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Why Targets of Economic Sanctions React Differently: Reference Point Effects on North Korea and Libya

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The international community has frequently introduced economic sanctions to curb the proliferation of weapons of mass destruction, to which each target nation has reacted differently. This paper explores the reasons why each target of economic sanctions reacts differently by specifically building a model based on reference point effects, and by analyzing the cases of North Korea and Libya. According to the results, when the reference point level increases, as in the case of North Korea, the target resists more firmly; on the other hand, when the reference point decreases, like in the case of Libya, the target resists more subtly.

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Keywords: economic sanctions, reference point (RP), prospect theory, North Korea, Libya

Economic sanctions, in the sense of the withdrawal or threatened withdrawal of trade or financial relations are imposed on a targeted country by other states or groups of states for the purpose of achieving foreign policy goals. According to Hufbauer et al. (2007), economic sanctions have been used increasingly frequently over the past century. In particular since the end of the Cold War, the international community has often imposed economic sanctions to curb the spread of weapons of mass destruction (WMD) and to cease supporting terrorism. Reynolds and Wan (2012) report that the international community introduced as many as 256 sanctions measures for these purposes on Iran, Iraq, Libya, and the Democratic People's Republic of Korea (hereinafter DPRK or North Korea) between 1990 and 2009, and that each target nation responded differently. This paper aims to compare the

DPRK's and Libya's contrasting decision-making in response to economic sanctions. It explains why one country continued to pursue nuclear tests, while the other reversed both its support for terrorism and its nuclear programs. Why did they decide to go in opposite directions? This paper presents a model based on the reference point effects of prospect theory, and applies the model to analyze the cases of the DPRK and Libya.

1. Reference Point Matters for a Sanction Target's Decision-making

1.1. Prospect Theory

The agents in prospect theory are similar to those in the mainstream expected utility theory, in the sense that they

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assess utility through the arithmetic operation of value and probability. The difference is that agents in expected utility theory measure utility on the basis of objective values and probability, while those in prospect theory use subjective values and probability. There is nothing new to the premise that humans base their decision-making on subjective judgments. The innovative contribution of Kahneman and Tversky (1979) was to identify regularity in the subjective judgments of agents, and define it through a value function and a probability weighting function, corresponding to a utility function in mainstream economics.¹

In particular, the value function of prospect theory posits that people evaluate values in relation to a reference point (hereinafter RP). Suppose that last year A and B earned \$30,000 and \$50,000 respectively. The theory argues that if they both receive \$40,000 this year, A will be happier than B. This is due to the comparison with the previous year: A gains \$10,000, while B loses \$10,000. In other words, value is assessed in relation to last year's salary as a RP. Humans are more sensitive to negative (-) than positive (+) change relative to RP: people are more concerned about the \$10 they lose

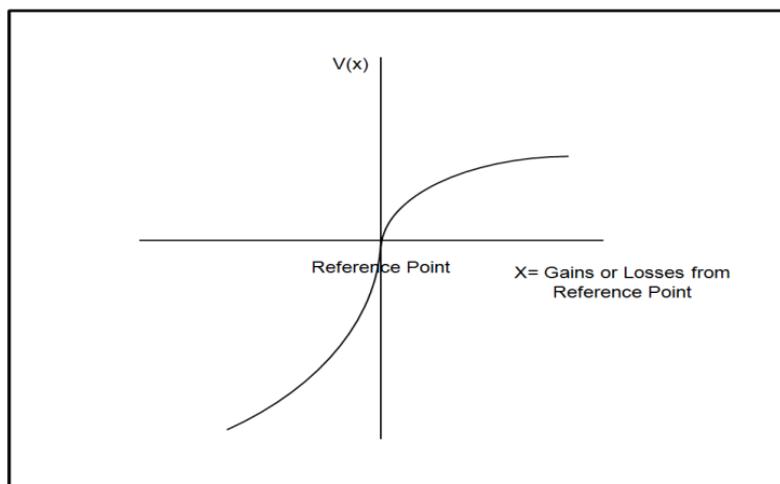
than the \$10 they find by happenstance on the street. Further, Kahneman and Tversky argue that people prefer to choose (4000, 0.25; 2000, 0.25) to (6000, 0.25), but (-6000, 0.25) to (-4000, 0.25; -2000, 0.25).² These preferences ensue from the value function, where the slope for losses is steeper than for gains, relative to the reference (see Figure 1). Thus, people respond more sensitively to change near the RP than to change in the region further away from it. This effect is called "diminishing sensitivity."

According to prospect theory, the reference point (RP), defined as a circumstance or condition against which to compare choices, has a crucial influence on people's decision-making.

Prospect theory basically analyzes individual choices about economic issues. For this very reason, Boettcher (1995) argued that the theory has limitations in terms of examining national choices about political matters. Nevertheless, many international political scientists have analyzed states' decision-making using prospect theory. Jervis (1994, 23-38) and Levy (1994, 139-40) argued that prospect theory could be a useful tool in analyzing a state's foreign policy decisions

through the concept of loss aversion, by which a state would react more sensitively to loss than gain based on its current situation (this is known as the reference point).³ Such discussions can provide a useful analytical framework for studying why a country would declare or participate in a war that it has an extremely low probability of winning. For example, Park (2004) analyzed Iraq's economic situation in 1990 based on the RP at which Iraq, during the Gulf War, decided not to surrender to U.S. attacks and take part in the war instead. In other words, taking the economic crisis at the time as its RP,

Figure 1: The value function



Source: Kahneman and Tversky (1979), 279.

¹ Kahneman was awarded the Nobel Prize in Economics in 2002 for his pioneering work on decision-making and uncertainty (prospect theory), which was developed with Tversky.

² (6000, 0.25) refers to a 25 percent chance to win \$6,000. (2000, 0.25; 4000, 0.25) means a 25 percent chance to win \$2,000 or a 25 percent chance to win \$4,000. It is the same for the case of (-).

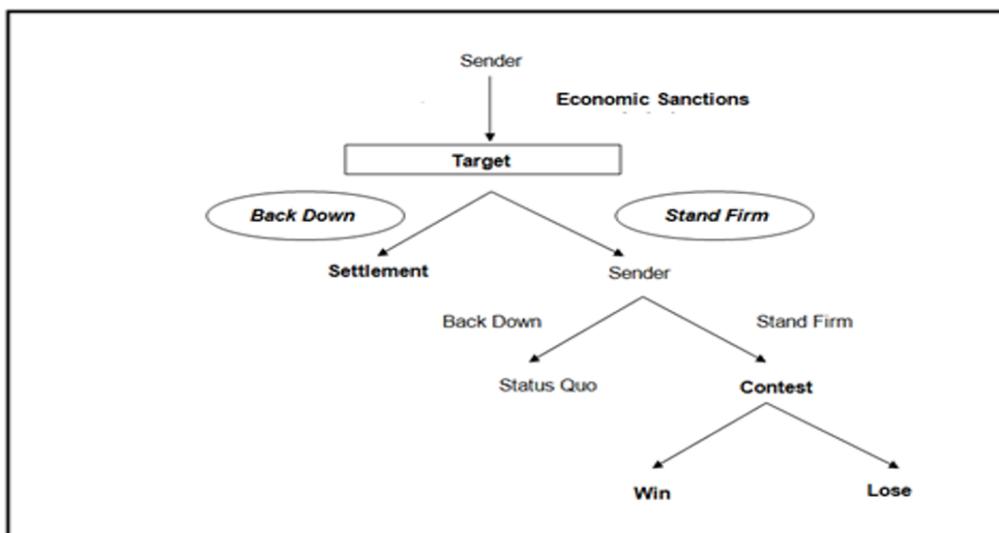
³ According to Levy (1994), a "risky option" is one that includes uncertainty (that is, the probability); here the RP is the standard of judgment for all gains and losses.

Iraq chose the risk-seeking option of war in order to prevent a severe worsening, which was a definite loss with a high probability. McDermott (1998) analyzed President Jimmy Carter’s decision to send military forces to rescue American hostages in Iran based on prospect theory. The economic situation in 1979, when the embassy hostage crisis occurred, was extremely poor and support for the Carter Administration was falling sharply. Under such circumstances, Carter could

1.2. Reference Point Effects on a Target’s Decision-making

As Figure 2 shows, the sender imposes economic sanctions to pressure the target into compliance with particular diplomatic demands. The target has the binary option of backing down or standing firm. If it backs down, the two parties reach a settlement and the game is over. On the other hand, if the target stands firm, the sender must choose between withdrawing or maintaining the sanctions. If the sender lifts the

Figure 2: Target’s options in response to economic sanctions



not sit by and watch the inevitable drop in his approval ratings; instead, he chose the policy of using force against Iran despite the possible low probability of winning.

Prior research has successfully identified the central implication of the theory, which is that “circumstances and contexts need to be considered in the analysis of the decision” (Hwang 2005; see also McDermott 2004). In this regard, prospect theory provides key tools for analyzing foreign policies. According to the literature, a state’s domestic and international circumstances can be taken as the RP for decision-making in response to economic sanctions (McDermott 2004, 289–312; also Farnham 1994, 41–71; Park 2004).

sanctions, the target returns to the prior status quo without sanctions; however, if the sender keeps the sanctions in place, the target ends up in a contest with the sender. Consequently, the target anticipates either “a win” or “a loss” as the ultimate consequence of the economic sanctions. The target will presumably make its decision by comparing the expected utilities among the three possible options of settlement, status quo, and contest. The assumption of this paper, however, is that when economic sanctions are issued the target does not expect the status quo to continue. In other words, the target does not anticipate the sender’s acceptance of its resistance against the incurred sanctions. The reasoning is as follows: the sender would not have initiated the economic sanctions in the

first place if the target could have expected the sender to accept its resistance to the demands (which would inevitably lead the target to choose to stand firm unconditionally). Thus, if sanctions are enforced they can be expected to be reliable, and the target will have to decide whether to stand firm or to relent based on a comparison between the respective expected utilities of the two options.

Considering that prospect theory also analyzes a target's decision-making in response to economic sanctions through the boundary point, s^* , where the preference of choice is indifferent because the utilities of the two options of settlement and contest are equal, it does not differ from the framework of expected utility theory.⁴ What creates a distinction between the two is that prospect theory identifies s^* by setting an RP, R ($0 \leq R \leq 1$), and the probability level to calculate the utility of each outcome. The expected utilities of settlement and contest can be derived by the RP and the probability level proposed by prospect theory.¹¹

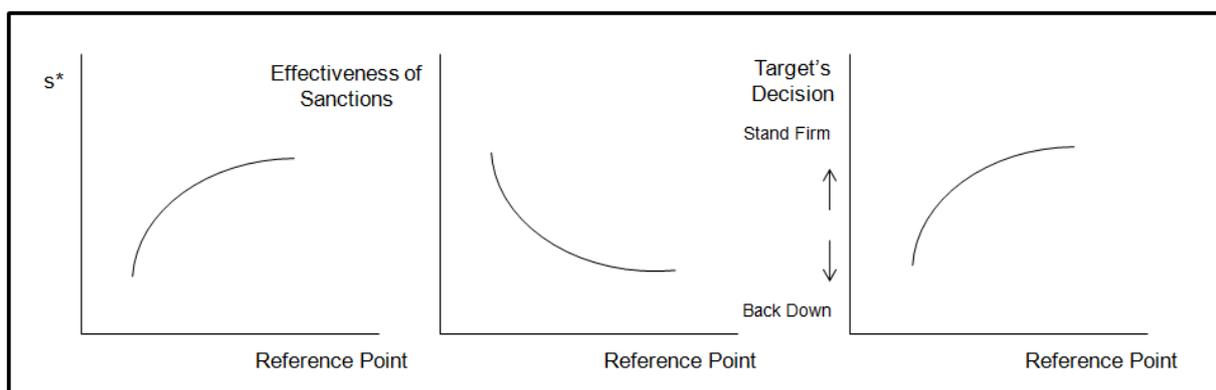
In other words, the higher the RP is, the higher the boundary point (s^*) would be. As explained earlier, a high boundary point implies low effectiveness of economic sanctions, which manifests in the target's strong resistance. In conclusion, the utility function proposed by prospect theory shows that as the RP increases, a target can be expected to decide to stand firmer against the sender's demands.⁴

2. The North Korean Case

2.1. The Chronology of Pyongyang's Decision to "Go Nuclear" in Response to Economic Sanctions

North Korea's nuclear activities came to the international community's attention in September 1989, following the release of photographs of the Yongbyon area taken by a French commercial satellite. The International Atomic Energy Agency (IAEA) requested a visit to these undeclared facilities in 1992. On March 16, 1994, the IAEA declared that it could not verify that no reprocessing activities had occurred at the Radiochemical Laboratory, since it had not been able to complete a full inspection. In response, North Korea stopped operating its 5 MW nuclear reactor in April 1994, and started to withdraw spent fuel rods on May 4, 1994. The IAEA conducted another inspection on May 17, 1994, but North Korea refused to allow the collection of a spent fuel sample, which made it impossible for the inspectors to assess past nuclear activity. The United States finally abandoned talks and proceeded to impose economic sanctions on North Korea. On June 3, 1994, a joint statement by the Republic of Korea (South Korea), the United States, and Japan announced economic sanctions on North Korea. The U.S.-led sanctions included halting development aid, a ban on sports, cultural, and scientific exchanges and support, and an arms embargo. The statement also threatened harsher measures affecting

Figure 3: Reference point effects on the target's decision



⁴ In fact, $s^* = 1 - \frac{1}{(1/\lambda)(1-c-R)^\beta + (R+c)^\beta} \left[\frac{1}{\beta-1} \right] \times \left[\frac{1}{\lambda} \left[(1-c-R)^\beta (\beta-1) \right] + (R+c)^\beta (\beta-1) \right] \times \left[\frac{1}{e^{-(\ln(1/p))^\alpha}} \right]$

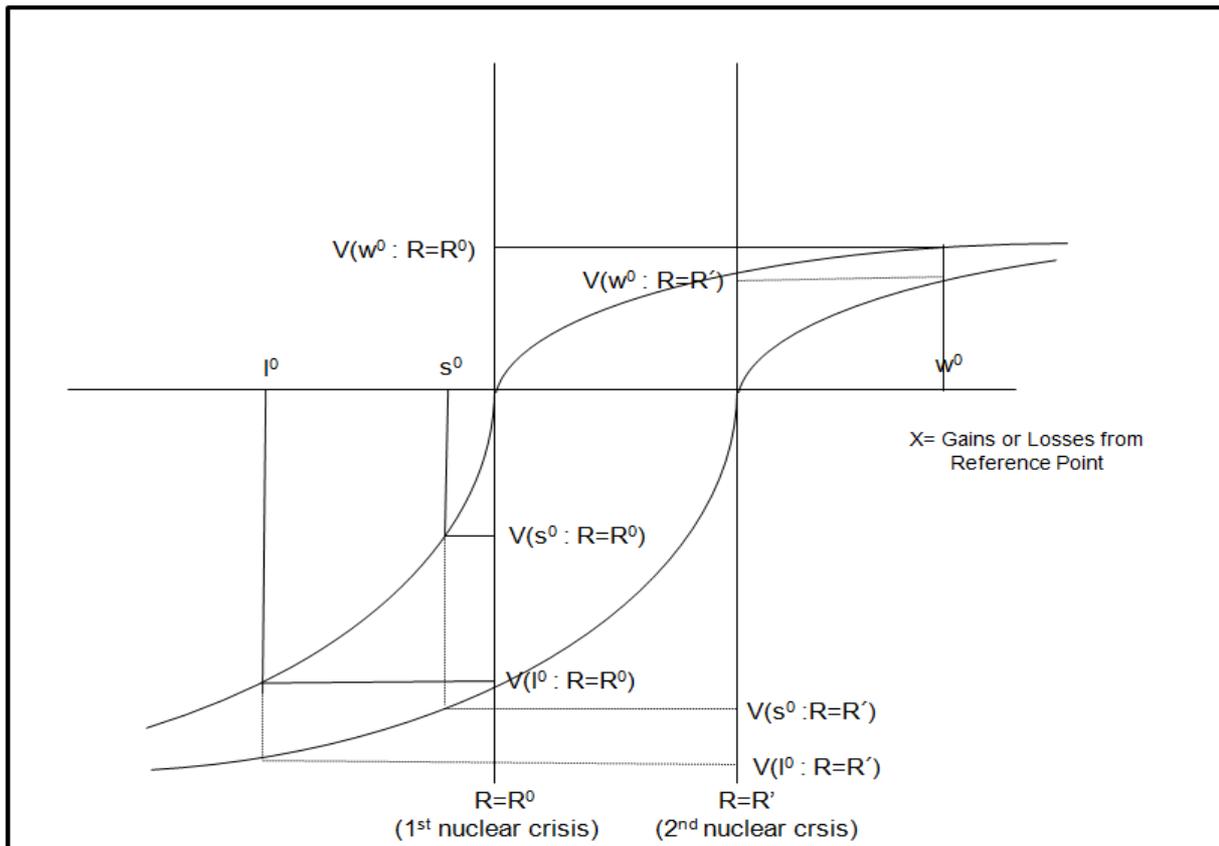
$\left[\frac{1}{\beta-1} \right] \times \left[\frac{1}{\lambda} \left[(1-c-R)^\beta (\beta-1) \right] + (R+c)^\beta (\beta-1) \right] > 0$ can also imply a positive correlation between s^* and R .

trade and financial transactions if North Korea rejected a special IAEA inspection. As economic sanctions became reality, North Korea weakened its hostile behavior; it continued to condemn the United States but at the same time stressed the necessity of negotiations (Rodong Shinmun 1994a, 1994b, 1994c). This conflict was temporarily settled with the Agreed Framework of 1994.

The North Korean nuclear crisis resumed in the early 2000s, when it admitted possession of highly enriched uranium (HEU) development plants. In response the administration of President George W. Bush immediately supplying heavy oil, demanded that doubts over HEU development be cleared in the short term, and sought complete, verifiable, and irrevocable nuclear disarmament in the long term. North Korea strongly condemned the United States for imposing sanctions

and blamed it for breaking the Agreed Framework. In resistance to the U.S. economic sanctions, North Korea lifted its nuclear freeze on December 12, removed the surveillance camera for the sealed 5 MW reactor on December 22, expelled the IAEA inspectors on December 31, and announced its withdrawal Nuclear Non-proliferation Treaty in January 2003, while condemning the sanctions as an excuse for an invasion to serve the “dirty political purpose” of “imperialists” (Rodong Shinmun 2003). On November 26, 2004, seeing no signs of a resolution to the North Korean nuclear issue, the U.S. opted for a year-long suspension of the KEDO light-water reactor (LWR) project. On February 10, 005, North Korea declared its possession of nuclear weapons. The September 19 Joint Statement was drawn up in September 2005, during the second phase of the fourth round of the Six-Party Talks, but

Figure 4: Reference point effects and the DPRK's value function under sanctions



subsequent in-depth action plans were interrupted by a motion for economic sanctions against North Korea by the U.S. Treasury (Haggard and Noland 2012, 250-58). Sanctions through the Banco Delta Asia in Macau resulted in a long-term freeze on North Korea's overseas funds, and the nuclear issue reached a deadlock. Finally, on October 9, 2006, North Korea conducted its first nuclear weapon test.

Whereas Pyongyang responded to the U.S.-led economic sanctions in the early 1990s by entering into the Agreed Framework, in the 2000s it responded by conducting a nuclear test. Plainly, North Korea demonstrated stronger resistance in the second crisis than in the first.

2.2. Why the DPRK Decided to “Go Nuclear”: Pyongyang's Increasing Reference Point

Why did North Korea decide to pursue nuclear technologies despite facing such severe economic sanctions? The reason can be argued in terms of RP effects: Pyongyang's RP had increased; therefore, North Korea could go nuclear.

According to the value function proposed by prospect theory (see Figure 4), if the RP increases from R^0 to R' and this is accompanied by shifts in the value of the expected results in both the case where North Korea backs down and in the case where it stands firm, both values would result in decreases.

In particular, the extent to which the value of the expected result decreases in the case where North Korea backs down and agrees to denuclearization is much greater than the decrease in the value of the expected result in the case where it stands firm. Thus, if the RP increased during the time of the second North Korean nuclear crisis, and consequently the utility of agreement decreased by a much greater extent than the decrease in the utility of confrontation (resistance to the economic sanctions), this could explain North Korea's firmer resistance in the second case.

As mentioned above, the domestic and international circumstances of North Korea need to be considered as indicators of its RP. Domestically, North Korea's situation was seriously unstable during the early 1990s, its political stability having suffered a severe blow when the Soviet Union and

China, its two strongest allies since its establishment, opened diplomatic relations with South Korea. Moreover, this was the period immediately after the collapse of the Soviet Union, when formerly communist Eastern Europe turned to the market economy system. There was widespread external agreement that “North Korea's collapse following Eastern Europe was unavoidable and was just a matter of time” (Gang 2002, 3). The political instability North Korea faced at the time is also reflected in its approach to inter-Korean relations: without domestic instability, North Korea had no reason to change its hostile stance toward South Korea to voluntary appeasement. Moreover, it is believed that this political insecurity motivated North Korea to seek regime stability through improved inter-Korean relations. For instance, North Korea initially responded negatively to South Korean President Roh Tae-woo's July 7 Declaration of 1988, in which he announced a six-point program that included promotion of trade, exchanges of visits at all levels, and humanitarian contacts between the two Koreas, etc. (Oberdorfer 1997, 188-89),⁵ but later it changed its stance. During the Supreme People's Assembly on May 24, 1990, Kim Il-sung indicated his intention to improve relations with South Korea by announcing that North Korea could accept a “gradual” withdrawal of the U.S. military forces from the South, which was a change from his former demand of “immediate” withdrawal (Rodong Shinmun 1990).

Furthermore, the economic situation in North Korea was also very unstable. The loss of its external markets following the collapse of the Communist Bloc greatly affected the North Korean economy. As the Soviet Union and China, which accounted for most of North Korean trade, began requiring payment in hard currency, its imports of raw materials plummeted and negative growth rates ensued (KIEP 2002). Economic growth was 1.4 percent in 1989, but fell into the negative range after 1990: -4.3 percent in 1990, -4.4 percent in 1991, and -7.1 percent in 1992 (UN Database). Considering that the only previous year of negative growth since the country's founding was 1978, which was not long after the oil shock, these consecutive negative growth rates indicated that the North Korean economic situation was indeed

⁵ Kim Il Sung, in private conversations with the East German defense minister later in July, declared that

Roh's declaration was intended to permanently split the country up.

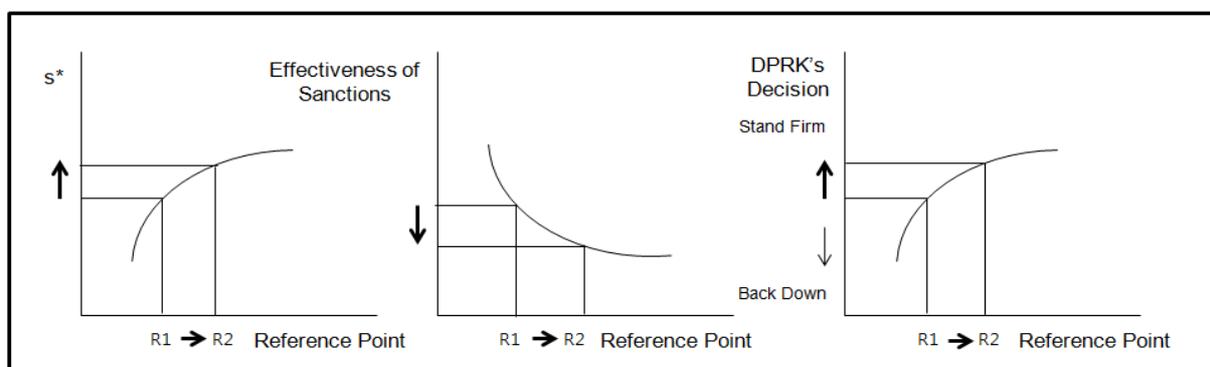
highly unstable (KINU 1993, 258). Moreover, for the first time in the regime’s history, North Korea had to admit the failure of its Economic Development Plan (the Third Seven-Year Plan, 1987–1993; KCNA 1994, 168).

By the 2000s, North Korea’s domestic and international situation had stabilized to some extent, particularly when compared to the early 1990s. Internally, the completion of Kim

position” that symbolized and represented the state’s glory and the people’s dignity. Furthermore, the new constitution stipulated that the NDC was the organization responsible for the overall national defense management, and built the system through which NDC Chairman Kim Jong-il’s power could extend across the entire state (Suh 2000, 223).

Additionally, the North Korean economic situation began to

Figure 5: Reference point effects on the DPRK’s decision-making



* R1: RP in the early 1990s / R2: RP around the 2000s

Jong-il’s succession may have relieved some of the domestic political insecurity. Following the death of Kim Il-sung in 1994, Kim Jong-il was nominated as General Secretary in October 1997, and was re-nominated as the Chairman of the National Defense Commission (NDC) in September 1998. At the same time, Kim Jong-il carried out a constitutional reform to solidify his power. Under the new constitution, the powers of the NDC Chairman were no longer limited to controlling and leading the military forces and managing the nation’s overall national defense projects; now, the NDC Chairman could be viewed as the head of state. According to the Chairman of the Presidium of the Supreme People’s Assembly, the NDC Chairman was now the “top position of the state,” leading the state’s entire political, military, and economic capabilities, protecting the national system of the homeland as a socialist state and the destiny of its people, and also organizing and leading projects to strengthen and develop national defense and overall national power (Rodong Shinmun 1998). It was a “holy

improve in the 2000s; economic growth was 0.4 percent in 2000, 3.8 percent in 2001, 1.2 percent in 2002, 1.8 percent in 2003, and 3.8 percent in 2004 (UN Database). These positive growth rates meant that the economic situation had started to recover from a steep downturn, and it can be assumed that the economic instability at least partially alleviated. The food supply remained unstable, but shortages were reduced.

Moreover, North Korea sought a way out of international isolation by improving relations with China. China in turn sought to expand its international influence by assuming the role of active mediator, in a change from its past stance over the North Korean nuclear issue (Jeon 2006, 265). Under this policy paradigm, frequent visits took place between the

governments of China and North Korea (ibid.).⁶ Moreover, China continued to provide economic assistance in a variety of forms, despite the U.S. economic sanctions. For instance, after the imposition of economic sanctions in 2002, aid from China to North Korea amounted to \$10,888,000 in 2003, \$14,556,000 in 2004, \$38,123,000 in 2005, and \$37,360,000 in 2006 (Cho 2010, 4).

It appears that around the 2000s, North Korea's domestic and international situation had stabilized in comparison to the early 1990s. In other words, the RP of North Korea seems to have increased during the period of U.S. sanctions seeking to restrict North Korean nuclear nonactivities. According to the suggested model, Kim's stronger resistance to sanctions could be explained by North Korea's raised RP (see Figure 5).

3. The Libyan Case

3.1. The Chronology of Tripoli's Decisions to Cease Supporting Terrorism and Forgo Nuclear Development in Response to Economic Sanctions: The Chronology

After seizing power in 1969, Qaddafi began to seek nuclear weapons. In the 1970s, Libya attempted unsuccessfully to procure nuclear weapons from France, India, the Soviet Union, and even sources on the black market (Nuclear Threat Initiative). Libya's nuclear efforts were frustrated by the reluctance on the part of most supplier countries to provide such assistance (Palkki and Smith 2012, 261). Qaddafi appeared to be implicated in several terrorist attacks against Western targets, such as the 1985 Rome and Vienna airport attacks, and the 1986 bombing of a discotheque in Berlin, which killed two U.S. servicemen. In response, President Reagan invoked the International Emergency Economic Powers Act to impose trade and financial controls against Libya in 1986. He banned most exports and imports of goods, technology, and services, all loans or credits to the Libyan government, and transactions relating to travel to Libya by a U.S. citizen or permanent resident (Hufbauer et al. 2007, case 78-8). Reagan also froze Libyan government assets in U.S.

banks, including hundreds of millions of dollars of deposits held in foreign branches of American banks, as well as real estate and investments (Rose 1998, 129-56). Even under these severe sanctions, Libya nevertheless apparently continued to support international terrorism and was involved in overseas attacks until the mid-1990s. These included the 1988 destruction of Pan Am flight 103 over Lockerbie, Scotland, which caused 270 casualties, including those of 189 citizens. Evidence was also found linking Libya to international terrorists such as the heavily armed Palestinian terrorists captured off the coast of Israel, who claimed that they were trained in Libya, transported by Libyan vessels, and accompanied by Libyan advisors (ibid.).

Libya's nuclear weapons program became a serious issue for the international community from the 1990s. At this juncture it received a boost from A. Q. Khan and his global network of illicit suppliers, who provided Libya with key technologies such as centrifuge enrichment, weapons design, and engineering, as well as overseas training for Libyan personnel. In terms of terrorism and nuclear issues, sanctions were imposed under United Nations Security Council (UNSC) Resolutions 748 (1992) and 831 (1993), which entailed an arms embargo, air embargo, travel restrictions, petroleum-sector restrictions, and the freezing of Libya's financial assets and funds. Complementing the sanctions through the UNSC Resolutions, Executive Order 12801 signed by President George H. W. Bush in 1992 prohibited access to U.S. airspace of any flights bound to or flying from Libya. The U.S. Congress also passed the controversial Iran-Libya Sanctions Act (ILSA) in 1996 (updated in 2001). This legislation mandated sanctions against foreign firms with significant investment in Libya's petroleum sectors. At the signing ceremony, Bush declared that ILSA "will help to deny (Iran and) Libya the money they need to finance terrorism, and it will limit the flow of resources necessary to obtain weapons of mass destruction" (Hufbauer et al. 2007, case 78-8). In response, starting from 1998, Libya ceased supporting terrorist acts, closed all terrorist training camps on Libyan soil, and expelled the Abu Nidal terrorist organization

⁶ Such as the visit to North Korea by Wu Bangguo, Chairman of the Standing Committee of China's National People's Congress, in 2003; the visit to

China by Kim Jong-il in 2004; the visit to North Korea by Li Changchun, member of Central Committee Politburo Standing Committee, in 2004; the visit to China by Kim Young-nam, Chairman of the

Presidium of the Supreme People's Assembly, in 2004; the visit to North Korea by Hu Jintao, the former leader of China 2005; and the visit to China by Kim Jong-il in 2005.

and concedes to denuclearization would be much greater than the increase in the value of the expected result in the case where it stands firm. Thus, if the RP decreases, the utility of conceding to economic sanctions consequently increases by a much greater extent compared to the increase in the utility of confrontation by resistance to economic sanctions, and subsequently, Libya would have less reason to resist economic sanctions.

In order to assess Libya's RP, its political and economic situation and international conditions need to be considered. Until the mid-1980s, Libyans enjoyed great improvements in housing and education, and comprehensive welfare and health services, which were all free of charge under Qaddafi's policies. All of these were dependent on the continuous flow of oil rents based on Qaddafi's Libyanization policy. However, the oil price collapse caused serious cash flow problems; oil revenues fell from \$22 billion in 1980 to about \$5 billion in 1986 (Altunisik 1995, 87). Besides, poor economic performance during the 1980s demonstrated clear deficiencies in the planned economic model of the Socialist People's Libyan Arab Jamahiriya. GDP growth fell from 8.3 percent in 1985 to -11.4 percent in 1986, and -14.7 percent in 1987 (UN Database). To address the sudden recession, Qaddafi embarked on economic reform efforts from 1987. He introduced the concept of *tashrukiyya*, as a form of collective ownership that allowed partners to contribute labor and capital through the creation of cooperatives (Alafi and Bruijn 2010). Between 1987 and 1989, the government passed a raft of new laws that allowed limited private sector investment for the first time since 1977. The Libyan economy appeared to gradually recover between 1987 and 1990: GDP growth rose from -14.7 percent in 1987 to 7.6 percent in 1988, and 7.2 percent in 1989 (UN Database).

Despite Qaddafi's efforts to overcome the "shortage economy" of the Socialist People's Libyan Arab Jamahiriya, external problems remained. The Libyan economy benefited from windfall profits resulting from the Gulf crisis in the early 1990s. Later, however, it suffered the effects of fluctuating oil prices. The fact that there was no budget from April to December 1993 reflected the chaotic state of the economy. According to the governor of the central bank, the slump in the

oil prices in 1993 meant that external earnings for the fiscal year ending March 31, 1993, were 13 percent less than the projected estimate (Altunisik 1995, 190). Increasing imports also contributed to inflation and budget deficits. In the meantime, the regime sought to secure sufficient financial reserves to withstand these difficult times.

Along with the economic instability of the mid-1990s, Qaddafi also faced political instability within his core base. First of all, there were several reports of a mutiny at a military base that later spread to the nearby town of Misratah, where local civilians also joined the uprising. Although it was hard to determine the truth of these reports, Qaddafi's subsequent speeches contained several confirmatory indications. For example, he praised the alertness and perceptiveness of the citizens of Misratah and spoke about the fact that the people had rejected the traitors (ibid., 212). Secondly, the regime continued to face challenges from Islamist groups, and Qaddafi no longer had sufficient political power to ignore these voices. In 1993, the state adopted coercive policies to appease its religious opponents. Thirdly, clear signs of tensions within the elite groups began to appear. For example, relations between Qaddafi and Abdessalam Jalloud, who was his close partner in leading the Libyan Revolution, became increasingly strained. Jalloud publicly rejected Qaddafi's proposal to distribute half of the oil revenues in March 1993 and said that this idea was unpatriotic, destructive, and exceeded selfishness (ibid., 212-13). Another former Revolution Command Council member, Abu-Bakr also overturned Qaddafi's decision to retire 2,500 army officers (ibid.). It could be said that these struggles were expected to heighten and that conflicts over distribution would deepen. Indeed, with increased political instability, the Libyan economy became seriously unstable again; per capita GDP fell from \$8,081 in 1992 to \$4,032 in 2002 (UN Database).

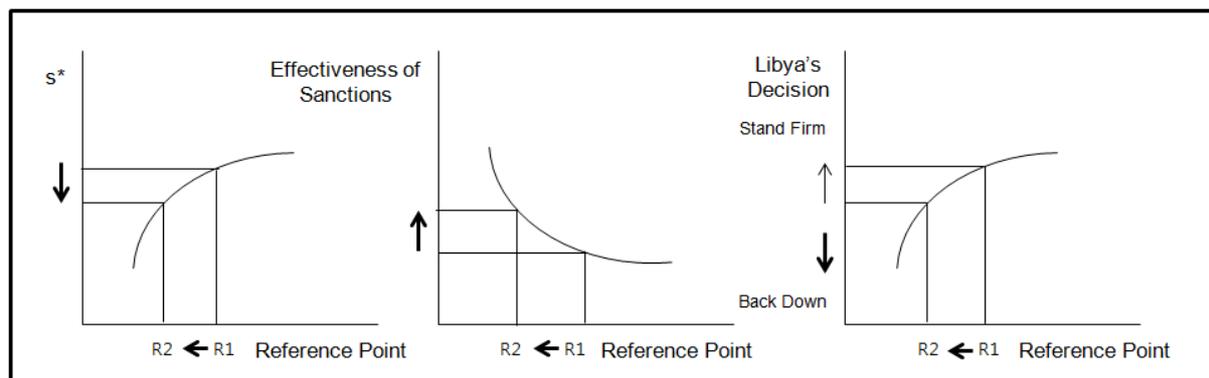
Moreover, the changing world order in the 1990s reminded Libya of its international isolation. Qaddafi's relations with his neighbors were strained in the 1980s over issues such as unpaid salaries for Tunisian workers and a border clash with the Egyptians. Until the mid-1990s, such issues in Libya had been more regional in character and for which Qaddafi had secured support from his socialist allies. However, from the

mid-1990s, the Libyan issues turned international in character as Libya faced continuous threats from the United States regarding its terrorism and nuclear program; and since aid from his allies had dried up, Qaddafi had to face the increased intensity of these international threats alone. After the September 11 attacks, President George W. Bush identified WMDs as the “gravest danger” (Palkki and Smith 2012, 268). U.S. leaders made the case for war against Iraq during 2002–2003 based largely on Iraq’s suspected nuclear program. As the United States was moving its forces into the Middle East to follow through on its threats against Saddam Hussein, Libya ultimately could not escape from being surrounded by international inspections.

Libya’s domestic and international situation seems to have become more unstable after the mid-1990s. Its RP appears to

First, the differing decisions made by North Korea and Libya in face of the second set of sanctions may have been because the former had very hostile relations with the United States, while the latter’s were relatively amicable. From 2001 the Bush administration completely reexamined the Clinton administration’s policy of engagement with North Korea and set a hardline policy course, which emphasized strict reciprocity and verification (Pritchard 2007). North Korea showed strong resistance to the hardline U.S. policies and criticized the Bush administration for establishing its missile defense system and delaying the KEDO LWR project, and threatened to resume missile tests (KCNA 2001). Meanwhile, after the September 11 terrorist attacks, the United States was focused on antiterrorism and nonproliferation of WMDs at a global level. In this context, the United States labelled North

Figure 7: Reference point effects on Libya’s decision-making



* R1: RP before mid-1990s/ R2: RP after mid-1990s

have decreased during the period of U.S. sanctions. According to the proposed model, it could be said that the decreased RP led to Qaddafi’s weaker resistance in response to the economic sanctions (see Figure 7).

4. Alternative Discussions

Although this paper discusses the change in a target country’s response to sanctions followed by a change in its RP, it additionally introduces two alternative discussions that could explain the behavior of North Korea and Libya.

Korea as part of an “axis of evil” and U.S.-DPRK relations displayed extremely hostile characteristics. On the other hand, after the sanctions against Libya were issued, U.S.-Libya relations showed the most amicable atmosphere thus far. Libya agreed to the extradition of the two suspects accused of involvement in the 1998 Pan Am explosion, and in 2003, accepted U.S. demands including taking legal responsibility for the explosion and paying compensation individuals (Blanchard 2009, 5–10). In 2002, the United States called Iran, Iraq, and North Korea the “axis of evil” and strongly criticized them as countries sponsoring terrorism, but displayed an amicable

attitude in its relations with Libya, which was excluded from the group. Under such circumstances, there would have been no great difference for North Korea even if it had strongly resisted the sanctions. However, if Libya had done so, the amicable atmosphere with the United States would have been damaged at enormous cost. Thus, this made it relatively difficult for Libya to resist the sanctions. Drezner (1997) verified this kind of analysis: when a target resisted the sanctions of a sender with which it had hostile relations, almost no loss was expected; however, very large losses were anticipated under amicable relations. Therefore, the more amicable the relations with the sender country was, the lower the likelihood of the target country resisting the sanctions.

Secondly, the different decisions made by Libya and North Korea following their respective second set of sanctions could be seen as a function of whether or not they had allies. It could be said that while Libya could not strongly resist the sanctions because of its international isolation, North Korea could choose to firmly resist because of the presence of China. Existing research often argues that resistance to sanctions is prolonged where there is external assistance. According to Hufbauer et al. (2007, 59), the impact of sanctions on the target can be reduced if it can rely on allies to compensate the burdens. China could be perceived as an actor that could not only simply supply North Korea with the economic capacity to resist economic sanctions, but also an actor that could stand up to the United States. Moreover, if U.S. sanctions against North Korea were to include secondary boycotts, most of the targets were likely to be the Chinese companies that had close economic relationships with North Korea (KOTRA 2015).⁷ In this case, U.S. sanctions against North Korea would also have the characteristic of being sanctions against China. As a result, even if North Korea was to resist the U.S. sanctions, it would not be easy for the U.S. to implement them. Thus, North Korea could firmly resist the sanctions.

6. Conclusion

This paper explores “why each target of economic sanctions reacts differently:” that is, “in response to U.S.-led economic sanctions, why did North Korea pursue the nuclear path while Libya ceased supporting terrorism and refrained from further nuclear testing?” This study especially builds a model based on RP effects, and analyzes the cases of North Korea and Libya utilizing this model. According to the results, when the RP level increases, as in the case of North Korea, the target’s losses from “backing down” loom larger, and as a result, the target resists the economic sanctions more firmly. On the other hand, when the RP level decreases, as in the case of Libya, the target’s losses incurred from “backing down” are smaller, and therefore, the target resists more weakly.

Theoretically, a risk-seeking decision-maker would prefer to resist economic sanctions and a risk-averse decision-maker would accept the sanctions. However, in reality, the reaction of a target country does not manifest in the dichotomous choice of either resistance or acceptance. This is because the actor calculates the costs and benefits associated with an economic sanction differently, depending on the level of the specific RP. Therefore, this paper does not simplify the target country’s response to acceptance or resistance but rather, develops a model by modifying the regularity of the prospect theory inference into a function, examining the decision-making of the country targeted by economic sanctions and in the process, finding the factors that affect the target’s decision-making. It is this aspect that differentiates this research from previous discussions on the application of prospect theory. However, the limit of this current research is that only the target nation’s decision-making is reflected in the model. Therefore, developing the model to include both the sender and target states will be pursued in further research.

⁷ Trade with China accounted for more than 90 percent of North Korea’s total trade in 2014.

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Appendix

¹ First, a comparison of the expected utilities of settlement and contest according to expected utility theory is in order. If the target accepts the sender's demands, it acquires s ($0 \leq s \leq 1$). In this case, the probability is 1; therefore, the expected utility becomes s . On the other hand, if the target protests against the sanctions and enters into a state of contest with the sender, its expected utility equals $p \times (1-c) + (1-p) \times (0-c)$. Here, p ($0 \leq p \leq 1$) refers to the probability that the target will win in the contest between the two states, and c ($0 \leq c \leq 1$) refers to the expected cost entailed in the contest. If the expected utility of settlement is greater than that of contest, the target will back down; this leads to the conclusion that the economic sanctions have proven to be effective. However, if the expected utility of settlement is smaller than that of contest, the target will not relent; therefore, it can be said that the effectiveness of the sanctions is doubtful. The decision of the target here is normally not a dichotomous choice between complete settlement and complete resistance. Rather, the choice of the target needs to be analyzed in terms of a "level of acceptance" or a "level of resistance." Suppose that there is a boundary point, s^* , where the preference of choice is indifferent because the utilities of the two options are equal. Certainly, s^* becomes the starting point from which the target begins to back down, and at the same time, it becomes the last point from which the target decides to stand firm. Therefore, the target's choice becomes a matter of identifying this boundary point, s^* . The lower the s^* , the point that the target regards as acceptable, the more easily the target will back down in response to the economic sanctions at hand.

² According to Butler (2007), the value function (V) and the probability weighting function (W) in prospect theory can be described through the following functional equations. In this formulation, β ($0 \leq \beta \leq 1$) exhibits diminishing sensitivity, and λ ($\lambda > 1$) indicates loss aversion. Also, α ($0 \leq \alpha \leq 1$) is an exponent reflecting overestimation of low probability and underestimation of high probability.

$V(x) = x^\beta \quad (x \geq 0)$	
$= -\lambda \{(-x)^\beta\} \quad (x < 0)$	--- (1)
$W(p) = e^{\lambda \{-\ln p\}^\alpha}$	--- (2)

When the expected utilities (U) of settlement and contest are calculated using equations (1) and (2), they are as follows. The expected utility is computed by multiplying value and probability, where x refers to an amount of gain or loss from the RP, and the probability for settlement is 1. Thus, if the target is located in the

positive (+) domain of ($x \geq 0$), the expected utility of settlement is formulated as equation (3). On the other hand, if the target is positioned in the negative (-) domain of ($x < 0$), the expected utility of settlement appears as equation (3').

$U(\text{settlement}) = V(x) \times W(p)$	
$= (s-R)^\beta$	--- (3)
$\text{or} = -\lambda \{(R-s)^\beta\}$	--- (3')

Likewise, the anticipated expected utility of contest is the sum of the utilities of its two possible outcomes: winning and losing. If x_1 and x_2 are the expected values for winning and losing, respectively, then the expected utility of contest can be described as equation (4). The expected value for losing, x_2 , is ($0-c-R$) and is always negative (-); however, the expected value for winning, x_1 , ($1-c-R$), can be either positive (+) or negative (-). Therefore, if x_1 is positive (+), the expected utility of contest can be written as equation (5). If x_1 is negative (-), then the equation will be equation (5').

$U(\text{contest}) = V(x_1) \times W(p) + V(x_2) \times W(1-p)$	---(4)
$= (1-c-R)^\beta \times e^{\lambda \{-\ln p\}^\alpha} - \lambda(R+c)^\beta \times e^{\lambda \{-\ln(1-p)\}^\alpha}$	---(5)
$\text{or} = -\lambda(R+c-1)^\beta \times e^{\lambda \{-\ln p\}^\alpha} - \lambda(R+c)^\beta \times e^{\lambda \{-\ln(1-p)\}^\alpha}$	---(5')

For the target, relenting means giving something up and generates negative (-) utility. Accordingly, the expected utility of settlement can only be measured using equation (3'). In theory, the expected utility of contest varies depending on whether the expected value when predicting a win is positive (+) or negative (-); however, this paper assumes that, in general, a target foresees positive (+) expected value from winning. If the expected value is positive (+) for the target's anticipation of a win, then the expected utility of contest for this decision can be written as equation (5). Accordingly, boundary point, s^* can be expressed as equation (6) by applying equations (3') and (5).

$-\lambda \{(R-s)^\beta\} = (1-c-R)^\beta \times e^{\lambda \{-\ln p\}^\alpha} - \lambda(R+c)^\beta \times e^{\lambda \{-\ln(1-p)\}^\alpha}$	
$s^* = R - \left[\frac{1}{\lambda} \times (1-c-R)^\beta \times e^{\lambda \{-\ln p\}^\alpha} + (R+c)^\beta \times e^{\lambda \{-\ln(1-p)\}^\alpha} \right]^{1/\beta}$	---(6)

A detailed analysis of equation (6) is called for. When the conventional values predicted by prospect theory are substituted for each coefficient of equation (6), and under the assumption that p and c are fixed, R and s^* show a positive correlation as depicted in Figure 3.