to the non-proliferation regime is grave, but an effective mechanism can significantly limit its negative impacts. In other words, troubles that may arise from North Korea's nuclear weapon country status can be prevented or kept in control. To this end, the ROK needs to be an active cooperation partner in the global efforts to keep in check the North Korean regime's nuclear capabilities and to shun any remarks that are against the efforts' spirit. In this context, it is far from recommended Seoul appears to be willing to go nuclear. With the solid nuclear umbrella provided by the U.S., South Korea is in no need of nuclearization on its own. As long as the U.S. is in principle

opposed to proliferation, the political and economic cost of developing nuclear weapons would be high for the Northeast Asian country. The authors find Korea's transformation into a nuclear state highly unlikely in the near term, as it is far from a wise decision to pay such a huge price for something not urgently needed. Also, given that other parties are well aware of this situation, going nuclear would not serve as a useful leverage for Seoul. All things considered, ROK toying with nuclearization would cause a gratuitous damage on its national image, rowing against the international stream of efforts toward non-proliferation. Unless fundamental shifts occur in international security landscape, pitching for its own nuclearization would be all harm and no practical good.

B. Korea's Strategic and Policy Response

1) Political, Economic and Social Response

In the wake of the fourth and fifth nuclear experiments in 2016, it became all the more clear that North Korea pursued to improve its nuclear capabilities further. In response, Korea held the biggest-ever joint military exercise with the U.S. and halted the operation of the Kaesong Industrial Complex along with humanitarian exchanges. It also resumed loudspeaker broadcast towards the North, part of its psychological warfare. For the time being, tension is unlikely to ease. When prospects are dim for the elimination of sanctions against Pyongyang or improvement in inter-Korean relations, what

can shake the status quo appears to be either changes in external circumstances or North Korea's attitude.

Nevertheless, to handle this issue effectively, Korea should set up strategies and policies based on a few principles. First, there is a need to uphold the principle of peaceful resolution on North Korea's nuclear armament, through dialogue and compromise. Second, the Korean government needs to raise public awareness on how the DPRK's advancement in nuclear programs can pose a real threat to the country. Building on that effort, it is no less important to secure legitimacy and momentum of its policy choices for implementation. Third, detailed obligations and incentives for each stage are essential to break the vicious cycle of tension escalated by Pyongyang: negotiation, agreement, abrogation of agreement and tension rising again.

In addition, if Seoul takes too long in formulating a productive measure against the DPRK's increasing nuclear threat, the case for Korea's nuclearization will be considered even more compelling. Korea's nuclearization attempts would result in a need to re-balance its alliance with the U.S. along with the disapproval of the international community, thereby undermining Korea's sovereign credit ratings. Granted, chances are slim for practical dialogue or negotiations to be resumed for the time being. It does not mean Korea should give up the principle of peaceful resolution through talks altogether. In particular, the robust sanctions currently in place may give way to a more relaxed or dialogue-based approach in the future. Thus, as an attempt to secure an exit strategy among others, it would be wise to leave

some room for policy change, and clearly present South Korea's conditions on Pyongyang's return to the negotiation table.

Pyongyang's advanced nuclear capability may create a situation that demands Seoul to rely on military response, which undermines efficient distribution of budget and resources. Also, a security dilemma may aggravate the arms race. That, in turn, would raise sovereign risk, which will damage Korea's reputation and competitiveness in the global market. Although it was inevitable, the shutdown of the Kaesong Industrial Complex proves that inter-Korean ties strained by increased nuclear threats can drive up the Korean government's expenditure as well.

Observers might find it surprising Korean people's relatively serene attitude to a series of North Korean nuclear experiments and missile launches. In part, it is because Koreans have gotten used to provocations from the North to the extent of considering it part of their daily life. But the bigger factor at play appears to be their relative ignorance. Many Koreans fail to grasp fully the seriousness of the security threat posed on them by Pyongyang's nuclear arsenal. This calls for an awareness campaign that helps the public correctly understand the nature and reality of this issue, which can help in forging a broad consensus on the Korean government's North Korean policy.

Lastly, pursuing a package deal, such as the previous administration's "grand bargain" initiative is no longer applicable to the DPRK, as its nuclear capacity has advanced since then. Another considerable approach is a more detailed and phased roadmap toward North Korea's denuclearization, which includes effective carrot and stick

measures in each stage. The ultimate goal of such roadmap will be denuclearization and guarantee of the future of the current North Korean leadership after denuclearization. The roadmap needs to assure that once international cooperation and effective deterrence and defense system are firmly in place, Pyongyang's denuclearization will occur and be irreversible. That assurance will come only after discussion on how to guarantee the regime's existence and to control the regime's military operations and forces in a systematic manner after the end of the Byungjin policy, the parallel development strategy for nuclear weapons and economy that North Korea currently pursues.

In the meantime, North Korean people's perception of nuclear armament needs to be changed in the mid- and long-term. In contrast with the outside skepticism, Pyongyang has clung to push forward missile and economic development at the same time. The North Korean economy would only worsen if the regime remains adamant about its nuclear and missile programs. Its persistence will only lead to ever-strengthening international sanctions and China's eventual sign-up to the efforts. Even in case Beijing does not step up its sanctions or join the international sanctions only to an insufficient extent, the North Korean economy is likely to deteriorate further. China, after all, is highly unlikely to go against the international consensus on building a network of sanctions against the Kim regime.

If Pyongyang's grip on the weakening North Korean economy gets loosened, informal markets such as Jangmadang may thrive further. Popularity of Jangmadang can facilitate the spread of outside

information. Through Jangmadang, information can be and should be spread out that the people's suffering is not caused by international sanctions but the wrong policy decisions made by their nuclear-obsessed leaders; that the suffering is unavoidable for a considerable period of time unless the regime's mindset and policy shift; and that consequences of their leaders' bad decisions will fall upon them, not the regime.

2) Military response

Since North Korea's military strategy and operation system is changing in line with its advancing nuclear and missile capabilities, South Korea needs to review the fundamentals of its national defense paradigm against the North, including the paradigm of warfighting, military strategy, and operation systems. As explained earlier in this paper, on top of the miniaturization of nuclear warheads and improvement in missile technology, Pyongyang is materializing a missile belt with a gradual deployment of Scud, Rodong, IRBM, and KN-08 on its soil. The Kim regime also focuses on improving tactical mobility by developing SLBM and mobile launcher vehicle and enhancing threat capabilities with nuclear arms and missiles, including a more flexible employment of missiles. If North Korea's progress in precision-guided capability keeps this pace, the regime may add Multiple Independently-targetable Reentry Vehicle (MIRV) in its arsenal in the future, one of the worst scenarios for concerned parties.

Under the Kim Jong-un's leadership, another concern that is

rapidly turning to reality is the maximization of North Korea's asymmetric war capabilities. Pyongyang has increased the number of long-range artillery deployed in the DMZ and made cunning local military provocations, including the explosion of ROKS Cheonan and installations of PMD series mines. It is also intensifying the rhetoric on its willingness for nuclear attacks and psychological warfare against the South. Furthermore, the DPRK now puts an emphasis on building a network among all these arms systems at strategic and tactical levels, calling it "joint and unified tactics." That heralds a new kind of warfare on the peninsula. Concrete and real, this new approach includes hybrid warfare in which military and non-military options are integrated. In this approach, nuclear weapons play the key role, combined with many other asymmetric war capabilities. This might be a paradigm shift hard to respond for South Korea. Admittedly, the ROK's war paradigm is still based on the conventional weapons system. It stresses quantitative advantage on military budget and power as well as the U.S. nuclear umbrella as its key strategic advantages.

This shift in the North Korean military can be properly addressed with a tailored strategy based on a multi-faceted approach that embodies both macro-and micro-level perspectives. Meticulous analysis on the status quo should be carried out on the Kim Jong-un regime's rapidly-changing arms system; operations and training; military strategies and directions; and operation doctrines including training disciplines. Especially, it would be crucial to conduct analysis on how the DPRK's hybrid tactics—a combination of nuclear arms and missiles, conventional weapons and soldiers, and cyber and psychological warfare—would affect the paradigm of

war, and how such changes in the concept of war and military strategy are reflected in the regime's policy on and provocations against South Korea. Under the young Kim's leadership, provocations targeting the South have adopted a combined pattern. Their provocative actions, diversified in terms of intensity and types, are mixed with appeasement attempts, nuclear capability showoffs, and demand on peace. For Seoul, it is a situation that calls for active counter-strategy after understanding its own strategic shortcomings.

It is no less important to build strategies and tactics on the back of correct assessment of the strategic environment that South Korea is in. It must include a more realistic understanding on the geopolitical landscape, accurate assessment of the strengths and weaknesses of the ROK armed forces, and plans to secure resources in order to achieve the appropriate volume and effectiveness of military strength. In this context, in order to deal with the growing nuclear threat from the North, South Koreans must focus on building effective deterrence capabilities rather than passively react to heightening threats. If so, it may not be wise to pour excessive resources for ballistic missile defense.

Other than the THAAD deployment by U.S. Forces in South Korea, there are talks on introducing PAC-3, a major upgrade of the PAC-2 missile interceptor, on the Korean soil. It should not be forgotten that ballistic missile defense systems are a secondary means of defense, and not just because of their low technological maturity. Looking into strategic situations in which ballistic missiles are likely to be used, the limits of missile defense systems are clear. In principle, the systems offer a security advantage, giving

a deterrence by denial capability. In reality, however, their effectiveness is in part determined by how Pyongyang perceives it. If the regime proves to be reckless and irrational as outsiders believe it to be, the deterrence capability of ballistic missile interceptors will be much less significant. Therefore, as for South Korea, an effective way to cope with this issue involves bolstering its strategic military cooperation with the U.S—an effort to be coupled with formulating policies and alternatives for better defense role-sharing and greater security. To this end, Korea needs to engage in close consultations with the U.S. on materializing the deployment or circulation of American nuclear strategic assets to Korea.

In addition to missile defense, the ROK seeks to complete the kill chain, a preemptive strike system that detects and counters nuclear missile launches. One of the assets that contributes to the system's effectiveness is KH-12, the American reconnaissance satellite with a ground resolution of 15cm. The effectiveness of Korea's kill chain is likely to be enhanced in the future, as Seoul signed a $1.2 billion contract to introduce a set of Global Hawks, the U.S.-made high-altitude reconnaissance plane, by 2019. The four air vehicles will be its first asset in autonomous reconnaissance for the ROK. In 2017, the ROK Armed forces are scheduled to conduct installment and launching experiments on the TAURUS Long-Range Air-to-Surface Missiles with F-15 fighter jets. TAURUS will be deployed after the experiments. If effective, the combination of the aforementioned systems will increase the chance of success for the kill chain.

Additionally, the South Korean government has declared its commitment to develop creative strategic ideas that will secure the upper hand, instead of passive reactions to North Korea's push for asymmetrical strategy. The Korean government's initiative to build a creative military power, dubbed "reverse-asymmetrical strategy," aims to impede Pyongyang's military response and ultimately, to neutralize its arsenal of nuclear weapons and WMDs. The gist is an integration of military technology and cutting-edge information technology, one of South Korea's key advantages over the North. In other words, the initiative aims to tap into Seoul's scientific and technological edges. This approach, however, will not be successful without improvement in wireless network capabilities, military satellite communications and relevant workforce and expertise.

Thanks to progress in fine guidance system and strike technology such as Global Navigation Satellite System (GNSS) and Inertial Navigation System (INS), long-range, precision strikes through various weapons are increasingly commonplace. U.S. Forces aimed to create a synergy by combining this trend with its reconnaissance, surveillance and command and control functions. The result is a comprehensive system called Command, Control, Computer, Communication & Information + Precision Guidance Munition (C4ISR+PGMs), a part of America's drive for military innovation. As a result, the nature of war conducted by the U.S. has changed from close, linear, direct to distant, non-linear and indirect. In addition, the U.S. is well-positioned to create a synergy in military operations. Its operation environment is built upon networks, interoperability and inter-agency cooperation system that organically connect capabilities and activities in multi-dimensional time and

space.

On the back of precision strike capabilities, effects-based operations (EBO) can maximize confusion and paralysis on the enemy's side. Long-range high-precision strikes target the enemy's strategic, tactical and operational key areas along with asymmetrical and parallel attacks pinpointed to critically vulnerable areas. EBO is unlikely to succeed without capabilities that make the enemy lose interest in the war altogether, thereby ensuring early termination of war with minimal combats. In this regard, Korea's kill chain initiative may need an implementation plan that also embodies understanding on surrounding factors in the longer run.

It may be worthwhile to take a look at the latest amendment in the Korea-U.S. Missile Guideline. The new agreement extended Korea's ballistic missile range ceiling to 800 km from 300 km. A warhead can weigh up to 1500-2000 kg for missiles that can fly as far as 300 km. The maximum payload is 1,000 kg for 550 km-range missiles and 500 kg for 800 km-range missiles. On-board payload limit for unmanned aircraft also went up from 500 kg. The limit is eliminated altogether if the range is 300 km or less; for those with longer ranges, the cap is 2,500 kg. The amendment also assures unlimited research for missile and unmanned aircraft that do not fall in the scopes specified in the agreement. While it is lagging behind in terms of quantity and variety of missile arsenal, it might be compelling for South Korea to focus on strengthening ballistic and cruise missile capabilities, latter of which is not possessed by the DPRK, in order to boost practical deterrence and combat capabilities in a time of emergency.

3) Diplomatic and Security Response

Considering the current situation, the Korean government's military response to North Korea's advancing nuclear capability can produce best results when accompanied with diplomatic negotiations, unless it opts for a full-scale war to solve this issue. To this end, more active discussion is needed to formulate political alternatives that both parties can agree on. Today, disrespect is rampant among Korean politicians on this issue, arguing his or her party's view is the only answer. This attitude is an obstacle to find an alternative and gain momentum for it.

To tackle this issue, a good starting point is to acknowledge and understand various and complicated channels that can elicit change from Pyongyang. North Korea, in contrast to the widespread and simplistic view, is more than a merely closed and isolated society. By looking into diverse networks that the DPRK has, South Koreans will gain a more organized and comprehensive understanding on the regime in the North and its people. On the other hand, there is a chance that the DPRK's advancement in nuclear capability may facilitate North Korea's nuclear capability spilling beyond the border. Therefore, a close review and preparation are imperative to comprehend what role North Korea plays in international proliferation networks. It is essential to find out how the Kim regime, other than its traditional ties with China, acquires resources from diverse entities via various channels. Based on that efforts, South Korea will be able to figure out how to prevent or deter this network's impact on the DPRK's nuclear development.

Another concern for Seoul is how to manage the economic risk that may entail North Korea's nuclear development in the short- to mid-term. This risk calls for diversification in South Korea's trade structure, which is at the moment heavily dependent on neighbors whose security interests sometimes clash with Korea's. In addition, it also necessitates policy efforts to promote domestic market's growth. While it may sound paradoxical to some, a stronger domestic market will reduce short-term sensitivity and long-term vulnerability, an unavoidable cost of mutual economic dependence. Considering the close correlation between security and economy, it is strongly recommended economists with considerable insight on security are structurally guaranteed to take part in the decision-making process in security matters.

When it comes to addressing North Korea's growing nuclear threat, analyzing mid- to long- term strategic factors would be critical in setting a direction for diplomatic relations. In both devising and implementing North Korean policy, decisions of South Korea need to be based on a deeper understanding on the strategic interests of the U.S., China, and other involved parties, especially if that policy's timeline stretches to unification process. It's crucial to consult with neighboring countries before making a big move on North Korea so that they do not feel neglected. Securing diverse communication channels in all official, unofficial and 1.5 (semi-official) diplomacies will help minimize misunderstanding if one happens. In this regard, China demands a special attention. It is an emerging power whose key national interests do not necessarily align with the ROK, but is also not in an outright conflict. This truth can be reaffirmed by holding bilateral strategic

dialogue on a regular basis, which is also an opportunity to acknowledge that strategic cooperation is not impossible between the two countries in the future. If the ROK shares its own strategy and direction and opens up for mutual understanding, chances will increase that other parties embrace its action on current issues.

Nevertheless, North Korea's nuclear technological advances are likely to increase diplomatic cost for Seoul. A case in point is the agreement to deploy the THAAD system in Korea, which has become a sensitive issue for China and Russia. In the wake of the THAAD announcement, both countries turned seemingly reluctant to applying stronger sanctions against the Kim regime.

The two pillars of China's nuclear strategy are minimal deterrence and no preemptive nuclear strikes. Beijing has strongly implied it may review those principles if THAAD is deployed on the Korean Peninsula. The Asian powerhouse's response to the THAAD deployment cannot be independent from the current lack of strategic trust between Beijing and Washington and how it will change over time. Still, there is a good chance China will boost its nuclear capabilities including missile defense systems as a countermeasure to the THAAD deployment. Beijing has already been working on the modernization of its military might. It would try to accelerate or expand the initiative once its competition with the U.S. is perceived intensifying. Over the course of this initiative, China may find Russia a good cooperation partner, taking advantage of the country's military and science technology capabilities. Therefore, for the Republic of Korea, it may be a good choice to secure various channels where security concerns are shared, and to

understand and take their concerns into consideration in alliance with the U.S. In other words, in order to gain a mutual understanding with other involved countries, Seoul may do more than working on the issue unilaterally, turning to America's support for active cooperation in some aspects if necessary.

The Kim regime's latest provocations prompted the ROK's tougher responses as well as the confrontation between the big powers. To prevent the confrontation from escalating, Seoul needs to make multilateral or international organization-based approaches to ease tension. It necessitates awareness-raising efforts on what carrots and sticks are on hand to coerce Pyongyang's change or reward the regime's cooperation adequately. It falls on South Korea to review the conventional denuclearization model, develop a new one tailored for the Korean Peninsula and seek an understanding of the international community on that model's worth.

Previous cases of denuclearization provide a few valuable lessons. The biggest, perhaps, is about the importance of trust and compensation in the process of nuclear disarmament. Best cases indicate that it is more important to give a party nuke assurance on security and economic assistance that it wants than to gain a mutual trust. Also, being absorbed to settle immediate issues, it is dangerous to neglect the nuclear club's non-proliferation efforts so far. Short-sightedness may only provoke the party, thereby raising risk cost. In addition to reflecting the hawkish North Korea strategy that it currently has, South Korea also needs to take into consideration what diplomatic efforts need to be done to facilitate other countries' participation and how the ROK will cover the cost.

Lastly, the Korean government needs to propose a vision of non-proliferation and a peace regime for the entire peninsula, and to strive for its realization. In the 7th Congress of the Workers' Party in May 2016, the Kim regime asserted it would endeavor for global non-proliferation as a nuclear weapon state. The declaration clarified that arms reduction would be a key strategic position that the North will take in international diplomatic and political dialogue over nuclear arms. It will try to counter the world's demand on denuclearization by pitching for the frame of a peace agreement and disarmament. However, the international community centering on South Korea, the U.S. and Japan remains adamant that strong sanctions are not to be lifted unless the DPRK makes actions toward denuclearization first. On the other hand, Beijing's unchanged position is that its ultimate goal is the complete denuclearization of the Korean Peninsula including North Korean nuclear disarmament. Therefore, the competition among three visions is likely to continue for the time being: peace agreement and disarmament by North Korea, non-proliferation and sanctions by South Korea, the U.S. and Japan, and non-proliferation and peace treaty by China.

Against this backdrop, Korea needs to develop and promote a new frame that sufficiently reflects the country's interests and consolidates its leadership. Without abandoning the non-proliferation and sanctions frame for the present, strategic preparation will allow Seoul to address actively any change in the future. A reasonable alternative for the current frame is the package of sanctions, denuclearization and a peace regime on the Korean Peninsula. China is yet to elaborate on the degree of denuclearization and the

content of the peace agreement it wishes. For the U.S., there is little need for or interest in pursuing a peace agreement that Beijing and Pyongyang call for. Seoul should develop strategies under such circumstances. Korea can prevent China and the U.S. from reaching a bilateral strategic compromise that excludes Seoul and secure its leadership in the inter-Korean relations. However, a unilateral campaign by South Korea for North Korea's denuclearization and reckless attempts to improve its relations with Pyongyang may be a risky choice. For the foreseeable future, Seoul's ties with Pyongyang will remain to be under the influence of the mechanism of international sanction against the North. Unless the Kim regime shows visible moves toward denuclearization, Korea's independent sanction lifting, such as the reopening of the Kaesong Industrial complex, will lose the momentum of the sanction.

Dialogue should be the ultimate means to achieve the vision of sanctions, denuclearization and a peace regime. Sanctions are tools to make Pyongyang return to the negotiating table. Talks, of course, should take a form that reflects South Korea's interests and guarantees the implementation of denuclearization measures. Denuclearization and a peninsula-wide peace regime should not be considered the end of their regime for North Korea's incumbent leaders, however. If the sanctions' role as punishment gets overemphasized or drive for a peace regime is misinterpreted as a scheme for unification through absorption, North Korea's resistance would be fierce, undermining the success of the plan.

On the other hand, elimination of sanctions should not be a precondition to initiate talks on denuclearization and the

establishment of a peace regime. Sanctions can be a useful tool to ensure North Korea's compliance and to deal with any deceit, if one happens. Therefore, negotiations should not offer any way out for Pyongyang both in form and content, and should be reactive to the regime's behavior. Also, the withdrawal of U.S. Forces Korea should neither be a bargaining chip to start negotiation for a peninsula-wide peace regime, nor a result of it. The peace regime aims to promote peace and strategic stability in Northeast Asia. The absence of U.S. forces in Korea is more likely to destroy the strategic balance in the region. In this regard, the withdrawal of U.S. Forces Korea is a matter to be discussed between unified Korea and the U.S. after the Korean unification.