

The ruling strategy of Kim Jong-Un and North Korea's last 10 years: The Rational Action-Reaction about The Expected Effect of The Sanctions

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The international community has imposed economic sanctions to coerce North Korea to abandon its nuclear program for decades. However, in the end, it completed the development of nuclear warheads, and it even successfully tested the ICBM. Pyongyang's successful nuclear program shows that the sanctions have not been effective. Thus, it would be appropriate to analyze why the sanctions on North Korea have failed to produce the intended outcome. This study explores the reasons for the economic sanction failure from the perspective of the rational actor theory. Presuming the U.S. and DPRK as "reasonable actors" trying to minimize the effectiveness of each other's actions, it will explain not only the regime survival scenario of Kim Jong-Un but also the effectiveness of sanctions on Pyongyang.

This approach will contribute to bringing new inspirations to policymakers who want to figure out how and why sanctions on North Korea have remained ineffective. It also can explain how Kim's regime maintains strong ruling power as well as why they adopt all-around hacking, the science-technology policy line, and the strategies to exploit the U.S.-China conflict as its regime survival strategies of "Building a Powerful Socialist Country."

Key Words: Rational action-reaction, Regime survival strategy, Effective factors of sanctions, Impact-Backlash of sanctions.

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INTRODUCTION

In North Korea, sanctions have become routine since the regime formalized its nuclear weapons program and finding a way to survive on their own against action from outside also has become common. There is no difference from the people or the regime. Indeed, even when the South Korean government provided favorable economic support to North Korea, dubbed the “Sunshine Policy,” the Kim Jong-il regime reacted sensitively to protect his regime, such as the “mosquito net theory.”

From this point of view, it is very important to study in depth the Kim Jong-un regime's survival strategy against the sanctions, which is threatening the ‘nuclear non-proliferation regime’ and South Korea with practically completed nuclear weapons.

After the *de facto* success of the Democratic People's Republic of Korea (DPRK)'s ICBM launch on November 29, 2017, there had been a number of historic dialogues between the two Koreas as well as Pyongyang and Washington. At that time, the North Korean nuclear crisis even seemed resolvable in the near future. The inter-Korean mistrust and distrust between the DPRK and U.S. appeared to be transformed into trust through the momentous events including the inter-Korean envoy exchange for the 2018 Pyeongchang Olympic Games, the U.S.-DPRK dialogue coordinated by the Moon Jae-in administration, and the Washington-Pyongyang summit.

However, the discord between the U.S. and DPRK proved difficult to bridge. The Kim Jong-Un regime has asserted that the sanction must be lifted before the abandonment of nuclear capability and the Trump administration has argued otherwise. In response to Washington's headstrong position and unproductive talks, Pyongyang has shaken the negotiation framework through several political maneuvers including renewed pressure on Seoul from June 2020. In addition, Kim Yo-jong even articulated, “I believe that the previous theme of the DPRK-U.S. negotiations, that is, ‘denuclearization measures versus lifting of sanctions’ should be changed into a formula of ‘withdrawal of hostility versus resumption of DPRK-U.S. negotiations’” (the Korean Central News Agency 2020).

There lies a number of assumptions in the interaction between the U.S. and the DPRK. First of all, the U.S. policymakers appear to believe that the sanction on North Korea will make Kim's regime give up nuclear armament since the sanction will worsen the North Korean economy. Following this logic, Pyongyang will be forced to abandon the nuclear weapon to avoid the possible uprisings of the people who would suffer from extreme poverty due to dissatisfaction with the Kim regime. On the other hand, the DPRK leadership seems to believe that they

can control their people even under the sanction posed by the international community including the U.S.¹ and that nuclear armament will protect themselves from external security and military threats.

In turn, the question becomes either 'Can the DPRK maintain the current regime under sanctions?' or 'Can the sanctions cripple the durability of the North Korean regime?'

Despite clear issues on North Korea's denuclearization, the international community was too focused on enhancing the effectiveness of the sanctions, so it is true that there is a lack of research on why the strong sanctions on North Korea's denuclearization do not work. In particular, little effort has been made to understand what measures Kim Jong-Un is using to avoid the effects of sanctions with what goal in mind what strengths he has against international sanctions.

This research tries to answer the question above by assessing the impact of the economic sanctions on the DPRK regime and the response of Pyongyang's leadership.

REVIEW ON THE EFFECTS OF SANCTIONS FOSTERING DENUCLEARIZATION OF NORTH KOREA

The U.S.-DPRK negotiations, a deep standoff between the U.S.'s 'trustworthy denuclearization measures' and DPRK's 'guarantee of Kim's ruling regime', can be seen as a game to impose their will on the other side as much as possible. Particularly considering the current tension between the U.S. and North Korea, both sides see current and future circumstances as a very important factor in determining the outcome of this conflict.

Sanctions Scenario That The U.S. Hopes To Imprint On The Pyeongyang

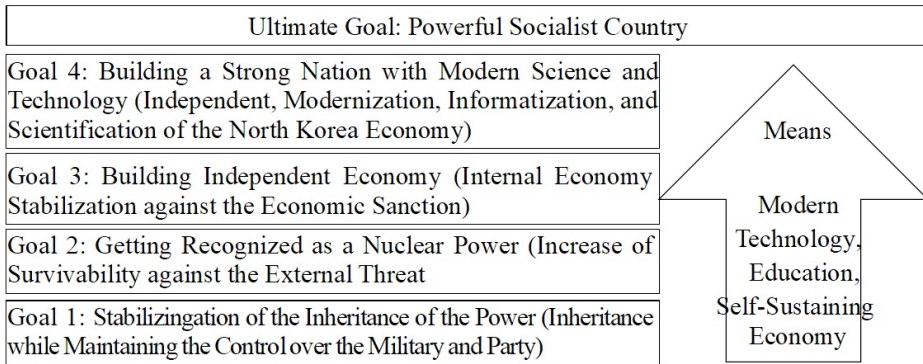
The North Korean regime's greatest concern is maintaining the Kim family's rule. In the midst of the economic crisis of the 1990s, when hundreds of thousands of people starved to death at least, Pyongyang's policy-making, which prioritized the continuation of Kim Jong-il's dictatorship over policy changes to ensure the survival of its people, clearly indicates that the utmost goal of North Korean

¹ Despite the fact that the international community including the United Nations has imposed various economic sanctions on North Korea, this paper expresses the U.S. as a sanctioning agent considering the U.S. is the only country that North Korea recognizes as a party to negotiate denuclearization.

policymakers is the perpetuation of the Kim regime.

This is also evident in Kim Jong-Un's public speeches, as shown in Figure 1.² below.

Figure 1. The Goal for the 'Kim Il-sung Cho-sun' in Kim Jong-Un's Speeches



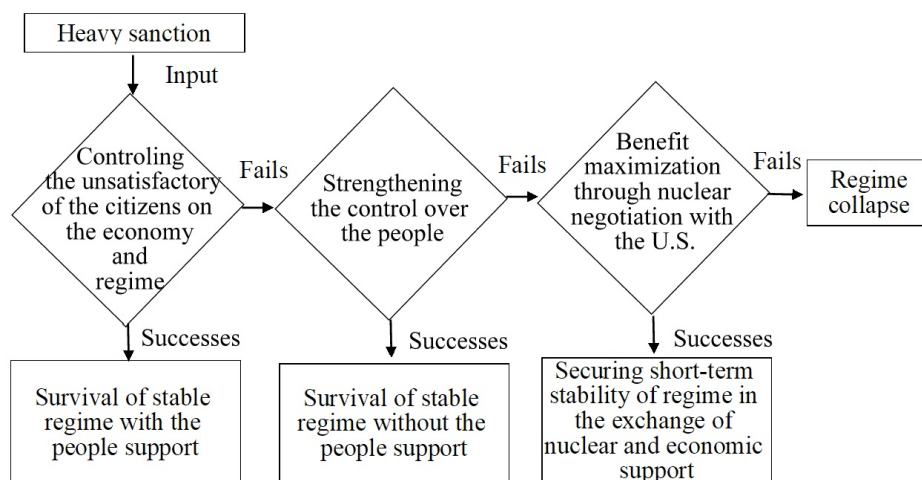
Source: Kim (2020, 83)

Meanwhile, since Pyongyang believes that the international community tries to induce denuclearization by pressuring regime collapse through sanctions, They will regard the regime's survival strategy in two main ways: countering external threats with nuclear armament and focusing on internal control with social and economic development to prevent possible revolt. Considering the international community's intentions and North Korea's response, the payoff of strategies would either result in 1) regime survival with mutual success of the nuclear program and economic development or 2) regime collapse. Two possible scenarios between 1) and 2) may await such options: nuclear armament with a poor economy or economic development following the abandonment of the nuclear armament. Figure 2. below illustrates how the sanctions scenario that senders want to imprint on Pyongyang may unfold.

But what matters in this scenario is whether North Korea can withstand international sanctions. In the end, in order to research the governance strategy of the Kim Jong-Un regime, a framework is needed to evaluate the results of sanctions and reevaluate them as survival strategies of the Kim Jong-Un regime.

² It is a diagnosed image of Kim Jong-Un's goals and means of achievement for 'Kim Il-sung Chosun', which appeared in his eight public speeches from 2012-2019.

Figure 2. The Sanctions Scenario that the U.S. hopes to imprint on Pyongyang



Source: Kim (2023, 128)

Effect Factors And Performance Indicators Of Sanction

Obviously, the goal of the sanction is the denuclearization of North Korea by threatening possible regime collapse. Moreover, economic sanctions are one of the most viable foreign policy instruments of Washington since the military option is not a simple method to employ, because of shared borders with South Korea.

However, economic sanctions have not always produced purposed outcomes. For instance, the U.S. economic sanctions on the Soviet Union in the 1980s were unsuccessful. At first, the U.S. unilaterally imposed sanctions on Soviet pipelines. Nonetheless, due to the high demand for the Soviet natural gas of its allies in Western Europe, the U.S. soon announced the lifting of the sanctions. As such, according to previous research on sanctions' effectiveness, a few factors determine the impact of the U.S. economic sanctions (Allen 2008; Wright 2008; Bapat and Morgan 2009; Hwang, Suh, and Jeon 2017).

First of all, if the sanctions target non-democratic regimes, the deterioration of residents' real life rarely affects the policy-making of the leadership; thus, ordinary sanctions aimed at residents are more likely to fail. On the contrary, the more closely connected the target country's top echelon, the more likely sanctions are to be successful; If sanctions succeed in bothering the Power elites more directly, the regime can even trigger a 'rally-round-the-flag' effect to strengthen solidarity and promote state-led economic development among its

population.

Secondly, there is a chance of success if the international community imposes the sanction on the target country firmly. Conversely, if one of the imposers is lukewarm or openly opposed to sanctions, sanctions are more likely to fail. Particularly, if the lukewarm countries are an ally of target country or in conflict with the leading country of international sanctions, the possibility of failure increases.

Thirdly, external economic dependency of the target country affect the impact of sanctions. As for countries with high dependence on the international economy, especially on the U.S., the sanctions are more likely to achieve desired results. On the contrary, if the target country does not rely on external resources, the chance of failure increases. Therefore, the existence of political-economic support for the target country is one of the important variables that determine the effectiveness of sanctions.

Considering the objectives of sanctions on Pyongyang, the international community needs to overcome the challenges created by various factors (*Factors influencing the Effective of Sanction*). Besides overcoming these factors, it should also foster changes in the economic system or at least force the DPRK government to consider changes. If the sanction successfully induces a friendly environment for change in the North Korean regime or at least fosters an environment that the DPRK leadership needs to consider, Pyongyang is likely to make a more 'risky decision' and the international community can use it as an opportunity.

Meanwhile, Kornai and Cho et al. claim that regardless of the purpose of economic system change, chronic deficiency of conventional socialist planned economy affects the transformation. Most likely, the leadership tries to introduce a few components of the market economy into the socialistic planned economy system in order to maintain their regime. They mainly try to maintain the state control over the social and economic system and adopt the concept of private assets, a market economy with a supply and demand system, and incentives to increase productivity (Kornai 1992, 26-8).

Nonetheless, since such modifications introduce the concept of private assets and loosen government control over the market (*Action of sanction*), they weaken the power of the political leadership. The modification may end up with regime change. Without enough past and cultural experiences and sufficient ideology to maintain the authoritarian leadership, the regime can suddenly collapse (Cho, Park, and Lim 2016, 12-3). Marketization has been a key catalyst of regime change although the leadership tries to alter the economic system while upholding socialist rule (Kornai 1992, 102-3).

However, North Korean authorities, 'a reasonable actor' who knows its

intention to bring the economic changes mentioned above through the sanctions, will not just let go. Rational actor theory is a tool derived to explicate human political, economic, and social behaviors, in which individuals systematically use the information available to determine action according to their goals (Seol 2018, 3). That is, it assumes that an actor acts rationally to maximize its interest (Jeong 2003, 418). Therefore, the tight tension between the U.S., which aims to denuclearize North Korea, and North Korea, which seeks to preserve the Kim regime, can be defined as a rational encounter to achieve their goals as much as possible.

Therefore, assuming it behaves as a rational actor that cultivates the current situation favorable to the leadership, Pyongyang needs to create the following conditions (*Reaction of sanction*): avoid international sanctions from provoking changes in the economic system; and implement policies to satisfy and control its people if sanctions compel the economic system to change.

To sum up the above discussion, this paper will apply a framework for evaluating the impact of sanctions on North Korea, as shown in Table 1 below, taking into account the reasonable actions-reactions of the U.S. and DPRK who want to challenge the present and future circumstances in each other's favor.

Table 1. Framework for Evaluating the Effectiveness of Economic Sanctions

Factors influencing the Effective of Sanction	Action of Sanction (Check Points of Sanction Impact)	Reaction of Sanction (Check Points of Backlash)
Political System (How authoritarian it is)	Marketization and Change in resident consciousness	Utilization of the External Sanction for the Solidarity * ex) State-led Restoration of the Planned Economy
The Connection between the Power Elites	Privatization of the Asset	
External Economic Dependence & Existence of the Supporting Country	Change of Pricing system (Market with Supply and Demand)	
Stability on History, Culture and Ideology	Change in the Resource Distribution	

Source: Author.

THE EFFECTS OF SANCTIONS ON NORTH KOREA AND The CURRENT SITUATION

Assessing the Effect Factors

Historically, the impact of sanctions varies depending on the target country's 1) political system and connection between the power elites, 2) external economic dependency and the existence of the politically and economically supporting countries and 3) stability of history, culture and ideology.

Political System and Connection between the Power elites

First of all, the North Korean political system is a strong authoritarian system. Even though Kim Jong-Un inherited power from his father in a short period in 2011, he has successfully dominated the leadership through a number of events such as taking control over the military and winning the party elections in 2016 (Kim 2020, 50).

According to the *List of the 2017 North Korean Key Figures*, Kim Jong-Un has replaced about 25% of the DPRK leadership since 2012 - the year he assumed the leadership role - and it indicates that he already has a firm grip on the leadership by replacing the old generation with his generation (ROK Ministry of Unification 2017).

A strong authoritarian leader that wields enormous influence on the policy-making process signals that he can allocate the resources to the field that he or she wants to focus on. The North Korean ministries and national institutions utilize *Waku*³ to make revenue and use the revenue to achieve their goals and pay its laborers (Kim 2020, 73). In summary, the *Waku* system in which Kim Jong-Un still holds power to allocate resources, allows him to concentrate North Korea's resources in his fields of interest.

External Economic Dependency and Existence of Supporting Countries

The modern economic system makes it difficult to maintain a complete self-sufficient system unless it has abundant resources, funds and advanced technology independently. In addition, external material and technical assistance is essential for an economically underdeveloped country like North Korea to pursue economic development.

North Korea has a very high dependence on the People Republic of China (PRC) in trade. According to the Korea International Trade Association's *2019 Inter-Korean Trade Report*, China dominated 91.7% and 95.2% of North Korean trade in 2018 and 2019 respectively (KITA 2019). While these numbers are estimate figures, there is no doubt that the DPRK economy is highly reliant on Beijing. In fact, PRC is an important breathing hole for Kim Jong-Un regime.

China has been a traditional supporter of North Korea in terms of politics and economy. Despite continued missile and nuclear tests and military aggression including the sinking of *ROKS Cheonan* and bombardment of Yeonpyeong, China

³ Rather than allocating a national budget like a capitalist country, the DPRK issues 'trade certificates (*Waku*)' to certain institutions to allocate the resources. While *Waku* is directly translated as a trade certificate, its significance extends beyond a mere trade certificate. *Waku* allows the owner to dominate the trade activities and the entire revenue from the trade. Accordingly, the paper uses *Waku* verbatim instead of referring to it as a trade certificate.

has remained silent. Moreover, China only observed UN sanctions on North Korea during the very early stages and has not adhered to it soon after. If China, a country that North Korea shares most of its northern border with strictly complied with the UN sanctions including the close monitoring of its trade flows, the North Korean nuclear crisis would have been already solved.

Furthermore, China challenges U.S. grand strategy. If the hegemonic competition between the two countries continues, Beijing is less likely to support Washington-led sanctions on North Korea. After the DPRK successfully tested the *Hwasong-15* intercontinental ballistic missile which has changed the frame of the U.S.-DPRK denuclearization negotiation, the *Global Times*, the mouthpiece of the Chinese communist party, has been publishing more articles in favor of North Korea (Kim 2020, 103-4).

China's cover for North Korea at the U.N. Security Council is enough to signal that North Korea will continue to be protected even if the North increases its intensity of armed provocations in the future. All things considered, China is a decisive factor in undermining U.S. sanctions against North Korea.

Stability of History, Culture, and Ideology

In North Korean history, the experience of democracy is absent. After the end of the feudal Joseon dynasty, the entire Korean Peninsula underwent Japanese colonial rule. Following the defeat of the Japanese empire, the authoritarian Kim regime was founded in the northern part of the peninsula so its citizens had no chance to experience democracy. Due to the history without democracy, the DPRK citizens are unfamiliar with criticizing the system; rather, they are used to conform to authority. The North Korean famine during the 1990s is an example that portrays North Koreans' subservience to the government authorities albeit harsh living conditions. Even though Kim regime could not provide food to the people and barely maintained its regime, no single revolt or protest against the authoritarian regime occurred, reflecting an easily obeyed nature of the North Korean people (Kim 2005, 63-4).

Assessing the Action of Sanction

According to previous studies, U.S. economic sanctions have brought about various consequences: 1) marketization and change in resident consciousness; 2) privatization of assets; 3) change of pricing system; and 4) changes in resource distribution. However, the monopoly of political and economic resources showed signs of conflict among some power elites after Kim Jong-il's death, but Kim Jong-Un's monopoly appears to be maintained again after Jang Song-thaek's execution, so this paper does not deal with 4) change in the resource distribution

separately.

Marketization and Change in Resident Consciousness

The productivity of daily necessary goods dropped to serious levels during the Kim Jong-il era and the market⁴ provides daily necessary goods to the people. Although the market activity increased and allowed better supply and production of daily necessary goods, Kim Jong-il had to control the market periodically if the productivity reaches a certain level since the market weakens the state's control over its residents.

During the entire life cycle including school, work, and military, North Korean people attend 'self-criticism' sessions (*Saenghwalchonghwa*). Every single week, they criticize themselves and others to demonstrate fidelity to the regime. However, since the market is a privatized place for their own survival, there is no such self-criticism system within the market. Thus, continuous market activities might have curbed people's loyalty to the Kim regime.

Figure 3.⁵ below shows the ebb and flow of the North Korean population and GNP per capita that explains the market policy during the Kim Il-sung and Kim Jong-il era. Getting closer the dotted line (population) and the solid line (GNP per capita) indicates the improvement in the domestic economy as productivity increases. Getting the two lines farther apart illustrates otherwise.

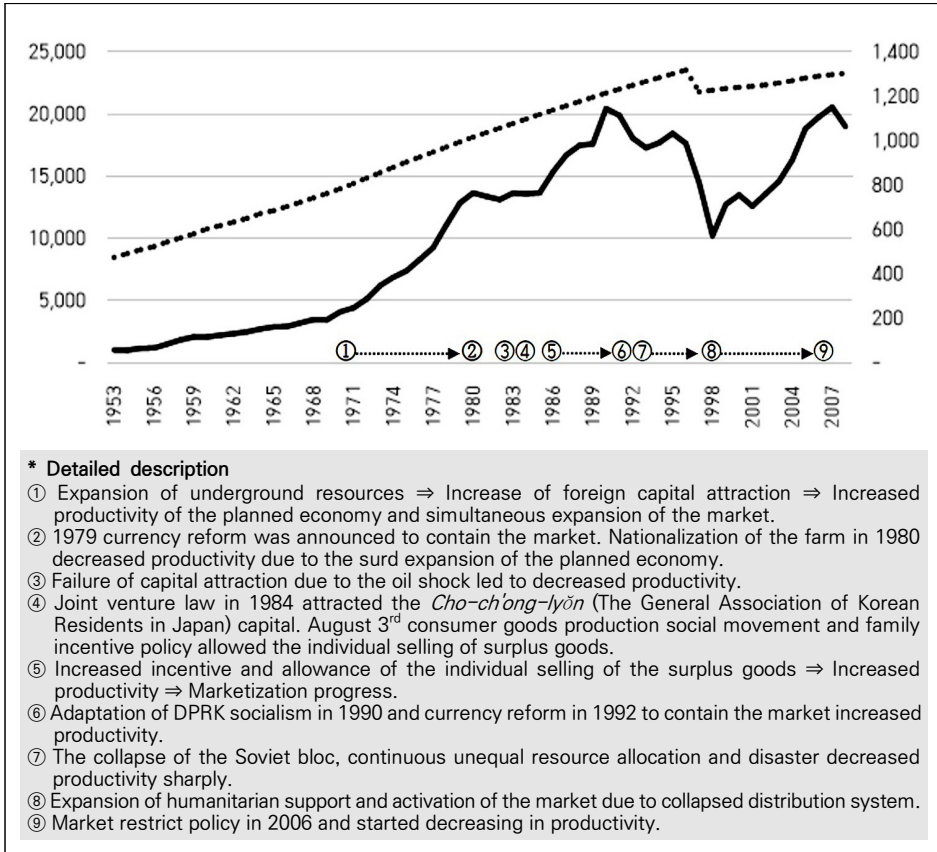
As the graph shows, if population and GNP per capita close in, the North Korean regime implements the market control policy. Conversely, if population and GNP per capita take different directions so the citizens have limited access to the daily necessary goods, the government loosens market control. It is a clear example that shows how the Pyongyang leadership has been controlling the marketization process.

But, Kim Jong-Un faces an economic environment different from his father. As shown in detailed description ①, ④, ⑧, there always has been measures such as external goods or money inflow to support Pyongyang's planned economy and market control policies before the Kim Jong-Un era, and Pyongyang has adopted policies to restrict market activity whenever it expands enough to threaten the regime as shown ②, ⑥, ⑨.

⁴ In this paper, the 'market' refers to an opposite concept of the planned economy controlled by the government. Thus, this concept not only includes unofficial market but also unofficial production by factories and institutions.

⁵ Population and GNP data are yet to be disclosed since the Kim Jong-Un era. Hence, this study did not include it in Figure 3. In addition, it is not necessary to sketch out after 2009 because it is intended to encapsulate the characteristics of Pyongyang's market policy before the Kim Jong-Un era.

Figure 3. DPRK's Policy Tendency against Market before the Kim Jong-Un Era



Source: Made by author using raw data in Bank of Korea 2021.

However, currently, no country and organization can overtly support North Korea in defiance of U.S. sanctions since Washington has strong sway in the international community and trade. Since Kim Jong-Un lost the external channel of large-scale support, he has never implemented market restricting policies. Moreover, if the market activities are restricted in a situation where there is an absolute shortage of daily necessities due to border blockades caused by COVID-19, residents' dissatisfaction with the power elites will not be suppressed as easily as before. The changed perception of the market economy by North Koreans is another negative variable that may jeopardize the DPRK regime's survival.

Furthermore, people's sense of obedience slightly changed recently. During

the 1990s famine, many households started not to teach their children obedience to Kim's regime since they had no time to educate their children. Rather, they needed to secure food for their family so even the 'self-criticism system' lost its position. Dire economic conditions also weakened North Korean government control over its people. Rather than fully controlling market activities of the people, the government only focused on control over the anti-government activities (Kim 2020, 105).

As a result, North Koreans protested against the regime during the November 2009 currency reform and the people in their 30s to 50s who experienced 1990s famine led the protest. Even though the scale remained small relative to demonstrations in democratic societies, it is still meaningful since it hinted that they will not tolerate the Kim regime in recurring economic crisis like 1990s (Kim 2005, 72).

Privatization of Assets

U.S. economic sanctions have resulted in a shortage of money and goods for the North Korean regime and forced the DPRK government to implement various changes in its economy. Recognition of ownership, albeit limited, of private assets, market economy, and incentives for voluntary production are crucial for these changes.

In the case of the industry and agriculture management sector, the government collects 30 percent of produced goods and allows the manufacturer to take the rest. To do this, the government provides the manufacturer with resources such as raw materials and factories. Particularly, with respect to the production goods, state-owned companies acquire Chinese-made raw materials through the investment of financially dominating individuals or manufacturer orders from Chinese companies.

The manufacturer can even sell the excess products as an incentive. Also, Kim Jong-Un even allowed self-planned production by manufacturers under the self-supporting accounting system. The trading of resources between the manufacturers, revenue investment, the sales of surplus goods, market-based pricing, and payment depending on the productivity are now allowed. It is even identified that now the local manufacturers even produce extra goods exceeding the planned economy due to the shortage of certain daily goods. However, even though the government legitimized self-planning of production, privatization of factories and industry are not recognized. Thus, the North Korean production system still has traits of a socialist planned economy, with a handful of components of the market economy.

In the finance, labor and retail sector, the North Korean government started

to implement and introduce a number of flexible systems and policies. First of all, it has implemented the 'equal currency policy' that pursues an equal currency exchange rate between the private market and government-owned currency exchange banks. Following the more flexible foreign currency exchanges, the government now allows tax payment with foreign currencies and foreign currency bank accounts for the planned economy. The government even installed a toll road and introduced and expanded an electronic payment system for it. Under the planned economic system, to change workplaces is very limited in accordance with laborers' preferences but the Kim Jong-Un government permits the workers to choose the factory that he or she would like to work in through the so-called 'investment' system.⁶ Furthermore, in the commerce and retail sector, the Kim Jong-Un government allows businessmen to retail goods that are not listed an annual production plan and meet the demand of the consumers. Moreover, financially dominating individuals so-called Donju have been active recently and those individuals have a strong connection with government authorities. These individuals run loan shark businesses. As collateral good, they often receive housing certificates provided by the government even though it is illegal to buy and sell housing certificates between people.

Change of Pricing System (Market with Supply and Demand)

North Korean laborers earn extra cash through the 'incentive' policy and this system settled successfully. The North Korean income system consists of monthly income and incentives - when the laborers exceed the goal or develop new technology. Even though the average monthly salary is only a few thousand North Korean won, it is identified that North Koreans purchase more luxury goods compared to the pre-Kim Jong-Un era. Because the prices of luxury goods normally exceeds a few thousand won, equivalent to a monthly wage, it shows that people's purchasing power has consistently increased thanks to the incentive.

Table 2⁷ below shows the price of canned food from a grocery shop in April 2018 and how North Koreans' purchasing power has increased. Especially, the

⁶ In the North Korean planned economy, the workers are designated into workplaces including the factory by the order of the central government. However, the Kim Jong-Un government permits the workers to choose their workplace with its unique investment system. If a workers invests in a certain factory, the government allows him or her to take a job in that factory.

⁷ This is a table drawn out from 200 photos taken at a private store by a foreigner who traveled to Pyongyang and Kaesong in April 2018, and the exchange rate was based on the North Korean black market at that time.

comparison between the North and South Korean canned food prices show that North Korean canned meat and rice is about one-third to half the price of the South Korean one. However, the price of luxury canned food such as canned chestnuts is almost identical. It again indicates that the incentive system enables North Koreans to afford luxury goods and the government controls the price of non-luxury goods.

Table 2. North Korean Canned Food Price in Glossary Shop

(Exchange Rate: 8200 KPW = 1 USD)

Meat	Chicken (500g)	About \$1.6 – \$1.7
	Duck (450g)	About \$1.7 – \$1.8
	Pork	About \$1.7
Porridge	Mudfish Porridge	About \$0.9 – \$1
	Mussel Porridge	About \$0.9 – \$1
	Hare and Mushroom Porridge	About \$1.1
	Oyster Porridge	About \$1
	Beef and Parsley Porridge	About \$1.1
	Deluxe Rice Porridge	About \$1.1
	Cockle Porridge	About \$1.1
Rice	Glutinous Rice (500g)	About \$1
	Rice (500g)	About \$0.9
	Herring	About \$1.1 – \$7.7
	Mackerel	About \$1.6 – \$2.14
	Flat Fish	About \$1.3 – \$1.7
	Trout	About \$1.5
	Okhotsk Atka Mackerel	About \$1.7 – \$2.1
Luxury goods	Duck Soup (3kg)	About \$10.5
	Chestnut (100g)	About \$1.2 – \$1.3
	Cucumber	About \$0.5

Source: Kim (2020, 135)

In particular, the items of high economic impact indicators such as prices of oil, food, and exchange rates were returned to stable soon although external price fluctuations factor occurred and North Korean authorities' forced market merchants enroll in management list. These cases clearly attest that Kim Jong-Un's regime pursues 'marketization under strict control' (Kim 2020, 176).

Furthermore, North Korean business has diversified to meet the demand of the people. For instance, some photo studios have specialized their fields, such

as wedding photo studios; clothing shops broadened into either Korean traditional clothing shops or western tailoring shops; glossary shops branched out to fruit, vegetable, and fish markets. This specialization and diversification reflect that demand for high-quality goods at a reasonable price has increased. Moreover, it can be interpreted as the settlement of the market economy among North Koreans since the specialization and diversification of the market has occurred due to their demand for increased revenue through the market economy. In sum, North Koreans have familiarized themselves with the market economy and they have already become accustomed to it.

Assessing the Reaction to Sanctions

Kim Jong-Un, who has a dream of completing Kim Il-sung's Joseon Dynasty as described in Figure 1., already achieved his first (Stabilization of the inheritance of the power) and second (Getting recognized as nuclear power) goals. Thus, it seems adequate to analyze the third goal, the social and economic development plans.

When analyzing the U.N.'s existing sanctions against North Korea, the main goal is to block funds, high-tech technologies, and important raw materials, and North Korea's response to sanctions was also focused on neutralizing the effects of these goals.

Promoting government-centric planned economic expansion

The first and most integral part of Kim Jong-Un's social and economic policy is maintaining a government-centric planned economy. To satisfy his people, Kim Jong-Un has implemented an incentive system so that excess goods are produced beyond the planned economy. However, the incentive system should not be viewed merely as an economic policy. It serves as a political maneuver to stabilize the daily life of the North Koreans under U.S. sanctions. Since the U.S. has no intention to remove sanctions in the near future and sanctions continue to interfere with North Koreans' daily lives, Kim Jong-Un needed to implement measures to appease and control his people. Furthermore, since Kim Jong-Un still calls the shots in allocating political and economic resources, his policy steers the expected outcome of U.S. sanctions.

Another notable characteristic of the Kim Jong-Un economic policy is the attraction of foreign investment. In 2011, the DPRK enacted and amended 14 foreign investment laws (Lee 2016, 5-6) to give incentives for foreign investment. Furthermore, it enacted the 'exclusive industrial zone law' in April 2013 (Cha 2018). to expand the exclusive industrial zone all over North Korea. However, since U.S. sanctions make foreign investment attraction virtually impossible,

these enactments appear to give people some hope of economic development rather than actual intentions to assimilate into the international market.

Attempts to keep up with the technology gap

The second part of Kim Jong-Un's social and economic policy is the promotion of science education, cyber terrorism, and hacking to narrow the gap with modern technology. For the national competitiveness in the global market, it is important to obtain cutting-edge technology. Building science-related infrastructure including research, education, and laboratory is one way to acquire modern technology. Learning modern technology from a foreign country is another (Ann 2007, 67-70).

The DPRK government has also strived to acquire and possess modern technology by building relevant infrastructure. Especially, Kim Jong-Un is trying to create a scientist-friendly environment. Kim established a 'Scientists Street' in Pyongyang, built scientist-only holiday accommodations, and provided housing for the scientists and educators. North Korea's compulsory education extended from 11 years to 12 years in 2017 and around 130 textbooks were newly published since 2009 (ROK Ministry of Unification, 2021). However, as laying infrastructure does not produce meaningful outcomes in the short term, the North Korean government has utilized cyber terrorism and hacking to acquire modern technology.

'Cyber Hacking' refers to all illegal activities that copy, change, and extract data over the authorities and cause unexpected outcomes to servers and software developers. The outcome of cyber hacking highly depends on the skill of the offender and the defender. If the offender outmaneuvers the defender, the defender cannot even recognize whether he or she was attacked and how much data the intruders stole (Yu 2018, 1-5).

Since a substantive amount of resources is poured into developing advanced technology, the basis of next-generation products, countries take the protection of high-tech industries seriously. However, countries without such resources can obtain advanced technology with successful cyber hacking activities in a small amount of time.

Even though the North Korean government lacked the technical resources, it has completed the development of medium and long-range ballistic missiles that normally require a considerable amount of high-technology. Logically, the fast development of ballistic missiles could have been possible if North Korea had remarkable basic science technology or imported relevant technology from outside.

If the North Korean government already possessed exceptional qualities in

basic science, it should already have ICBMs. Since the Kim Jong-il regime successfully developed the nuclear warhead, the development of the long-range ballistic missile would have granted the regime deterrence against external security threats. However, failures in developing ICBM portray that the DPRK did not have the basic science technology to develop ballistic missiles.

When a country endeavors to acquire technology from other countries, it has two options, official and unofficial technology cooperation and technology theft. The DPRK started to test its long and medium-range ballistic missile that flies more than 1,000km from March 2016 onward and succeeded the ICBM test in November 2017. Among the 33 tests conducted, 15 tests did not even reach 100km. Ten tests out of 18 tests that successfully projected more than 100km were based on the Scud and Rodong missiles, already qualitatively proven missiles. If there is official or unofficial technology cooperation with other countries, the North Korean government should have fixed the problem before they failed 15 missile tests that cost more than a million dollars per test. Thus, these failed attempts indicate that North Korea did not engage in technical cooperation with other countries.

However, the technology amassed through cyber activities would be partial or incomplete data since hackers can only access data available online. Thus, it is unlikely to get quick feedback even though scores of critical failures occur. In the case of failure, they need to gather more information through hacking or repeat failures to find the answer.

In conclusion, a number of failures in the North Korean ballistic missile tests allude that the DPRK has collected technology through illegal means rather than formal cooperation with others. Moreover, if the DPRK not only attempted cyber hacking on the ROK but on the entire world, its unexpectedly rapid missile development makes more sense.

After the appearance of Kim Jong-Un, North Korea's cyber hacking has become very offensive. Until 2007, cyber hacking was only limited to radio network tapping but since 2008, it started to collect South Korea's defense technology by hacking the South Korean government as well as the ROK Agency for Defense Development (ADD). Even from a year after the successful development of the ICBM in 2018, the DPRK initiated cyberattacks on financial institutions such as the cryptocurrency market and gathered personal information to sell in foreign markets (Chung 2018, 122-6).

DPRK cyberattacks against the ROK include intruding into army unit servers in March 2009, looting 76 million military information and 1,700 military intelligence from the ROK Armed Forces in 2010, spreading malicious codes and cyber-attacking the ROK Ministry of National Defense, disrupting the server of

the Korea Hydro & Nuclear Co. Ltd (KHNP) and stealing its sensitive data in December 2014, attacking the ADD server in 2014, hacking ROK defense industries such as Hanjin Heavy Industry, SK, DSME and Korean Air in 2016, and hacking Defense Integrated Data Center (DIDC) in September 2016 (Chung 2018, 116-26). While the list goes on, these are cases in which the DPRK tried to steal technology to build their strategic asset.

Particularly, South Korean experts estimate that North Korea stole the 'cold launch technology from the South Korean shipbuilder and submarine manufacturer, DSME, and it influenced North Korea's development of submarine-launched ballistic missiles (Park 2017). In 2019, North Korea displayed short-range ballistic missiles that resemble the ROK Armed Force's Hyunmoo missile – another hint that North Korea hacked South Korean technology. The South Korean ADD, against which North Korea launched a cyber attack in 2014, led the development of Hyunmoo missiles. In August 2019, the UN Security Council Sanctions Committee on North Korea even recognized South Korea as a major target of North Korean cyber attacks, although the committee did not specify the details of what North Koreans stole (Han, 2019). North Korea's cyber offense on South Korea shows that Pyongyang has utilized such aggression as a tool to improve its various technological capabilities to overcome technological backwardness while advancing its capacity of medium and long-range ballistic missiles.

It can be argued that North Korean medium and long-range ballistic missile development took five stages: 1) acquisition of the basic technology including propulsion technology; 2) appropriation of the propulsion and attitude control technology such as cold launch and grid pin technology acquired through cyber hacking; 3) technology linkage between previous obtained technical information and existing missile technology, and theft of further technical information that was unknown previously; 4) acquisition of advanced technologies for missile development; and 5) the successful development of the missile.

Table 3⁸ classifies the timing of North Korea's mid-to-long range missile tests, cyber-hackings on ROK, and technological developments during the Kim Jong-Un era into the aforementioned steps. It can be inferred that Pyongyang has developed ICBM technology through cyber espionage.

⁸ The author simplified North Korea's ballistic missile tests and public announcements as well as public data related to Pyongyang's hacking against ROK defense companies in the Kim Jong-Un era.

Table 3. The Cyber Hackings and Technical Changes related Ballistic Missile during the Kim Jong-Un Era

Timeline	ROK's Defense companies that suffered from North Korea's cyber attack	Success of Ballistic Missile Tests and Technical Changes	Estimation of the Missile Development
		<u>Official Announcement of DPRK</u>	
April, 2014	ADD that possesses the missile guidance technology		Acquisition of basic technology including propulsion technology
April 18 th ~ 23 rd , 2016	Hanjin Heavy Industries, SK, and DSME that possess the cold launch technology	30km flying of 1 <i>Buggeugseong-1</i> (SLBM) with cold launch technology	Collection of propulsion and attitude control technology such as cold launch and grid pin technology.
		First ground test a new ballistic missile engine (<i>Baekdusan</i>)	
May 1 st ~ 22 nd , 2016	Korean Air that possesses flight technology related to aircraft	400km flying test of <i>Musudan</i> (IRBM) that first mounted the 'GRIDPIN' for the attitude control	Technology linkage between the previous collected technical information and existing missile technology and collecting further technical information that was not collected previously.
August 3 rd ~ 24 th , 2016	DSME and DIDC	500km flight of <i>Buggeugseong-1</i> with cold launch technology	
February 12 th , 2017		500km flight of <i>Buggeugseong-2</i> (IRBM)	
March 6 th ~ 19 th , 2017		1,000km flight of 4 SCUD-ER	Acquisition of advanced technology for the missile development
		<u>Completing <i>Baekdusan</i> engine program</u>	
May 14 th ~ November 29 th , 2017		450km flight of SCUD-ER that first mounted the guided 'CANARD' during the terminal phase, 700-3,700km flight of <i>Hwasong-12</i> (IRBM), 500km flight of <i>Buggeugseong-2</i> , 1,000km flight of <i>Hwasong-14</i> (ICBM), 4,500km flight of <i>Hwasong-15</i> (ICBM)	Successful development of the missile
		<u>Self-development of new weapon system equipped with a high-tech guided missile system</u>	

Source: Modified by the author using Kim (2020, 200-1)

Considering this context and the problem of power shortage that Kim Jong-Un is citing light water reactor as a solution, which he calls one of the key challenges in economic development, it is safe to say that Pyongyang's hacking of institutions/companies having key technologies of light water reactors are scheduled or already be in progress.

Military mobilization in the economic sector

Thirdly, Kim Jong-Un's social and economic policy addresses the mobilization of military personnel in the economic sector.

There is always a military aide of Kim Jong-Un when he makes field guidances at government institutions. Furthermore, during his visits to several places owned by the military, 1524 unit, a vegetable farm visit on August 30, 2018, a salmon farm that is subordinated to the unit 810 on May 30, 2015 and July 24, 2016; the 525 military factory on July 25, 2018, rather than emphasizing combat readiness, he gave a speech emphasizing food production. Also, some cases show that the military is highly involved in the North Korean major construction businesses. During Kim Jong-Un's visit to the Onpyo resort construction site, Hamgyong province on July 17, 2018, he said "the Korean People's Army (KPA) will complete the resort by the next year and present it to the people." He also said "since it is the first time for us to build the large size vegetable greenhouse farm, the KPA needs to be in charge of the project and put in their best effort" during his visit to the vegetable greenhouse farm construction site located in Kyongsong country, Hamgyong province on July 17, 2018 and August 18, 2018. During his visit to the Chongjin shipyard which is one of the shipyards that builds warship on July 7, 2018, Kim Jong-Un mentioned "I have decided to build a new modern cruise ship at this shipyard." During his visit to the hot spring resort construction site in Yangdok country, Pyongan province, he said "I have ordered ski resort amenities such as elevators and chairlifts from major military factories and the quality of them are perfect."

As shown in the cases above, it is clear that Kim Jong-Un is deploying the North Korean military personnel into various industries while the military manages them. To improve the productivity of the planned economy, he is mobilizing the servicemen into the critical economic sectors.

Legal and illegal financing

The fourth pillar of Kim Jong-Un's economic and social policy is the securement of the budget and foreign currency to perpetuate his authoritarian leadership. There are both external and internal means to secure the budget and foreign currency. Drug trading, printing counterfeit bills, smuggling fake cigarettes, weapon trade, cyber hacking, remittance from the North Korean workers abroad, selling business certificates for coal mining, aquaculture and cultural assets and attracting foreign tourists are examples of external means. Taxing a loyalty fee from the individuals and organizations and extra taxation are examples of internal means (Park 2017, 255-6).

Currently, those aforementioned activities are major sources of North Korea's

foreign currency earnings. Smuggling coals, fishery goods and cultural assets are also part of the North Korean foreign currency procurement strategy but the revenue from them has decreased so far due to U.S. economic sanctions.

North Korea still actively sells its weapons. The DPRK government has sold tanks and multiple rocket launchers through internet websites and according to the UN report published in 2017 (Kim 2020, 129); North Korea earns about \$200 million per year through arms trade. Moreover, there is no doubt that North Korea is still getting significant funds from arms trade, according to a recent official comment by a U.S. official that “North Korea provided weapons to Russia in the Ukrainian war”.

According to the UN Security Council report published in August 2019, North Korea made around \$2 billion from December 2015 to May 2019 through cyber hacking.⁹ During this period, it has hacked various financial institutions and cryptocurrency markets across at least 17 countries on 35 occasions. On average, it has gained \$570 million per year through cyber hacking. Moreover, some cases were omitted in the UN report. In 2011, Pyongyang earned \$5million by hacking a South Korean online game. In 2017, it threatened a ROK company with ransomware¹⁰ and ripped off \$1 million. There is even a company called Silver Star in Yanbian prefecture of China that consists of 300 North Korean hackers and it raises about \$18 million annually. In 2017, it was found that the company called North Korean Computer Center (KCC) sent \$10 million in remittances. By calculating all of those undetected cyber hackings of the DPRK, Pyongyang has earned around \$800 million per year (Joo and Shin 2019).

According to UN Security Council Resolution 2397, North Korean workers in foreign countries need to return home by 2019. However, North Korean workers in China are extending their stay in China by changing their visa and obtaining short-term temporal visas. They have earned foreign currency and traded medical and daily necessary goods while moving between Sinuiju and China. The Russian government has not expelled North Korean workers living in the Republic of Abkhazia (Kim 2019). As the Republic of Abkhazia is not a member of the UN, the North Korean laborers have no barriers sending remittances in Abkhazia. By calculating the individual smugglings and loyalty tax that the individuals are forced to pay, it is expected that the DPRK government collects more than \$750 million per year through remittances (Park 2017, 259).

⁹ According to an expert panel report of UN Security Council released on March 1, 2022, North Korean stole about \$400 million worth of cryptocurrency during 2021. These reports make us trust that North Korean still acquires huge illegal funds through cyber hacking.

¹⁰ Ransomware is a type of malware from crypto-virology that threatens to publish the victim's data or perpetually block access to it unless ransom is paid.

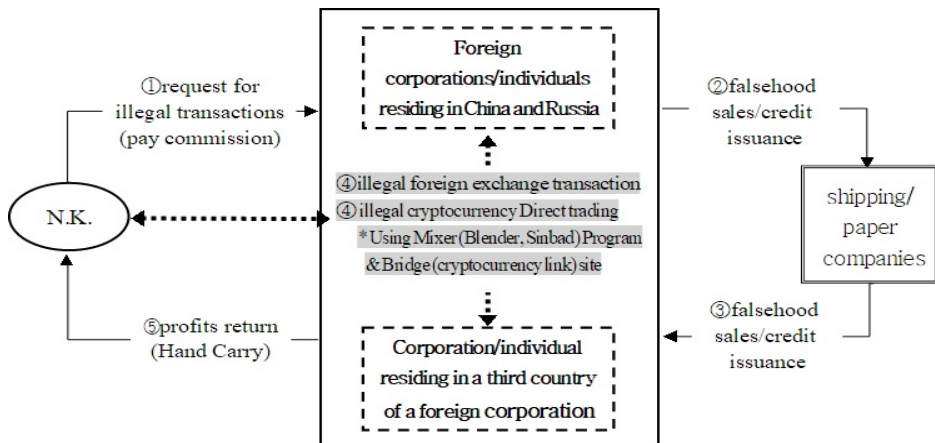
The Chinese fisheries in the East and West Sea of the Korean Peninsula are also linked with North Korean foreign currency earning activities. According to the South Korean intelligence agency, the DPRK earns around \$30 million by selling fishery rights to the PRC per year. In 2021, Chinese fishing boats paid about \$30,000 per ship in return for fishing, and \$200,000 when they violated fishing-related laws as a fine. Considering that up to about 200 ships operated in the East Sea a day, it is estimated that a considerable amount of dollars has flowed into North Korea so far.

Also, Pyongyang pocketed around \$360 million in 2018 by attracting Chinese tourists (Shim 2019). Even though the tourism sector is now non-existent due to the outbreak of COVID-19, Kim Jong-Un's tourism policy was relatively successful before the pandemic.

In total, the North Korean government has earned \$200 million through weapon trading; \$800 million through cyber hacking; \$30 million through fishery authority selling; more than \$750 million through remittance; \$360 million through tourism. The sum of legal and illegal foreign currency recorded more than \$2.15 billion and it is estimated to constitute 26 percent of North Korea's budget (The Bank of Korea estimates North Korea's annual budget as approximately \$8 billion).

The example of North Korea's overseas inflow of illegal funds is shown in Figure 4. below, and these illegal funds are flowing into various fields such as urban modernization, tourist destination maintenance, and nuclear weapons development.

Figure 4. An analysis of North Korean's illegal overseas funding



Source: Modified by the author using Kim (2023, 134)

It is noteworthy that these internal changes in illegal funds were used to spread “expectations of development” that could force North Koreans to exploit voluntarily. Therefore, the inflow of illegal funds forms a circular link between ‘expectations of the future’ and ‘voluntary exploitation for the future,’ neutralizing or suppressing public discontent that should have emerged as a result of sanctions.

Combined policy between permission and constraint

The fifth focus of Kim Jong-Un's economic and social policy is control of marketization. As mentioned previously, marketization changes the mindset of people so Kim Jong-il was always ready to implement measures to grasp control over the market.

However, Kim Jong-Un cannot follow into his father's footsteps when power seems to slip toward the market. Kim Jong-il has failed to get rid of the market and his failure of currency reform in 2009 has taught Kim Jong-Un that even though the market has the potential to weaken his authoritarian leadership, the market control policy needs to be implemented carefully to avoid a backlash from the people.

The lessons of his father's failure allowed Kim Jong-Un to implement different market and social control policies simultaneously. Kim Jong-Un promotes market activity to increase productivity while controlling his people with stronger government authority. Although the expansion of the market changes the mindset of people, they cannot consider challenging Kim Jong-Un due to the reinforced government control compared to the Kim Jong-il era.

Two attributes stand out in Kim Jong-Un's social control policy, laxation to some degree and harsher punishment for those testing the boundaries of the law. From his experience in the West, Kim Jong-Un partially tolerated the spread of western cultures such as Mickey Mouse, girl groups wearing miniskirts, swimming pools, and amusement parks in Pyongyang that were strictly prohibited during the Kim Jong-il era. By allowing them, Kim Jong-Un raised people's expectations on economic development. On the contrary, Kim Jong-Un has increasingly ordered public executions of government officials and ruthlessly penalized those who violated the rules. For instance, he has publicly punished wrongdoers; sought and punished those who spread and watched South Korean television programs; and arrested people who criticize the government.¹¹ Exerting strict social control, Kim

¹¹ According to the *White Paper on Human Rights in North Korea 2020* published by the Korea Institute for National Unification and a North Korean defector, the DPRK has toughened its social control over the people. In 2017, the government even tortured and incarcerated teenagers who

Jong-Un has sought to instill fear among the people to make them obey. Recently, he even realigned 'People's Units (*Inminban*)' which existed nominally after the North Korean famine in the 1990s to surveil the population.

Also, it is found that the price of daily necessary goods such as food and oil in the market is controlled by the North Korean government. Even though there is a sudden escalation of the price due to economic and external factors, prices are stabilizing quickly (Kim 2020, 105). Moreover, the government has pressured merchants to register with the government so as to have firm control of the market and to monitor the flow of money.

The market control policy demonstrates that the government presides over the range of price fluctuation while the market determines the price. It seems that the government actively interferes in determining the price of daily necessities while ensuring the market functions well in terms of retail. In conclusion, the market control policy has two different aspects in play, partial marketization and tight social control.

Moreover, the DPRK government has framed U.S. economic sanctions to spark a rally-round-the-flag effect. North Korean leadership has widened anti-American propaganda especially after the collapse of the 2019 DPRK-U.S. Hanoi summit.

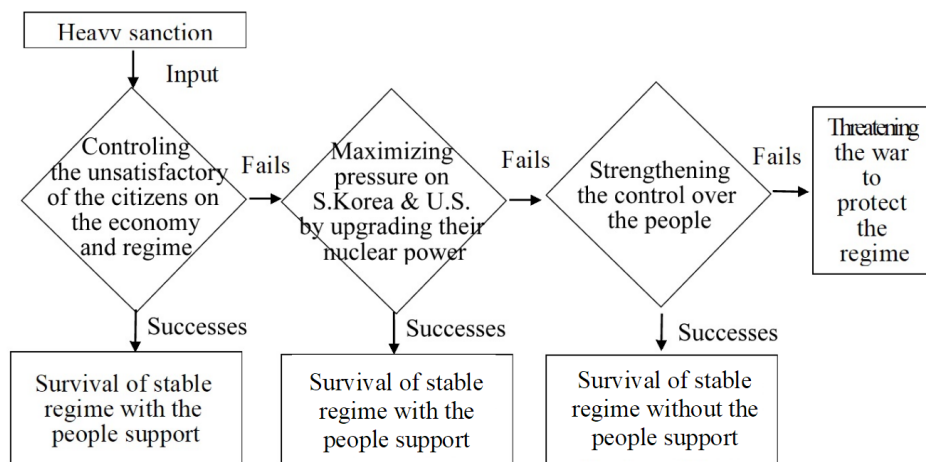
CONCLUSION

Nowadays Kim Jong-Un is facing some dilemmas. The one is that nuclear weapons developed to ensure the survival of the regime are causing massive sanctions, shaking the stability of the regime. The U.S., which effectively controls the global financial network, demands "disarmament of WMD" and is blocking major resources like technology and goods as well as large-scale funds to North Korea. But, Kim can't just choose "negotiation to abandon nuclear weapons" blindly. The power elites are well aware of how Libya's Gaddafi died.

Another dilemma is that the "restricted economic changes" chosen to survive amid unprecedented sanctions continues to change residents' consciousness, weakening the foundation for regime stability in the mid to long term. The power elites of DPRK are striving to maintain economic conditions at the minimum level for the survival of the regime by mixing market economic traits in people's daily lives and state-centered planned economy in major industries section.

watched South Korean television series. For detail, see D. Shin's paper "DPRK's Social Control in Kim Jong-Un Era", *Journal of North Korea Studies*, 5(1), (2019), pp. 111-144."

Figure 5. The North Korean's Regime Survival Scenario under the Sanctions



Source: Kim (2023, 129)

From this point a view, Kim Jong-Un's regime survival scenario under sanctions will be different from what the U.S. hopes to imprint on Pyeongyang (figure 2.) as shown in figure 5. and the direction of international sanctions against North Korea should also be designed based on this scenario.

Meanwhile, just like the bourgeoisie, who were eager to get a “political voice” to protect their growing wealth after the Industrial Revolution in the past, changing notions about private assets and incentives will make their attachment to “what should be protected” increase in North Korea too. Moreover, the residents who did not protest Kim's regime in the massive starvation of mid-1990s have now changed enough to voice their opinions to survive. Perhaps if the aftermath of COVID-19 creates similar massive economic difficulties as in the past, the response of residents will certainly be different from the past.

In this context, Kim Jong-Un, who dreams of “the permanence of Kim Il-sung Jos-sun,” presented a new solution that is contradictory one that “minimizes the impact of the sanctions through changes that can maximize economic effects, while maximizing social control so that the changes do not drive political change for residents.” This is the *‘ja-lyeog-gaeng-saeng*(self-reliance)’ that the North Korean regime has called for numerous times.

Considering his dilemmas, cyber hacking will be very attractive. While there will always be a lack of funds and advanced technology when implementing his economic policies under sanctions, it can make up for funds and technology without any internal “aftermath.”

At this point, we should note that Kim Jong-Un's “changes” are only a short-

sighted attempt to regime survival under the sanctions and not enough to support full-fledged economic development. Although the sanctions have yet to achieve the intended results due to Kim's effective domestic policy, it is already sowing the seeds of change in North Korean society.

Thus, if the U.S. wants denuclearization of North Korea, it needs to work to undermine Kim Jong-Un's social and economic policy. Rather than endeavoring to instigate an economic crisis in North Korea, Washington should focus on the collapse of the planned economy. Causing the collapse of the planned economy will facilitate further marketization so that North Koreans have a firm understanding of the concept of private assets. Marketization and a change of the people's mindset can divide the people and government and worsen the societal resilience of North Korea. In particular, it is necessary to shake Kim Jong-Un's strong monopoly on economic resources, represented by '*WaKu*'. If the value of an exclusive distribution rights on certain sectors or goods plummet, the value of monopoly on economic resources owned regime will also decline, which will restrict him from controlling the country in the direction he wants.

Secondly, it is essential to prioritize the prevention of North Korean cyber hacking as a global agenda. North Korea has been utilizing cyber hacking to catch up with technology that sanctions prohibited. Resources including money and technology are allocated to the development sector and it has shored up the loyalty of the North Koreans to the regime. Economic development without advanced technology and money from outside is almost impossible. Therefore, cyber hacking that keeps North Korea up to date with technology constitutes the key for protecting social and economic resilience. Therefore, it is necessary to devise a way for the hacking to cause an internal 'shock'. For example, because the hacking organization has played a big role during the Kim Jong-Un regime's 10 years and checks between authoritarian agencies are common in DPRK, if their hacking organizations can be suspected to cause 'political problems' such as 'organizational corruption' in the process of acquiring illegal funds and technology, Kim Jong-Un who receives reports of the 'political problems' from other powerful agencies that were normally jealous of hacking organizations will be forced to investigate them and consider reducing their 'role' of cyber hacking in his 'change initiative'.

Thirdly, the international community needs to have a flexible mindset on its North Korea policy. As shown, the North Korean government has continuously adjusted its policy and plan to overcome the sanction. Thus, they should understand that North Korean strategy can always adapt while designing the end-state of the game. The international community that wants to denuclearize North Korea, including the U.S., has to exercise flexibility that can simulate

various scenarios to yield the best outcome and should not fluctuate between hopes and fears by the DPRK's changing strategic decision. Furthermore, flexibility needs to begin with a dualistic mindset that separates the process and result of denuclearization of the DPRK.

Lastly, the U.S. needs to consider the balance between its world grand strategy and the successful denuclearization of North Korea. Because Kim Jong-Un has adopted “creating anti-U.S. blocks” as one of his survival strategies, such as visiting China and Russia before and after major U.S. negotiations with the U.S.

Just sanctions alone cannot deliver denuclearization. As long as nothing changes in the current situation, time is on Kim Jong-Un's side.

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