



SCHOOL OF ECONOMICS AND MANAGEMENT

Lund University

Does cheap talk matters when the U.S.A is dealing with North Korea?

A game theoretical approach to international policy on the Korean peninsula

Master's Thesis

January 19, 2010

Department of Economics

Lund University

Author:

Rickard Levin

Supervisor:

Hans Carlsson

Contents

- 1 Introduction..... 3
 - 1.1 Purpose..... 4
 - 1.2 Demarcations 5
 - 1.3 Disposition..... 6
- 2 Theoretical framework..... 7
 - 2.1 Games of Incomplete Information 7
 - 2.1.1 Perfect Bayesian Equilibrium 8
 - 2.1.2 Signalling Games 9
 - 2.1.3 Cheap-Talk Games..... 9
 - 2.2 Inter-Korean relations and the role of the U.S..... 12
 - 2.2.1 The Korean War 12
 - 2.2.2 North – South relations 15
 - 2.2.3 The U.S.’s perspective 16
- 3 Methodology & Analysis..... 18
 - 3.1 Why use game theory when analysing international relation? 18
 - 3.2 Hypothesis..... 19
 - 3.3 Analysis of the three conditions of Crawford and Sobel in the
Context of North Korean – U.S. relations 20
 - 3.3.1 The sender type must be of importance for the receiver's optimal action..... 20
 - 3.3.2 Different sender types must have different preferences over the receiver's actions..... 22
 - 3.3.2 The sender and receiver must not have opposite preferences over the receiver’s actions..24
- 4 Results..... 27
 - 4.1 Summary of the results..... 27
 - 4.2 Breakdown of the results..... 28
- 5 Conclusions..... 31

Chapter 1

Introduction

“North Korean and South Korean naval vessels exchanged fire for two minutes Tuesday morning (2009-11-10) in the waters around the Northern Limit Line (NLL) off the island of Daecheong in the West Sea. This is the third such clash between the countries and the first in over seven years, following encounters on June 15, 1999, and June 29, 2002.”¹

The conflict on the Korean peninsula has been on the international agenda for nearly 60 years and still no peace agreement has been signed. After the armistice was signed the 27th of July 1953 and the Korean War was put to an “end” the future of the fighting parts were about to be very different². The Democratic People's Republic of Korea (from here on “North Korea”), under the leadership of “the great leader” Kim Il Sung, developed a Soviet-style planned economy. After the fall of communism in Eastern Europe in 1989 and in Soviet in 1991 North Korea faced a heavy decline in foreign aid and had to rely on China. The aid from China has over the years declined leaving North Korea more isolated. This has had devastating impacts on the wellbeing of the people of North Korea. In the Republic of Korea (from here on “South Korea”) the story is a bit different. The term “the miracle on the Han River” is often referred to as the nearly 50 years of economic growth that South Korea has had since the first five-year-plan was implemented in 1961.

After the breakdown of the Soviet Union the power of the United States of America (from here on “the U.S.”) has increased. During the first four years of the presidency of Bill Clinton the U.S. threatened 34 countries with economic sanctions³. North Korea is one of the countries, along with Iran, Iraq etc., that has received the most threats. In June 1994 Clinton was

¹ http://english.hani.co.kr/arti/english_edition/e_northkorea/387069.html

² Kim (2004) p3

³ Frank (2006) p9

threatening to bomb North Korea in order to put pressure on the country to dismiss its nuclear program⁴.

The academic discipline of international policy, concerning sanctions, has rapidly grown during the last 20 years. This thesis is in line with that development.

1.1 Purpose

A game theoretical analysis of international policy is of great interest from an economist's point of view and game theory has widely been used when analysing international trade, tariffs etc. In this thesis I will use "Cheap-Talk games" to analyse if threats from the U.S. targeting North Korea are having any impact. Cheap talk games are an application of the perfect Bayesian equilibrium of "dynamic games of incomplete information"⁵. In this type of games there are always a sender and a receiver of messages. In this thesis the sender of the messages is the U.S. and the receiver is North Korea. South Korea, Japan and China are other interested parties who are closely following the communication between the sender and the receiver.

A centrepiece of the theory of Cheap-Talk games is the paper "Strategic information transmission" by Crawford and Sobel⁶. The paper presents three conditions that need to be fulfilled in order for cheap-talk to be informative between the sender and the receiver. By analyzing these three conditions in a "North Korean – U.S." context I'm aiming to answer the key question of this thesis:

- **Does cheap-talk matter when the U.S. is dealing with North Korea?**

My initial hypothesis is that it does. I support this hypothesis by referring to the characteristics of mainly the North Korean leadership and its predominant dictator Kim Jong-il. Also the legacies of the last two

⁴ Kim (2004) p46

⁵ Gibbons (1992) p175

⁶ Crawford & Sobel (1982)

administrations in the White House led by President George W. Bush and President Clinton are affecting the outcome of any attempt to negotiate with the North Koreans.

1.2 Demarcations

The nature of the analysis I will perform in this thesis brings some major demarcations. International relations can be analysed in various ways using numerous types of models and techniques. My choice of strategy to approach the difficult question of *North Korea – U.S. relations* is game theory. Within game theory there are many types of suitable theories that could be, and have been, used to analyse more or less the same area that I'm analysing⁷. Figure 1, below, is visualising the scope of this thesis. As mentioned in section 1.1 the conflict on the Korean peninsula is affecting the whole region and to a large extent the whole world. My choice of focus is *the U.S. – North Korea part* of the conflict. It's worth to mention that neither the U.S. nor North Korea is operating in their own universe. They are both under pressure from the rest of the world.

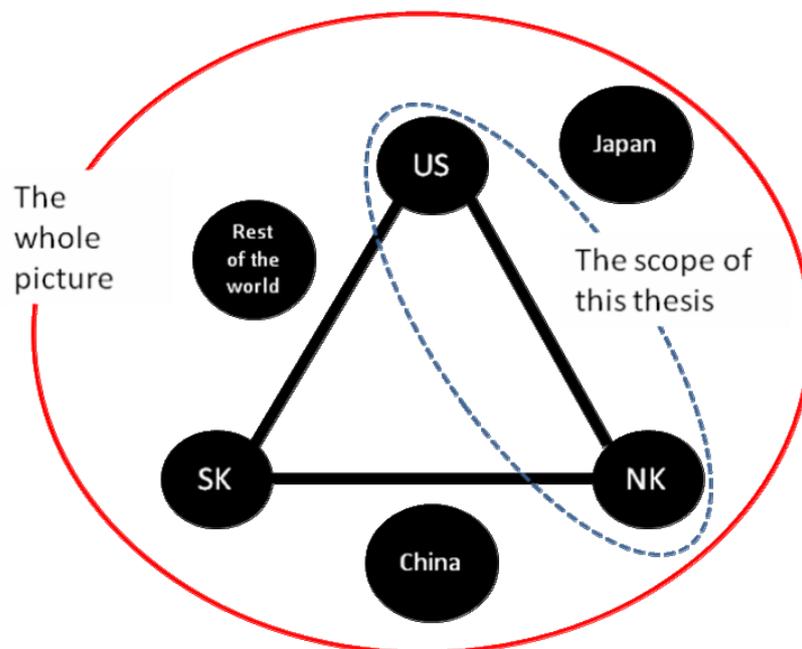


Figure 1

⁷ Kim & Jun (2002)

1.3 Disposition

In chapter 2 I present the theoretical framework for this thesis. The chapter is divided into two main sections. The first section contains a presentation of the game theory that is used for the analysis of the U.S. – North Korean relations. The main focus is on “Cheap-Talk Games”. The second section is providing a historical background of the development on the Korean peninsula.

Chapter 3 presents the analysis and has to be seen as the centrepiece of this thesis. Three separate under-sections are devoted to the analysis of the conditions stated by Crawford and Sobel.

Chapter 4 presents the results of the analysis performed in chapter 3. The chapter starts with a matrix showing an overview of the results.

Chapter 5 consists of a brief summary of the whole thesis and concludes the final outcome.

Chapter 2

Theoretical framework

“President Kennedy promised Soviet Premier Nikita Khrushchev that he would remove American nuclear missiles from Turkey if the Soviets first removed their missiles from Cuba. France and Great Britain promised to help Poland and Czechoslovakia if the Germans should attack. Secretary of State Dean Acheson claimed that the United States would not protect Korea in the 1950’s. And President Clinton threatened to bomb North Korea if they continued to acquire nuclear weapons capabilities. Each of these leaders engaged in cheap talk despite the fact that there was little reason to believe that any of these pronouncements were true.”⁸

This chapter will present the theoretical framework for the analysis of the thesis. The chapter is divided into two sections. The first section presents a theoretical overview of the game theory that will be used in chapter 3. The second section consists of a brief overview of the past and present situation on the Korean peninsula. This section can be skipped by readers with a good prior knowledge of inter-Korean relations. The whole chapter is intentionally kept short and concise.

2.1 Games of Incomplete Information

In games of complete information all the players in the game know all relevant facts about the other players. There is no need for beliefs. This type of games is of course very unrealistic, e.g. firms normally don’t know their competitors costs. When the agents don’t know the others’ payoffs the Nash-equilibrium is irrelevant. In order to perform systematic analyses of games with incomplete information the Hungarian economist John C. Harsanyi came up with the variable “type”. The “type” sums all the

⁸ Walters & Tingley (2009) p2

uncertainty that the agents have about each other. The players can then be defined according to their “type” by the other agents.

2.1.1 Perfect Bayesian Equilibrium

In order to present the framework of the perfect Bayesian equilibrium a game tree is presented below, figure 2. Gibbons uses the same game tree in his explanation of perfect Bayesian equilibrium⁹.

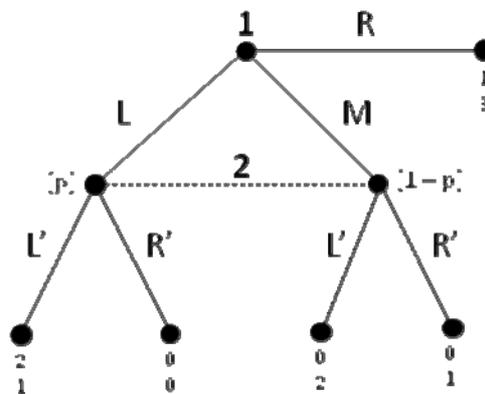


Figure 2

If we consider player one’s first move: he can either move R receive payoff 1 and the game will end without player two having ever moved. If player 1 instead moves L or M the game continues. Player two can either move L’ or R’. However, in this game of incomplete information he doesn’t know where in the information set he is. He can only guess based on his beliefs about which type player 1 might be. This belief is presented with the probability distribution p and $1 - p$. There are four requirements for the perfect Bayesian equilibrium presented below.

Requirement 1 *At each information set, the player with the move must have a belief about which node in the information set has been reached by the play of the game. For a non-singelton information set, a belief is a probability distribution over the nodes in the information set; for a singleton*

⁹ Gibbons (1992) p178.

information set, the player's belief puts probability one the single decision node.

Requirement 2 *Given their beliefs, the player's strategies must be sequentially rational. That is, at each information set the action taken by the player with the move must be optimal given the player's belief at that information set and the other players' subsequent strategies.*

Requirement 3 *At information set on the equilibrium path, beliefs are determined by Bayes' law rule and the players' equilibrium strategies.*

Requirement 4 *At information set off the equilibrium path, beliefs are determined by Bayes' rule and the players' equilibrium strategies where possible.*

Perfect Bayesian equilibrium is a consisting strategy when these requirements are being satisfied. In the following sections I will present two application of Perfect Bayesian equilibrium.

2.1.2 Signalling Games

A signalling game is a simple “two-player – two stages” game of incomplete information that is commonly used e.g. in labour economics. Many readers might be familiar with the “job-market signaling model” by Spence. In a signalling game the informed player, the sender (S), observes a random variable $t \in T$ and chooses a message $m \in M$. The uninformed player, the receiver (R), observes the message and chooses an action $a \in A$. The payoff's of the game depends on “a”, “t” and “m”¹⁰.

2.1.3 Cheap-Talk Games

A cheap-talk game is a signalling game where the players' payoffs only depend on “a” and “t” and **not** on “m”. The setup of a simple cheap-talk

¹⁰ Farrell (1993), p516.

game is presented below. It's worth to note that the setup is identical to a "signalling game" setup - only the payoffs are different.

1. Nature draws a type of $t_i \in T = \{t_1 \dots t_n\}$ for the Sender according to a probability distribution $p(t_i)$, where $p(t_i) > 0$ for every i and $p(t_1) + \dots + p(t_n) = 1$.
2. The Sender observes t_i and then chooses a message $m_j \in M = \{m_1, \dots, m_j\}$.
3. The Receiver observes m_j (but not t_i) and then chooses an action $a_k \in A = \{a_1, \dots, a_k\}$.
4. Payoffs are given by $U_S(t_i, a_k)$ and $U_R(t_i, a_k)$.

This, very simple, game setup indicates that the message has no direct effect on the payoff of the game¹¹. However, it can have an indirect effect on the payoffs by changing the receiver's beliefs about the sender's type.

The credibility of the messages and how the receiver interprets them are of major importance when analysing cheap talk games. In a situation of conflict, like the one on the Korean peninsula, the receiver might think that the sender wants him to believe something. In this case the receiver most certainly won't believe the sender. Another important factor is a commonly known language. Normally there aren't any problems concerning babel of tongues when analysing international relations at higher levels. Even if it's trivial it should be mentioned that a "common language" is taken as an assumption for informative communication to occur. In this thesis it's taken as an absolute fact that there is no shortage of interpreters within the U.S. administration. "M" is set to English and Korean. This is a very large M and in many models of game theory M might only consist of "Yes" and "No".

The paper of which this thesis mainly builds upon is "*Strategic information transmission*" by Crawford & Sobel¹². The paper analyses three necessary conditions for cheap talk to be informative i.e. "matters" when direct communication is available between two agents. It is important to note that

¹¹ This is the same setup as used in Gibbons (1993), p213.

¹² Crawford & Sobel (1982)

concepts like lying and credibility do not have a fully satisfactory operational meaning within the model constructed by Crawford & Sobel¹³. However, the model makes great sense since it's of major importance to be able to measure whether communication will have any effect at all. The three conditions are:

1. The sender type must be of importance for the receiver's optimal action.
2. Different sender types must have different preferences over the receiver's actions.
3. The sender and receiver must not have opposite preferences over the receiver's actions.

These three conditions can be boiled down to two intuitive results. Firstly, the more aligned the preferences are of the agents the more informative the information will be. Secondly, in order for perfect communication to occur the agents preferences must be perfectly aligned¹⁴.

There are many papers that have further developed the model of Crawford and Sobel. "*Cheap Talk Can Matter in Bargaining*" by Farrell and Gibbons from 1988 is describing the equilibrium of a cheap-talk game by telling a story about two business leaders¹⁵. These two gentlemen happened to meet at a country club on Saturday. During the following Monday they are supposed to meet and negotiate on a business deal using sealed bids. On Saturday they can only send costless messages between each other. However, these messages might reveal their intentions. On Monday morning the two business leaders (one seller and one buyer) meet and play a game with the following features: Trade will take place at price $P = (P_s + P_b)/2$ if $P_b \geq P_s$. If $P_b < P_s$ there will be no trade. During their meeting at the country club the two agents were able to say either "keen" or "not keen" in response to their intentions regarding the possible deal on Monday. It's important to notice that these "messages" are neither binding nor verifiable. If trade takes place the buyer with valuation V_b will receive the payoff $V_b -$

¹³ Crawford & Sobel (1982) p1450

¹⁴ Crawford & Sobel (1982) p1450

¹⁵ Farrell & Gibbos (1988) p224

P and the seller will receive the payoff $P - V_s$. If trade won't occur the payoff is of course zero.

In this game there are three different equilibriums. The first is the “babbling equilibrium” with non informative cheap talk. The other two equilibriums are of more interest. If both players are “keen” on Saturday then serious bargaining will take place on Monday. In this case cheap talk is considered to be credible but not affecting the equilibrium outcome. Serious bargaining will also take place if only one of the players is “keen”. However, in this case cheap talk is informative. This is because low-value buyers and high-value sellers are willing to set future negotiations at play in order to improve their bargaining power. For a full and more detailed analysis of these equilibriums see the paper “*Cheap Talk Can Matter in Bargaining*” by Farrell and Gibbons from 1988.

2.2 Inter-Korean relation and the role of the U.S.

In order to prepare You as a reader for the analysis in chapter 3 the next sections will provide an overview of the political landscape on the Korean peninsula. This is done by presenting a summary of the Korean War, North Korea / South Korea relations and finally “The U.S. perspective”.

2.2.1 The Korean War

After the Second World War the Korean peninsula was divided by the Soviet Union and the U.S. which ended a 35-year-long Japanese occupation¹⁶. In 1910 the imperial governments of Korea and Japan signed the Japan-Korea Annexation Treaty. The treaty gave in reality all power to

¹⁶ Kim (2004) p3

Japan and is today seen as the official start of the “Korea under Japanese rule”. As of 2009, scholars are still arguing over the validity of the treaty. What is clear is that Korea stood under a massive military threat after Japan defeated China in the First Sino-Japanese War.

After the atomic bombs were dropped over Hiroshima and Nagasaki in 1945 Japan surrendered. Korea was soon to be divided by the 38th parallel after Soviet forces entered Korea from the north and later U.S. forces entered from the south. The idea of the 38th parallel is said to be founded by two U.S. Cornels over a 30 minute coffee break. Internal disturbance in the U.S. controlled south, led to the establishment of the Republic of Korea (South Korea) in 1947. As a response the Soviet controlled North established as communist government led by Kim Il-sung – North Korea. Shortly after these establishments the U.S. left the Korean peninsula.

On the 25th of June in 1950 North Korea invaded the poorly equipped South Korea and the Korean War had started. Over 230 000 North Korean soldiers marched in to South Korea and hardly meet any resistance¹⁷. The U.S. president Truman ordered U.S. forces in Japan to help South Korea to fight back the North Korean aggression. The war escalated and the South Korean army was pushed back to Pusan – see figure 2.



Figure 3

<http://www.learnkoreanlanguage.com/images/KoreanWarMap.jpg>

¹⁷ Cumings (2004) p3

From a U.S. perspective the Korean War can be divided into two different wars; one success and one failure. The success can mainly be boiled down to the fighting of the South in the summer of 1950¹⁸. After the successful *Battle of Incheon* in mid September of 1950 the US forces were reinforced by forces from the United Nations and they managed to push the North Koreans above the 38th parallel.

The failure of the U.S. regarding the Korean War had its origin from crossing the border of North Korea in October of 1950. At the same time the Chinese started to increase their supplies to North Korea and also took part themselves in the war with personnel and equipment. In November of 1950 the Chinese lead forces managed to conquer Seoul. Seoul was recaptured in March of 1951 by the UN forces. After that many battles was fought but not much land were shifting hands. The Military Armistice Agreement was signed on the 27 of July 1953. Today the surroundings of the “demilitarized zone” (DMZ) holds an estimate of nearly 1,8 million military personnel¹⁹.

2.2.2 North-South Relations

North – South Relations on the Korean Peninsula

It's said that what uttermost is preventing a U.S. strike on North Korea is the implications it will have on South Korea. Some 37 000 U.S. troops are stationed at mainly the *United States Army Garrison Yongsan* in central Seoul.

The South Korean relationship with its neighbor in the North can be said to be “difficult”. On one hand the South Koreans are regarding the North Koreans as their brothers and sisters. On the other hand, the two countries are still at war and regard each other as enemies. Since it's hard to capture the public's view in North Korea it's hard evaluate the whole North Korean perspective on inter-Korean relations. Still Koreans are regarded as one of the most homogeneous populations in the world.

¹⁸ Cumings (2004) p5

¹⁹ Kim (2004) p4.

Among most other conflicts around the world the Korean conflict stands. The specific characteristic of the Korean conflict is the ethnic unity of the two “fighting” parts. This in combination with the South Korean ability to distinguish between the people and the leadership of North Korea has a positive impact on inter-Korean relations²⁰. A brief look at the history of the Korean peninsula tells us that the years under Japanese colonial rule and other historical events have shaped a strong nationalistic spirit among all Koreans – both in the South and in the North. In a South Korean survey from 2000 95% of the respondents answered “strongly agree” or “agree” that “North Korean people are of the same Korean ethnic-nation”²¹.

In the year of 2009 a Korean unification is very far away and there are numerous underlying obstacles for this. The two main arguments are (1) “it’s too expensive” and (2) “South Korea is a puppet state of the U.S”. The first argument is claimed by the South and the second by the North. Regarding the costs and benefits of unification - it’s out of the range of this thesis to fully cover.

2.2.3 The U.S. perspective

After the end of the cold war the U.S. has shifted its military focus from large scale wars between superpowers towards targeting “rogue states”. The Middle East and the North East Asia have gained sufficient attention from the U.S.

The U.S. – North Korean relations have over the years been frosty. In 1994 the Clinton administration threatened to bomb North Korea in order to force it to shut down its claimed nuclear facilities. In the last minute former President Jimmy Carter managed to settle an agreement between the two countries – the Agreed Framework was founded in October 1994. Then came George W Bush. Already during his candidacy for President he

²⁰ Shin & Chang (2004) p120

²¹ Shin & Chang (2004) p123

opposed the Agreed Framework and after the “Axes of Evil speech” on January 29 in 2002 the U.S. – North Korean relations were frozen to ice²².

The two underlying forces that have been driving the U.S. – North Korean relationship since the end of the cold war are somewhat overlapping. Irregardless, they can be summarized in to the ones presented below:

The development of nuclear weapons and missiles in North Korea. Over the years U.S. intelligence services have accused North Korea for developing nuclear weapons at a site called Yongbyon. This has been the key issue that has been driving the world’s and the U.S. agenda against the country.

Famine in North Korea. In the mid 1990s a major food crisis broke lose in North Korea. The exact number of deaths will probably never be revealed but the estimates are from a couple of hundred and to approximately a million. The U.S. contributed as the single largest donor of food, medicine and other types of aid to support the people of North Korea.

A summary of the North Korean – U.S. relations can be concluded to: The relationship is driven by crises²³.

²² Nicksch (2003) IB98045 (p5)

²³ Armstrong (2004) p17

Chapter 3

Methodology & Analysis

“How well can agents verbally communicate with each other? Crawford and Sobel (1982) addressed this question by modeling cheap-talk games as follows: ‘there are two agents, one of whom has private information relevant to both. The better-informed agent, henceforth called the Sender (S), sends a possibly noisy message, based on his private information, to the other agent, henceforth called the Receiver (R). R then makes a decision that affects the welfare of both, based on the information contained in the signal.’ Under some specific assumptions (generalized by Spector, 2000), Crawford and Sobel (1982) proved that as the speaker’s and the receiver’s preferences tend to coincide, communication converges toward full information transmission.”²⁴

In this chapter I will present the analysis which this thesis builds upon. In section 3.1 a brief discussion about game theory applied on international relations is presented. In section 3.2 the hypothesis of the thesis is presented. Section 3.3 consists of the analysis of how well the characteristics of the *North Korea – U.S. relations* are fulfilling the three conditions stated by Crawford and Sobel.

3.1 Why use game theory when analysing international relations?

The field of game theory is on the rise and is applied in more and more areas of economics and other sciences. Ever since the publication of the *“Theory of Games and Economic Behavior”* by von Neumann and Morgenstern in 1944 international and political economists have benefited from using game theory as their analytic structure. In doing so it can e.g. be

²⁴ Spector (2002) p283

proved that wars *ex post* are inefficient²⁵. It's a "common knowledge" that democracies are much less likely to participate in wars than autocracies. The leaders of democracies have much harder "budget constraints" and need to consider the political cost for war. This in turn leads to that democracies normally only fight wars that they are 100 % sure of winning. A survey shows that democracies win 93 % of all the wars they initiated²⁶. For autocracies this figure is about 60 %. Proving this and other scenarios are of great help for economists when communicating with policy makers and the public. This makes a clear statement why using game theory when analysing international relations.

It's also worth to mention the limitations of game theory when analysing international relations. Game theory is a structured and analytic way of seeing interactions between actors. These actors can be single individuals or nation-states and everything in between. Today game theory is unable to consider all the areas of interest to the "players" in international relations²⁷. As mentioned above, game theory is a relatively new discipline and will be developed further in the future.

3.2 Hypothesis

As described in chapter 1 the key question of this thesis is:

Does cheap-talk matter when the U.S. is dealing with North Korea?

My hypothesis is that it does. In the following section I will try to prove this hypothesis by carefully considering each of the three conditions set by Crawford and Sobel from a North Korean – U.S. perspective.

²⁵ De Mesquita (2006) p638

²⁶ De Mesquita (2006) p640

²⁷ Correa (2001) p204

3.3 Analysis of the three conditions of Crawford & Sobel in the context of North Korean – U.S. relations

This section is the centrepiece of this thesis. The paper “Strategic Information Transmission” by Vincent Crawford and Joel Sobel was published in *Econometrica Journal* in 1982. The paper is the most quoted one by economists and other scholars when writing about cheap-talk games. The model presented by Crawford and Sobel is described in chapter 2. Below I will argue for each of the three conditions stated by Crawford and Sobel which need to be fulfilled in order for cheap-talk to matter i.e. to be credible in equilibrium²⁸. I am intentionally aiming to make my analysis as free of mathematics as possible and the following three sections will mainly include analysis of literature i.e. academic papers, political agendas, books etc. It’s important to mention that the analysis that is presented below only takes into account the past and the present. How the future will look and what agendas will be on the table is only due to more or less qualified guesses.

3.3.1 “The sender type must be of importance for the receiver's optimal action.”

The first of the three conditions states that if the receiver is indifferent between the types of the sender - cheap talk is useless. Applying this condition to the U.S. – North Korean relation is giving us some very interesting questions to reason about. This thesis is examining the case where the U.S. is the sender and North Korea is the receiver. For a stronger analysis it’s important to mention that cheap talk can occur both when the U.S. act as a sender and North Korea act as a receiver and the other way around. It’s no doubt that who ever act as sender – the receiver will care

²⁸ Ferrell & Gibbons (1989) p222

about the sender. Some more analysis is needed in order to fully understand how the two sides care about each other.

In chapter 2 a brief overview of the Korean War is presented. The North Korean perspective is that the U.S. is invading “their” country by having army bases in the South and the U.S. is constantly targeted in the North Korean propaganda. The reason that North Korea cares about the U.S. can be boiled down to two single factors: (1) North Korea “needs” to have an enemy and (2) North Korea is in strong demand from international aid – something that the U.S. on many occasions has a say in. Over the years there have been a number of North Korean projects aiming to develop their economy. Two of these projects are the Sinuiju special economic zone and the Kaesong industrial plant. The Sinuiju special economic zone is located in the north western part of the country and is developed in collaboration with China. Kaesong industrial plant is located in the south of North Korea, very close to the DMZ, and is developed in collaboration with South Korea. Even if those two initiatives have been somewhat profitable it is a must for North Korea to improve their relations with the U.S in order to take the next step in their economic development. This is partly due to the fact that in order to get approved loans from e.g. the World Bank and the Asian Development Bank you cannot be on the U.S. State Department list of states that sponsors terrorism²⁹. In October of 2008 the former U.S. President George W Bush removed North Korea from the U.S. State Department’s list of states that sponsors terrorist. In January of 2010 North Korea was still off that list. Although it’s worth to note that the Secretary of State, Hillary Clinton, has warned North Korea that she is considering replacing the country on the list³⁰.

Taking the above in the context of cheap talk games we see that the sender type, the U.S., is of importance to the receiver’s, North Korea’s, optimal choice. Below I will present some facts that support the opposite relationship.

²⁹ Kim (2004) p50

³⁰ <http://www.state.gov/s/ct/c14151.htm> 2010-01-19

The U.S. clearly cares about North Korea and virtually all actions taken by the North Korean government is noted and commented by the U.S. There are numerous evidence that prove that the U.S cares about North Korea when U.S acts as a receiver. Below I will mention a few.

The most obvious evidence is the establishment of several military bases in South Korea. As mentioned in chapter 2; the headquarter is located in central Seoul. A clear change towards a higher U.S presence on the Korean peninsula occurred in 1978 when the Combined Forces Command Korea was created. The Combined Forces Command Korea transferred the command over the front line South Korean military forces from the United Nation to the U.S.. Initiatives like this and reports from the U.S. Forces Korea are enhancing the case that U.S cares about North Korea³¹.

Another good example is the former President George W Bush's State of the Union address in January 2002 in which he pointed out North Korea, along with Iran and Iraq, as the "Axis of Evil". This was a massive setback of the U.S. – North Korean as well as inter-Korean relations³². In October 2002 the "October Surprise" hit the U.S – North Korea relations. The "October Surprise" started with the U.S State Department announcing that it had evidence of a North Korean enrichment program of uranium for nuclear weapons. The crisis had the effect that all negotiations were set back to the state of 1994.

As mentioned earlier – this thesis is aiming to analyse a game setup when the U.S. is acting as a sender. However, is it harmful to include an analysis of the opposite – the U.S. acting as a receiver.

³¹ Schwartz (2001) p3

³² Armstrong (2004) p49.

3.3.2 “Different sender types must have different preferences over the receiver's actions”

The second condition states that different sender types must have different preferences over the receiver's actions. This condition is straight forward since the receiver's ability to differentiate between senders types is of major importance. If this is not the case all senders will be “rated” the same by the receiver and by then cheap talk will not matter. This is due to that the receiver in this case initially will know the outcome of any future game – since all senders have the same preferences. The nature of this condition makes the analysis of it the shortest of the three.

When applying this condition to international relations in general and the North Korean – U.S. relations specifically it's easy to become over explicit. When the U.S. is acting as a sender we can see that the receiver, North Korea, is by all sure capable to differentiate between different countries. Even if North Korea in their rhetoric sometime tend to put countries in clusters i.e. “puppets of the U.S. ” this altogether comes down to that this condition is fulfilled in the North Korea – U.S. case.

A brief side track is a discussion about changing preferences within a country. If we start with a brief look at the median voter theorem this tells us that politicians need to position them so that they attract the median voter. The preference of the median voter tends to change due the economic situation, domestic and foreign occurrences etc. This in turn is a warranty for changing preferences among the political leaders. Or more correctly “indirect preferences” since the core preference is to stay in power. By this I want to claim that the sender, the U.S., preferences are changing over time and cannot be seen as constant.

3.3.3 “The sender and receiver must not have opposite preferences over the receiver's actions”

The third condition states that when the sender and the receiver have totally opposite preferences cheap talk doesn't matter. In figure 4 this is shown in the red double arrow. Here the sender strictly prefers apples and the receiver strictly prefers bananas. Since a message from the sender to the receiver at best only can encourage the receiver to take action opposite his preferences - case cheap talk is useless. The green double arrow is showing a best case for cheap talk to matter – the sender and the receiver are having the exact same preferences. The apple and bananas example can easily be translated into “agree” “not agree” or anything else that is more suitable in a situation of negotiations or equivalent.

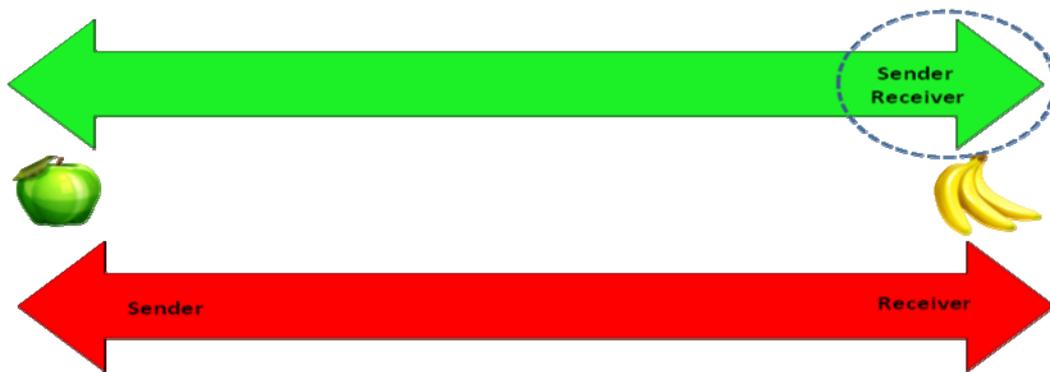


Figure 4

This condition is the most interesting one to apply to international relations. It's also the most difficult one to find objective information about. This is due to that governments' preferences and political agendas are not always correlated with each other. One other major difficulty is that that even if the U.S. and North Korea were about to have the same preferences there are several sources of misunderstandings. The paper by Pinkston and Saunders “Seeing North Korea Clearly” presents five of these sources: (1) linguistic barriers, (2) ideological barriers that distort interpretation of developments in North Korea, (3) intellectual constructs that conceal important information, (4) lack of imagination and reluctance to acquire a deeper

comprehension of the North Korean mindset, (5) deliberate misrepresentation for political or policy convenience³³. I won't dig any deeper into the implications of the different sources of misunderstanding. However it is of major importance to consider them when analysing all of the three conditions of Crawford and Sobel.

Moving our focus to the analysis of the "The sender and receiver must not have opposite preferences over the receiver's actions" condition leads towards two major considerations: (1) The fairly stable North Korean preferences and (2) changing preferences in the U.S.

In the book "Inter-Korean Relations" by Charles K. Armstrong the author is stating the three main principles of North Korea. Summarized they are: (1) North Korea is the true representative of the Korean people, and the regime in the South is a grave threat to the very existence of North Korea, backed by the U.S. (2) The people, as opposed to the government, of South Korea would warmly unite with their Northern brethren. (3) Ultimately the North's position is morally correct and will gain the support of all Koreans since each and everyone will see the superiority of the North Korean system³⁴. These principals give a good overview of the preferences of North Korea. At the same time it's important to remember that it's a very hard task to find out exactly what the preferences of North Korea really are.

The U.S preferences tend to change over time and are somewhat correlated with administrations changes in the White House. The Presidency of George W Bush is outstanding in changes of preferences. Until the fall of the Soviet Union in the early 1990s the preferences of the U.S. was more or less stable. The simple aim was to deter an attack on South Korea³⁵. During the 1990s two major events occurred that made the U.S. rethink its strategy towards North Korea - the 1994 nuclear crisis and the famine in 1995. The breakdown of the Soviet Union put an abrupt stop of supplies like food, oil

³³ Pinkston & Saunders (2003) p81

³⁴ Armstrong (2004) p51

³⁵ Manyin, M. & Nikitin, M.B. (2009) p85

and medical equipment and medicine. This put North Korea in a very isolated position. Altogether the 1990s can be characterised by changed U.S preferences towards more focus on “helping” North Korea via different aid-programs. Then George W. Bush came and everything was about to become very different. As pointed out earlier the Presidency of George. W Bush had a very negative impact on both the South Korea – U.S relations and the North Korea – U.S. relations. The U.S became hawkish towards North Korea and their preferences changed towards a very anti-North Korean approach.

A very brief look at the more fundament drivers within both countries we can see that the U.S. is democracy and North Korea is an autocracy. Different preferences are embedded within these two systems. The leaders in the U.S need to respond to the public. In North Korea this is very far from the truth. Even with these two different political systems one assumed common preference is to avoid a nuclear war. This “common” ground is probably what uttermost drives the whole U.S. engagement on the Korean peninsula. Although this is just an assumption and it’s very hard to prove what the real preferences are of either the U.S. or North Korea.

Chapter 4

Results

“Seoul’s gamble is that the United States and the DPRK would resolve the nuclear issue peacefully, while growing inter-Korean contacts would draw Pyongyang out and help establish a more stable and cooperative environment on the Korean peninsula.”³⁶

In this chapter I present the results of chapter 3 followed by a brief analysis of the findings.

4.1 Summary of the results

The absolute result from my analysis is that my initial hypothesis is valid: **Cheap talk does matter when the U.S. is dealing with North Korea.** The matrix below, figure 5, presents a summary of my analysis.

Condition	“Evidences”		Rate of Fulfillment
	North Korea	U.S.A	
“The receiver must care about the type of the sender”	<ul style="list-style-type: none"> • Constantly claims the U.S: to be invading their country. • Economics incitements. 	<ul style="list-style-type: none"> • Several army bases located in South Korea. • The “Combined Forces” in on the South side in the DMZ. 	H
“Different sender types must have different preferences”	<ul style="list-style-type: none"> • North Korea are able to differentiate between different countries. 	<ul style="list-style-type: none"> •The democratic system in the U.S. is guaranteeing the a change of preferences. 	H
“The sender and the receiver must not have the opposite preferences”	<ul style="list-style-type: none"> • Fairly stable “official” preference. • Some what changing preferences corresponding to famine e.g. 	<ul style="list-style-type: none"> • Preferences changing with the change of administrations. • A “stable” condition on the Korean peninsula is to prefer. 	M

Figure 5

³⁶ Kim (2004) p40

In order for You as a reader to get a fast overview of my results I provided this matrix. The matrix is organized by three different columns; “Condition” “Evidences” and “Rate of fulfilment”. The “Condition” column is referring to the three conditions stated by Crawford and Sobel. The “Evidences” column is divided into “North Korea” and “U.S.A.”. The label “Evidences” is by no means perfect but it’s reflects my intentions of providing the results of my analysis – both from North Korea and from the U.S. The last column is called “Rate of fulfilment”. It is rating how well the condition is fulfilled considering the evidences. The conditions are rated from **High** to **Medium** to **Low**.

4.2 Breakdown of the results

The following section is presenting the results of the analysis carried out in chapter 3. The results are also partly based on the more general facts that are presented in chapter 2.

The first condition; “The sender type must be of importance for the receiver's optimal action” is the one that has the highest likelihood to be true in the U.S. – North Korea case. In the matrix above I rated it **H**.

As my analysis shows there is little doubt that North Korea do care about the U.S.. North Korea is still claiming that the U.S. is invading South Korea and their “South Korean policy” is closely linked to their “U.S. policy”³⁷. Generally the North Korean government views South Korea as a “puppet” of the U.S. Another important point in my analysis is North Korea’s economic incitements for caring about the U.S. Currently North Korea is off the U.S. State Department’s list of states that are sponsoring terrorism. A list that of January 2010 holds four countries; Cuba, Sudan, Iran and Syria³⁸. Finally it’s important to mention the threat of a nuclear attack from the U.S. that North Korea faces. An optimal action for the receiver, North Korea, must be to avoid a nuclear war.

³⁷ Kim (2004) p51

³⁸ <http://www.state.gov/s/ct/c14151.htm>

The second condition; “Different sender types must have different preferences over the receiver's actions” is harder than the first one to analyse which makes the result of the analysis a bit sloppier, although I rated it **H**. This comes mainly from the fact that the opposite is very unlikely to occur – that all countries are the same over eternal time. My analysis is broken down into looking at first at the “world level” where I claim that North Korea is able to differentiate between different countries. The second part of the analysis is concerning the “country level” where I claim that the type of the sender, the U.S. is changing over time.

If the U.S. over eternal time would have been having the exact same preferences cheap talk would not have mattered in the North Korean – U.S. relations. In this case the North Koreans would have known the outcome of any game played with the U.S. and there would have been no room for negotiating. A brief look into reality shows that is not the case. In the analysis in section 3.3.3 I talk about how the role of the U.S. has changed over time ever since the Second World War. This argument is mainly in support of the third condition but is also applicable in support of the second condition. Altogether it's clear that the preferences of the U.S. are changing over time. Even if those changes come from changed administrations or external factors like crises or wars – involving or not with direct involvement of the U.S. Neither of these two drivers for changed preferences is mutually exclusive.

The third condition “The sender and receiver must not have opposite preferences over the receiver's actions” is less likely to be fulfilled in the U.S. – North Korean case. I rated this condition to have a rate of fulfilment of **M**.

This condition has been, by far, the most difficult one to fully analyse. On one hand the North Koreans are claiming that South Korea is a puppet of the U.S. and by then having the preferences of throwing them out of the Korean peninsula. That is clearly not the preference by the U.S. In the U.S. mind they are in South Korea to protect, under UN mandate, South Korea from a North Korean invasion.

On the other hand North Korea wants to have a functional economy and in later years they have softened their attitude towards the U.S. The U.S. on their hand has welcomed this “new” attitude of North Korea by removing them from their list of states that supports terrorism and approving the Keasong Industrial Plant etc. Both can be seen as a sign of changed preferences that are in the direction of an economically functional North Korea and uttermost avoids a nuclear war. Although it’s important to note the preferences of the U.S. can shift fast – elections, the U.S. domestic opinion etc. need to be taken under consideration.

Chapter 5

Conclusions

The main conclusion that this thesis delivers is that cheap talk does matter in the U.S. – North Korean relationship. Even if my analysis from time to time is far from perfect – the final outcome stands. However, there is one major disappointment that needs to be mentioned: what kind of information about the receiver, North Korea is the sender, the U.S., holding? This question hasn't been addressed nor has it been answered and it's a major shortcoming of this thesis. Saying that I still claim that this thesis is fulfilling its purpose – even though the core game theoretical approach didn't fully work. This is mainly due to the level of difficulty of the subject and my own ability.

If you found this thesis interesting there are numerous papers and books to dig into. Many of them have been used as references for this thesis. I want to highlight *Inter-Korean Relations* by Samuel Kim as a cornerstone in every Korea-interested person's personal library.

References

- Cummins, B (2004) *North Korea: Another Country*, The Time Press
- Gibbons, R. (1992) *A primer in Game Theory*, Prentice Hall
- Mas-Colell et al. (1995) *Microeconomic Theory*, Oxford University Press
- Kim, S (2004) *Inter-Korean Relations*, Palgrave MacMillian
- Varian, H. (1992) *Microeconomic Analysis 3rd edition*, Norton & Company
-
- Armstrong, K (2004) *U.S. – North Korean Relations*, Asian Perspective. Vol. 28 No. 4 2004 pp 13-37.
-
- Correa, H. (2001) *Game Theory as an Instrument for the Analysis of International Relations*, Ritsumeikan International Studies. pp187 - 207
-
- Crawford. V & Sobel, P (1982) *Strategic information transmission*, Econometrica, Vol. 50, No. 6
-
- De Mesquita, B (2006) *Game Theory, Political Economy, and the Evolving Study of War and Peace*, American Political Science Review Vol. 100, No. 4 November 2006
-
- Ehrhardt, G (2008) *Beyond the Prisoners' Dilemma: Making Game Theory a Useful Part of Undergraduate International Relations Classes* International Studies Perspectives (2008) 9, 57–74.
-
- Farrell, J. (1993) *Meaning and Credibility in Cheap-Talk Games*, Games and Economic Behavior, No. 5. pp. 514-531

Farrell, J & Gibbons, R (1989) *Cheap Talk Can Matter in Bargaining*,
Journal of
Economic Theory 48, 221-237

Frank, R. (2006) *The political economy of sanctions against North Korea*,
Asian Perspective, Vol. 30, No. 3, 2006, pp. 5-36.

Manyin, M. & Nikitin, M.B. (2009) *U.S. Assistance to North Korea*
International Journal of Korean Studies, vol. XIII, no.1, p85 – 105

Niksch, L. (2003) *Korea: U.S.-Korean Relations - Issues for Congress*,
Congressional Research Service. The Library of Congress

Pinkston, D. & Saunders, P. (2003) *Seeing North Korea Clearly* Survival,
vol. 45, no 3. p80 – 102

Ruiz Estrada, M.A & Park, D (2008) *Korean unification: How painful and
how costly?* Journal of Policy Modeling 30 87–100

Spector, D. (2002) *Failure of communication despite close preferences*,
Economics Letters 74 (2002) 283–289

Shin & Chang (2004) *The Politics of Nationalism in the U.S.-Korean
Relations*. Asian Perspective, Vol. 28 No. 4, 2004, pp. 119-145.

Kim and Jun (2002) *Uncertainty in Foreign Policy Making: A Bayesian
Game Analysis of Korea*. Department of Political Science Florida State
University

Walters, B. & Tingley, D (2009) *Does Cheap Talk Matter? An
Experimental Analysis*, Princeton University.

Schwartz, T. (2001) *Statement of General Thomas A. Schwartz Commander
in chief United Nations command/combined forces command & commander*,

United States forces Korea before the senate armed services committee. 27
March 2001

Piazza, J (2006) *Rooted in Poverty? Terrorism, Poor Economic Development, and Social Cleavages*, *Terrorism and Political Violence*, 18:159–177