Designing and Evaluating Conventional Arms Control Measures: The Case of the Korean Peninsula

Yong-Sup Han
The RAND Graduate School Dissertation series reproduces dissertations that have been approved by the student's dissertation committee. RAND is a nonprofit institution that seeks to improve public policy through research and analysis. Publications of RAND do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published 1993 by RAND
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
To obtain information about RAND studies or to order documents, call Distribution Services, (310) 393-0411, extension 6686
Designing and Evaluating Conventional Arms Control Measures: The Case of the Korean Peninsula

Yong-Sup Han

The original version of this study was prepared as a dissertation in July 1991 in partial fulfillment of the requirements of the doctoral degree in public policy analysis at the RAND Graduate School. The faculty committee that supervised and approved the dissertation consisted of Kevin Lewis (Chairman), Bart Bennett, and Norman Levin.
This study explores specific Korean conventional arms control measures and examines the effectiveness of these measures in terms of four criteria to show to what extent these measures are militarily stable, legally binding, verifiable, and negotiable. In searching for more effective arms control measures specific to the Korean setting, case studies of the Korean Armistice regime and European arms control were conducted, while an analytic military simulation model of the Korean Theater was developed to assess current military balance and the consequences of these measures on the military stability in Korea. As such, this research should be of interest to officials in government and academia who make and suggest policies that affect security and stability in Korea.

This document fulfills requirements for the degree of Doctor of Philosophy in Public Policy Analysis from the RAND Graduate School. Funding was provided by the Arroyo Center at RAND.
SUMMARY

The governments of South Korea and North Korea have recently made proposals for arms control in the peninsula with mixed motives: either to settle a 45-year-old military confrontation with sincerity or to repeat past propaganda wars with each side blaming the other side on posing threats. The analytic community of the two Koreas has not systematically analyzed the effects of arms control proposals on the security and the stability of the peninsula, nor have they suggested coherent ways to design and evaluate arms control measures. Because there is no overarching framework to relate arms control policy to conventional defense policy in Korea, there are no meaningful policy guidelines to lead possible arms control talks to fruition. Therefore, this dissertation attempts to design and evaluate effective arms control measures in relation to specific Korean security problems and arms control objectives that the South Korean government should undertake.

In order to design specific Korean arms control measures and to evaluate the effectiveness of these measures, four criteria are derived from the analysis of the security problems and arms control objectives of the South Korean government. Suitable consideration is taken of U.S. regional defense policies toward the peninsula. The criterion of “military stability” is defined to imply that the defending side can defend against any attack without losing any territory within the first 30 days of battle. The “legally binding” criterion is understood to bind the two Koreas legally to the agreed provisions. Verifiability is defined as the degree of intrusive inspections of the implementation of the agreed provisions. Negotiability is defined as the likelihood of the convergence of interests of the two Koreas have on arms control measures.

In light of these four criteria, four major alternative arms control measures are identified to achieve the arms control objectives of South Korea. The Korean confidence-building measures emulate lessons learned from European arms control but are enriched with policies peculiar to the Korean security problems. In order to limit North Korean combat capabilities and to prevent the possibility of a surprise attack, constraint measures that had not been adopted in European arms control are proposed for the Korean arms
control (e.g., establishment of a non-deployment zone (NDZ)). To accommodate the North Korean sense of threats, a scale-down or suspension of the joint U.S.-South Korean Team Spirit exercises is selected as an alternative measure. To directly resolve the problem of an asymmetric balance, reduction measures (mutual reduction of U.S. and South Korean forces and North Korean forces) are selected as a fourth option.

The evaluation of these four alternative measures suggests that South Korea has mismatched arms control measures with its objectives, either by completely disregarding the importance of constraint measures, (e.g., an NDZ), or by placing insufficient emphasis on reductions. Since prevention of a North Korean surprise attack and reduction of North Korean superiority are the most serious problems that arms control should address, establishment of an NDZ and North Korean reduction of asymmetric forward-deployed forces should be priority goals for the arms control talks. This recommendation is supported by the combat simulation results of the Korean theater. Establishment of the NDZ and a North Korean unilateral reduction are estimated to best achieve the goal of South Korean arms control. These two measures enhance stability, while a unilateral reduction or suspension of Team Spirit exercises and confidence-building measures may only reduce military stability.

However, those constraint and reduction measures have tradeoffs in ensuring legally binding quality and verifiability of the agreement. Confidence and-Security-Building-Measures (CSBM)s and a scale-down of Team Spirit exercises are more easily verifiable than the NDZ and mutual reduction measures because the latter measures would require more intrusive verification. As observed in the European case, acceptance of intrusive verification and provision of accurate military information occur at the last stage of the arms negotiations. Therefore, force reductions and establishment of the NDZ would take a substantial amount of time to assure verifiability.

For chances of negotiated settlement to improve, it is pointed out that accommodation of the other party's main threat and tight conditionality of one side's concession upon the other side's concession would be needed. However, South Korea's concession (e.g., reduction of Team Spirit and withdrawal of U.S. forces) should guard against negative consequences of
these measures on security and stability of the Korean peninsula. If South Korea is to scale down *Team Spirit* exercises, a North Korean reduction of its excessive forward-deployed forces should be tightly linked. Moreover, confidence-building measures should be negotiated together with reduction measures because separating talks on these two issues is nearly impossible.
ACKNOWLEDGMENTS

Many people provided support and encouragement in completing this dissertation; I would like to acknowledge those whose contributions have been especially important. First, I would like to express my appreciation to the members of my committee: Bart E. Bennett, Norman D. Levin, and Kevin N. Lewis (chair). Their expertise, insight, and wisdom made it a better product.

Next, particular thanks must go to Charles Wolf, Jr. who encouraged my participation in the work for the U.S.-Korean security issues project and provided many ideas to sharpen analytic aspects of this dissertation. Jim Thomson, Jonathan Pollack, Paul Davis, Richard Kugler, Bob Nurick, Jim Wendt, and Jim Hays should be credited for earlier conceptualization of this dissertation. For developing and refining the combat simulation model of the Korean theater, Richard Hillestad is the person I have to thank. Other RAND researchers, Kong Dan Oh, Richard Darilek, and Jim Winnefeld, provided valuable advice. Also, I extend my thanks to Professor Richard Zeckhauser of Harvard University who has continuously shown a special interest in my academic development.

Special thanks for their timely advice and expertise go to Mr. Young Hae Kwon, Vice Minister of the Korean Ministry of National Defense (KMND); Major General Dong Shin Kim of the KMND; Brigadier General Yong-Ok Park, my former boss at the KMND; Kwan-Young Hwang, the former President of the Korean Institute for Defense Analyses (KIDA); Dr. Kwan-Chi Oh, Dr. Young-Koo Cha, and Dr. Kyong-Mann Jeon of the KIDA; Professor Soong Hoom Kil, Young Rok Koo, Chungsi Ahn, Myong Choi, Hakjoon Kim (Special Assistant to the President), and Hongkoo Lee (Korean Ambassador to the United Kingdom) of my alma mater, Seoul National University; Professor Byung Moo Hwang of the Korean National Defense College; and Professor Hyock-Sup Lee of the Korean Military Academy.

Thanks to my friends at RAND and my classmates at RGS, especially Loren Yager, Patricia Brukoff, and Jeannette Van Winkle, who helped accelerate my dissertation. I dedicate this dissertation to my late father,
Young-Dong Han and his loving God. And I thank my wife, Hyangran, and my only daughter, Goun, for all their help during my schooling.

Although many people have contributed to the completion of this dissertation, I alone bear the responsibility for any errors or oversights. The contents of this dissertation should not be interpreted as representing the views of the Korean government, RAND, the U.S. government, or any of the individuals named above.
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>iii</td>
</tr>
<tr>
<td>SUMMARY</td>
<td>v</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ix</td>
</tr>
<tr>
<td>FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>TABLES</td>
<td>xv</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td>xvii</td>
</tr>
</tbody>
</table>

Section

I. INTRODUCTION .................................................. 1
   Reasons For Conventional Arms Control In Korea .......... 1
   Defining the Problem ....................................... 4
   The Structure of This Study ................................ 7

II. CURRENT CONCEPTS OF CONVENTIONAL ARMS CONTROL .......... 9
   Introduction ................................................. 9
   Korean Understanding and Application of the European
   Experience ..................................................... 9
   Current Status of Knowledge on European Arms Control ... 11
   Summary ...................................................... 20

III. METHODOLOGY ................................................... 22
    Introduction ................................................. 22
    Systems Analysis ........................................... 22
    Methods of Evaluation ...................................... 24
    Implementing Scenarios ...................................... 30
    Limitations of the Methodologies ......................... 34

IV. SECURITY PROBLEMS IN THE KOREAN PENINSULA ................. 37
    Introduction ............................................... 37
    The Lack of an Arms Control Regime ....................... 37
    Threat Perception and Assessment .......................... 48
    Summary ..................................................... 66

V. ARMS CONTROL OBJECTIVES IN THE PENINSULA .................... 68
   Introduction ............................................... 68
   South Korea's Objectives .................................... 68
   North Korea's Objectives .................................... 71
   The United States' Objectives ............................... 74
   Criteria ...................................................... 77
   Tradeoffs Among South Korean Arms Control Objectives
   and Defense Policy Objectives ............................... 77
   Summary ..................................................... 80

VI. ALTERNATIVE ARMS CONTROL MEASURES .......................... 81
    Introduction ............................................... 81
    Proposals Made by the Two Koreas ......................... 82
Insights from European Arms Control Measures .......... 92
Alternative Arms Control Measures for the Peninsula .......... 106
Summary .................................................. 112

VII. EVALUATION OF ALTERNATIVE MEASURES ............ 114
Introduction ................................................. 114
Alternative 1: CSBMs Only ................................ 115
Alternative 2: Establishment of Asymmetric Non-
Deployment Zones (NDZ) of 40 km to the North of
Current Military Demarcation Line (MDL) and 20 km
to the South of MDL ......................................... 120
Alternative 3: Scale-Down of Team Spirit Exercises and
North Korea’s Reduction of Forward Deployed Forces .... 124
Alternative 4: Reduction of the ROK-U.S. Forces and
Reduction of North Korean Forces .......................... 129
Comparison of Alternatives .................................. 137
Summary .......................................................... 141

VIII: CONCLUSIONS AND POLICY RECOMMENDATIONS .... 144
Introduction ....................................................... 144
Conclusions ..................................................... 144
Policy Recommendations for South Korea .................. 147

Appendix
A. COMBAT SIMULATION MODEL OF THE KOREAN
THEATER (COSMOKT) ........................................ 151
B. REPRESENTATIVE SENSITIVITY ANALYSES ............. 163
C. THE VALIDATION OF THE COSMOKT MODEL ........ 170
D. ARMS CONTROL PROPOSALS MADE BY SOUTH AND
NORTH KOREA .................................................. 175
E. THE ARMISTICE AGREEMENT (EXCERPTS) ............ 179

REFERENCES .................................................... 183
### FIGURES

3.1 Build-up Curve of South and North Korean Force over Time ................................................................. 29
3.2 Axes of Movement .......................................................................................................................... 31
3.3 Schematic of Hypothetical D-Day Posture and North Korean Strategy ........................................... 32
3.4 Terrain Features of the Korean Theater ...................................................................................... 33
3.5 North Korea’s Average Penetration Within the First 30 Days .......................................................... 34
4.1 Military Manpower of South and North Korea ................................................................. 53
4.2 ED Scores of South and North Korean Ground Forces .......................................................... 55
4.3 North Korean Penetration Under Different Scenarios ........................................................ 57
4.4 North Korea’s Penetration into the South Korean Territory by Each Axis Under Delay of U.S. Reinforcements ........................................................................................................ 58
4.5 Size of Team Spirit .................................................................................................................. 61
4.6 Military Spending of South and North Korea (1961–2001) ......................................................... 63
4.7 South Korean Penetration into the North ............................................................................. 65
6.1 Number of Notifications of Military Maneuvers and Movements in Europe .............................. 100
7.1 North Korea’s Average Penetration with a Surprise Attack ...................................................... 118
7.2 Effects of Non-Deployment Zone (North Korea’s Advance on D+30 Days) ............................. 122
7.3 North Korea’s Average Penetration Associated with Reduction of Team Spirit Exercises .......... 126
7.4 Relationship Between Reduction of North Korean Forces and Reduction of Combat Effectiveness of South Korean Forces ........................................................................................................... 127
7.5 Effects of U.S. Force Withdrawal from the ROK on North Korea’s Average Penetration .............. 131
7.6 Effects of North Korean Force Reductions Under U.S. Withdrawal Without Reinforcements ........ 132
7.7 Effects of North Korea’s Reduction of Forward Forces .......................................................... 133
7.8 Reduction of South and North Korean Forces ....................................................................... 134
A.1 Flow of Ground Combat ........................................................................................................ 152
A.2 Terrain Features of the Korean Theater .............................................................................. 155
A.3 Flow of Air Force Engagement Model ................................................................................. 156
B.1 Relationship Between Critical Force Ratio and North Korean Penetration .............................. 164
B.2 Relationship Between Air-Ground Effectiveness and North Korean Penetration ..................... 166
B.3 Relationship Between U.S. Delayed Reinforcements and North Korean Penetration in Each Axis .......................................................................................................................... 168
B.4 Minimum Force Required for Stability at Low Force Levels .................................................. 169
C.1 Changing Force Ratio in the Korean War ............................................................................ 171
C.2 Estimated North Korean Penetration in Axis 2 in the Korean War ........................................... 172
C.3 North Korea's Penetration into the South Korean Territory .................................................. 173
C.4 Actual vs. Predicted North Korean Penetration in the Korean War .......................................... 174
TABLES

3.1 Comparison of Initial Military Capabilities Between South and North Korea ........................................... 28
3.2 Input Variables ................................................................................. 29
4.1 Records of Compliance Until the End of 1954 .................. 40
4.2 Reported Casualties in the Korean War ................................. 49
4.3 Major Offensive Weapons of South and North Korea ........ 54
5.1 Comparison of Arms Control and Defense Policy Objectives of South Korea ............................................... 78
6.1 Opposing Proposals for CSBM ........................................................................ 86
6.2 Opposing Proposals for Constraint Measures ...................... 89
6.3 Proposals for Structural Reduction .............................................. 91
6.4 Comparison of Helsinki CBMs of 1975 and Stockholm CSBM of 1986 ........................................... 97
7.1 Comparison of Alternatives in Terms of Military Stability ................................................................. 138
7.2 Comparison of Alternatives in Terms of Legally Binding Requirements ........................................... 139
7.3 Comparison of Alternatives in Terms of Verifiability ........... 140
7.4 Comparison of Alternatives in Terms of Negotiability ........ 141
7.5 Comparison of Alternatives .......................................................... 142
A.1 Input Variables of South and North Korean Combat Capabilities .................................................. 159
C.1 Assumed Initial Ground Force Allocation in Each Axis ...... 171
GLOSSARY

<table>
<thead>
<tr>
<th>AC</th>
<th>Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACDA</td>
<td>Arms Control and Disarmament Agency</td>
</tr>
<tr>
<td>APC</td>
<td>Armored Personnel Carriers</td>
</tr>
<tr>
<td>CBMs</td>
<td>Confidence-Building Measures</td>
</tr>
<tr>
<td>CFE</td>
<td>Conventional Forces in Europe</td>
</tr>
<tr>
<td>CONUS</td>
<td>Continental United States</td>
</tr>
<tr>
<td>COSMOKT</td>
<td>Combat Simulation Model of the Korean Theater</td>
</tr>
<tr>
<td>CSBM</td>
<td>Confidence-and Security-Building Measures</td>
</tr>
<tr>
<td>CSCE</td>
<td>Conference on Security and Cooperation in Europe</td>
</tr>
<tr>
<td>CSIS</td>
<td>Center for Strategic and International Studies</td>
</tr>
<tr>
<td>DMZ</td>
<td>Demilitarized Zone</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>DoS</td>
<td>Department of State</td>
</tr>
<tr>
<td>EDs</td>
<td>Equivalent Divisions</td>
</tr>
<tr>
<td>FLOT</td>
<td>Front Line of Troops</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>IISS</td>
<td>Institute for International Strategic Studies</td>
</tr>
<tr>
<td>JCS</td>
<td>Joint Chiefs of Staff</td>
</tr>
<tr>
<td>KIDA</td>
<td>Korean Institute for Defense Analyses</td>
</tr>
<tr>
<td>km</td>
<td>Kilometer</td>
</tr>
<tr>
<td>LOC</td>
<td>Line of Communications</td>
</tr>
<tr>
<td>MAC</td>
<td>Military Armistice Commission</td>
</tr>
<tr>
<td>MBFR</td>
<td>Mutually Balanced Force Reduction</td>
</tr>
<tr>
<td>MDL</td>
<td>Military Demarcation Line</td>
</tr>
<tr>
<td>MFR</td>
<td>Modified Force Ratio</td>
</tr>
<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
</tr>
<tr>
<td>NDZ</td>
<td>Non-Deployment Zone</td>
</tr>
<tr>
<td>NNAS</td>
<td>Neutral and Non-Aligned States</td>
</tr>
<tr>
<td>NNNSC</td>
<td>Neutral Nations Supervisory Commission</td>
</tr>
<tr>
<td>OSI</td>
<td>On-Site Inspections</td>
</tr>
<tr>
<td>RLR</td>
<td>Relative Loss Rates</td>
</tr>
<tr>
<td>ROK</td>
<td>Republic of Korea</td>
</tr>
<tr>
<td>SIPRI</td>
<td>Stockholm International Peace Research Institute</td>
</tr>
<tr>
<td>U.N.</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNC</td>
<td>United Nations Command</td>
</tr>
<tr>
<td>WTO</td>
<td>Warsaw Treaty Organization</td>
</tr>
<tr>
<td>WEI/WUV</td>
<td>Weapon Effectiveness Index/Weighted Unit Values</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

REASONS FOR CONVENTIONAL ARMS CONTROL IN KOREA

In 1950-53, Korea experienced a devastating war and ever since, the arms race between South Korea and North Korea has continued without any sign of easing. To date, the probability of war on the Korean peninsula has remained unacceptably high. The division of the peninsula and continued arms race caused a serious security dilemma where the more defense measures one state adopted to increase its sense of security, the more insecure the other felt. The reacting state then took additional measures of its own, which caused the first to take more measures, and so on.\(^1\) This security dilemma has undermined both political and military stability in and around the Korean peninsula. It has also adversely affected political and economic development.

This security dilemma becomes all the more serious at a time when North Korea is falling far behind South Korea in economic and technological capabilities, while still maintaining numerically superior military capabilities. According to the South Korean government, South Korea and the United States will have parity with North Korea in military balance on the Korean peninsula in the later 1990s.\(^2\) For a North Korean strategic planner, the first half of the 1990s will be very significant in military terms. According to academic research on deterrence failure, when one nation evaluates that the short-term military balance is in its favor, but that the long-term military, political, and economic trends are not favorable to it, its national leadership might end up with few alternatives: going to war in fear of a long-term loss in its competition with its enemy\(^3\) or cooperating with the

---


external world.\textsuperscript{4} Though North Korea has recently shown a slight sign of change in its isolationist policy, the chance of conflict in Korea may still remain high in the near term,\textsuperscript{5} a conclusion that is reinforced when we assume that North Korea might experience political turmoil after the death of Kim Il-sung.\textsuperscript{6}

On the other hand, there has been no effective regime under which the two Koreas discuss their security issues directly with each other to resolve their conflicting interests. The Armistice Agreement whose partial objective was to regulate the arms race through mutual supervision by the Neutral Nations Supervisory Commission (NNSC) has been invalidated since 1957.\textsuperscript{7} Throughout the truce period, North Korea has continuously violated the Armistice Agreement by means of terrorist actions as well as infiltration activities, but South Korea and the United States had no effective means to sanction them in the Military Armistice Commission (MAC). Though the United States-Republic of Korea (ROK) alliance has succeeded in preventing reoccurrence of the Korean War on the peninsula with South Korean armed forces under U.S. operational control in return for providing security to South Korea, it is uncertain whether South Korean forces will continue to be under the control of the United Nations Command (UNC) in the event of North Korea's low-level provocations as the United States reduces and restructures its military deployments on the Peninsula.\textsuperscript{8} The uncertainty is becoming more serious when we consider the fact that South Korean forces alone are

\textsuperscript{4}The Soviet Union is a good case in point, as interpreted by many Western strategists.

\textsuperscript{5}Norman D. Levin, Security Trends and U.S.-ROK Military Planning in the 1990s, RAND, N-3312-NA/USDP, 1991. According to Levin, there remain multiple sources of potential conflict on the Korean peninsula if North Korea is not participating in the ongoing pluralistic open detente in East Asia.

\textsuperscript{6}One hypothesis on the origins of the Korean war is claimed to be the existence of a domestic political power struggle between the Kim Il-sung faction and the South Korean faction inside the Korean Workers' Party. See Hakjoon Kim, Unification Policies of South and North Korea: A Comparative Study, Seoul National University Press, 1978, Chap. 2. Though there are many contending hypotheses on the origins of the Korean war, domestic power struggle would be more relevant to the current situation if there is to be another war.

\textsuperscript{7}For detailed discussion, see Sec. IV of this Note.

expected to achieve parity with the North by the turn of this century in terms of conventional military balance.

Against this backdrop, there are essentially two policy alternatives for South Korea for improving security and stability on the peninsula. It can choose a defense policy of continued build-up of military forces for the near future until it achieves parity with North Korea, or it can opt for negotiations with North Korea to reduce the military threat to the level at which both parties feel secure, thus reducing military requirements.

However, a defense build-up alone may not provide adequate security and stability in the peninsula. Since arms control has become an important feature of the international order as reflected by the success of European conventional arms control, policy planners in South Korea and in the United States should be prepared to seize the opportunity to change the security situations in the peninsula. There is a growing public perception that the traditional ROK-U.S. alliance may not be appropriate in new security environments where North Korea is increasing a peace offensive to build upon anti-Americanism in South Korea and surrounding areas that have turned against North Korea. North Korea’s traditional allies, the Soviet Union and China, have begun to distance themselves from North Korea in order to have a closer relationship with South Korea. North Korea is developing nuclear weapons as a hedge against the uncertainty in its future security,\(^9\) although it feels the need to opt for arms control to release resources for its economic development as a long-term strategy for survival. South Korea needs an arms control policy to induce changes in North Korea at a time when the United States clearly stated its policy of reducing forces in South Korea in the 1990s. South Korea also feels the need to reduce the military share of its gross national product (GNP) as a result of democratization in which diverse sources of power are competing for a larger share of government spending and creating domestic turbulence. Thus, arms control policy should be pursued in parallel with defense policy to successfully

\(^9\)Reasons for North Korean nuclear development can be inferred in three ways: as a bargaining chip in negotiations with the United States to facilitate establishing relationships with Japan and the United States, including a U.S. withdrawal of tactical nuclear weapons from South Korea; for military use in the future Korean war; and for political use in pursuit of coercive diplomacy with South Korea and the North Asian region.
manage potential political crises in North Korea and deter North Korea's possible attempt to invade South Korea.

Arms control in Korea requires both Koreas to move away from their antagonistic relationship by negotiating with each other to provide avenues for resolution of political and military disputes or prevention of miscalculations and misperceptions which could escalate into military conflict. Against this background, enhancing security and stability on the peninsula, achieving peaceful coexistence, and fostering unification should become the ultimate objectives of arms control in South Korea.

DEFINING THE PROBLEM

The governments of the two Koreas have begun to recognize the importance of doing something about the continuing arms race. The most recent comprehensive arms control proposal made by the South Korean government consists of three parts: (1) political confidence-building measures, (2) military confidence-building measures, and (3) reduction of military forces. The proposals of the North Korean government can be characterized as structural arms control proposals that disregard the first two parts proposed by the South Korean government.

Even though there are commonalities in their proposals, such as establishing a hot line and designating the Demilitarized Zones (DMZ) as a "peace zone," the approach of the South Korean government follows the European experience more closely than its North Korean counterpart. Evidence of this can be seen in the fact that negotiations for confidence-building measures (CBMs) must succeed before any significant progress can be made in the structural arms control area and that the proposed CBMs are almost the same as those made in Europe. However, North Korea has

---

10A peace zone implies that North Korea and South Korea should remove all military facilities and weapons built in the Demilitarized Zone in violation of the Armistice Agreement and open it for civilian access.

11CBMs herein are defined to imply that measures, e.g., notification of military movements and maneuvers of one nation to other nations and mutual inspections of notified events, are taken to lessen risks of conflicts being sparked by misinterpretation of the military and political behavior of states with an expectation that increasing communication and transparency of military intentions among opposing nations would improve their relationship to ultimately contribute to the prevention of military conflicts. For detailed discussion of CBMs and CSBMs see Chapters 2 and 6 of this dissertation.
insisted on beginning with full-fledged reductions of armed forces; precedents for this can be found in the case of European Mutually Balanced Forces Reduction (MBFR).\footnote{The Mutually Balanced Forces Reduction (MBFR) started in Europe to reduce military personnel and weapons between NATO and Warsaw Pact nations in 1973. However, the origin of the MBFR goes back to 1968. For detailed discussion, see Sec. VI of this dissertation.}

It is largely true that the two Koreas have made arms control proposals for propaganda purposes up to 1990. Since the collapse of Communism in Eastern Europe and a consequent major breakthrough in conventional arms control between NATO and Warsaw Pact nations, the thinking of the two Koreas has been influenced to a differing degree. However, the recent arms control proposals are not articulated well enough to meet the Korean security problems. The policy debate surrounding conventional arms control is rather limited and is lacking in policy relevance.

There are several problems with the current state of this debate. First, proposals have been made without sufficient analysis of the security problems that South and North Korea should address in the arms control process. This problem is caused by two factors: One factor is that not enough attention is paid to the task of evaluating military balance, which is the most important area in arms control and defense policies of South and North Korea. The traditional approach to the balance study remains at the exploratory stage of comparing military personnel and number of major weapons--the so-called bean-counting approach. Thus, it does not provide any meaningful guide to the arms control measures. The second factor is that arms control objectives of South and North Korea were not derived from in-depth analysis on security problems specific to the Korean peninsula. Thus, current arms control proposals cannot solve the security problems. This aspect causes inconsistency between arms control objectives and a discrepancy between objectives and proposed measures.

The second problem with the current debate is the inappropriate application of European conventional arms control measures to the Korean situation. Different as these two cases are, scholars attempt to apply the success of European conventional arms control to the Korean situation without taking into account unique Korean factors and conditions. It is a
fundamental weakness in their analysis that most of them do not realize that there were, in fact, some arms control measures in the Armistice Agreement of 1953. Moreover, there is no recognition about how security and stability of the Korean peninsula will be affected by various arms control measures. Thus, their ability is rather limited in sorting out more relevant and effective measures from their block of recommendations.

The third major problem is that arms control was debated in a vacuum without a unifying framework by which the outcomes in the arms control negotiations could be directly related to the defense objectives of the two sides. This problem comes not only from the fact that this debate on arms control is a new policy issue in the peninsula, but also from the fact that the current state of knowledge regarding the connection between force planning, arms control policy, and defense objectives is limited. Arms control proposals should be accepted only when they will drive a side no farther than its defense objectives, unless one side totally withdraws from the previous position of continuing the arms race for some reason.

If the debate is to provide meaningful policy guidelines to defense planners, criteria on evaluating the effectiveness of arms control measures and models on evaluating the effectiveness of those are required. The institutional inertia that has put an emphasis on the arms race and build-up cannot be compromised without systematic concern over the effects of arms control on the balance that the two sides perceive and evaluate. Such a framework should allow comparison of various measures in appropriate regard to the defense objectives of the two sides. It is also significant to provide appropriate criteria on designing and evaluating the effectiveness of arms control measures on the Korean situation.

To correct the problems described above, this study will attempt to analyze major security problems that the arms control talks should address. From this analysis, arms control objectives of South Korea, North Korea, and the United States will be related directly to security problems that they want to resolve. Alternative measures to achieve those policy goals will be identified through a critical analysis of arms control proposals made by the South and North Korean governments and through a case study of the European experience with conventional arms control. Evaluation of arms control measures to achieve those objectives will be made against several
criteria that have been set to build on analyses of security problems and arms control objectives.

However, this study will not address the issues involving U.S. nuclear deterrence policy toward the Korean peninsula, because the main concern of this study is conventional arms control. Though U.S. deterrence obviously affects the balance, it is less relevant to Korean conventional arms control, because the United States still maintains they neither confirm nor deny (NCND) policy and North Korea does not have nuclear parity with the United States. In addition, there is a possibility that North Korea will resolve its nuclear-development policy with Japan and the United States out of the context of the conventional arms control.\footnote{North Korea announced that it would permit international inspection of its nuclear development site conducted by the International Atomic Energy Agency. \textit{Hankuk Ilbo}, June 15, 1991.}

One more issue that is not explicitly addressed herein is North Korea's reluctance to "open up" its system because of the perceived threat to its ruling regime. Since any real arms control process would necessarily require tangible policy changes in North Korea, identifying North Korea's genuine security interests from a broader perspective, including the political and economic dimensions, will be needed. Considering that a combination of political, economic, and military policy instruments should be employed in a coherent manner to facilitate changes in North Korea, the task to identify North Korean incentives is thought to be important. However, this study narrows down the scope of analysis to the military context and also takes North Korea's declaratory policy regarding arms control as given so as to explore the conditions and requirements for more effective arms control measures. If circumstances change drastically, we could modify the priority of alternatives to suit the need for policy adaptation.

THE STRUCTURE OF THIS STUDY

Section II summarizes the current status of knowledge and understanding of conventional arms control of Korea as well as of Europe. Section III describes methodologies to be employed in this study. Section IV identifies security problems that arms control should address in Korea. Section V defines arms control objectives of South Korea, North Korea, and
the United States. Section VI designs alternative arms control measures specific to the Korean security problems and arms control objectives. Section VII evaluates the effectiveness of alternative arms control measures in light of major criteria. Finally, Section VIII draws conclusions from this study and makes policy recommendations for conventional arms control for South Korea.
II. CURRENT CONCEPTS OF CONVENTIONAL ARMS CONTROL

INTRODUCTION

This chapter reviews the literature on conventional arms control for the Korean case and the European case. This review is intended to provide an understanding of existing approaches and their key assumptions and controversy surrounding the arms control approaches. In the review process, definition of key concepts that have been developed in the arena of conventional arms control will be made for further use in this dissertation. This chapter begins by reviewing the level of Korean understanding of the European case and its application to the Korean case. Next, it reviews Western efforts to conceptualize conventional arms control. It then examines the strengths and weaknesses of those approaches in themselves or in relation to the Korean context.

KOREAN UNDERSTANDING AND APPLICATION OF THE EUROPEAN EXPERIENCE

Thus far, the applicability of the European experience within South Korea is twofold: (1) to create incentives for South and North Korea to cooperate in arms control to pursue joint security interests,\textsuperscript{14} and (2) to apply measures of European conventional arms control to the Korean peninsula.\textsuperscript{15} Logically, the former approach is done largely by political scientists within South Korea and without. They focus on unilateral strategies that each side should take actions without reciprocal actions to create incentives for the two Koreas to come to the negotiation table. Unilateral strategies demanded of South Korea include suspension of ROK-U.S. Team Spirit exercises and U.S.


unilateral withdrawal of nuclear weapons from South Korea. Unilateral measures demanded of North Korea are unilateral withdrawal of some forward-deployed forces and North Korea's disclosure of tunnels located below the DMZ.\textsuperscript{16} They suggest that conditions for both sides to have confidence in each other should be created with some strategies, which were often called "confidence-building measures (CBMs) for CBMs."\textsuperscript{17} Thereafter, negotiation for arms control and reductions should start. However, the former approach does not provide a meaningful guide to policymakers. It assumes that unilateral restraints would consequently induce both sides to come to the negotiation table for further talks. Those who argue for the importance of the unilateral strategies failed to show the limitations and tradeoffs involved in applying lessons drawn from the European conventional arms control to the Korean case. Even if we assume that unilateral restraints will induce both Koreas to come to the negotiation table, it is unclear what the next step should be.

The latter approach is attempted by political scientists and military experts both inside and outside Korea.\textsuperscript{18} They focus on an incremental approach to conventional arms control. Their presumption is that the CBMs should precede any talks on structural arms control, implying that success of CBM talks seriously influenced progress in structural arms control in Europe. Their analyses of European CBMs are not thoroughly analytical.

\textsuperscript{16}The South Korean government requested that North Korea take unilateral actions to show its seriousness in negotiating with the South, while North Korea requested that the South take similar actions. Scholars and experts in and outside Korea also hold similar views: The Conference report of the KIDA/CSIS of January 1991 maintained that the United States should withdraw nuclear weapons from Korea unilaterally in order to prevent the U.S. from having delicacy involved with North Korea's linkage strategy of its nuclear development to U.S. nuclear presence in Korea. For a detailed discussion, see joint report: \textit{The Future of Inter-Korean Relations, Conference Report of the KIDA-CSIS Study Group on ROK-U.S. Policy Toward North Korea}, January 1991, p. 13.

\textsuperscript{17}Young-Sun Ha, p. 25. Ha holds the view that Korean arms control differs from that of Europe because the two opposing blocs in Europe regarded each other as a legitimate negotiation partner, while South and North Korea do not admit each other as a legitimate negotiating partner. Thus, he maintains that some unilateral measures should be taken to induce each other to come to the negotiation table for arms control. He calls these preliminary steps CBMs for the CBMs.

They fail to note that talks for structural arms control and for CBMs started at roughly the same time, but through different channels. Nor do they acknowledge the significance of different negotiation channels on the outcome of negotiation. Their gradual approach does not allow them to evaluate the consequences of various arms control proposals for the security and stability of Korea, because structural arms control is presumed to happen in the distant future, if at all.

Most of the North Korean research on arms control is not known to the Western world. However, through their scholars' participation in the conference on arms control in the United States, it is possible to get a limited evaluation of their knowledge and understanding of arms control. Their level of understanding of arms control is at the embryo stage, lacking any analytic reasoning on their governmental proposals.¹⁹

Thus, the state of knowledge in the Korean arms control area remains at the exploratory stage, hampering consideration of meaningful policy alternatives for arms control. Analysts of these issues fail to place arms control policy in the larger context of overall objectives that policymakers should achieve through negotiation by regarding arms control itself as the sole objective. They do not show tradeoffs among many alternative measures, nor have they tried any analytic methods in evaluating effects of those alternative measures on the security and stability of both South Korea and the Korean peninsula as a whole.

CURRENT STATUS OF KNOWLEDGE ON EUROPEAN ARMS CONTROL

It is useful to review the European experience with conventional arms control, not only because it will provide meaningful insights into designing and evaluating the relevance of such experience to the Korean security problems, but also because it will provide more broad theoretical and methodological resources to this study. A systematic review of the European arms control experience involves two distinct approaches. One approach is that taken by the school of international relations theorists. The other approach is taken by security, and more narrowly, defense analysts.

International Relations Approach

This school of thought has paid more attention to broad political and strategic solutions that lead two adversary nations to cooperate in the security arena to resolve a military confrontation (security alliances). This approach stresses the importance of strategies for facilitating mutual cooperation by way of altering perceived incentives and payoffs from cooperative moves, thus influencing opponents to abandon mutual defection. They also attempt to identify factors and conditions that turn divergent security interests of two adversary blocs into convergent ones. There are four different strains of thought that come under the heading of this school.

First, international relations theorists simulated ideas for studying how cooperation can develop in mixed-motive situations where actors experience a mix of shared and conflicting interests. Axelrod originally concentrated on explaining how to solve the Prisoner’s Dilemma situations in computer experiments.\(^\textit{20}\) Later this work was extended by others to resolve Prisoner’s Dilemma type of U.S.-Soviet security interface by the use of tit-for-tat strategy.\(^\textit{21}\) However, the bulk of the game’s theoretic approach was conducted in a broad context, not specifically for security problems. Robert Jervis’ work is exceptional in this sense because he refined the concept of security dilemma and identified variables that exacerbate or alleviate its effects. Jervis suggests that cooperation is more likely under certain conditions. The first condition holds when (and if) defensive weapons are easily distinguishable from offensive weapons systems (possible as a result of technology development). Cooperation is also more likely when it is believed by both sides that defensive strategies dominate offensive ones because the strength of the defense will allow states to react slowly and with restraint when they fear that others are menacing them. Consequently, the status-quo states will tend to procure defensive weapons.\(^\textit{22}\) In line with this contention,


experts in the arms control area proposed changing from an offensive posture to a defensive one in order to enhance cooperation and stability.\textsuperscript{23}

The second strain is best summarized by Alexander George.\textsuperscript{24} In his study, he discussed the work of scholars in a \textit{World Politics} study. Those scholars conducted intensive examinations of historical cases to identify conditions and strategies that favor cooperation more than defection in issues of security and political economy. Their work was done with two objectives in mind: (1) to improve the ability to explain the occurrence or non-occurrence of cooperation in international relations; and (2) to contribute to a prescriptive theory of how actors can promote cooperation if they want to do so. Through case studies, they attempted to test three hypotheses where cooperation is more likely:

- if the payoff for defection (non-cooperation) for either player is smaller than cooperation (mutuality of interests exists)
- if the interaction between the players is repeated many times in which case “the shadow of the future” will encourage players to forgo the temptation to obtain short-term gains from defection--this is because to do so would jeopardize achievement of important gains in the future
- if the number of players is low.\textsuperscript{25}

The relationship between these hypotheses and arms control can be summarized as follows:\textsuperscript{26} To reduce the arms race, unilateral strategies and negotiation strategies should be taken.


\textsuperscript{26}\textit{Ibid.}
Unilateral strategies consist of four elements: concentrating on defensive weapons as suggested by Jervis, forming defensive alliances, creating buffer states, and acquiring and surrendering intelligence information with the expectation that an opposing nation will realize that one nation will not proceed with the arms race. In the case of negotiation, linking the arms race to other issues (e.g., access to raw materials, recognition of territorial claims) and making a one-time game is iterated many times in such a way that the net marginal benefit and long-term total benefits gained from cooperating within this broader and continuous game are greater than those derived from defection. To make this strategy a success, it is assumed that nations in the game would have perfect information and control of other parts of their government, so that these conditions will not cause problems in interpreting the opponent’s true intentions. However, these scholars failed to differentiate cases where those strategies would work to generate cooperation from others and where those strategies would not do so.

Third, criticizing World Politics scholars, Alexander George and his colleagues focused on differentiating conditions under which a general explanatory hypothesis for the presence or absence of cooperation is true and the conditions under which it is not. According to George, the incentives for superpowers to work out cooperative arrangements are higher in issue areas where interdependency of mutual security relations are tight and which are central to their interests (e.g., avoiding crises in Cuba and Berlin). In those cases where the interdependency is loose and issues are peripheral to their interests, their incentives can go in either direction. They can agree on cooperative arrangements (e.g., CBMs in the Helsinki Accord, Partial Test Ban Treaty) because agreements on those issues do not severely undermine their vital interests. A different set of issues in this domain can fail to draw the attention of decisionmakers, because these issues are less important to national interests. George criticizes the work of the World Politics study and suggests three unilateral strategies for improving mutual adaptation without obtaining benefits of formal or even tacit agreements.

The “shadow of the future” is also applied with more variations to George’s empirical analysis of U.S.-Soviet relations. Concern for the future

may hamper rather than facilitate cooperation, e.g., when negotiations with an adversary are hindered by the enemy images that both negotiating partners have towards each other over an extended period. The relationship between the number of players and prospects for cooperation also varies after recognizing the fact that the emergence of U.S.-Soviet detente in the early 1970s was encouraged and in some respects facilitated by U.S. allies, particularly by France and West Germany's Ostpolitik and later the participation of U.S. allies and neutral states in the Conference on Security and Cooperation in Europe.

International regime theorists represent the fourth strain. They attribute the success of security cooperation between the United States and the Soviet Union to the existence of an arms control regime in which the two nations have taken into account their desire to continue arms competition or cooperate for arms control in setting policy. Regime is here defined as established institutions, principles, norms, procedures, and rules that regulate the actions of each nation in its interaction with other nations.\textsuperscript{28} Even though there is a question whether a U.S.-Soviet security regime is feasible and comprehensive, the two nations largely agree upon broad and specific injunctions in a number of sub-issues within the security relationship. Nye argues that a security regime exists in specific areas, such as limiting nuclear competition to avoid war, reducing risk of nuclear accidents and crisis, maintaining a non-proliferation treaty, and accepting parity of nuclear weapons.\textsuperscript{29}

The concept of regime is useful in developing institutions or agreed-upon procedures for monitoring and encouraging compliance with the rules and norms the actors have agreed to for purposes of regulating competition and facilitating cooperation. The importance of creating institutions is one of the strategies which facilitate cooperation and implement cooperative agreements that game theorists did not recognize. Relevant are the Confidence- and Security-Building Measures (CSBMs) and later Conventional Forces in Europe (CFE) regimes to regulate and improve arms


\textsuperscript{29}Nye, \textit{Ibid.}, p. 392.
control through the Conference on Security and Cooperation in Europe (CSCE) and the Vienna processes. Also, this school of thought provides insights into how important it is to establish a legal and political framework for further improvement of a security relationship through increasing the core of consensual knowledge of defense-related concepts and doctrines of the two opposing sides—enhancing the so-called learning effects with each other.

On balance, the international relations approach provides useful insights into discovering the factors and conditions facilitating cooperation for arms control. These features are, in general, useful in identifying conditions favoring cooperation among adversarial nations, thus resolving otherwise intractable deadlock and arms competition. However, most of this work focused on strategic arms control between two superpowers. They relied on case studies of past strategic arms control negotiations and agreements. Observations and lessons from strategic arms control cases are limited in their applicability to the conventional arms control area which involves security interests of more than two nations, let alone in arms control areas other than Europe. However, to establish a negotiation regime for arms control in the Korean peninsula, their general concept of regime and their efforts to identify factors that will facilitate cooperation are meaningful to the Korean situations.

**Defense-Oriented Approach**

The second approach is a more defense-oriented and practical approach than the former. It attempts to investigate whether there is a stable conventional balance to which both opposing nations could jointly subscribe. It also contributes to setting correct policy objectives as well as proposing appropriate measures to achieve those objectives as a result of their analytic efforts. It also makes an effort to pursue proper verification measures to make those arms control measures more implementable and credible.

A single central question for this school of thought was how the West could achieve a stable balance as a result of a negotiated outcome in conventional arms control talks. This approach differs from the international relations approach in its assumption that the occurrence of arms control negotiations was already a given. Thus, these analysts focused on developing
a viable negotiation concept and guiding principles for a conventional arms control policy.

Since the Soviet Union and Warsaw Pact have been superior in conventional capabilities, it was critical for the West to figure out how to arrive at a stable conventional balance. Though it is still being debated whether conventional stability could exist independently of nuclear deterrence or stability, this school of thought assumes that conventional stability is conceivable and feasible. In a broad sense, its proponents conceived of a combination of political stability and military stability. They further divided military stability into three components: crisis stability, arms race stability, and dissuasion stability.\(^{31}\)

It is generally believed that political stability results if no party to the international system is either interested in changing the status quo or capable of doing so without risking self-destruction. However, this school of thought tends to equate political stability with crisis stability by defining crisis stability as a situation where there are no military pressures to inhibit full exploitation of diplomatic-political means of conflict resolution. To achieve this stability, it targets intentions of political leaders to resort to the use of military means to resolve conflict. Confidence-building measures are proposed as measures to improve crisis stability. The expectation is that increasing communication and predictability in an international system would lessen the risks of acute conflicts being sparked by misinterpretation of

\(^{30}\)Erich Weede, “Beyond Pax Atomica: Is Conventional Stability Conceivable? Does Tension-Reduction Matter?” in Huber K. Reiner (ed.), Military Stability, Nomos Verlagsgesellschaft, Baden-Baden, Germany, 1990, p. 52. Weede argues that conventional military stability is not conceivable. He maintains that tying conventional deterrence to nuclear deterrence does induce the crisis stabilization that conventional deterrence necessarily lacks. He does so by illustrating that there is little point to preempt in a conventional war or to exploit inadequate force-to-space ratios on the other side, if victory in the conventional campaign is likely to trigger a nuclear campaign that might end in mutual destruction.

\(^{31}\)Paul Davis uses structural stability instead of dissuasion stability to imply that certain military structures and deployments would enable the defense to prevail under all circumstances encompassing force posture stability. Huber uses this term to include a sine qua non of crisis stability. Also, they include four sub-components of military stability to these three components: preemption, battlefield, force generation, and modernization stability. Huber (ed.), op. cit., p. 260.
the military and political behavior of states, hence contributing to arms control and disarmament.\textsuperscript{32}

In this sense, Holst's usage of confidence-building measures is more appropriate for refining the definition of political stability: he refers to confidence-building measures as establishing a linkage between political and military aspects of European security, and providing reassurances to states by reducing uncertainties and constraining opportunities for exerting military pressure through military activity.\textsuperscript{33} However, Kevin Lewis showed the limitations of CBMs for improving crisis stability through case studies. He holds the view that CBMs were successful in resolving incidents that did not involve deliberate intentions of political leaders, while the reverse was true in cases where fundamental interests of concerned nations could be realized only by deliberate actions including war or surrender.\textsuperscript{34} Richard Darilek follows the same view by noting that CSBMs (Confidence- and Security-Building Measures) taken in the Stockholm Conference would not provide adequate measures to block a surprise attack attempted by disguising regular movements and maneuvers.\textsuperscript{35} Recognizing the limitations of CBMs in a military dimension, analysts developed the concept of operational arms control to include not only CBMs, but also variables affecting military operation and the readiness of forces.\textsuperscript{36}

To achieve military stability, a logical starting point for those defense analysts is to directly address imbalances in military capabilities between the two security blocs. To identify how much to reduce from both sides,


negotiability of those proposals aside, analysts employed dynamic balance analysis methods. Conditions for conventional stability were to be derived from dynamic analysis using analytic military gaming and simulations. Because static comparison of weapons and personnel does not provide a meaningful guide to assess actual war outcomes that depend on many factors, four analytic concepts played a larger role in their analyses, i.e., force ratio in terms of bean counting as well as combat effectiveness capabilities, force-to-space ratio that will be sufficient to cover the front, operational doctrine and strategy, and other qualitative factors.

This approach has several striking policy implications. It recognizes the limitations of the arms control approach to achieve stability, and instead, emphasizes a dual-track approach of defense policy in parallel with arms control policy. It puts more emphasis on the importance of structural arms control, pursuing operational arms control at the same time. The guiding principle of structural arms control is that reductions should be made in an asymmetric way to reach a balance between the two sides; in particular, Soviet “excess forces” should be cut down first. Finally and more arguably, an operational minimum should be maintained to ensure a proper forward defense.

These analysts developed other concepts to achieve stability apart from the negotiated arms control arena. These are the concepts of sufficiency, defensive dominance, non-offensive defense, and talks on doctrine. The absolutes called for by sufficiency are limited in their use because of definitional difficulties such as the linkage to the threat of what the two sides perceive to be sufficiency. A defensive posture without any offensive

---

37 By dynamic, I mean that the model takes into account many variables that affect war outcomes in the actual war situations, i.e., time, terrain, military doctrine, reserves, air power, etc.

capabilities does not seem like a realistic possibility. The concept of defensive dominance seems to offer the most realistic possibility for achieving conventional stability; however, it is not at all clear that much offensive capability can be removed from forces while maintaining defensive capability.

On net, these analysts tend to be more prescriptive than those subscribing to the international relations approach in suggesting the right objectives and appropriate measures for conventional arms control. They rely more extensively on analytic methods than on historical case studies, thus providing more specific policy guidelines in the conventional arms control area. Though a large portion of their analytic concepts were derived from historical case studies of war and doctrine, their analysis successfully avoids the weaknesses of case studies presented in the international relations approach. Their analytic results yield many policy applications by providing a range of alternatives relating directly to policy objectives. However, their limitations lie in their assumption that arms control negotiations are already a given. This facet decreases the relevance of the model to the Korean situation, since many problems remain in establishing negotiation channels alone. Their models require prudent modification for application in other theaters.

SUMMARY

Though European knowledge and experience of arms control provide insights into how we can break up the Korean military deadlock situations, the applicability of these concepts and models is limited because the Korean security problems have different features from the European ones. Recent research on Korean arms control suffers from several deficiencies. First, analysts of these issues fail to differentiate Korean security problems from those in Europe. As a consequence, their suggestions for the Korean arms control do not answer the Korean security problems appropriately. Second, there has not been sufficient attempt to relate arms control objectives to defense policies of South Korea. As a result, their arms control proposals could hinder the accomplishment of defense policy objectives of South Korea. Third, criteria to compare the effectiveness of various arms control measures have not been suggested comprehensively enough to weigh costs and benefits of these measures. Finally and more important to this study, there has been
no systematic attempt to evaluate the effects of arms control measures on the security and stability of the Korean peninsula.
III. METHODOLOGY

INTRODUCTION

This section provides an overview of the methodology used to address the research objectives. In contrast to previous approaches to the Korean arms control problem noted in Sec. II, a systems analysis approach is derived to relate problems and measures in a coherent and presumed causal way. To identify security problems and evaluate the effectiveness of arms control measures in a systematic and rigorous way, a combined method of evaluation will be proposed: qualitative analysis and military simulation. Following the description of methodologies, the base case scenario against which other arms control measures are compared will be presented along with the limitations of the methodologies employed in this study.

SYSTEMS ANALYSIS

The entire study is conducted using the systems analysis method. Systems analysis is useful in helping a South Korean decisionmaker choose a course of arms control measures by investigating the full range of Korean security problems, searching out arms control objectives and alternatives, and comparing them in light of their consequences. This method enhances analysis of a complex problem by providing an appropriate framework for combining analytic methods and expert judgment that bear on the problem.\textsuperscript{39} The systems analysis method is used because contemporary approaches to Korean arms control do not address security problems in a systematic manner, nor do they provide an overarching framework relating South Korean arms control objectives to defense policy objectives. The lack of analytic military simulation models generates problems in assessing military balance and, as a consequence, in designing effective defense policy and arms control policy. Furthermore, contemporary qualitative analysis of arms control measures is limited in its utility because of its efforts to apply European measures to the Korean situation without analytic discretion.

This study follows the standard sequences of systems analysis tasks: formulating the security problems, defining the objectives of arms control, searching for alternative measures to attain these objectives, and evaluating the effectiveness of these measures in light of the criteria derived from the sections which analyze security problems and the arms control objectives of South Korea.

Formulating the Problem

The first step in the systems analysis approach to the Korean arms control problem isolates security questions and issues. More specifically it seeks to fix the context within which these issues are to be resolved, to discover the variables that are operative in this context, and to state relationships among them. To identify security problems that South and North Korea should address in arms control talks, a combination of case studies and analytic military simulation will be conducted.

Research questions that this section will address are:

- What have been the major problems in implementing the armistice agreement in the past, and what factors should be accounted for in developing a new arms control regime?
- What have been the important characteristics of the arms competition between the South and the North since the end of the Korean war?
- What are the major sources of threats that the two sides perceive? How are those threats evaluated by the two sides? What relationships exist among the variables, such as military capabilities, military doctrine, and military alliance in terms of war outcome?

Defining Objectives

The second step is to define the arms control objectives of South Korea, North Korea, and the United States. The following research questions will be answered by capitalizing on the previous problem formulation step.

- What are the arms control objectives of these three countries?
- What are the tradeoffs and constraints in achieving the arms control objectives of South Korea?
- 24 -

• What criteria should be applied to the design and evaluation of arms control measures in Korea?

Searching for Alternatives

In this step, alternative measures to achieve the arms control objectives of South Korea will be identified through critical analysis of proposals made by the South and North Korean governments and by examining relevant measures from European conventional arms control. Research questions that this section will address are:

• What measures have been proposed for arms control in Korea and why?
• Are there relevant arms control measures that can be taken from the European case?
• Are these measures consistent with arms control objectives in the Korean situation?

METHODS OF EVALUATION

The final step evaluates the consequences of arms control measures in light of criteria derived in Sec. V. Four major criteria will be suggested to conduct this evaluation: military stability, legally binding requirements, verifiability, and negotiability. The criterion of "military stability" comes from the defense-oriented approach noted in Sec. II. However, as a surrogate measure for military stability, we examine the ability of the defensive side (mainly South Korea) to defend against any attack (mainly by North Korea) without losing any territory within the first 30 days of battle.40 The other

40Laurinda L. Rohn, Conventional Forces in Europe: A New Approach to the Balance, Stability, and Arms Control, RAND, R-3732, May 1990, p. 63. Rohn divides military stability into two components, offensive stability and defensive stability. Offensive stability exists when neither side believes that it can attack the other with success (but might gain some territory). Defensive stability exists when either side is able to defend against any possible attack and not to allow an attacker to gain any territory. Paul K. Davis defines conventional stability as a situation where (1) both sides believe that in the event of invasion by either side, the defender would prevail, and (2) where both sides correctly believe that this situation would be unaffected by modest or even moderate changes in details of the military postures. Although these concepts are similar, defensive stability dominates by not allowing any success of the attacking side. Thus, the concept of defensive stability is pursued in this analysis.
three qualitative criteria are modified from the analysis summarized in Secs. II, IV and V.

Legally binding requirements will enhance the degree of mutual confidence by showing greater willingness of each side to comply with agreed measures. This criterion is adopted from European conventional arms control in which arms control measures to be agreed on in the Stockholm CSCE Conference should bind all the nations politically.\textsuperscript{41} Given that an armistice regime in the Korean peninsula failed to bind the two Koreas despite its nature of politically binding requirements, any future agreements should be modified to the Korean situation in order to bind the two Koreas more effectively.

The criterion of verifiability is also adopted from the analysis of European conventional arms control. The rationale for this criterion is that the more verifiable the agreed measures are, the better those are to improve mutual confidence and security.

Negotiability is a criterion that was adopted from the analysis of the international relations approach in Sec. II. Presumption herein is that an ability to converge security interests of opposing nations will improve chances for negotiated settlements of mutual security problems.

These three qualitative criteria will be used to design effective arms control measures specific to the Korean security problems and analyze the effectiveness of arms control measures in Secs. VI and VII.

Four research questions will be answered by this section:

- How stable a military balance will we achieve by each alternative measure?
- To what degree can each alternative measure be made legally binding?
- To what degree will these measures be verifiable?
- To what degree is each alternative set of measures negotiable in order to make both sides reach agreed outcomes?

\textsuperscript{41} In the Madrid CSCE follow-up meeting of 1983 (a preparatory meeting for the Stockholm Conference of 1986), the CSCE nations agreed to set mandates stating that later CBMs should be militarily significant, politically binding, verifiable, and geographically extensive.
Military Simulation Model

Most previous research on the Korean military balance can, in brief, be characterized as static.\textsuperscript{42} The principal method applied in measuring the difference in war capability is simply counting weapons. Based on such a "bean-counting" approach, previous research pointed out that North Korea outnumbered South Korea in personnel strength (1.53:1), in tanks (2.3:1), in armored personnel carriers (1.26:1), and in artillery (2.25:1). This simple approach draws the conclusion that North Korea has a high probability of winning a war. This method is mainly used by those who claimed that North Korea has a decisive advantage over the South in military balance. This approach is limited by neglecting the dynamic processes of warfare in which these forces grind each other up and move around. Also ignored are factors such as time, leadership, training, military doctrine and operational strategy, weapons effectiveness, terrain, and mobilization, whose impact can significantly alter combat outcomes.

The South Korean government is using the WEI/WUV method (Weapons Effectiveness Indicator/Weighted Unit Value) to compare combat capabilities of South and North Korea. The WEI/WUV method converts all the components of military forces (manpower and weapons) into comparable equivalent divisions (EDs) by aggregating all the points that are given to each component depending on its weapon effectiveness and relative importance.\textsuperscript{43} As a result, the South Korean government concludes that North Korea is superior to South Korea with a 10 to 7 margin.\textsuperscript{44} This has a decisive


\textsuperscript{44}Hankuk Ilbo, February 3, 1990. This quotes sources from the Korean Ministry of National Defense announcements that the combat capabilities of South
advantage over the bean-counting approach in that the ED scores take into account firepower, lethality, technology of all weapons, and tactical aircraft. Although EDs are an improvement over simple counts, the ED scores still have disadvantages. They do not account for role of air force, readiness, alternative scenarios for conflict, the advantages to the offense and the defense, terrain, the nature of potential engagements at the operational and tactical level, supplies and support structure, etc.

Therefore, the Combat Simulation Model of the Korean Theater (COSMOKT)\textsuperscript{45} was developed to provide a capability for examining these dynamics. This model is a deterministic model of theater warfare which can be operated either interactively or as a closed simulation with decisions regarding reallocation of ground and air forces made by embedded processes in the simulation.\textsuperscript{46}

The basic unit of combat effectiveness measures of ground forces in this new model is aggregate ED scores for South Korea (including U.S. forces) and North Korea. Helicopters and air-defense weapons are also converted into EDs despite their indirect contribution to the ground offensive. We have chosen to model air forces separately in their allocation to three distinct missions: air-to-air, air-to-ground, and air base attack. Table 3.1 indicates aggregate ED scores and number of aircraft allocated to different missions of South and North Korea.

\textsuperscript{45}See App. A: Description of the COSMOKT Model and its rules of ground and air combat engagements, input variables, mathematical formula to calculate output variables. See App. B for exemplary cases run to evaluate military balance of the Korean peninsula.

\textsuperscript{46}This model is deterministic in that values of all parameters do not vary with random features.
Table 3.1  
COMPARISON OF INITIAL MILITARY CAPABILITIES BETWEEN SOUTH AND NORTH KOREA

<table>
<thead>
<tr>
<th>Category</th>
<th>South Korea</th>
<th>North Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward deployed</td>
<td>14</td>
<td>25</td>
</tr>
<tr>
<td>Deployed in the rear</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Aircraft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air-to-air and air base attack</td>
<td>270</td>
<td>350</td>
</tr>
<tr>
<td>Air-to-ground attack</td>
<td>270</td>
<td>350</td>
</tr>
</tbody>
</table>

SOURCE: See App. A.

This model allows us to conduct a critical quantitative assessment of the current military balance based on arms control policy assumptions. The use of such a military simulation model enhances the static analysis and qualitative assessment techniques used in previous military balance studies. Thus, this new model is used to evaluate the military balance of the Korean peninsula and the effectiveness of various alternative arms control measures.

Assumptions on Parameters

This combat simulation model has many assumptions. Some of the factors accounted for are attrition and its implication on force effectiveness, differences in terrain, force readiness, force mobilization, battlefield attrition rates, movements during the conflict, air-to-ground support, weapon effectiveness, the density of forces required to hold the front line, the effectiveness of prepared defenses, and theater and operational strategy. The treatment, or lack thereof, of these factors will clearly affect an assessment. New assessments done by changing the assumed parameters can show how sensitive the results are to these assumptions.

Table 3.2 presents important assumptions on attrition rates of ground and air forces and effectiveness measures of aircraft of the two Koreas. It is assumed that the quality of South Korean air-to-ground attack aircraft is better than that of North Korea. (Detailed lists of input variables are given in App. A.)
Table 3.2
INPUT VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>South Korea</th>
<th>North Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground loss rate when defending</td>
<td>.01 ED/day</td>
<td>.01 ED/day</td>
</tr>
<tr>
<td>Ground loss rate when attacking</td>
<td>.02 ED/day</td>
<td>.02 ED/day</td>
</tr>
<tr>
<td>Air-to-air attack effectiveness</td>
<td>.1 AC/sortie</td>
<td>.1 per sortie</td>
</tr>
<tr>
<td>Air base attack effectiveness</td>
<td>.25 AC/sortie</td>
<td>.25 AC/sortie</td>
</tr>
<tr>
<td>Air-to-ground attack effectiveness</td>
<td>.004 ED/sortie</td>
<td>.002 ED/sortie</td>
</tr>
<tr>
<td>Air-to-ground attrition</td>
<td>.1 AC/sortie</td>
<td>.15 AC/sortie</td>
</tr>
<tr>
<td>Air-to-air attrition</td>
<td>.1 AC/sortie</td>
<td>.1 AC/sortie</td>
</tr>
<tr>
<td>Air base attrition</td>
<td>.2 AC/sortie</td>
<td>.2 AC/sortie</td>
</tr>
</tbody>
</table>

SOURCE: See App. A.

Figure 3.1 indicates ground forces available for the two sides over time. North Korea has a clear advantage in the mobilization speed and number of EDs. (Mobilization and reinforcement schedules are given in App. A.) North Korea enjoys a theater force-ratio advantage of 1.4:1 at the initial stage. The force ratio changes over time, reducing the North Korean advantage.
Assumptions on Scenarios

Scenario assumptions include: (1) a one-day surprise attack by North Korea coupled with a South Korean one-day delay in response to the attack, (2) no delay in U.S. preplanned reinforcements of ground and air forces, (3) neutrality of China and the Soviet Union, and (4) South Korea and the United States emphasizing air-to-air attack on North Korea’s incoming air attacks and North Korea placing more emphasis on attacking South Korean air bases in the beginning of a war.

Other assumptions include time needed for training and mobilization and the role of air power. The number of reinforcements available to both sides and the preparedness of South Korea’s defenses are affected by these assumptions. The predicted outcome of a war is probably more strongly affected by these assumptions than by the model assumptions.47

IMPLEMENTING SCENARIOS

To show how this model runs, the base case scenario is presented in this section. The base case will provide a yardstick to compare the consequences of various arms control measures for military stability.

Actual Conflict Adjudication Process

North Korea initiates attacks along the seven axes of movement shown on the Korean map in Fig. 3.2.48

---

48KIDA uses seven axes of attack movement given that transportation networks are highly developed compared with those in the Korean War period during which five axes were used by North Korea. See App. C for an analysis of the Korean War.
North Korea allocates more forces in two main-thrust axes (Axes 3 and 4) to achieve a force ratio required for a breakthrough as shown in Fig 3.3. North Korea has operational-level force ratios of 2.8:1 on the main axes and force ratios of 1 to 1.33 in other axes. A one-day surprise increases the force ratios 1.4 times in favor of the North. Surprise operationally implies situations in which South Korea does not know points of North Korea's force concentration and will not be able to send reserves to the front because of shock effects of initial damages inflicted by a surprise attack. North Korea plans quick breakthroughs on the main thrust axes, followed by flanking and encircling maneuvers if possible. North Korea conducts scattered pinning operations on the other axes in an attempt to tie down South Korean forces in these axes. North Korea allocates its air-to-ground attack aircraft proportional to its force ratios in each axis to support ground warfare.
Fig. 3.3--Schematic of Hypothetical D-Day Posture and North Korean Strategy

Because of the one-day surprise, South Korean forces engage in fighting against North Korean forces from the current positions and start bringing in reserve forces to the main axes (Axes 3 and 4) on day D+1. Lateral movement from non-main axes to main axes does not occur because South Korean forces are tied up for forward defense and it is militarily difficult to do so. South Korea sends more air-to-ground aircraft to counterattack North Korean ground forces on the main axes.

Effective combat forces in each axis are recalculated after accounting for the effects of terrain, readiness, and prepared defense and fortifications. (The detailed calculation method is given in App. A.) Terrain affects the combat effectiveness of each side but the terrain effect is assumed to reduce the combat effectiveness of the attacking side in this model. As shown in Fig. 3.4, North Korean terrain is rougher than that of South Korea and the width of axis is wider than that of South Korea. Terrain reduces the combat capabilities of North Korea when it initiates an attack.
Fig. 3.4--Terrain Features of the Korean Theater

The prepared defense and fortification of South Korea reduces the combat effectiveness of North Korea by 16.7 percent. After being adjusted for the effects of the terrain, surprise, prepared defense and readiness, the force ratios in the main-thrust axes become approximately 3 to 1. The attacking side continues an attack along each axis until force ratio in each axis falls below the critical force ratio (e.g., 2 to 1). Reserve forces are allocated to the front to increase force ratio in each axis to each side's advantage. (Detailed combat adjudication and calculation of movement are shown in Appendix A.)

Combat Outcome of the Base Case

The output of the model is presented with an updated Front Line of Troops (FLOT) positions in each axis at the end of each day. Since FLOT positions in each axis are different, an average penetration is shown to indicate the degree of penetration of North Korea. Figure 3.5 shows combat outcomes during the first 30 days of battle for the base case.
Validation of the Model

This model is tested against a scenario to emulate the Korean War. This case shows how well the model can predict combat outcomes of the Korean War. (The model validation process is given in App. C.) This model illustratively fits into the major features of the Korean theater. Thus, this model can be used to test sensitivities of various arms control options in terms of military stability.

LIMITATIONS OF THE METHODOLOGIES

The geopolitical environments, arms control assumptions, and modeling formalism may all create elements of uncertainty in the results of the methodologies taken herein. Another critical element is the proper accumulation of data required for the model.

There are three problems in the geopolitical and arms control assumptions made in this study. First, it is hard to estimate North Korea’s genuine security interests and its arms control objectives. Its traditional
isolation and strictness do not allow a free flow of information on which we may construct an accurate assessment. Thus, reliance on open sources (e.g., Nodongshinmun, Naewoe Press, etc.) in order to minimize subjectivity raises problems in differentiating North Korea's declaratory policy objectives from genuine policy objectives regarding arms control. This study takes North Korea's declaratory policy objectives as given. For example, this study assumes that North Korea evaluates a U.S. military presence and Team Spirit exercise as the most threatening factors to its security. This study does not explicitly handle uncertainties related to North Korea's future behavior towards arms control, although these assumptions and a scenario could be derived. Thus, another study will be required to properly assess North Korea's genuine security interests and consequent implications of these interests on their preferences for alternative arms control measures.

Second, the U.S. military presence is considered in light of its options for arms control negotiation. Reduction of Team Spirit is considered to evaluate how much readiness of ROK-U.S. combined forces will be affected and how much North Korean reduction of forces should be requested to compensate for the loss in the readiness of the ROK-U.S. combined forces. In case of a U.S. withdrawal, this study attempted to identify how much North Korean reduction should be requested to ensure stability. The defense planners of the two countries may have to establish priorities among these two options. However, political and economic consequences of these alternatives on the ROK-U.S. alliance were not considered in any detail here.

Third, the likelihood and extent of Soviet and Chinese assistance to North Korea in the war situation were not analyzed, because the current strategic environments do not allow assumptions that significantly differ from the situations in the Korean War period.

There are three problems with the systems analysis and military simulation model. First, typical of the systems analysis approach, a sensible balance between the qualitative and quantitative methods must be maintained. Security problems that are identified through case studies and military simulation could show different variables as important. Thus, a prudent balancing act is required to appropriately evaluate problems and arms control measures.
Second, the approach to evaluate the military balance outlined above does not incorporate all aspects of conflict. Excluded among them are the issues of encirclement, sustainability, strategic maneuver, amphibious warfare, morale and will to fight, fog and friction, psychological warfare, and guerrilla warfare. Encirclement is partially corrected by allowing allocation of more reserve forces to slowly advancing axes, but this clearly has limitations. Guerrilla warfare is less significant now because South Korean counter-guerrilla warfare capabilities are strong and North Korean infiltration efforts to use those methods have failed in the past.

Third, it is appropriate to point out the limitations of dynamic analysis, because predicted outcomes of war are sensitive to change in parameters and scenarios of war, the latter being of potentially greater effect than the former. In this respect, experts’ judgment is critical in order to make assumptions and conclusions reasonable. We note that experts are also driven by biases and are not always as good at predicting the behavior of forces for unusual and various situations.

As already noted, there are problems in the data. Equivalent division scores do not allow interactions among weapons and assume that the effectiveness of weapons is constant and linear. Assumptions on input variables are subject to uncertainties although sensitivity analyses on different assumptions have been conducted to correct for those problems.

Nonetheless, this approach can be used as an additional tool for examining the impact of arms control and the military balance in a dynamic way. By applying these methodologies, Sec. IV will try to identify security problems that Korean arms control should address.
IV. SECURITY PROBLEMS IN THE KOREAN PENINSULA

INTRODUCTION
This section formulates security problems and issues of the Korean peninsula. In this section, we will discover the variables that are considered important in establishing an arms control regime and identify sources of threats to the two Koreas that arms control processes should resolve. The issue areas will be discovered through case studies and analytic simulation. To place the arms control regime in historical context, a review of the armistice regime will be conducted. To articulate the problem of the continuing arms race, variables that affect threat perception will be identified, and balance assessment will be conducted using sources of such threats. This section will help to illustrate the arms control objectives of South Korea, North Korea, and the United States.

THE LACK OF AN ARMS CONTROL REGIME
As mentioned in Sec. II, it is important to establish an arms control regime where nations will discuss security issues on a regular basis to facilitate a sense of joint security, departing from mutual deflection toward an ultimate war. In the Korean peninsula, there has existed an armistice regime where representatives of the United Nations Command (UNC) headed by the United States and the Communist Command headed by North Korea regularly meet to supervise the implementation of the provisions of the Armistice Agreement. However, it is not an arms control regime with whom South Korea can directly discuss security problems with North Korea because South Korea was strongly opposed to signing the Armistice Agreement. It is but a cease-fire regime whose main mission is to keep the Demilitarized Zone (DMZ) intact.

49Korean Ministry of National Defense, Defense White Paper 1989, Seoul, Korea, p. 90. The Military Armistice Commission consists of 10 senior officers: 5 from the United Nations Command and 5 from the North Korean and Chinese forces. The current Plenary Session of the MAC consists of 10 members as follows: U.S., two ROK, one UK, and 1 other UNC member (out of Australia, Thailand or Canada), 4 North Korea and 1 Chinese. However, no one other than senior members of the two sides has a right to speak in the meeting.
Thus, the function of the Armistice regime became obsolete after the termination of the Korean War, and even more so by the Military Armistice Commission’s (MAC) invalidation of some clauses pertaining to arms control. It is important to review why the armistice regime failed to observe the arms control clauses so as to provide appropriate lessons for future arms control policymaking. This review will enable us to identify problems in the armistice regime so that we may resolve them in the future arms control regime.

Structure of the Armistice Regime

The Armistice Agreement consists of five main articles: the military demarcation line (MDL) and DMZ, concrete arrangements for the cease-fire and armistice, arrangements relating to prisoners of war, recommendations to the governments concerned on both sides, and miscellaneous. Concrete arrangements for cease-fire and armistice stipulated in Article II include: (1) withdrawing all military forces, supplies, and equipment from the DMZ; (2) ceasing the introduction into Korea of troops and weaponry; (3) composition, functions, and authority of the MAC; and (4) composition, functions, and authority of the Neutral Nations Supervisory Commission (NNSC).

In particular, among these, the sections pertinent to arms control are part of Article 2: 13(c) which ceases the introduction into Korea of reinforcing military personnel, 13(d) which ceases the introduction into Korea of reinforcing combat aircraft, armored vehicles, weapons, and ammunition. In both cases, the NNSC inspection teams are to conduct supervision and inspections at the designated ports of entry and report the results of inspections to the MAC, and then the MAC is to resolve the reported issues in regular MAC meetings. The NNSC was also requested to conduct special observations and inspections by the MAC at places outside the DMZ where violations of the Armistice Agreement were reported to have occurred. The MAC was required to report violations and also their corrections to the commanders of both sides and to meet daily with provision for agreed recesses not to exceed seven days.

Historical Record of the Performance of the NNSC

The NNSC consisted of four neutral nations: Switzerland and Sweden, appointed by the UNC, and Poland and Czechoslovakia, appointed by the Communist Command. The NNSC was to establish twenty Neutral Nations Inspection Teams, five located at ports in South Korea and five located at ports in North Korea and ten to be held in reserve near the headquarters of the NNSC.\textsuperscript{51} Each inspection team consisted of not less than four officers, preferably of field grade, two from the Swedish and Swiss contingent and two from the Polish and Czech contingent. The inspection teams were to make periodic reports and also special reports to the NNSC, which would send copies to the MAC. The NNSC or any member was authorized to communicate with any member of the MAC. Besides conducting special observations outside the DMZ at the request of the MAC or the senior officer of the MAC on either side, the NNSC has the functions of conducting inspections and reporting the results to the MAC in connection with the agreements of both sides to cease the introduction into Korea of reinforcing military personnel and reinforcing weaponry. However, the NNSC had no authority except to report violations to the MAC which could settle them through negotiations and report them to commanders of the opposing sides. The agreement provided only for ground inspections.

Within the first month, it was clear to Swiss and Swedish representatives that: (1) the Poles and Czechs were not neutral; (2) entries and exits of materials and personnel in North Korea were taking place outside the five ports, and therefore knowledge of these entries had to depend on the reports of North Korea; (3) the mobile inspection units could not engage in inspections unless a majority so decided; and (4) most of the demands for inspections from the UNC were refused as a result of a two to two vote among the inspection teams.\textsuperscript{52}

Poles and Czechs allegedly conducted espionage activities against the military activities of South Korea in an unneutral manner. On February 12, 1954, the Chinese Communists and North Koreans announced that they

\textsuperscript{51}Five cities for South Korea are Pusan, Inchon, Kunsan, Kangnung, and Taegu, while five ports of entry of North Korea are Sinuiju, Chongjin, Hungnam, Manpo, and Sinanju. See the Armistice Agreement, Article II, 43.

would no longer admit the mobile teams into North Korea at the request of the UNC because requested inquiries of North Korea's introduction of the MiG-15 were based on false complaints. Even though this announcement did not put an end to all inspections, the number was greatly restricted from then on. On April 14, 1954, the Swiss and Swedish delegates had suggested to North Korea and the UNC that the NNSC be terminated. Chinese, Polish, and Czech delegates refused.

The situation of more inspection in South Korea and none in North Korea led to hostility by the South Koreans toward the NNSC, culminating in demonstrations on July 31, 1954. After that, a number of inspections took place in North Korea. In 1954, the U.N. General Assembly decided to reduce the stationary inspection teams by abolishing two in each area, in part based on the report that there had been no shipments to the two ports in South Korea (Kunsan and Kangnung) and no traffic at all in three North Korean ports. There was a 50 percent reduction in the number of men on the remaining teams. As seen in Table 4.1, records of compliance of South Korea and North Korea demonstrate that North Korea had not complied with the notification of its introduction of armaments except in a limited number of cases compared with the South Korean counterpart. This asymmetry in reporting caused the UNC and the Swiss and Swedes of the NNSC to suspect the validity and reliability of the inspection system.

Table 4.1

<table>
<thead>
<tr>
<th>TYPE OF ARMAMENT</th>
<th>SOUTH KOREA</th>
<th>NORTH KOREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combat aircraft</td>
<td>631</td>
<td>0</td>
</tr>
<tr>
<td>Combat vehicles</td>
<td>631</td>
<td>7</td>
</tr>
<tr>
<td>Rifles</td>
<td>82,860</td>
<td>641</td>
</tr>
<tr>
<td>Munitions</td>
<td>226,000,000 rounds</td>
<td>56,650 rounds</td>
</tr>
</tbody>
</table>


On February 21, 1955, the UNC requested that a mobile inspection team investigate six airfields where it was claimed that MiG aircraft had been illegally introduced, and the Czech and Polish delegates stalled the dispatch of the inspection team for one week while they dispersed those
aircraft. Despite the concealment during that week, 88 MiG's were observed on these fields.

At a press conference on August 16, 1955, Secretary of State Dulles stated that the NNSC was obsolete and thus reaffirmed the United States position established in early March in response to the Swedish government's request for abolition of the NNSC.53 The UNC, on May 31, 1956, informed the Communist Command in Korea and the NNSC of its intention to suspend the activities of the NNSC's teams in the three South Korean ports because of Communist violations of the armistice agreement. At a UNC meeting on June 4, 1956, the Communist representatives attacked the UNC for violations of the armistice agreement and demanded the withdrawal of the May 31 announcement. On June 5, 1956, the NNSC unanimously agreed to recommend to the MAC the provisional withdrawal of the fixed inspection teams both in North and South Korea. The Communist side declined to accept the NNSC recommendation, but they could do nothing since the NNSC teams in South Korea were required to withdraw by June 9.54

From this point on, the activities of the NNSC were limited to recording information furnished by either side. An end to the arms control clauses came with the UNC announcement of June 21, 1957, at the 75th plenary session, that it would suspend its acceptance of limiting reinforcement of weapons and manpower until it reached parity with North Korean armed forces. Thus, the inspecting functions of the NNSC were virtually eliminated. The United States, in its capacity as the United Nations Command, decided in 1957 to proceed with the rearmentment of South Korea in order to maintain a relative military balance in Korea and thus to preserve the stability of the armistice.55

The UN report of August 13, 1957, cited the inability of the NNSC to obtain information because of Communist obstruction. Without disclosing the source of this information, it stated specifically that the Communists had built up their air force in North Korea to more than 700 planes. Therefore, the UNC considered that it was entitled to be relieved of corresponding

54 United Nations General Assembly, A/3167, Aug 16, 1956, p. 6 (mimeo.).
obligations under paragraph 13(d) until such time as the relative military balance had been restored and the Communist side, by its actions, has demonstrated its willingness to comply. Even though the report stated that "the UNC does not intend to start an arms race and that the replacement weapons are being deployed for defensive purposes only," reaction to North Korea's arms build-up started explicitly at the cost of the armistice regime. Finally, in January 1958, the UNC announced its intentions to introduce atomic bombs into South Korea.\footnote{Jacques Freymond, "Supervising Agreements: The Korean Experience," \textit{Foreign Affairs}, Vol. 37, No. 3, April 1959, pp. 496–503.}

Thus, the armistice regime is only limited to the maintenance of the MDL. In the early 1970s, North Korea built the iron fence crossing the DMZ closer to the MDL and began constructing infiltration tunnels under the DMZ.\footnote{The Demilitarized Zone (DMZ) is 2 kilometers south and north from the Military Demarcation Line (MDL). For detailed North Korean violation of the Armistice Agreement, see \textit{Defense White Paper 1989}, pp. 109–114.} Thus, validity of the armistice agreement regarding the maintenance of the DMZ was also challenged.

Three representative incidents that were regarded as the most serious challenges by North Korea against the United States and that limited the effectiveness of the armistice regime since 1953 are worth noting. On January 22, 1968, North Korean infiltration forces attacked the South Korean Presidential House and two days later, the U.S. intelligence ship, Pueblo, and its crew of 80 were attacked and seized by North Korean gunboats in international waters off the East Sea of Korea, with North Korean allegations that it had committed a violation of her territorial waters. On April 14, 1969, North Korean MiG aircraft shot down an American reconnaissance plane over international waters. On August 18, 1978, North Korean guards in Panmunjom killed two U.S. soldiers with an ax. Despite North Korean violations of the Armistice Agreements, there have been no effective sanctions against them.

\section*{Evaluation}

Overall evaluation of the Armistice regime demonstrates that it has succeeded in maintaining the armistice and preventing reoccurrence of another war, but failed in ensuring that the two sides comply with several
important clauses, in particular, those pertaining to regulate arms build-up and violation of the DMZ. Further evaluation reveals the reasons why the Armistice regime could not achieve the objectives of arms control.

First, objectives of the United States and North Korea could not converge with respect to regulating the arms race in the post-war period. The U.S. objective was to codify the then military status quo ante as of July 27, 1953, whereas that of North Korea was to redress military imbalance in the shortest time. The U.S. position is manifested in Admiral Turner's speech in the armistice talks on 7 December, 1951.

What we are proposing is only to make sure that what the two sides do not have now will not be owned after the war, thus freezing force level to the current level as of the truce date.58

For North Korea, accepting the then military balance was impossible, recognizing that its failure in achieving the communization of all of Korea was due to a lack of air and naval capabilities. The urgency of this strategic reason prevented the Communist Command from agreeing to any clause that limited their build-up of air power—a build-up the United States wanted to restrict by stipulating free movement of inspection teams. The compromise that was to later prove useless was a natural reflection of military realities: that neither side achieved a decisive victory over the other, thus not providing any leverage by one over the other.

This also suggests that a strong arms control agreement cannot be achieved when one side already has a clear advantage. Neither side was willing to enter into an agreement in which it would suffer enduring inferiority by any meaningful measure. North Korea refused freedom of movement for inspection teams until it achieved parity with U.S. and South Korean counterparts in terms of tactical aircraft and major weapons, and when the UNC judged that North Korea achieved parity with the South, the UNC was also relieved of its obligation to comply with the Armistice Agreement. This suggests that arms control could not be used as means to codify an unfavorable balance to one side in the peninsula.

Second, U.S. long-term objectives to regulate a North Korean arms build-up were overshadowed by other short-term objectives such as a quicker termination of the war, voluntary repatriation of prisoners of war (POW), and continuous stationing of U.S. forces in South Korea in the negotiations for the Armistice Agreement. In U.S. policy priorities, the importance of an arms control regime was secondary to other objectives. This is illustrated by these facts: (1) The United States did not pay enough attention to the warnings made by the Swiss government about the inherent vulnerabilities that lie in the proposed Armistice as explained above;\(^{69}\) (2) the United States abandoned demands for free inspection on the whole peninsula of weapon and manpower reinforcements in exchange for North Korea’s concession on other short-term objectives of the United States in the armistice negotiations;\(^{60}\) and (3) the United States relied on the rearment of South Korea with the threat of maximum retaliation, including using nuclear weapons in the event of a major North Korean reinvansion as the primary means of preventing resumption of hostilities.

Third, attitudes toward the agreed outcomes differ significantly. The UNC side looked upon the Armistice as a step towards a peace settlement and considered itself bound, in its own interest, by the provisions of the Agreement it signed. The other side looked upon the Armistice only as a lull in a struggle that could not be allowed to terminate until the final victory of the Communist regime had been achieved. The Communist side used the agreement to earn a breathing space to regroup its forces without interrupting the battle that was continuing by other means. To this end, the Agreement must first of all be binding upon the other side and must furnish a

---


legal pretext for interfering in its activities, weakening and paralyzing it, while at the same time ensuring that the revolutionary camp would be protected in carrying out its own illegal designs. North Korea and China wanted to preserve the regime to conceal increases in North Korean defense capabilities, while barring South Korea and the United States from increasing defense capabilities because of moral constraints. The Armistice regime played into the hands of North Korea allowing them to cover the clandestine reconstitution of their own forces, so they insisted upon maintaining the fiction of Armistice supervision. This attitude has persisted throughout the post-war period until now. North Korea's repeated violations of the Armistice Agreement could not be prevented or stopped. Only international opinion and moral reproach could give them long-term costs.

Fourth, the United States paid less attention to the means of making the Armistice regime effective, particularly regarding arms control clauses. Means that were effective in facilitating the cease-fire could not work in peacetime. The threat of expanding war to the Chinese mainland, either with the use of atomic bombs or by conventional means, helped accelerate the truce but did not force North Korea's compliance with the Armistice Agreement. In addition, since the equal representation in the MAC and the NNSC by the UNC and Communist sides could not resolve any conflicting issues; it could be predicted that the two sides could not expect implementation of the agreement. Thus, we see a mismatch between ends and means. This suggests that intrusive verification including inspection with freedom of movement for inspectors should be required. Freedom of movement and intrusive inspection are important to make the regime implementable. Verification procedures should be formulated in detail. An effective sanction system should emerge. Reward and punishment should be institutionalized toward creating incentives to comply with arms control agreements.

Fifth, another failure was the lack of long-term vision on the prospects of the Korean military balance and on the role of South Korea in the

---

61 This is well manifested in China's record on the Korean War. Chinese sources emphasized the importance of combining fighting with negotiation during the phase of truce negotiation. See Chinese Academy of Military Science, Kangmei Yuanchao Zhanshi [The Combat History of Resist America and Aid Korea], Beijing, Academy of Military Science, 1987.
Armistice regime. It did not envision the future when North Korea might break the military balance in its favor, nor North Korea’s repetitive violations that were typical of Asian Communists’ negotiating behavior. That is, when they are weak, they pursue dialogue; when they are strong, they pursue war. Because South Korea was opposed to any type of truce with the Communists, the United States had conducted the truce talks without South Korea. To prevent South Korea’s total boycott of the truce, the United States offered South Korea several incentives that would not be realized until the Communists committed major violations. The United States promised to assist the South Korean government in building up 20 divisions of ground forces and rehabilitating the country with economic and military aid. South Korea depended on the United States for her security.

Conflicting Views on Changing the Armistice Regime

Supervisory functions of the NNSC relating to inspection in the arms race have long been suspended and several items pertinent to maintaining the DMZ have also been invalidated. It has been 38 years since South Korea has had no right to speak in the MAC plenary session. The Armistice regime has been outdated because peace has been maintained since the Korean War and military situations of today are different from those of the wartime. Three nations, South and North Korea and the United States, share the view that a new security regime to resolve security problems should be formulated. They, however, have different views on how to change the Armistice regime.

South Korea. Her refusal to be a signatory to the Armistice Agreement generated problems which were to be recognized by her government in the future. The South Korean government had no channels whatsoever to resolve military problems with North Korea directly. More serious was that South Korea could not take any retaliatory or punitive measures against North Korea’s recalcitrant terrorists and infiltrating actions. It was only through the U.S. chairman of the UNC that South Korea could raise North Korea’s violations of the Armistice. These limitations were not foreseen by the Syngman Rhee government. As South Korea assumes a self-defense policy, South Korea needs a direct channel to North Korea to improve inter-Korean relations and to pursue security and stability that the two Koreas can agree on. However, without replacing an already ineffective Armistice regime, it is
nearly impossible for South Korea to attempt to improve the South-North relationship because South Korea does not have the right to speak in the MAC, and North Korea does not recognize South Korea's representing authority in the MAC. Thus, South Korea discussed this problem with U.S. Defense Secretary Cheney, when he visited the South Korean President Rho Tae Woo in February 1990. South Korea's plan is to replace the senior member of the UNC with a Korean general. This action was made in March 1991, but to no avail because of North Korea's strong opposition stating that South Korea is not a signatory to the Armistice Agreement.\(^6^2\) In addition to replacing the senior member of the UNC, the South Korean government proposed to hold direct high-level talks between the Presidents of South and North Korea to resolve political and military confrontations, including the conclusion of a non-aggression pact. At present, the approach to maintain the MAC through replacement of its senior member does not seem to work.

**North Korea.** North Korea also needs to change the Armistice regime. However, Pyongyang insists that the United States sign a peace treaty to replace the Armistice Agreement, because the United States is a legal partner to it. Though North Korea feels the need to discuss political and military issues directly with South Korea, it strongly disagrees on the modalities of meetings. Pyongyang insists that tripartite talks with South Korea and the United States be a forum to resolve security issues. The United States and South Korea have been opposed to this modality, because North Korea’s intention is to deny South Korea’s role as a legitimate negotiating partner.

**The United States.** The United States holds the view that the MAC's role in developing and enforcing measures to reduce military tension along the DMZ is critical.\(^6^3\) This view is reflected in the Department of Defense's statement that the Armistice Agreement and the UNC must be maintained essentially in the current form.\(^6^4\) However, the United States expressed

---


strong support for the South Korean government in negotiating with the North to reduce tensions.

In sum, with respect to the need for an arms control regime, three nations (South and North Korea and the United States) have similar views but do not agree on the modalities. However, it is clear that arms control measures will neither be implemented through the Armistice regime effectively, nor will security interests of South Korea be well represented in the MAC. The MAC has been outdated and invalidated except for keeping the DML intact. Thus, an arms control regime should be created either by direct talks between the two Koreas or by some participation of the United States in this process. Without initial agreement on the modalities of the talks it will be hard to enter any substantive talks between South and North. As observed in the history of South-North talks, most of the efforts were spent on debating negotiation channels without involving substantive issues.

THREAT PERCEPTION AND ASSESSMENT

On what threat perceptions do the two Koreas base their defense policies? To be fair, each side's perceptions of threat should be considered analytically rather than rhetorically or in a partisan way. This section handles the issue of threat through case study and military simulation.

South Korea's Threat Perception

There are three main factors that affect South Korea's threat perception: North Korea initiated the Korean war; North Korea has maintained its offensive strategy with surprise attacks to communize the peninsula; and North Korea is maintaining a military advantage.

Korean War. A devastating loss to the peninsula as summarized in Table 4.2, comprises one of the most important concern to South Koreans, and Koreans in general.

South Korea was shattered by North Korea's surprise attack, without prepared defense and sufficient combat capabilities. Without U.S. and U.N. intervention, it would not have been in existence now. Above all, preventing another Korean War is the most important security issue for Koreans,
considering that the losses from another war could be more than twice those in the Korean war in 1950.\textsuperscript{65}

Table 4.2
REPORTED CASUALTIES IN THE KOREAN WAR

<table>
<thead>
<tr>
<th></th>
<th>Soldiers</th>
<th>Civilians</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>996,937 (850,000)</td>
<td>2,000,000</td>
</tr>
<tr>
<td>and the United States</td>
<td>1,093,839</td>
<td></td>
</tr>
<tr>
<td>North Korea</td>
<td>1,420,000 (520,000)</td>
<td>N.A.</td>
</tr>
<tr>
<td>and China</td>
<td>N.A.</td>
<td></td>
</tr>
</tbody>
</table>

NOTES: The upper line in each cell is based on sources from South Korea and the United States. See Clay Blair, The Forgotten War, 1987, p. 975. The lower line in each cell is based on sources from China. See Chinese Academy of Military Science, Kangmei Yuanchao Zhanshi (The Combat History of Resist America and Aid Korea), App. 3. Numbers in parenthesis are casualties of South and North Korea only. Civilian casualties include South and North Koreans.

N.A. = not available.

The Korean War made the division of the peninsula irreconcilable, strengthening each side's image of the other as the enemy. By splitting the political spectrum in domestic politics followed by a massive purge of the opposition, repression has prevailed in both parts of Korea, creating bureaucratic inertia and deepening mutual political and military confrontation.

Because of the Korean War, the South transferred its right of operational control to the Commander of the UNC, which was later given to the Commander of the Combined Forces Command (CFC), making restoration of operational control over South Korea difficult. North Korea's unchanging communication policy of the peninsula has continued for the past four decades. The suspicions and misperceptions are so strong that South Korea is reluctant to place much confidence and trust in the utility of

\textsuperscript{65}The South Korean Ministry of National Defense estimated that within the first 10 days, the losses would be twice that incurred in the Korean War over three years.
negotiating with the North for its security. Bureaucratic and political rigidity still hinder the inception of a policy for improving the South-North relations. The thinking that there is no compromise with Communists and that only comparative strength wins the competition with the Communists prevails. Such thinking rationalizes reliance on the United States for its security on the one hand and prevents any self-reliance strategy from coming into being on the other.

North Korea's Military Doctrine and Strategy. The military threat that North Korea poses to South Korea derives not only from the asymmetries in capabilities, but also from the manner in which they might be used. In the Korean War, North Korea employed the doctrine of surprise attack on the South, which was reinforced by the Chinese victory in its first and second campaign in October and December, 1950.66 Their doctrinal basis comes from traditional Communist strategy and was reinforced by guerrilla warfare experience in the anti-Japanese war and refined by reflecting on the lessons from the Korean War experience. Kim Il-sung's speech on 23 December, 1950, suggested corrections of eight weak points of the North Korean forces based on their experience in the Korean War during the first six months. Notable among them are a shortage of reserve forces, a lack of well-trained forces, the problem of allowing deserted enemy forces an opportunity to reorganize themselves, a lack of combat power effectiveness in times of inferior fire power and air and naval power, and a lack of support services.67 These points were well taken care of, when Kim Il-sung implemented the Four-Point Military Guidelines in 1962, arming the entire population, transforming the whole country into an impregnable fortress, converting the whole army into an army of cadres, and modernizing the military establishment. To support these guidelines, three principles were laid out, calling for no reliance on allies, emphasis on politico-ideological warfare, and reliance on people's power (guerrilla warfare). The essence of the North Korean doctrine is to build up its own capability to effect a war without external assistance against South Korea. Thus, it maintained the strategy of massive surprise attack and completion of conflict within a short time period.

---

Emphasis was laid on the importance of ground warfare and offensive warfare.

North Korean strategy has also put more emphasis on breakthrough and maneuver warfare implemented by massing numerically favorable ground forces at chosen points. This maneuver warfare strategy was adopted from the Soviet military strategy. From a Soviet view, considers Savkin, breakthrough combined with surprise consists of the attempt to begin and conduct military operations with the most expedient groupings of fully combat-effective troops against the enemy groupings on that axis and at a time when they least expect it. By virtue of these tactics they are incapable of offering organized resistance and are forced to fight in a situation extremely unfavorable for them.\textsuperscript{68}

The idea behind a strategy of breakthrough and maneuver is to defeat the enemy (South Korean) forces by, first, fracturing their defense lines at selected places, and then advancing rapidly into the rear areas where maneuver operations can be undertaken. In this concept, the enemy line is broken by massed, highly concentrated assaults against known weak points by successive waves of attacking forces arrayed in echeloned formations. Smaller forces would be deployed elsewhere along the front line to defend against South Korean counterattacks and to discourage lateral deployment of South Korean forces to the breakthrough sectors. Once the defense line has been penetrated in these sectors, the echeloned reserves pass through the resulting gaps and move quickly into rear areas. Once there, they can exploit the situation in a variety of ways that can have decisive results: (1) envelopment attacks to encircle enemy forces trapped in the forward areas; (2) operations against enemy logistic facilities, supply dumps, and line of command and control networks; and (3) seizure of key terrain features and targets of value.\textsuperscript{69}


From the position of numerical strength today, the importance of maneuver warfare is still being emphasized to overcome perceived disadvantages of attritional warfare because of its gap with South Korea in economic and technological capabilities. The main features of North Korea's military doctrine are well reflected in their organizational structure, which consists of an Army Command, Air Force Command, Navy Command, Mechanized Command, Artillery Command, Missile Command, and Special 8th Corps to conduct organized warfare with an emphasis on combined war between regular and guerrilla combat forces and between maneuver and massive firepower.

Though possibilities of a North Korean surprise attack are real, some experts contend that strategically significant surprise attacks are less likely because modern technology has rendered surprise attacks less relevant. It is suspected that South Korea and the United States could hardly fail to observe and act upon North Korean preparations for invasion, and South Korean military commanders could not really be fooled about such matters as the main thrust sectors in a region with the fairly narrow waist of the Korean peninsula. However, it is worthwhile to remember that a North Korean surprise attack occurred actually as a surprise after a long period of warnings of attack possibilities. In addition, the very nature of North Korean society, being highly controlled and disciplined, allows it to have capabilities to conduct surprise attacks, deception, forward-deployed forces, high readiness, mobilization capabilities, the building of tunnels and training of non-regular paramilitary troops within a short period of time.

Thus, it would be more appropriate to consider avoiding strategic surprise as a priority issue in military analysis and arms control planning. In the words of American military historian DuPuy, "surprise has proven to be the greatest of all combat multipliers. It may be the most important of the Principles of War; it is at least as important as Mass and Maneuver." As demonstrated by DuPuy regarding the Korean War, surprise was a great multiplier, increasing the force ratio of 2 to 1 to approximately 3 to 1.

**Military Imbalance.** As seen in Fig. 4.1, North Korea is continuously increasing its military manpower to 1 million in 1989 after passing that of

---

South Korea in 1978, whereas military manpower of South Korea stays approximately the same at some 600,000 since the 1960s. Two reasons can be noted for this rapid increase of North Korea's military personnel.

North Korea is attempting to compensate for its lack of defense resources with military manpower, as demonstrated later in this section in comparing military expenditures between the two Koreas. The other reason is that North Korea judges its strategic environment as becoming unfavorable, perceiving threats as increasing from domestic reasons as well as external ones. Or it could attempt to create the opportunity to use its military assets before they become obsolete. This massive asymmetry in military manpower constitutes one important part of South Korea's threat perception.

![MILITARY MANPOWER OF SOUTH AND NORTH KOREA (1961-1990)](image)


Fig. 4.1--Military Manpower of South and North Korea
The other source of threat comes from big gaps in offensive weapons between North Korea and South Korea as summarized in Table 4.3. Table 4.3 shows that as of 1989, North Korea has a numerical advantage in major items of offensive weapons. In number of tanks, North Korea has 3,500 as opposed to 1,500 tanks of South Korea (2.33:1). North Korea has 9,000 artillery units, which is a 2.25:1 advantage over the South. In the category of armored personnel carriers (APC), North Korea has a 1.26 to 1 advantage over the South, whereas North Korea has increased more than twofold the number of APVs in 1990. This is clear evidence that North Korea is augmenting its offensive capabilities continuously despite its repeated peace offensive propaganda to support arms control talks with the South.

Table 4.3
MAJOR OFFENSIVE WEAPONS OF SOUTH AND NORTH KOREA

<table>
<thead>
<tr>
<th></th>
<th>SOUTH KOREA</th>
<th>NORTH KOREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanks</td>
<td>1,500</td>
<td>3,500</td>
</tr>
<tr>
<td>Artillery</td>
<td>4,000</td>
<td>9,000</td>
</tr>
<tr>
<td>APC</td>
<td>1,550</td>
<td>1,960</td>
</tr>
<tr>
<td>Tactical</td>
<td>540</td>
<td>720</td>
</tr>
</tbody>
</table>

SOURCE: Defense White Paper 1989,

---

7IISS, The Military Balance 1990-1991, London. North Korea's increase in APCs is interpreted as an effort to step up her capabilities to implement a surprise attack. However, evidence to support such a drastic increase is not well founded, when compared with a change in her defense expenditures between 1989 and 1990.
Fig. 4.2--ED Scores of South and North Korean Ground Forces

In the category of tactical aircraft, North Korea is maintaining a 1.33 to 1 advantage over the South. This numerical superiority of the North constitutes an important part of the threat to the South. Figure 4.2 shows that North Korea has approximately 39 EDs compared with 28 EDs of South Korea. If we look at only forward-deployed forces, North Korea has 25 EDs in the front as opposed to 14 EDs of South Korea. These asymmetric forward deployments by the North clearly constitutes a main threat to the South coupled with Pyongyang's breakthrough warfare strategy.

Threat Assessment of South Korea

The imbalances summarized above can be translated into a real threat in South Korean defense analysis. On top of the base case presented in Sec. III,\(^{72}\) two other cases are tested to show sensitivities of surprise on combat outcomes. Current imbalances in military capabilities can be translated into a degree of North Korea's penetration into South Korean territory in the event of conflict within the first 30 days of conflict. Because surprise affects the speed of reaction of South Korea and the United States to a North Korean attack, the penalty South Korea pays is a reduced capability to send reserve

\(^{72}\)For more detailed description of the COSMOKT, see Apps. A, B, and C.
forces to the front. The surprise effect is accounted for by giving 1.4 times the combat effectiveness of the attacking side, while the defending side will not be able to allocate reserve forces to the front until the surprise factor is gone. The combat results of no surprise, a one-day surprise and two days of surprise are illustrated in Fig. 4.3.

Under attrition warfare (no surprise), North Korea could make 30–40 kms of penetration into Axis 3 and Axis 4 (10 kms in all axes on average). South Korea could prevent North Korea from occupying Seoul. Under the scenario of a one-day surprise, North Korea can penetrate into South Korea up to 60 kms on an average over the whole front, thus allowing Seoul to fall into the hands of North Korea within about two weeks of battle. There is no significant difference in combat outcome between the one-day surprise and the two-day surprise by the North.

In light of such a significant effect of surprise as opposed to no surprise, South Korea should be prepared to prevent North Korea’s surprise attack. As noted earlier, strategic surprise could happen even if South Korea could develop surveillance capabilities, because a one-day surprise, as observed in the Gulf War of 1991, can readily be made even after a long confrontation. This is more so, given the fact that North Korea has 65 to 70 percent of its troops deployed forward, which will enable them to make a standing-start attack, given sufficient readiness, logistics and supplies, and other factors. Thus, it is significant for the South to respond to the initial warning of the war right away.
Under the ROK-U.S. alliance strategy, the speed of U.S. reinforcement to the Korean theater is critical to maintaining a successful forward defense. Thus, three cases with respect to U.S. delay in reinforcement are tested to compare the effects of U.S. reinforcement delay of 0 days, 5 days, and 10 days on combat outcomes. The possibility of delay could result either from inherent limitations in the U.S.-ROK security alliance treaty in which U.S. involvement in the war would be determined by her constitutional process or from the negative consequences of a complete U.S. withdrawal from South Korea on the implementation of war.

The simulation results show different effects of delay or no delay on the war outcomes, as shown in Fig. 4.4. This demonstrates the relationship between delay of U.S. reinforcements and combat outcomes. The difference in the war outcomes grows bigger as the time of delay gets longer, i.e., from 5 to 10 days.
Fig. 4.4--North Korea's Penetration into the South Korean Territory by Each Axis Under Delay of U.S. Reinforcements

Such delay effects can be shown more drastically under the scenario of a no-surprise attack. If the two Koreas are to conduct attrition warfare, a delay of 10 days in U.S. reinforcements will cause South Korea to be unable to stall North Korea in the middle of the month, thus causing the coherent defense to collapse. Accordingly, North Korea will penetrate 80 kms into South Korean territory on an average. Seoul will fall to the North within the first 15 days of battle. North Korea did not make any penetration in Axis 1 because its strategy and doctrine placed an emphasis on occupying Seoul by flanking Seoul's adjacent axes (axes 3 and 4). (See App. B, Case B-3.)

This example demonstrates the concern over a U.S. plan to draw down forces from South Korea. If the forces are to be drawn down, the size of reinforcing capabilities and the speed of a U.S. response might be adversely affected. As shown in the simulation results, the United States should consider several measures which will not affect the size and speed of reinforcements.
In sum, the combat outcome turns out to be sensitive to both the possibility of Pyongyang's surprise and changes in U.S. reinforcement strategy. Since North Korea's military doctrine is offensive-oriented, equipped with breakthrough warfare, preventing a surprise attack should be the most important case that defense and arms control policy should address. Should South Korea and the United States change their alliance, alleviating the effects of reinforcement delay should be a priority goal of the alliance management.

**Threat Perception of North Korea**

To the extent that North Korea feels “threatened,” there are two main factors that create this perception: (1) the U.S.-ROK alliance is too strong and their joint operation might inflict devastating damages on North Korea, and (2) South Korea has stronger economic capabilities to build more combat capabilities than the North in the long run.

**Continuing the U.S.-ROK Alliance.** The existence of U.S. troops in Korea is a main source of North Korea's threat perception. They have consistently criticized the United States for blockading the revolutionization of both Koreas. According to the North Korean propaganda, a U.S. nuclear presence poses threats to them. North Korea insists that before signing a nuclear safeguards agreement, the United States should remove its nuclear threat against the North.

North Korea regards *Team Spirit* exercises as an expression of U.S. strategy of invading North Korea. North Korea sees the massive scale, including projecting nuclear capabilities of *Team Spirit*, as a threat to the peace and stability of the Korean peninsula that North Korea defines. Its duration of more than two months, North Korea alleges, is also a clear indication of U.S. strategy of effecting a surprise attack, projecting forces, and conducting maneuver warfare coupled with its air-land battle doctrine since 1976. Thus, the North criticizes *Team Spirit* exercises as military training

---

to initiate a surprise attack with an offensive doctrine in the disguised manner of military exercise.\textsuperscript{75}

They also claim that the U.S. air-land battle doctrine has brought a new threat to the North because of its nature of offensive defense. Thus, many reports of air-land doctrine are found in North Korea's newspapers, especially when a \textit{Team Spirit} exercise is going on.\textsuperscript{76} They claim that \textit{Team Spirit} reveals a U.S.-South Korean attempt to achieve reunification through a victory over communism by force if their strategy of peaceful transition, which was designed to obliterate the socialist system of North Korea, does not work.\textsuperscript{77} North Korea points to the possibility that these maneuvers create a situation in which nuclear war might break out in Korea. It is construed as significant to the North that the scale and duration of the joint military exercises are becoming larger and longer, as seen in Fig. 4.5.\textsuperscript{78} Figure 4.5 indicates that the number of troops involved in \textit{Team Spirit} has increased drastically since the early 1980s compared with that of the 1970s. It is notable that the number of South Korean forces increased more than that of U.S. troops, and U.S. troops constitute approximately one-third of total forces engaged in \textit{Team Spirit}.

North Korea has issued combat alert orders every year since 1983 to protest \textit{Team Spirit} exercises with the exceptions of 1985 and 1987. North Korea habitually used \textit{Team Spirit} as a pretext for postponing or boycotting the ongoing inter-Korean contacts. It is interesting to observe a change in North Korean attitudes toward a U.S. military presence and \textit{Team Spirit}. While North Korea seems to accept the military reality of the U.S.

\textsuperscript{75}\textit{Nodongshinmun}, March 16, 1991. North Korea further claims that the Team Spirit exercise is a nuclear test war to initiate a surprise attack on North Korea.


\textsuperscript{78}The duration of \textit{Team Spirit} also increased in accordance with its increased scale in the 1980s, from 10 days in the late 1970s to 90 days in the late 1980s.
military presence, it still insists upon the complete suspension of Team Spirit as a precondition for any arms control talks.\textsuperscript{79}

\textbf{Economic and Long-term Military Trends Are Unfavorable to the North.} The South Korean economy is seven to eight times larger than that of North Korea in terms of GNP as of 1989.\textsuperscript{80} This gap in economic capabilities is expected to widen throughout the 1990s, if we compare estimation of growth rates between the two Koreas. As also seen in Fig. 4.6, long-term trends of military expenditures of South and North Korea constitute a main source of

\textsuperscript{79}North Korea shows flexibility on the issue of U.S. withdrawal from South Korea, which is quite different from North Korea's traditional position of insisting upon U.S. complete withdrawal as a precondition for peace on the Korean peninsula. See the Korean Institute for Strategic Studies, Developments and Prospects of the ROK-U.S. Security Cooperation, Sekyongsa, 1990, Seoul, Korea, pp. 143–145.

North Korea's threat perception. Though the North outspent the South in defense up to 1975–1976, it was subsequently outpaced by the South by a substantial margin. This spending gap results from a gap in economic and technological capabilities between the South and the North, which is expected to widen in absolute and relative terms. Up to 1975–1976, defense spending of North Korea exceeded two or three times that of South Korea. This was because North Korea's economy was superior to that of South Korea, since North Korea had maintained most of the industrial bases in the Northern part and her success in early economic development had provided enough resources to the defense sector.

However, South Korea's remarkable economic growth throughout the 1960s to 1980s enabled her to spend more on the defense area, thus overpassing North Korea in aggregate defense spending. South Korea's defense spending in 1989 amounted to $9 billion, which is estimated at twofold that of North Korea. This gap in defense spending is expected to widen up to a ratio of 2.4 to 1 in the year 2000 and South Korea's cumulative real investments in defense are expected to overpass those of North Korea in the mid-1990s.81

---

81 According to the Korean Ministry of National Defense, the cumulative total real investments in defense (1953 onward) are expected to be the same as those of North Korea in the year 1996. See Hankuk Ilbo, February 3, 1990. For reference, RAND estimates on cumulative total defense expenditures of South and North Korea between 1968 and 1983 show that South Korea has spent 1.06 times that of the North in 1979 constant dollars. If we add later spending gap to this differential, we will get a larger ratio. See Charles Wolf, Jr., et al., The Changing Balance: South and North Korean Capabilities for Long-Term Military Competition, RAND, R-3305/1-NA, December 1985, p. 43.
The long-term trends of economic capabilities and defense resources will clearly add threat perception to the North Korean government. Furthermore, a major change in the strategic environment resulting from a Soviet policy change to recognize South Korea as an equal partner may increase the threat perception of North Korea. By making a delivery of offensive weapons to North Korea more difficult than ever, North Korea may have difficulties increasing its advanced weaponry, thus becoming more inferior in military technology to South Korea.

---

Fig. 4.6--Military Spending of South and North Korea

---


Hankuk Ilbo, October 30, 1990. See interview coverage of Soviet Deputy Foreign Minister with South Korean reporters.
In a nutshell, Seoul’s far-superior socioeconomic capabilities are likely to produce increasing pressure on Pyongyang. There is an imminent danger that the real picture of the South’s domestic capabilities may be disclosed to the North’s population, once South-North exchanges start. Pyongyang is under dual pressure: one being the direct threat by South Korea’s ongoing military build-up and the other being the danger of domestic instability rising from its defeat in the economic and technological competition.

**Threat Assessment**

In this section, we assume that North Korea’s threat perception of *Team Spirit* is legitimate for an analytic purpose, although its claim is probably mostly designed for political purposes: undermining support in South Korea for the U.S. presence and upsetting close ROK-U.S. security relations. Applying the same simulation model to an analysis of the South Korean threat, Fig. 4.7 shows how *Team Spirit* can be used as a claimed surprise attack on North Korea. South Korea and the U.S. forces would not make a noticeable advance into the North Korean territory despite the given advantage of the attacker with surprise. Initially low theater-level force ratios do not allow South Korean forces to obtain the critical force ratio threshold required for a breakthrough in more than one axis, whereas South Korea may have to allow North Korea to have such critical force ratios in several axes. Thus, South Korea may have to withdraw in the axes where it has an unfavorable force ratio, thus making negative movements overall. On an average, South Korea records a negative penetration and, thus, overall losses in the fight against North Korea.

The war outcome improves in South Korea’s favor in the latter phase of the war as South Korea brings in reserve forces to the front but without any substantial gain. This is close to a stable outcome. Two days of a South Korean surprise would not make any noticeable difference. This means that North Korean asymmetric forward-deployed forces can successfully defend against South Korean attacks made even through *Team Spirit*. Therefore, there is no basis for North Korea’s claim that *Team Spirit* is an offensive strategy to invade North Korea to unify the Korean peninsula on South Korean terms.
Nevertheless, North Korea's authoritarian regime would not believe this analytic result because North Korea used *Team Spirit* to consolidate its regime and conduct annual exercises to train and indoctrinate its militaries against the ROK-U.S. alliance. The authoritarian regime tends to regard the false belief as true after a long time of ideological propaganda, even though the regime started to criticize *Team Spirit* exercises mostly for propaganda purposes. Thus, a change in the size of *Team Spirit* may induce a change in North Korea's rigidity in its false belief if prospects for arms control dictate to do that.

**ESTIMATION OF SOUTH KOREA'S SURPRISE ATTACK**

**Fig. 4.7--South Korean Penetration into the North**
SUMMARY

As noted earlier, an arms control regime where the two Koreas can resolve security issues directly with each other, recognizing the other's security concern as real and legitimate, does not exist in the peninsula. Provisions pertaining to arms control in the Armistice Agreement have become a dead clause. Though the Armistice regime is working to maintain the MDL as the status quo, the regime has not been working for a peaceful settlement of the Korean security problems.

The lack of an arms control regime aggravates security problems in the peninsula: (1) The two Koreas are continuing the arms race, though they believe that the arms competition aggravates rather than resolves security problems; (2) The two Koreas are still arguing about negotiation channels rather than about the substantive issues; (3) Though they think that their security problems are interdependent and central to their security interests, they cannot resolve security problems; and (4) The MAC and Armistice regime remain intact though South Korea does not have right to speak in the MAC.

To create an alternative security regime between the two Koreas, South Korea should make valuable observations from its experience with the Armistice regime:

- Chances for agreeing on effective arms control measures are low when any one side has a clear military disadvantage in terms of balance.
- Chances for arms control agreements are low when arms control objectives are contradictory to defense policy objectives of the negotiating parties and when arms control objectives of those negotiating nations diverge.
- Strong incentives and sanctions to ensure North Korean compliance with the agreed provisions should be built into a future arms control regime.

From the analysis of threat perception and threat evaluation of the two Koreas, the following points comprise major security problems that should be addressed in the arms control talks between the two Koreas. For South
Korea, North Korean military superiority clearly constitutes a major threat coupled with the historical fact that the North initiated a surprise attack with its then numerical superiority. This military asymmetry provides options to the North to be used either for attrition warfare or for breakthrough warfare. Holding everything else constant, South Korea could manage to defend the North Korean attack with a minor loss of territory in case of attrition warfare. However, it is proven that breakthrough warfare would clearly give the North the possibility of gaining South Korean territory with a maximum of 140 km in the main-thrust sectors including Seoul. If U.S. reinforcements would be delayed for 10 days, this outcome would become worse. In this respect, North Korean intentions to push a U.S. withdrawal from the South are clear. Therefore, redressing the military imbalance and preventing the possibility of a North Korean surprise attack should be a priority in the arms control talks.

North Korea claims that the increase of the ROK-U.S. joint military exercise (Team Spirit) in the 1980s increases the “threat” to North Korea, though it has been demonstrated that Team Spirit itself would not enable the South to obtain North Korean territory even if it were hypothetically used to attack the North. North Korea’s threat perception is adversely affected by its increasing gap in economic and technological capabilities with the South and changing security environments where its traditional allies are distancing themselves from the North. Therefore, the major security problems for North Korea are generated from the dilemma in which its military superiority is gradually becoming obsolete, while it is falling behind the South in competition of political and economic capabilities and becoming increasingly isolated internationally. The latter points also constitute a major potential source of its domestic instability.

Therefore, given political will, an arms control regime could serve useful purposes in resolving the security problems that the two Koreas regard as important to its interests. Based on these findings, Sec. V will attempt to define the arms control objectives of South Korea, North Korea, and the United States.
V. ARMS CONTROL OBJECTIVES IN THE PENINSULA

INTRODUCTION

This section compares and analyzes the arms control objectives of South Korea, North Korea, and the United States. The arms control objectives of the United States are relevant because its defense and arms control policies significantly affect the military balance and will affect the future course of the arms control in the peninsula.

First, this section identifies arms control objectives of the three nations by the survey of government documents and press releases of their policy positions on arms control. Next, it adds interpretation of those discovered objectives of the concerned governments. Third, it attempts to articulate an overarching arms control objective for the South Korean government by closely relating its arms control objectives to defense policy objectives. Finally, criteria to design and evaluate arms control measures will be derived from a close examination of consistency between arms control objectives and security problems that the South Korean government is trying to resolve.

SOUTH KOREA'S OBJECTIVES

South Korea's arms control objectives have not been articulated well. A variety of objectives drawn from the European experience with conventional arms control are often cited to apply to the Korean situation. Among them, to enhance confidence between the two Koreas, to lessen misunderstanding and miscalculation, to prevent surprise attack possibilities, and to facilitate the unification process are put forward by various sources. Based on limited sources of documents, arms control objectives of South Korea are inferred as follows:

- Ultimate Objectives
  - enhance security and stability
  - maintain a peaceful coexistence
  - promote unification
- Operational Objectives
  - build trust and confidence between the two Koreas
- lessen misunderstanding and miscalculation
- prevent surprise attack and all-out attack possibilities
- promote further arms reduction to diminish North Korean superiority

Ultimate Objectives

The ultimate arms control objectives of South Korea can be inferred from its government proposals. These ultimate objectives can be achieved through a foreign policy and a security policy whose components are defense policy and arms control policy. As summarized above, the ultimate objectives of South Korea can be defined as enhancing security and stability, maintaining a peaceful coexistence, and furthering prospects for unification based on ensured progress of the first two factors.84

Operational Objectives

To attain those ultimate goals, there are four key operational objectives that particularly pertain to arms control: build trust and confidence between the two Koreas, lessen misunderstanding and miscalculation, prevent a surprise attack and all-out attack possibilities, and promote further arms reduction.85

Build Trust and Confidence Between the Two Koreas. The South Korean government regards building trust and confidence between the two Koreas as a preliminary step geared toward further progress in arms control. This is important because North Korea initiated the Korean War and has repeatedly violated the Armistice Agreement by terrorist and infiltration activities as noted in the previous section. Building trust and confidence through increasing contacts and exchanges of information will work to further progress toward a peaceful coexistence and unification, as suggested by the South Korean government and traditional functionalist approaches. This objective is interpreted by North Korea as a South Korean strategy to instigate a gradual change in North Korean society, with a disguised

85These are articulated based on arms control proposals made by the South Korean government summarized in Section VI. Other objectives could be suspension of arms race between the South and the North, and non-use of force.
expectation that North Korea may collapse, if it is opened up for external influences.\textsuperscript{86}

**Lessen Misunderstanding and Miscalculation.** Misunderstanding and miscalculation are used interchangeably here to denote a cycle of military action and reaction that leads to unintended escalation. This is a purposefully narrow interpretation that focuses on situations where benign intent is liable to be misinterpreted and lead to overreaction. The objective is sometimes referred to as reducing the likelihood of a “false positive” warning of war, where positive denotes offensive intent.\textsuperscript{87} This aspect will become very critical if North Korea experiences political turmoil during the transition period after Kim Il-sung’s death. For South Korea, it is significant that North Korea not overreact to a South Korean response to such turmoil. Aside from political turmoil, it is important to prevent North Korea’s miscalculation that it could win the war in certain circumstances and its misunderstanding that South Korea and the United States are conducting military exercises for invading the North. For North Korea, it is crucial to understand South Korea’s peaceful adaptation to a newly agreed arms control regime that would replace the Armistice regime, followed by a gradual draw-down of U.S. forces from South Korea.\textsuperscript{88}

**Prevent a Surprise Attack and All-Out Attack Possibilities.** As noted in Sec. IV, the main threat to the South is North Korea’s ability to launch a massive surprise attack with its forward-based forces. North Korea’s offensive military doctrine and posture coupled with the experience of the Korean War adds to this threat perception. North Korea can launch a surprise attack from a standing start, off the march, after mobilization, and even during the apparent de-escalation of a crisis. This objective is often referred to as reducing the likelihood of a “false negative” warning, where negative denotes

\textsuperscript{86}North Korean Prime Minister’s speech at the South-North Prime Ministerial Talks, October 18, 1990, Pyongyang; FBIS-EAS-90-203.


\textsuperscript{88}It is hard for the two regimes to coexist not only because an arms control regime will be created as a result of correcting problems associated with the Armistice regime, but also because North Korea is opposed to establishing an arms control regime without changing the nature of the Armistice regime, as observed in North Korea’s proposal for non-aggression declaration. (See App. D.) As a practical matter, however, the Armistice regime will continue to exist for a transition period.
the belief that nothing hostile is afoot. In the Korean case, the consequences of false negative warning are more serious than those of a false positive warning. The possibility of use of force for political intimidation is less relevant to the Korean peninsula than to the European case.\textsuperscript{89} Thus, preventing a North Korean surprise attack and an all-out attack should be the most important arms control objectives of the South Korean government.

**Promote Further Arms Reduction to Diminish North Korean Superiority.** The South Korean government believes that arms reduction of the South Korean side should be the last step after observing tangible progress in the three operational objectives described above. From the position of numerical inferiority, South Korea does not have many arms reduction options. Thus, South Korea maintains the position that North Korea should draw down forces to the same level as that of South Korea first. Then, if tangible progress is verifiable and reliable, South Korea could make offers toward arms reduction, with the knowledge that maintaining massive armed forces on the two sides prolongs the possibilities of conflict in a situation where political intent is subject to rapid change.

**NORTH KOREA'S OBJECTIVES**

Arms control objectives of North Korea are hard to identify. However, the North Korean Government Daily (Nodongshinmun) and other public statements provide limited sources of information on its official positions toward arms control. Also, South Korean official statements criticizing the North Korean policy positions add another source of information. Objectives that the North Korean government are pursuing through arms control talks are inferred from those sources as follows:

- **Ultimate objectives**
  - preserve North Korean regime survival
  - achieve unification on its terms

- **Operational objectives**

\textsuperscript{89}In Europe, the Soviet Union used forces to suppress the political crisis in Poland in 1981 after the CBM agreed in 1975 in Helsinki. Such forces used for political purposes could be interpreted as Soviet attempts to invade western Europe. Thus, preventing misperception and miscalculation through arms control talks was a main objective in Europe and this objective is clearly stated in a U.S. policy statement for the Stockholm Conference.
- Koreanization of Korean political and military issues
- accelerate U.S. troop withdrawal and reduction of forces at the same time to undermine South Korean security
- weaken/limit a U.S. nuclear deterrent
- maintain military advantage over the South

Ultimate Objectives

North Korea’s ultimate objectives of arms control can be inferred from many sources. As summarized above, they are to preserve its survival as a national system and to achieve unification on its own terms, if the previous two objectives are achieved through military as well as political means.

Operational Objectives

Koreanization of Korean Political and Military Issues. The North Korean leadership intends to achieve its ultimate objectives by removing foreign influences on the peninsula in military terms. They assume that such situation will bring about changes of status quo in North Korea’s favor. North Korea is trying to seize an opportunity for military disposal in the short term while creating political instability in South Korea by raising this issue consistently.

North Korea’s approach to the CBMs is different from that of South Korea in that confidence building is possible, in the main, through structural arms control, including U.S. troop withdrawal from the peninsula because Pyongyang regards the main source of threat to be the U.S. deterrence and defense strategy in Korea. Pyongyang regards removal of foreign military involvement in the South as a genuine sign of intentions to ease tension and build confidence between the two Koreas.

Acceleration of U.S. Troop Withdrawal and Reduction of Forces at the Same Time to Undermine South Korean Security. As noted in Sec. IV, North Korea claims to see a “threat” from the U.S. and Korean joint military exercises.

---

90 Koreanization is meant to imply that North Korea has traditionally insisted on a non-intervention principle of foreign troops in the Korean security either from its political purpose to achieve unification in its terms or from its strategy to undermine the base of the South Korean society. This is the so-called self-reliance (Chuche) strategy.

91 See North Korea’s arms control proposals in App. D. Most of North Korea’s arms control proposals are related to removal of foreign troops and military exercises.
U.S. nuclear capabilities, and the strong cohesion of the U.S.-ROK security alliance itself. Certainly these represent a central obstacle to North Korea's unwavering efforts to bring the entire peninsula under its control. Thus, withdrawal of U.S. troops has been raised since the day of truce negotiations, but its rationale has been changed with a change in the security environments of the day.

Currently, North Korea's propaganda is aimed at using the atmosphere of arms control in the world to boost its political assets by contrasting South Korea's dependence on foreign troops with its own policy of self-reliance. North Korea tries to create uncertainties that may increase in case of a U.S. pullout in the expectation that these uncertainties would work in North Korean favor. At a minimum, it can build upon its political assets by trying to instigate anti-Americanism inside South Korea to reinforce North Korean strength through a destabilization of South Korea. However, it is expected that North Korea will change this position if it has no option but to accept the status quo.

**Weaken/Limit a U.S. Nuclear Deterrent.** North Korea repeatedly maintained that the United States threatened nuclear warfare in the Korean peninsula. A partial reason for North Korea's nuclear development is inferred from their policy statement that it is aimed at removing any U.S. nuclear weapons that may be deployed in South Korea. Through arms control talks, North Korea wants to establish a nuclear free zone in the peninsula. At a minimum, North Korea can generate some political benefits by rationalizing its position to look more peaceful than it is.

**Maintain Military Advantage over the South.** The North Korean regime relied upon massive armed forces to pursue its revolutionary strategy by military means, which is an intrinsic nature of its communist system. To keep this strategy intact, the North wants to prevent the South from acquiring a far superior qualitative advantage by capitalizing on its economic and technological strength. In this sense, it is unacceptable for the North to

---

93 Benjamin Zycher and Tad Daley, *Military Dimensions of Communist Systems*, RAND, R-3593, July 1988, p. viii. This work conducted an empirical test of communist systems' emphasis on military building to pursue their political goals relative to other systems (capitalist and non-aligned systems) and the differences turned out to be significant.
see South Korea nullify North Korea’s numerical superiority. This is partly why North Korea is developing nuclear weapons to get an edge over the South. Thus, North Korea wants to regulate defense spending of South Korea on procurement of advanced weapons, as noted in Sec. IV. This will create a security environment where the North can safely divert resources from the defense sector to economic development.

THE UNITED STATES’ OBJECTIVES

Since the U.S. government has not taken the issue of arms control seriously yet, its arms control objectives have not been articulated. Thus, this section will attempt to postulate arms control objectives of the United States regarding the Korean peninsula from publicly available sources and will also extrapolate regional security policies applicable to the arms control arena.94 The inferred arms control objectives are as follows:

- Ultimate objectives
  - maintain peace and stability in the peninsula
  - maintain a security alliance
- Operational objectives
  - reduce political and military tensions on the peninsula
  - encourage the institution of a CBMs regime
  - prevent any destabilizing effects of arms control
  - smoothly transform U.S. forces in Korea from a leading to a supporting role, including some force reductions

Ultimate Objectives

Ultimate objectives of U.S. arms control in the Korean peninsula have not been formulated yet. As summarized in Fig. 3, inference from U.S. regional security and strategic objectives provides two ultimate objectives for the Korean peninsula: maintaining peace and stability in the peninsula, and maintaining a security alliance to deter North Korean aggression.95

95 Ibid., p. 10.
Operational Objectives

Reduce Political and Military Tensions on the Peninsula. Out of recognition that tension reduction on the peninsula is in the U.S. interests, the United States clearly stated that it would support any steps that could lead to a more stable environment.\textsuperscript{96} In this light, the United States encourages the South-North talks and helps the South to negotiate with the North from a position of strength.\textsuperscript{97} Basically, the U.S. strategy toward this goal is observed to be a phased approach consisting of three phases (short-term: 1991–1993, midterm: 1993–1995, long-term: 1995–2000). In the short term, the United States holds that the Armistice regime must be retained essentially in its current form because the Armistice regime has maintained the status quo with success.\textsuperscript{98} As South Korea gradually takes the leading role regarding the responsibilities for the peninsula in the ROK-U.S. security alliance, Seoul is presumed to take a leading role in the South-North relations including arms control talks. Since the blueprint for arms control policy has not been formulated between Washington and Seoul yet, it is unclear which step the two nations will take regarding arms control on the peninsula. Nevertheless, it is inferred that the United States will determine whether to continue further reduction of forces from South Korea based on its assessment on the state of the South-North relationship in the midterm. This implies that the United States and South Korea will formulate an arms control policy which would improve South-North relations in a coordinated way relating further draw-down of U.S. forces to the development of South-North relations.

Encourage the Institution of a CBMs Regime. The United States has the same view on CBMs as South Korea. On the peninsula, CBMs are the first steps to be taken to ease tension and build trust between Seoul and Pyongyang in an expectation that further progress in structural reductions could build on earlier piecemeal successes, however small they are. The United States sees the importance of institutionalizing a confidence-building regime in Korea whose specific contents are yet to be detailed.\textsuperscript{99} However, it

\textsuperscript{96}\textit{Ibid.}, p. 22.
\textsuperscript{98}U.S. Department of Defense, \textit{op cit.}, p. 15.
\textsuperscript{99}\textit{Ibid.}, p. 15.
is not clarified how maintaining the Armistice regime would be in harmony or conflict with institutionalizing a CBMs regime.

**Prevent Any Destabilizing Effects of Arms Control.** This objective is similar to the South Korean objective of preventing any surprise attack and all-out attack possibilities in the peninsula. The United States is conducting joint military exercises with South Korean forces to show clearly its strong commitment to the security of South Korea and stability in the region. The commitment is all about U.S. military presence. Stability has been maintained in the North Korean part as well as in the South Korean part.

North Korea's revolution strategy by military means has been checked and South Korea's retaliation against North Korea's violation of the Armistice Agreements that could lead to a war have been completely controlled. In a period of gradual draw-down of U.S. forces, the United States should design a device to successfully maintain stability during the transition period and beyond.

Notably, the U.S. concept of stability could differ from the South Korean definition if it is applied to matters outside the peninsula. The issue of nuclear weapons on the peninsula is a striking case in point. The U.S. strategic aim is to deter a threat from the Soviet Union, China, and North Korea. In this light, achieving stability on the peninsula will not necessarily provide the regional stability that the United States wants to attain. For the United States, stability on the peninsula could be a suboptimization that may do harm to the regional stability that the United States seeks. Thus, arms control measures should meet the double standard of stability specific to the Korean peninsula and to the region.

**Smoothly Transform the Role of U.S. Forces in Korea from a Leading Role to a Supporting One, Including Some Force Reductions.** The U.S. objective of the smooth transition of roles, missions, and responsibilities of its forces to South Korea is not articulated in the context of arms control, but in the context of defense policy with the aim to defend South Korea. Thus, the United States clearly identifies the problems in the transition period as increasing public pressure by Koreans to alter the terms of the security relationship between the United States and Korea. These pressures represent the combined effects of assertive nationalism and democratization that include proposed changes in command relationships between American and Korean officers, continued
deployment of tactical nuclear weapons, and relocation of bases. However, the United States may have some reservations in facilitating this, because it may undermine the basis for an increased U.S. role if North Korea invades South Korea. This could foster the image of U.S. abandonment of South Korea.\textsuperscript{100}

**CRITERIA**

Criteria to evaluate the presumed causal relationship between arms control objectives and arms control measures should be derived from the analysis of objectives of South and North Korea and the United States. Since a prime research objective of this study is to evaluate the effectiveness of arms control measures from the South Korean perspective, criteria will be developed to be compatible with South Korean arms control objectives primarily, but with the United States and North Korea under appropriate consideration.

**TRADEOFFS AMONG SOUTH KOREAN ARMS CONTROL OBJECTIVES AND DEFENSE POLICY OBJECTIVES**

To develop criteria on designing and evaluating measures that are specific to the Korean security problems, it is necessary to identify tradeoffs among arms control objectives and defense policy objectives by contrasting two sets of objectives, as shown in Table 5.1. There are tradeoffs between South Korea's traditional strategies that have relied on U.S. deterrence strategy of a massive retaliation—including the possibility of nuclear attack in the event of crisis—and arms control strategy of accommodating North Korean arms control objectives that intend to change the nature of the U.S.-ROK security alliance. Thus, to enhance confidence between the two Koreas, South Korea and the United States may have to relax the stringency of the ROK-U.S. alliance to some extent, which might possibly encourage a North Korean surprise attack. This point will be addressed in Sec.VII, in the process of evaluating the consequences of various alternative arms control measures.

\textsuperscript{100}Jonathan D. Pollack and James Winnefeld, *U.S. Strategic Alternatives in a Changing Pacific*, RAND, R-3933-USCINCPAC, 1990, Sec. III.
Table 5.1
COMPARISON OF ARMS CONTROL AND DEFENSE POLICY OBJECTIVES OF SOUTH KOREA

<table>
<thead>
<tr>
<th>CORE ARMS CONTROL OBJECTIVES</th>
<th>DEFENSE POLICY OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence building</td>
<td>Deter and defend against North Korean attack</td>
</tr>
<tr>
<td>Lessen misunderstanding/miscalculation</td>
<td>Maintain the ROK-U.S. alliance until the South reaches parity with the North</td>
</tr>
<tr>
<td>Prevent surprise attack/all-out attack possibilities</td>
<td>Achieve self-reliant superior military strength over the North in the long run</td>
</tr>
<tr>
<td>Promote further arms reduction</td>
<td></td>
</tr>
</tbody>
</table>


To prevent possibilities for a surprise attack and an all-out attack, South Korea may need to hold onto the arms race in the long run to redress the military imbalance and to fill the gap being created by a U.S. withdrawal. However, this will neither promote confidence, nor lessen misunderstanding and miscalculation. Thus, we will need to take into account several representative tradeoffs properly and establish an overarching goal that will incorporate both arms control and defense policy objectives of South Korea. In addition, we must consider U.S. objectives of arms control in order that adjustment of the ROK-U.S. alliance may be relevant to North Korea’s tangible changes. The overarching goal will be to ensure robust military stability under which the defending side can defend against any attack without losing territory, as defined in Sec. III. Furthermore, making agreed arms control measures legally binding, negotiable, and verifiable will deal with tradeoffs among objectives.

Major Criteria

In the following sections, four major criteria will be derived to design and evaluate the effectiveness of various arms control measures:

- militarily stable
- legally binding
• verifiable
• negotiable

Militarily Stable. The criterion of military stability is drawn from the Conventional Armed Forces in Europe (CFE) meetings. Pretext for this criterion can be found in the criterion of being "militarily significant," which had been one of the mandates for the Stockholm Conference of 1986. This military stability criterion is the most important one, because the possibility of a surprise attack is real, as Koreans experienced in the Korean War and as noted in Sec. IV. Thus, any arms control measures should be not only militarily significant, but also militarily stable. Thus, whether arms control measures in Korea will improve military stability or not will be the first priority criterion.

Legally Binding. As noted in Sec. IV, even if the Armistice Agreement was politically binding, it was not successfully implemented because it lacked a legally binding structure. This is the main reason why the South Korean government insists on signing a non-aggression treaty instead of a non-aggression declaration, which is proposed by the North Korean government. It is not accidental that South Korea and North Korea do not feel bound by the Joint Communique that was accorded on July 4, 1972, between the South Korean chief of the Central Intelligence Agency and the North Korean deputy Prime Minister.101 Thus, the South Korean government aspires to have more binding agreements for the continuing building blocks of confidence and arms reduction.

Verifiability. The Korean experience with the NNSC inspections into violations of the Armistice Agreement, as noted in Sec. IV, shows that a verification system is crucial to maintaining and developing the effectiveness of an arms control regime. If the North Korean Communists stick to their traditional ways of circumventing agreed measures and do not allow freedom

---

101 The July 4 Joint Communiqué laid out three principles: (1) Unification shall be achieved through independent Korean efforts without external interferences; (2) Unification shall be achieved through peaceful means, not the use of force against each other; (3) Transcending differences in ideas, ideologies, systems, a grand national unity as a homogeneous single nation shall be sought as top priority. Though the principle of non-use-of-force was agreed then, no government admits as such that it would bind the two sides to transform their defense policies and arms control policies.
of action, an arms control regime will not be implementable. Thus, this criterion constrains the utility of measures and cross-checks various measures. Thus, measures should be verifiable to augment confidence on the reliability of the other side's position and to confirm the extent of political will to comply with agreed measures.

**Negotiability.** Measures should allow or facilitate the two sides to find areas for cooperation by making compromise possible. This criterion will be applied to make arms control feasible and worthwhile for continuous negotiation. The objective is to provide incentives and to adapt the two sides to a framework that will politically bind one to the other and will force the two sides to value long-term benefits of cooperation more than short-term benefits of violation (extending "the shadow of the future"). In addition, measures should enlarge the context of negotiation to enable a linkage strategy to work for further progress in mutual security relations, as interpreted in Sec. II.

**SUMMARY**

In this section, the arms control objectives of South Korea, North Korea, and the United States were articulated. In particular, South Korean arms control objectives were reevaluated in relation with its defense policy objectives. Among its defense policies, relying on U.S. regional security strategy is clearly stated. To obtain consistency among arms control objectives and defense policy objectives, an overarching arms control objective was defined to achieve military stability through arms control talks. This is a reflection of the U.S. arms control objectives. In addition, four criteria to design and evaluate arms control measures were derived from this section. These identified arms control objectives and criteria will be used in the next section to design alternative arms control measures for Korea.
VI. ALTERNATIVE ARMS CONTROL MEASURES

INTRODUCTION

This section will explore alternative measures to achieve South Korean arms control objectives through critical analysis of proposals made by both the South and North Korean governments and relevant measures from European examples of conventional arms control. In designing alternative measures, three broad concepts will be used. These include CSBMs,\textsuperscript{102} constraint measures, and structural reduction measures, though constraint measures are often classified into the concept of operational arms control measures.\textsuperscript{103} In addition, those alternative measures will be investigated with respect to consistency with arms control objectives specific to the Korean situation.

\textsuperscript{102}In designing confidence building measures (CBMs), the concept of confidence and security building measures (CSBMs) will be extensively used herein, because the CSBMs are more advanced and significant in terms of security. In fact, the addition of “S” was made along the proposal of non-aligned Yugoslavia at Madrid as a way of distinguishing the new, more militarily significant measures to be negotiated at Stockholm from their less militarily significant predecessors, e.g., earlier CBMs that were adopted in the Helsinki Conference in 1973. South Korea is quoting several measures taken in the Stockholm Conference, thus CSBMs are more appropriate to use.

\textsuperscript{103}The distinction between “operational” and “structural” arms control is made to imply that the former affects “operations” of military forces that include declaratory measures and CSBMs, while the latter implies that reductions directly affect military force “structure”—the elements (units, equipment, and personnel) that make it up. See conceptual contribution, Richard Darilek and John Setear, \textit{Arms Control Constraints for Conventional Forces in Europe}, March 1990, RAND, N-3046-OSD, March 1990, p. vi.

PROPOSALS MADE BY THE TWO KOREAS

Though the number will differ depending on measurement criteria, North Korea has made 236 proposals on arms control since the end of the Korean War, whereas South Korea made 64 proposals during the same time period.\textsuperscript{104}

History of Arms Control Proposals Made by South Korea

Until 1990, South Korea has made proposals for arms control extensively regarding the CBMs. The origin of CBMs in South Korea traces back to 1981. Through the channel of the MAC in a UNC Commander's capacity, the United States proposed to North Korea that North Korea and China send military observers to the Team Spirit exercises to show the lack of any offensive features in those exercises. The North Korean response was predictably negative since it would have amounted to a legitimization of the American military presence on the Korean peninsula, a presence which North Korea has regarded with the greatest hostility.

As noted earlier, the annual spring maneuver has expanded every year and the American side has consistently reiterated the notification of Team Spirit maneuvers and the invitation of military observers from the North. Aware of the extreme North Korean sensitivity about these annual maneuvers, the maneuver in 1984, although larger than ever, was conducted in a East-West direction and no longer in a North-South direction. When President Reagan visited Beijing in April 1984, Secretary of State Shultz delivered an American proposal to Chinese Foreign Minister Wu Xueguan to be passed on to North Korea, which included the following items: (1) restoration of the non-military character of the DMZ by pulling forces back and removing heavy weapons from the area; (2) regular inspection by teams composed of neutral nations to ensure the non-military character of the DMZ; (3) prior notification by the North as well as the South of military exercises; and (4) mutual assignment of observers to such exercises.\textsuperscript{105}

In October 1984, President Reagan stated in his UN General Assembly speech that CBMs would be an important first step toward peaceful reunification.

Regarding a hot line between military leaders of the two Koreas, on 1 February 1982, the South Korean Minister of the National Unification Board


\textsuperscript{105}\textit{Korea Herald}, June 7, 1984.
proposed 20 sample projects, including opening the Inchon and Chinnampo ports to each other and establishing a peace zone in the DMZ. On 6 August 1987, the South Korean Foreign Minister issued a statement proposing that talks between the North and South Korean foreign ministers be held to discuss problems concerning: (1) the conclusion of a non-aggression agreement, (2) a simultaneous admission to the United Nations, (3) cross-recognition, (4) disarmament, and (5) the prevention of military clashes. President Rho Tae Woo proposed to the North in October 1989 that the two sides should sign a non-aggression treaty or no-use-of-force principle, set up institutions to discuss issues related to arms reduction with a view towards a peace settlement, reunification and mutual exchanges, and hold the Northeast Asian peace conference by six parties. South Korea's comprehensive proposal for CSBMs was presented in the Prime Ministerial talks in October 1990 to build political and military confidence between the two Koreas, as will be explained below.

**History of Arms Control Proposals Made by North Korea**

North Korea has made arms control proposals for extensive structural reduction. Pyongyang has repeatedly insisted upon U.S. force withdrawal from South Korea since the end of the Korean War. In January 1984 the North Korean side proposed tripartite talks between the North, the United States, and the South to discuss measures to reduce tension. In response to President Reagan's 1984 speech in the U.N., the North Korean Minister of Foreign Affairs stated that the North Korean side would consult and discuss the CBM raised by Ronald Reagan together with other peaceful issues in three-way talks. However, the American side declined since it favored the MAC, the forum which included China. In reaction to the UNC's proposal for notification of military exercises and invitation of observers, at a meeting of the MAC in Panmunjom on 29 July 1985, the North Korean delegate surprised the other side by proposing negotiations on a series of tension-reduction measures without the Joint Security Area by reducing arms and men. The American side promised to study the proposal thoroughly, but in a letter on 26 September it rejected the North Korean proposal saying that it would be disadvantageous to the UNC side because of the geographical configuration. On 6 December 1985, North Korea proposed at another
meeting of the MAC to stop large-scale military exercises completely and gradually to stop all other military exercises.

On 13 July 1987, the North Korean Foreign Ministry issued a statement urging once again the establishment of a nuclear-free zone on the Korean peninsula, which included: (1) complete pull-out of nuclear weapons from the Korean peninsula; (2) prohibition of any new delivery, storage, development, and transfer of nuclear weapons; (3) prohibition of military activities that could cause a nuclear warfare; and (4) prohibition of nuclear threats. On 23 July 1987, the North Korean State Administration Council issued a statement proposing that multilateral disarmament negotiations among North Korea, South Korea, and the United States be held in Geneva in March 1988, with the representatives of the Neutral Nations Supervisory Commission present as observers. Proposals include: (1) The troop personnel of North and South be reduced by three stages from 1988 through 1991; (2) By the beginning of 1992, each side maintain troop personnel less than 100,000; (3) The U.S. gradually withdraw its conventional forces and nuclear weapons stationed in South Korea; and (4) They establish a peace zone in the DMZ and let Neutral Nations Supervisory Forces be stationed in the DMZ. On 30 July 1987, North Korea announced through a bulletin of the Supreme Headquarters of the People's Army that it would discharge 100,000 soldiers from service during 1987.

Subsequently, North Korea proposed on 7 November 1988 in a statement in a combined meeting with the People's Central Committee, the Standing Committee of the Supreme People's Committee, and the State Administration Council that both sides should reduce their force level to 400,000 and the United States should withdraw ground forces and nuclear weapons to the Pusan-Chinhae area in the first year. Also, both sides should reduce force levels to 250,000 in the second year, ultimately reaching a level of 100,000 in the third year by the end of 1991. As summarized herein, the main tenets of North Korean proposals have been withdrawal of U.S. troops from the South, including conventional and nuclear forces and suspension of joint military exercises like Team Spirit. North Korean proposals for arms control were aptly summarized in the Prime Ministerial talks held on 5 September 1990.
Main features of the history of arms control proposals made by South and North Korea demonstrate that because there have been differences between the two Koreas regarding negotiation channels, there have never been any bilateral or tripartite meetings to discuss substantive issues on arms control. Regarding the negotiation agenda, there was a big gap that could not be bridged, so the two sides repeated their positions without taking the other's position into account. Not until the Prime Ministerial talks of September 1990 did the two sides start to raise the issue of arms control in a serious manner so as to draw the other side's attention with the most comprehensive proposals and to resolve the problem of increasing threat. Thus, we will summarize each side's proposals in the Prime Ministerial talks with regard to the three categories described above and analyze the reasoning behind the proposals of each side.\textsuperscript{106} Comparison of arms control proposals of the two Koreas will show common and different items in each category with tables below.

**CSBMs**

**Common Items:**

- Establishment of Hot Line
- Nonaggression Treaty or Declaration.

South Korea proposed establishing a hot line between the Ministers of National Defense to build confidence and prevent accidental clashes, whereas North Korea proposed a hot line between high military authorities to prevent accidental conflicts and subsequent escalation. While the South insists on signing a nonaggression treaty after agreeing on the CBMs, the North maintains that a nonaggression declaration is the first step to ease tensions between the two Koreas. North Korea also maintains the position that a non-aggression declaration should follow the signing of a peace treaty between Pyongyang and Washington.

\textsuperscript{106}For arms control proposals made by Prime Ministers of South and North Korea, see FBIS-EAS-90-172, September 6, 1990; and FBIS-EAS-90-202, October 18, 1990. These two documents will be used extensively for analysis on arms control proposals in this section. Full text of proposals made by the two Koreas is in App. D.
Opposing Items:

As shown in Table 6.1, South Korea basically proposed CBMs that have been agreed to in Europe. Notification threshold of size and terms is more restricted than that accepted in the Stockholm Conference on the CSBMs in which CSCE nations agreed on 42 days for in-advance notification of military maneuvers and movements involving 13,000 military personnel and more. Mutual disclosure and exchanges of military information will seem to require the two sides to submit lists of information on military manpower, weapons, defense spending, etc. This information clause is similar to the Stockholm Document in that it required production of a military calendar regarding notifiable events, but it goes even one step further to require more information on manpower and equipment than were required in the Conventional Forces in Europe (CFE) process. South Korea expects that mutual visits and exchanges of military manpower will enhance mutual understanding on military doctrine and posture of the two sides, thus making contributions to build confidence of the North. South Korea recognizes that it has taken some twenty years for European countries to agree on meaningful CSBMs since such talks started. Thus, it estimates that it would take a long time to reach tangible progress in arms control talks. In the meantime,

<table>
<thead>
<tr>
<th>SOUTH KOREA</th>
<th>NORTH KOREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual visits and exchanges of military personnel</td>
<td>Ban of military exercises of division size and larger</td>
</tr>
<tr>
<td>Mutual disclosure and exchanges of military information</td>
<td>Notification in advance of military exercises of less than division size</td>
</tr>
<tr>
<td>Advance notification of the movement and maneuvers of military units of brigade or larger units no later than 45 days with invitation of observers</td>
<td></td>
</tr>
</tbody>
</table>

Source: App. D.
CSBMs would increase transparency in the military arena of both sides, relieving tensions and enemy images.

Surprisingly enough, North Korea proposed one item for confidence and security building between the two Koreas. North Korea recognizes the fact that the biggest barrier to unification is mutual mistrust. North Korean Prime Minister Hyong-Muk Yon stated:¹⁰⁷

The mistrust stems from each side's misconception and misjudgment that the other side has been alert for every possible political and military opportunity to swallow one side up. The North has mistrusted the South, because it is mistaken in assuming that the South, together with the U.S., has prepared a military invasion and has been waging an ideological warfare by transmitting liberal ideas. The South, on the other hand, has mistrusted the North by misconceiving a military and subversive threat from the latter.

North Korea bases her proposal for resolving mutual distrust on removal of political and military confrontation, which is regarded as the root cause of mutual distrust. It is certain that unification will resolve the issue of mutual distrust, but it is not explicitly stated in the North Korean proposal how the two sides can reach unification under the current situation of mutual confrontation. This reinforces South Korea's suspicion that the North is still maintaining its conventional approach of communizing the South after the United States has completed pull-out of her forces from the South.

North Korea explicitly says that multifaceted exchanges in economic, cultural, and social fields will contribute to promoting mutual understanding and national unity. These exchanges can, however, gain the desired outcome only after the present politico-military confrontation is resolved. Exchanges themselves cannot be carried out without a firm foundation. Though it is not clearly stated what a firm foundation means, the firm foundation may imply unification. To this end, South and North Korea should Koreanize political and military problems by completing withdrawal of U.S. conventional and nuclear forces from the South and suspending all joint military exercises including Team Spirit exercises. At a minimum, North Korea regards the

¹⁰⁷Text of Hyong-Muk Yon's keynote speech at the first session of the Prime Ministers' conference held on September 5, 1990 in Seoul, Korea.
suspension of Team Spirit as a step toward removing political and military confrontation.

Though Seoul did not specifically spell out the contents of a nonaggression treaty, North Korea proposed details of a nonaggression declaration on October 17, 1990. This includes major declaratory policies: (1) agreeing on non-use-of-force principle and peaceful settlement of inter-Korean issues, (2) maintaining the DMZ and the DML as stipulated in the Armistice Agreement, (3) suspending the arms race and reducing armed forces stage by stage in order to firmly guarantee the mutual promise on nonaggression, and (4) establishing direct telephone links between the military authorities of the two sides in order to prevent accidental arms conflict and its expansion.

However plausible Pyongyang's nonaggression declaration may be, it claimed that the signing of a peace treaty with the United States and the suspension of Team Spirit exercises should precede signing of a nonaggression declaration. But for preconditions, Seoul would have no reason to refuse signing the nonaggression declaration, though it wants more binding agreements such as a nonaggression treaty.

Constraint Measures

Common items:

- Demilitarization of the DMZ and its use for peaceful purposes

Though North Korea added details to this proposal, the two Koreas agree on this item: to maintain the status quo and furthermore to improve mutual relations by setting a buffer zone. This provision was already in the Armistice Agreement but not implemented because of mutual escalatory violations. A new proposal is a step forward from the Armistice Agreement in that such demilitarization would not only ensure the military status quo ante, but also create a peaceful zone for mutual exchanges of contacts to be used for peaceful and civilian purposes. The North Korean proposal adds limitation of provocative military activities along the entire DMZ which would inhibit military exercises even in the vicinity of the DMZ.

For successful implementation of this item, the two sides would be required to release any information of their violation of the Armistice Agreement pertaining to the maintenance of the DMZ, e.g., forward
deployment of forces beyond the DMZ, location of underground tunnels below the DMZ and mining areas, etc.

Opposing items:
As shown in Table 6.2, South Korea did not propose concrete items pertaining to constraint measures, while North Korea made a lot of proposals regarding constraint measures. South Korea seems to believe that CSBMs will be sufficient to build confidence and remove the mutual misconception and misunderstanding that will ultimately contribute to prevention of surprise and all-out attack. As long as the two Koreas can agree on transforming the offensive military structure into a defensive one, Seoul tends to think that no constraint measures may be needed. However, what is required in changing an offensive military structure into a defensive one is not spelled out.

Table 6.2

<table>
<thead>
<tr>
<th>SOUTH KOREA</th>
<th>NORTH KOREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transform offensive military structure into a defensive one</td>
<td>Restriction of military exercises</td>
</tr>
<tr>
<td></td>
<td>Prohibition of combined exercises with foreign forces and exercises of foreign troops in the territories</td>
</tr>
<tr>
<td></td>
<td>Ban of military exercises of division size and larger</td>
</tr>
<tr>
<td></td>
<td>Suspension of exercises near the DMZ</td>
</tr>
</tbody>
</table>

Source: App. D.

On the contrary, North Korea proposed that the two sides prohibit any military exercises involving either foreign troops in Korean territories or troop numbers greater than a division. It is obvious what North Korea intends to accomplish through this proposal. North Korea’s intention is to see the ROK-U.S. alliance suspended. North Korean Prime Minister Hyong-Muk Yon clearly stated in his speech on the Prime Ministerial talks on September 5, 1990:
We consider Team Spirit not only as the most urgent issue for relieving military tensions but also as a critical problem affecting the fate of these South-North talks. We would like to propose either to terminate the exercise for good or to suspend it for at least two or three years. (Italics added)

Pyongyang's linkage of Team Spirit to the South-North dialogue is not new. Though North Korea may appear to be testing South Korea's political will to advance the talks for easing tensions through the fate of Team Spirit, the North's explicit objective is to limit South Korea's readiness and combat effectiveness, which have been based fundamentally on combined operation and joint command and control during the past four decades. Since South Korea has never conducted massive training at more than the corps level independently, this constraint measure is unlikely to be accepted by Seoul. Along the same line, a ban of military exercises of divisions and larger forces will undermine the independent operational capabilities of South Korean forces which have been trained by Team Spirit exercises. Considering the fact that military operation can be conducted at full strength in no less than the corps level, banning the military exercises in the division level will asymmetrically undermine South Korea's capability to effect war fighting.

For this reason, it is understandable why South Korea did not propose any concrete steps for constraint measures as means to promote arms control. South Korea does not want to be entrapped by the North in this category of arms control measures. However, this can be construed as a passive position, not a proactive position. It is significant to limit North Korea's offensive capabilities and posture as long as they maintain asymmetric military capabilities and offensive doctrine.

Structural Measures

Though the two sides appear to agree on achieving numerical equality in arms and men, there are substantial difference as to how they will reach the equality. As shown in Table 6.3, South Korea wants North Korea to reduce "excess forces" first and then the two sides to proceed with equal reduction that will be agreed upon at that point. North Korea wants to start arms reductions along the phased plan to reach the manpower level of 100,000 within a three- to four-year period.
Table 6.3
Proposals for Structural Reduction

<table>
<thead>
<tr>
<th>SOUTH KOREA</th>
<th>NORTH KOREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce offensive military weapons first by the North</td>
<td>Phased reduction of forces</td>
</tr>
<tr>
<td>Reduce North Korea's excess forces to the level of the South</td>
<td>I. Troop cuts to 300,000 in the first year</td>
</tr>
<tr>
<td></td>
<td>II. Troop cuts to 200,000 in the second year</td>
</tr>
<tr>
<td></td>
<td>III. Troop cuts to 100,000 in the third year</td>
</tr>
<tr>
<td>Progressively reduce forces by equal numbers</td>
<td>U.S. force withdrawal proportional to the above phases</td>
</tr>
<tr>
<td>Reduce the number of troops in accordance with reductions in their arms</td>
<td>Scale down military equipment in proportion to troop cuts</td>
</tr>
<tr>
<td>Reduce reserve and paramilitary troops concurrently</td>
<td>Disband civilian militia at the initial state</td>
</tr>
<tr>
<td>Verifications and monitoring of arms reductions</td>
<td>Notification and verification</td>
</tr>
<tr>
<td>- joint verification group</td>
<td>- notification of implementation of arms reduction</td>
</tr>
<tr>
<td>- permanent monitoring groups</td>
<td>- on-site verification</td>
</tr>
<tr>
<td>Keeping level of forces on each side needed by a unified state</td>
<td>Cessation of import and development of military equipment and technology</td>
</tr>
<tr>
<td></td>
<td>Set up a nuclear-free zone of the peninsula</td>
</tr>
</tbody>
</table>

Source: App. D.

South Korea's objective is to achieve numerical parity in arms and men with South Korea's current level of forces as a benchmark. North Korea should cut their forces that exceed the current South Korean forces. This will be translated approximately into a North Korean cut of some 400,000 military personnel, 2,000 tanks, 5,000 artillery, 500 APCs, and 180 tactical aircraft, if based on the data of the South Korean Ministry of National Defense as noted in Sec. IV. However, it is unlikely that North Korea will agree on such unilateral reductions.
Though the two sides could agree on reduction of some forces, it is unclear from what level they should start reducing. Information that both sides will release regarding military manpower and equipment may not be reliable. Data from IISS and SIPRI may also have problems. If they cannot rely on current data on each side's forces and weapons to reach an agreed-upon starting point, it may take a rather long time to negotiate force reduction. North Korea's proposal for reducing manpower apparently resembles the MBFR approach made in Europe from the end of the 1960s. Without reliable data, such negotiation might have the same unsuccessful result that happened in the MBFR.

North Korea ironically relies on the Armistice regime because it chose to operate with a free hand and ignore agreed-upon clauses. To guarantee peace during the arms reduction period, Pyongyang proposes that the neutral nations' supervisory troops may be deployed in the DMZ along the Demarcation Line. It also proposes that the two Koreas should create a North-South joint military committee, headed by chief-of-staff-level officers of the North and South to resolve bilateral disputes.

North Korea goes one step further to regulate the arms race in the post-arms control period by proposing that both sides suspend qualitative innovations of military equipment. It maintains that both sides discontinue introduction of new military technology and equipment and suspend import of foreign advanced military technology and equipment. This is a reflection of Pyongyang's strategic prediction that Seoul will be technologically superior within the foreseeable future due to its economic capabilities and U.S. provision of technology transfer, which is not comparable with Soviet provision of weapons and defense technology to the North. North Korea is anxious about the widening gap in economic capabilities, which will readily be converted into technological superiority in the defense sector. This is why North Korea included regulatory items for arms reduction, which seem to be similar to an item that was stipulated in the Armistice Agreement.

INSIGHTS FROM EUROPEAN ARMS CONTROL MEASURES

Most of the arms control proposals made by South Korea have been adopted from European conventional arms control without analytically investigating the relevance of those measures to specific Korean problems
and objectives. North Korea's arms control proposals are a mixture of the European style and North Korea’s traditional Communist-style proposals. Thus, investigating the rationale for those European measures will provide insights into Korean arms control policy planning. This section will also analyze European measures in terms of three concepts of arms control measures, as suggested in the beginning of this section.

Actually, in the European arms control process, the distinction between the perceptions of intentions and perceptions of capabilities led the development of arms control policy. The former were to be solved by operational arms control such as CBMs and CSBMs. The latter were to be resolved successfully after the former through the CFE process, although MBFR, predecessor of the CFE, resulted in failure. Constraint measures that are part of operational arms control were introduced in the CFE process, not in the talks for the next generation CSBMs.

There is sufficient reason why CSBMs (including CBMs) and structural reduction measures were discussed and resolved through separate channels. First, nuclear issues were discussed in direct U.S.-Soviet arms control talks, thus enabling conventional arms control talks to be held in different fora. Next, CBMs were not regarded as arms control measures by U.S. policymakers. Rather, measures that affect structure and size of military forces in Central Europe were meant to be genuine arms control measures by the United States. Thus, the agenda for structural reduction was discussed in the bloc-oriented forum like the MBFR and later the CFE. The background for CBMs and CSBMs is the antithesis to the MBFR forum. Within the framework of the CBMs and CSBMs, France and neutral and non-aligned states (NNAS) exerted strong pressures to include militarily significant clauses, because the two opposing blocs did not pay attention to the securities of those NNAS. Those NNAS wanted to include a security-relevant agenda in the CSCE, to which the United States and the Soviet Union agreed later, influenced both by prospects for valuable agreement in the negotiation and by NNAS.

The CSCE was primarily a political negotiation about the fate of post-war Europe. It had been originally proposed by the Soviet Union as a way of settling that fate, but has since been confined largely to dealing with such outstanding nonmilitary problems as human rights and contacts, economic
interchanges, and information flows. However, neutral and nonaligned states (NNAS) responded to their exclusion from the MBFR talks by including strong security components within the CSCE framework. Thus, the Helsinki Final Act included several rudimentary confidence-building measures. These were forerunners of operational arms control measures. In sum, success of CBMs and CSBMs is attributed to the existence of a multilateral political and legal framework that often transcends security interests of the East-West blocs. Through such a multilateral “regime” of security talks, not only NNAS but West Germany and France exerted European pressures for an agreement to help conceptualize the “from the Atlantic to the Urals” (ATTU) zone to regulate military activities agreed to at the Stockholm Conference.

**CBMs and CSBMs**

**Rationale for CBMs and CSBMs.** The aim of CBMs and CSBMs was to promote transparency with regard to military affairs in Europe with the expectation that reducing uncertainty and secrecy in military affairs would lessen the chances that war might come about as a result of misunderstanding and miscalculation.

Advocates for CBMs went further in their contention that increasing transparency and openness of military activities in Europe might even lessen fears that a surprise attack could occur or that military exercises could be used successfully for political intimidation. Increasing openness and predictability in the military arena would alter the payoffs to European states who used to value benefits generated from uncertainties and secrecy of military forces more than costs in maintaining capabilities to meet with all uncertainties.

Once nations control intentions for aggression by enabling others to predict, bureaucratic inertia to continue the arms race will be dampened. Thus, CBMs are conducive to reducing tensions or even reversing the present pace of the arms race. However, CBMs do not aim at a direct reduction in the competitive military efforts. They form elements, rather, in a framework for the indirect alleviation and reduction of the incentives for competition which derive from uncertainty and possible misunderstanding.
Along these lines, European nations designed CBMs, mainly prior notification of major military maneuvers and exchange of observers to those maneuvers, on a basis determined by the CSCE. Those earlier CBMs involve the communication of credible evidence of the absence of feared threat. The underlined assumption is that if multiple nations can observe the military maneuvers of one or many nations, the sum of that information will be a better indication of the intentions of those observed nations than information that any single nation collected through secret activities. Such informational exchanges among nations would contribute to having a correct judgment of the opposing side. This correct judgment would prevent excessive reaction to a presumed threat which would, in turn, control domestic factors supporting the arms race. In this respect, some European nations maintained that inviting observers was not a necessary condition for CBMs, because notification already showed lack of military intention to some degree.\(^{108}\)

However, earlier CBMs did not satisfy the security interests of all nations in the CSCE. Those CBMs, as summarized in Table 6.4, neither required mandatory invitation of observers from other nations, nor legally bound all nations to notify all relevant military activities. It was hoped that signatory nations would incur political damages if they failed to report notifiable events. These earlier measures, nevertheless, were noteworthy as precedents for the follow-on CBMs.

The limited success of the earlier CBMs also reflected compromises between U.S. and Soviet interests. The U.S. objectives were to include military issues in the CSCE process and increase the predictability and openness of military activities in Europe. The Soviet objectives were to obtain recognition for and maintenance of the status quo in Europe with respect to existing borders and military practices and to encourage greater transfer of economic and scientific benefits from Western Europe to Eastern Europe with a minimum of change on the part of the Soviet Union. The United States succeeded in including security-relevant items and human rights regulations in the CSCE process in exchange for recognizing the Soviet position of maintaining the status quo of a divided Europe and facilitating economic and cultural changes. The United States made concessions on the

issues of the period of pre-notification and the numerical threshold for the size of maneuver to be notified. The Soviet Union made a critical concession by agreeing to include CBMs in the CSCE agenda.

The general state of good U.S.-Soviet relations provided an important impetus and context for the adoption and successful implementation of such CBMs, including CBMs agreed on in the nuclear arena (e.g., the updated Hotline (1971), the Nuclear Accidents (1971) and Incidents-at-Sea agreements (1972), and the Agreement on Prevention of Nuclear War (1973)). However, the CSCE that produced the earlier CBMs survived the low tide of the U.S.-Soviet relations to ultimately produce more advanced CBMs (CSBM). The existence of agreed CBMs, though limited in scope and binding power, and an arms control regime where the CSCE nations regularly discussed and resolved conflicting security interests and exerted centripetal forces to converge interests of opposing blocs caused the CSCE to bring to fruition the CSBM in Stockholm. In the Stockholm Conference, compromise between the United States and the Soviet Union was made to ensure the U.S. objective of making CBMs more militarily significant and inhibit Soviet use of force for the purpose of political intimidation. Apparently, the Soviets’ extensive concession is ascribed to Gorbachev’s new thinking and new policy but the Stockholm Conference made a major breakthrough in the CBMs area, thus called CSBM.

Specific Measures. CBMs from the Helsinki Final Act of 1975 and CSBM of the Stockholm Conference of 1986 are summarized in Table 6.4 to contrast differences between those two. The earlier CBMs stipulated notification and observation on a voluntary basis. Regarding the notification threshold, the general view was that a longer period of pre-notification provided better advance warning and made it difficult for a state to launch a

---


Ambassador Goodby holds that the role of the neutral and non-aligned participants defined the center of gravity of the Stockholm Conference, and Dr. Jankowitsch maintains that the NNAS acted as centripetal forces to pull together two opposing blocs to make an agreed outcome possible. For Dr. Jankowitsch’s article, see R. B. Byers and Stephen F. Larrabee (eds.), op. cit., p. 90.
surprise attack under the guise of routine military maneuvers. The final compromise, however, was made in 21 days. NATO, out of recognition that 21 days would be adequate to launch a satellite to observe the pre-notified exercises, made concession from the original position of 60 days.\footnote{Marilee Fawn Lawrence, A Game Worth the Candle: The Confidence-and Security-Building Process in Europe--An Analysis of U.S. and Soviet Negotiation Strategy, Ph.D. Dissertation of the RAND Graduate School, June 1986, p. 35. Requotted from V. Y. Ghebali, “Considerations sur Certains Aspects Militaries de la Detente: Les Measures de Confiance d'Helsinki,” Defense National, Vol. 33, April 1977, pp. 21-35.}

Table 6.4
COMPARISON OF HELSINKI CBMs OF 1975 AND STOCKHOLM CSBMs OF 1986

<table>
<thead>
<tr>
<th>Zone of application</th>
<th>Helsinki</th>
<th>Stockholm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>European territory extending 250 km into the USSR and Turkey</td>
<td>The whole of Europe and adjoining sea and air space</td>
</tr>
<tr>
<td>Degree of commitment</td>
<td>On a voluntary basis</td>
<td>Politically binding</td>
</tr>
<tr>
<td>Activities covered</td>
<td>Confining to maneuvers</td>
<td>Agreed military exercises, movements, and transfer of troops from outside the zone</td>
</tr>
<tr>
<td>Notification threshold</td>
<td>25,000 troops</td>
<td>Ground: 13,000 troops or 300 tanks</td>
</tr>
<tr>
<td>Prior notification</td>
<td>At least 21 days</td>
<td>At least 42 days, with annual calendar and 2-year forecast</td>
</tr>
<tr>
<td>Observation threshold</td>
<td>None specified</td>
<td>Ground forces: 17,000 Amphibious: 5,000</td>
</tr>
<tr>
<td>Observation regime</td>
<td>Rudimentary</td>
<td>Detailed specification: host country and observers</td>
</tr>
<tr>
<td>Constraint measures</td>
<td>None</td>
<td>Time constraints: activities with 40,000 and &gt;70,000 not permitted unless they are notified 1 and 2 years in advance</td>
</tr>
<tr>
<td>Verification</td>
<td>None</td>
<td>Each state must accept up to 3 on-site inspections per year from the air, ground</td>
</tr>
</tbody>
</table>


Regarding the notification channels, the United States wanted to increase military contacts by allowing military exchanges but the Soviets...
wanted to go through political channels. The agreed pattern was either a type of press release or use of diplomatic channels instead of military channels. To exchange observers, NATO states and NNA states requested the mandatory invitation of observers from all CSCE states to every notifiable maneuver, while the Soviets limited the measure to voluntary invitation of observers from neighboring states only. The final agreement allowed invitation on a voluntary basis only in a spirit of reciprocity. The zone of application was agreed to cover 250 km into the western Soviet Union, while the NATO position was to include all of the European portion of the Soviet Union up to 700 km. If signatories were to violate the agreement, they would pay only the political price of lost international prestige.

The later CSBMAs agreed upon in the Stockholm Conference grew out of the attempt to solve problems of the earlier CBMs and other security problems. They were aimed at making new measures “more militarily significant, binding, and verifiable” than their predecessors. Above all, the new CSBMAs consisted of mandatory measures. As shown in Table 6.4, the invitation of observation teams and notification were mandatory and no longer subject to a participating nation’s discretionary choice. Notification threshold was lowered to cover military movements and maneuvers of more than 13,000 troops or 300 main battle tanks if organized into a divisional structure of at least two brigades/regiments, and an amphibious landing or parachute drop of at least 3,000 troops. Such activities, when carried out without advance notice to the troops involved (i.e., alerts), were notifiable at commencement of the activity (vs. 42 days in advance). For this, NATO’s original positions were accepted by the Soviet Union.

A provision for observation of certain military activities requires the invitation of observers from all other participating states to all notifiable activities and alerts lasting longer than 72 hours. Nations were required to invite observers from all other states to all prenotified activities and to certain alerts. This was also NATO’s gain in the negotiation.

In the area of compliance and verification, a major breakthrough occurred. All CSCE participants agreed on the provisions stipulating that: (1) there be three on-site inspectors per year of any participating state by air, ground, or both, with the state being inspected in effect supplying any transport and communications required; and (2) the number and extent of
restricted areas be as limited as possible, and consequently, those areas would not be used to prevent inspection of notifiable military activities. Notable among these provisions was one not to interfere with other states’ “National Technical Means” (e.g., photoreconnaissance satellites) for monitoring compliance with the provisions of an agreement and to allow each to send observers to the other on a limited basis to observe activities that seemed not to be in compliance with negotiated agreements. However, inspected states are supposed to provide transportation and communications equipment required by inspecting states who were to agree on modalities of inspection. This left room for the inspected states to exert a veto over the inspection teams.

NATO’s position on exchange of military information, on a yearly basis, covering the structure of ground and air forces in all of Europe did not gain support from the Soviet bloc. This was to come later with the bold Soviet offers made in the CFE negotiations. On the other hand, the Soviet proposal for imposing a ceiling of 40,000 men on military exercises did not get consent from NATO nations. Nevertheless, there was agreement on an annual calendar to be provided by 15 November of each year forecasting activities notifiable in the following year.

Figure 6.1 demonstrates how nations have complied with notification clauses since the Helsinki Final Act. The number of notifications increased fourfold in the post-CSBM period compared with the previous period. It clearly shows that the accords of the Stockholm Document are more strict and binding relative to earlier CBMs. Lowering the notification threshold and expanding the scope of military activities also contributed to the substantial increase of notified military activities. One interesting observation is that Warsaw Pact nations did not notify as many times as NATO nations. This was so partly because they did not conduct as many exercises as NATO nations, partly because Communist nations do not comply with agreed measures as strictly as NATO nations. In 1989, the number of notified military activities declined by more than 30 percent compared with those of the previous year. This resulted from revolutionary changes in Eastern Europe and the Soviet Union which made structural reductions possible. At any rate, cumulative effects of mutual notifications and inviting on-site inspection teams made a significant
contribution to making military affairs in Europe more predictable and transparent.

SOURCE: SIPRI Yearbook, Armament and Disarmament, from 1975-1990

Fig. 6.1--Number of Notifications of Military Maneuvers and Movements in Europe

Besides notifications, on-site inspections (OSIs) of military activities were conducted after 1986. The number of OSIs reached 5 times in 1987 and 13 times in 1988. NATO nations provided advanced forecasts for military activities with more than 40,000 troops: 7 times in 1987, 5 times in 1988, and 4 times in 1989. On the other hand, Warsaw Pact nations provided one notification in 1987 and they did not report anything thereafter. This could imply that Warsaw Treaty Organization (WTO) nations did not conduct any exercises involving more than 40,000 troops since 1988.
Constraint Measures

Rationale for Constraint Measures. These measures were to set limits or “constraints” on conventional military forces that were much tighter and more direct than CSBs. Designers of these measures attempted to make the breaking of agreements incur more costs in terms of money and time. If nations were to break out of CSBMs, they could do so in very short order. If nations were to break out of constraint measures, it could take more time and cost more.

These measures are designed to set limits on how the forces could be used without reducing them. If exercises above a certain threshold were a problem, then exercises at those levels would be prohibited. If high readiness levels among units were the issue, then constraint measures would define and prohibit unacceptable levels. If the problem involved limiting the deployment of particular forces in certain areas, so called “keep-out” zones, then these could be subjected to a ban on deployments there.

It was expected by arms control policy planners that certain types of constraints (e.g., strict limits on the movement of forces outside of their garrisons) might provide some substitute for force reductions. If these constraints are combined with effective verification measures, such as the small army of inspectors that NATO planned to have visiting Warsaw Pact military units at short notice, with no right of refusal, they could add significantly to the warning time available in advance of a conflict.

Those measures were also regarded as necessary to asymmetrically affect operational capabilities of the attacker more than the defender. This aspect is striking in Paul Davis’ work, which was extensively used to enhance the defender’s prospects by reducing the threats of strategic and operational surprises by way of (1) making the process of preparation for war lengthy and observable, and (2) prohibiting many of the important elements of those preparations so that if the preparations occurred and were observed, there would be strong pressures on political leaders to heed them.112 According to Davis, constraint measures would be used to increase complexity and duration of final attack preparations by increasing deployment distances and prohibiting elimination of important current choke points in lines of

---

communications (LOC). These goals could be complemented by increasing exchanges of data and observation of exercises that were stipulated in the CSBMs.

Constraints of this type were proposed in the context of negotiations on CFE, not in the follow-on CSBM talks. To accompany the force reductions that it was advocating in CFE negotiations, NATO put forward a package of proposals that included measures for information exchange, stabilization, and verification. For example, the NATO package included a requirement that call-ups of 40,000 or more reservists within the CFE treaty area would be reported to all parties 42 days in advance and be inspected by all parties at virtually any time. The package contained provisions for placing various types of military equipment (e.g., tanks, artillery, armored personnel carriers, and bridging equipment) in monitored storage sites and for limiting the amount of such equipment that could be removed from storage at any given time. It also barred signatories to the treaty from conducting military exercises in excess of 40,000 troops or 800 main battle tanks more than once every two years. In addition, NATO proposed notification of such exercises a year in advance, as well as notification 42 days in advance, of any movement of equipment that exceeded specified amounts (600 tanks, 400 artillery pieces, 1200 armored personnel carriers within 14 days) or that came out of the storage sites.\textsuperscript{113}

In sum, constraint measures are useful for stabilization purposes and may be easier to negotiate than force reductions, because they are less unpopular than reductions with force commanders. Once agreed to, they also have an indispensable multiplier effect for force reductions. Nevertheless, there are limitations. Constraints are not a substitute for force reductions; they neither reduce forces nor combat capacity.

**Specific Measures.** Constraint measures have three basic components:\textsuperscript{114} the object or activity regulated (for example, tanks, or artillery and its ammunition, or divisional exercises); a quantitative limit on


the deployment or activity of the regulated military units (for example, zero tanks, ten rounds withdrawn per storage site per day, two field training exercises per year); and the zone where the prohibition or limitation occurs (for example, within 100 km of any border).

Among those measures, constraint provisions that call for placing on the calendar, two years in advance, any notifiable activity in excess of 75,000 troops and of 40,000 troops, with exceptions implied for the latter but not the former, were agreed upon at the Stockholm Conference of 1986. The final CFE treaty focused on post-treaty locations of military forces defined in terms of their equipment inventories, totally disregarding activity-oriented constraint measures.

From the European experience of constraint measures, we can reach the tentative conclusion that constraint measures are hard to obtain by agreement after large-scale reductions have been made. Countries may seem to prefer military flexibility on the low-force level rather than to be limited in the use of remaining forces. Also, declining threat perceptions in Europe may work against agreement on constraint measures.

**Structural Arms Control Measures**

**Rationale for Structural Reduction Measures.** The goal of structural arms control is to reduce the number of asymmetric military forces continually in order to strengthen stability and security in Europe. Military instability results from the existence of the practical possibility of one side mounting a surprise attack against the other. The likelihood of invasion is ultimately determined by the available military capabilities at a political leader's disposal. Unless the greater military capabilities of one side are reduced, the perceived threat increases with both sides involved in the arms race.

The reduction of men and arms started in the MBFR process throughout the 1970s and 1980s until the CFE process replaced the MBFR process. In the beginning of MBFR, U.S. and Soviet objectives of preventing

---

115 The Final Document of the 1989 Vienna Meeting declares, *inter alia*, that the aim of these negotiations is the "strengthening of stability and security" on the European continent by way of achieving three intermediate objectives: (1) establishing a stable and secure balance at a lower force level; (2) eliminating asymmetries of the forces; and (3) eliminating the possibility of launching a surprise attack and offensive operations on a large scale.
U.S. force reductions in Central Europe seemed to converge.\textsuperscript{116} Their objectives diverged later with respect to how to reach mutually balanced force levels by setting common ceilings on active duty military manpower. This was because the common ceiling was too difficult to verify and too easily circumvented. However, MBFR's common ceilings on men and equal percentage reductions approach stalled and did not produce any reduction of force levels in Europe because they could not agree on data on which they could base their reduction agreements.

The CFE talks started against the background of success in the CSBMs and failure in MBFR. Soviet leaders wanted to cut their own forces for economic reasons. To seize the opportunity firmly, President Bush succeeded in mobilizing the NATO governments to react rapidly to what became a continuing stream of Warsaw Pact concessionary moves.\textsuperscript{117} The CFE talks took on a different character from the cautious tactical maneuvering which had marked the initial stages of most earlier East-West arms control negotiations: SALT, START, and even INF, not to mention MBFR talks. In December 1988, General Secretary Mikhail Gorbachev proved the seriousness of Soviet intentions to make CFE a success by announcing a large unilateral withdrawal of Soviet forces from Eastern Europe. In January 1989, Warsaw Pact and NATO negotiators agreed on a mandate or terms of reference for the new talks based on Western proposals. The Pact also agreed to leave to separate talks the thorny issue of reducing tactical nuclear weapons. Also in January 1989, the Warsaw Pact for the first time published data on its forces, data confirming NATO claims of large numerical superiorities in Warsaw Pact armaments, especially major ground force armaments like tanks, artillery, and armored troop carriers. In March 1989, Eduard Shevardnadze accepted the conceptual basis of the Western reduction approach, to reduce selected armaments of the numerically stronger side to a new equal level.


below the current holdings of the weaker. He agreed to include tanks, artillery, and armored troop carriers under this reduction approach, although he argued for reduction of combat aircraft, armed helicopters, and military personnel. Also, in May 1989, President Bush in a surprise move proposed mutual reduction of combat aircraft, armed helicopters, and U.S. and Soviet military personnel, moving toward meeting Soviet demands in this area.

Such rapid moves toward compromise created a momentum for structural arms reductions. The primary military consequences of these massive Pact cuts will be to eliminate the basis for NATO's persistent nightmare of a sudden Pact armored attack cutting through to the Rhine and the English channel. Given minimum capacity of NATO to react in time, this new security system should ensure that any short-preparation Soviet attack on Western Europe would fail. Another aspect is the rapidly changing European alliances and structure where the United States and the Soviet Union have the same incentives to manage their relationship with their allies in a predictable way. On the basis of mutual judgment that orderly negotiated reductions are superior to a competitive process of unilateral force reductions in individual member nations driven by domestic political pressures, the United States and the Soviet Union made a quick step toward agreements. CFE agreements can also help to cope with potential negative consequences of political instability in Eastern Europe, because domestic instabilities in Eastern Europe might have triggered Soviet military intervention for political intimidation.

**Specific Measures.** On November 19, 1990, NATO and Warsaw Pact nations agreed to reach common ceilings on major weapons (e.g., 20,000 battle tanks, 30,000 armored combat vehicles, 20,000 pieces of artillery, 6,800 units of combat aircraft and 2,000 attack helicopters) in Europe from the Atlantic Ocean to the Ural Mountains.\(^{118}\) No single nation possesses more than approximately one-third of the conventional armaments and equipment limited by the Treaty.

To verify compliance with the provisions of the CFE treaty, all participating nations shall have the right to conduct and the obligation to accept on-site inspections with national or multinational technical means of verification at their disposal. This verification will be supplemented by aerial inspections by freely overflying the declared sites for inspection.

ALTERNATIVE ARMS CONTROL MEASURES FOR THE PENINSULA

As noted earlier, there are common items in the two Korea's arms control proposals. These are establishing a hot line, signing the nonaggression treaty or declaration, and organizing the joint military committee for CBMs. There is one common item in constraint measures, which is demilitarizing the DMZ and opening the DMZ for civilian uses.

Though these common items apparently could be agreed on by the two Koreas with ease, they might need some time because the two Koreas do not agree on the features of the Nonaggression Treaty and the Joint Military Committee. In fact, there are many preconditions to reach agreement on the proposals. South Korea currently is not willing to sign a Nonaggression Declaration or Treaty until North Korea agrees on CSBMs. As noted earlier, South Korea's strategy is to promote arms control gradually, starting from CSBMs and then to sign a nonaggression treaty and finally to reach reduction agreements. North Korea insists on suspension of Team Spirit exercises and signing a peace treaty with the United States as preconditions for having any substantive talks for arms control.

Alternative Confidence- and Security-Building Measures

South Korea proposed three main items regarding the CSBMs: (1) mutual visits and exchanges of military personnel, (2) mutual disclosure and exchanges of military information, and (3) in-advance notification of the movement and maneuvers of military units of brigade or larger units no later than 45 days, with invitation to observers.

Can South Korea accomplish her arms control objectives of building confidence and trust, lessening misunderstanding and miscalculation, preventing surprise attack possibilities, and promoting arms reductions with those proposed CSBMs?

To predict the consequences of those measures appropriately, it is necessary to apply those measures to the history of South-North relations
and to the characteristics of the threats the two sides are posing against each other, as noted in Sec. III. According to South Korea's expectation, CSBMs would increase transparency in the military arena in the long run, thus contributing to removing misperceptions of military threats, which will, in turn, make the two sides feel less impelled toward an arms race. Furthermore, exchanges of military information and mutual observation of military exercises will increase mutual understanding of defense policies and doctrines, thus helping to ease tensions between the two sides. Seoul may hope this incremental opening of North Korean society would gradually undermine North Korean authoritarian society, thus fostering irreversible changes in the North. North Korea seems to be more concerned about this last point.

However, there are many impediments to reaching those desired outcomes through the CSBMs. Pyongyang has simply rejected Seoul's invitation to observe Team Spirit exercises in the past. In addition, the political and military systems of South and North Korea prefer secrecy regarding military affairs, though to a differing degree. This is also one of the most striking differences between South Korea and the NATO nations. There are problems in applying European CSBMs to the Korean peninsula because of the absence of an arms control regime. Since South and North Korea do not have any direct relationship yet, the general state of the bilateral relationship is too immature to expect agreements on CSBMs. There is no CSCE equivalent political and diplomatic framework between the two Koreas, and no arms control regime where the two Koreas and the United States (possibly including other nations--China or the Soviet Union) can talk regularly and directly. Furthermore, there are no intermediaries to facilitate cooperation between the two Koreas, like the roles played by the NNAS and other European nations in facilitating compromise between the two opposing blocs.

Other than impediments, there are inherent limitations in the CSBMs to resolve security problems in Korea. Those limitations are striking if seen in the light of the Korean War history and characteristics of the Korean theater. Because of the Korean War, a threat, though it may be less formidable, is perceived as real and serious, until the two sides have parity and robust stability. This is different from the European experience. No
nuclear parity exists in the peninsula to induce the two Koreas to come to the negotiation table for conventional stability out of fear of mutual destruction. CSBMs may have worked out in the European continent where there was no war between the United States and the Soviet Union. Since there is no strategic depth in the peninsula, forward defense is the utmost significant factor for South Korea in planning defense policy and arms control policy. Ultimately in Europe, Eastern and Western Europe could be a strategic buffer zone for the United States and the Soviet Union alike. While NATO could retreat tens of kilometers to avoid collapse of a coherent defense in case of a Pact surprise attack, so as to restore the pre-war MDL later, it would be particularly difficult for Seoul to recover. Once occupied by Pyongyang's surprise attack, the fall of Seoul could inflict tremendous psychological damage to the South Koreans. Thus, confidence building cannot give South Koreans a complete sense of confidence about the North.

Moreover, South Korea has never developed an independent military doctrine which envisions the possible withdrawal of U.S. troops. Notification of brigade size exercises and allowing observing teams to such notified exercises may make South Korea's doctrine vulnerable to North Korea even before South Korea could develop its own defense strategy. Also, CSBMs would not prevent a false sense of security in the South. Several mutual visits and limited exchanges of information could happen without altering North Korea's revolutionary strategy. How can Seoul accept this situation with likely domestic instability that may arise from anti-Americanism agitated by Pyongyang and by opposition groups, if the U.S. troops are still stationed in the South? Besides, how can Seoul detect Pyongyang's disguised standing start attack under the cover of prenotified events in a situation where North Korea deploys 60 to 65 percent of their troops along the DMZ?

Alternative CSBMs that South Korea should pursue in the arms control talks have to deal with those problems noted above. Thus, these CSBMs have to be stricter than CSBMs taken in the Stockholm Conference. Nevertheless, they should not adversely affect South Korea's ability to conduct independent military exercises nor interfere with the smooth transition of operational authority over forces in the South to South Korea. Thus, the threshold of military maneuver and movements for the two Koreas should be above that provided for the CSBMs of the Stockholm Document. While the notification
threshold of the Stockholm Document of 1986 for ground forces is 13,000 troops and 300 tanks, that of the Korean arms control agreements should be higher. South Korea should be allowed to conduct independent military exercises on a divisional level without interference from North Koreans. Thus, a suggested notification level will be approximately twice that of the European notification threshold. In a similar vein, freedom for observation teams should be allowed not to repeat the failure of the Armistice Agreement. Suggested alternative CSBMs include:

- Mandatory notification of military maneuvers and movements of 26,000 troops and 600 tanks at least 45 days in advance.
- South and North Korea must accept on-site inspections from the other side to inspect military maneuvers and movements with 26,000 troops and 600 tanks by air, ground, or both.
- Inspection teams should be given freedom of movement and inspection with their own equipment within the designated inspection sites.
- South and North Korea must stop military activities involving more than 50,000 troops, unless they are notified two years in advance.

**Constraint Measures**

A common item for constraint measures is demilitarization of the DMZ and opening it for civilian uses. If this is agreed, it will provide a green light for the prospects of arms control. However, this in not an entirely new idea. The Armistice Agreement stipulated demilitarization of the DMZ, but North Korea first violated it and installed military facilities and heavily mined the area. South Korea followed suit. Actual demilitarization means a return to the conditions provided for in the Armistice Agreement itself, plus opening the DMZ for civilian use. Unless this measure is accompanied by other strong arms control measures, it may jeopardize the stability of the peninsula. If North Korea did not change its forward-based posture and intention to use military forces, demilitarization of the DMZ would provide

---

119 Such suggested threshold matches the level of the Air-Land Battle doctrine whose emphasis is laid on the exercises on the division level. See U.S. Department of the Army, *FM 100-5 Operations*, May 1986.
safe avenues for attack with rapid advances. In this light, other constraint measures should be considered as a complement or independently.

South Korea did not propose any serious constraint measures, while North Korea listed a few measures. North Korea's proposals could adversely affect South Korea's combat readiness and effectiveness, if they were adopted. Representative North Korean proposals are: (1) prohibition of combined exercises with foreign forces and exercises of foreign troops in the territories, and (2) ban of military exercises of division size and larger. These measures are certainly intended to reduce the readiness and effectiveness of South Korean forces.

Can South Korea achieve its arms control objectives as noted in Sec.V with constraint measures? To predict the consequences of constraint measures, it is necessary to apply them to the Korean security problems. If there could be constraint measures that would affect North Korea more adversely than South Korea, these measures would be desirable to propose. In the European example of conventional arms control, a variety of constraint measures were tried but few were adopted. If these measures are to be used to reduce the likelihood of North Korea's strategic and operational surprise, those measures will work in favor of South Korean security and stability, not to mention preventing possibilities of surprise attack. These will take care of asymmetric strategic depth between Pyongyang and Seoul and the problem of the unstable balance. If North Korean forces withdrew a greater distance from the DMZ than South Korean forces, South Korea could respond more rapidly to an attack in the DMZ. If North Korea could agree on withdrawing their forward-deployed forces farther northwards, then this would be construed as a clear sign of North Korea's intentions to ease tensions in the peninsula. Such measures taken together can help South Korea to achieve arms control objectives of building confidence, lessening misunderstanding and miscalculation, preventing surprise attack possibilities, and promoting arms reduction.

There are, of course, impediments to reaching a predicted outcome by constraint measures. North Korea will not agree on any constraint measures unless South Korea and the United States reduce or suspend Team Spirit exercises. Unless U.S. strategic interests and defense strategies do change, the ROK-U.S. alliance and consequent combined defense strategy would not
be changed. However, only if South Korea is willing to make concessions on *Team Spirit* for constraint measures that would affect North Korea more than the South, it is not impossible to work out constraint measures. Alternative constraint measures for South Korea to propose would be:¹²⁰

- Setting non-deployment zones and stationing of guard posts in northern and southern band on each side: e.g., 40 km to the north of the DMZ and 20 km to the south of the DMZ.
- Scale-down of *Team Spirit* exercises: e.g., 50 percent reduction of *Team Spirit* or temporary suspension of *Team Spirit*.

**Structural Measures**

Though the two sides appear to agree on achieving a numerical equality in arms and men, there are substantial differences as to how they would reach the equality. South Korea proposed that North Korea should reduce excess forces first and then proceed to reduce forces according to agreed upon procedures. North Korea proposed to reduce military manpower and weapons proportional to manpower reduction. Can structural reduction resolve security problems in the peninsula to accomplish arms control objectives of South Korea?

To predict the consequences of reduction measures, it is important to apply these measures to the Korean situation. If North Korea were to agree on asymmetric reduction of their arms and men, South Korea could achieve better results than those to be achieved by CSBMs and constraint measures. If they could agree on reducing forces to ensure balance at a lower force level, then this would resolve the problem of military instability and influence both sides to decrease defense budgets.

There are impediments to these measures. South Korea has not reached parity with the North in terms of military capabilities. Without North Korea's substantial reduction of forces, it is unlikely for the South to agree on those measures. South Korea would not agree on codifying an

¹²⁰Other constraint measures that would affect the attacking side more adversely than the defending side are: (1) Limitation on call-ups of reservists up to 30,000; (2) Suspension of maneuver and concentration larger than 50,000; and (3) Notification of movements of equipment exceeding specified amounts (e.g., 600 tanks, 400 artillery pieces, and 1200 armored personnel carriers within 14 days).
unfavorable balance. The U.S. forces would not be withdrawn without major policy changes. North Korea is limited in influencing the South unless she shows a clear interest in unilateral reduction first, as the Soviet Union did in the CFE process. Lack of military information would constitute a major impediment to progress in arms reduction. Alternative arms reduction measures would be:

- North Korea’s reduction of excess forward-deployed forces (weapons)
- U.S. troop withdrawal from the South
- South Korea’s force reduction

SUMMARY

The fact that CSBMs and structural reductions were discussed and pursued along distinctively different channels of negotiation in Europe sheds light on how difficult it may be for the two Koreas to separate talks for operational arms control from structural arms control. The direct partners in Korean arms control are two Koreas and the United States and there exist no intermediaries to pull the opposing sides to the middle ground. Furthermore, to separate nuclear issues from South-North arms control talks is also an impossible task. Instead, the two Koreas will have to pursue two categories of arms control in one forum. Operational and structural arms control are inseparable on the Korean peninsula.

Given this fact, there would be more advantages in negotiating CSBMs, constraint measures, and reduction measures in one channel. It can convert the nature of negotiation of a zero-sum game into a non-zero-sum game. Considering that South and North Korea put different weights on different measures, negotiating all kinds of measures in one forum expands the scope of negotiability and the chances for agreements. This will help the two Koreas depart from the traditional negotiating behavior used to negotiate a zero-sum game and move toward compromise. The sense that each party can get something from the negotiation would provide military hard-liners with incentives for negotiation, too. In a nutshell, this could even shorten the time to achieve progress in arms control talks.

Given that North Korea’s negotiating cards are, in the main, related to U.S. conventional forces and nuclear weapons in Korea and ROK-U.S. joint
military exercises (*Team Spirit*), South Korea and the United States will need to maintain a close consultation process so as not to make negotiated settlements do harm to objectives that the ROK-U.S. alliance has. Since South Korea's negotiating targets are North Korea's forward-deployed forces, its offensive doctrine and posture, and its numerical superiority, South Korea will have to attempt to resolve those issues directly by all means.

Accounting for the factors described above, alternative arms control measures could be summarized as follows:

- CSBMs: notification and on-site inspection measures
- Constraint measures: asymmetric non-deployment zone and scale-down of *Team Spirit* exercises
- Reduction measures: North Korea's reduction of forward-deployed forces and balanced reduction up to a stable balance on low-force levels.

In the next section, we will evaluate the effectiveness of those alternative arms control measures in light of the four criteria set forth in Sec. V.
VII. EVALUATION OF ALTERNATIVE MEASURES

INTRODUCTION

This section will evaluate the consequences of arms control measures suggested in Sec. VI by combining them in a way to formulate a negotiating agenda for arms control talks between the two Koreas. Four alternatives will be tested by applying major findings of the previous sections and using analytic simulation models that were employed for the threat assessment in Sec. IV. Alternative 1 is composed of CSBMs only. Alternative 2 is solely made of constraint measures. Alternative 3 is a combination of constraint measures and reduction measures. Alternative 4 is a combination of reduction measures. The specific contents of these alternatives are the following:

- Alternative 1: Confidence- and security-building measures only (notification and on-site inspections)
- Alternative 2: Establishment of asymmetric non-deployment zones (NDZ) between 40 km to the north of current DMZ and 20 km to the south of current DMZ
- Alternative 3: Scale-down of Team Spirit exercises and North Korea's reduction of forward-deployed forces\textsuperscript{121}
  - Case 1: 50 percent reduction of Team Spirit
  - Case 2: complete termination of Team Spirit
- Alternative 4: Reduction of the ROK-U.S. forces and reduction of North Korea's forces

\textsuperscript{121} Reduction of Team Spirit is only considered in terms of total number of troops involved in Team Spirit, not duration of Team Spirit. It is assumed that a 50 percent reduction of troops currently involved in Team Spirit would decrease the combat effectiveness of South Korean forces by 5 percent and a complete suspension of Team Spirit would decrease that of South Korean forces by 10 percent. For analytic purposes, a 25 percent decrease in the combat effectiveness of South Korean forces is tested in case of a complete suspension of Team Spirit. For a more accurate estimation of effects of changes in Team Spirit, it would need more comprehensive interviews of military commanders than that done by the author.
- Case 1: complete U.S. withdrawal with/without reinforcements and North Korean force reductions
- Case 2: North and South Korean force reductions (no U.S. withdrawal).

To evaluate the effectiveness of these four alternatives, the four criteria suggested in Sec. V will be used. Again, military stability will be measured by how much North Korea can penetrate into South Korean territory under different sets of assumptions specific to each alternative. Since the research objective of this study is to see the consequences of alternative arms control measures from the perspective of the South Korean government, simulations of potential South Korean attacks are not conducted particularly because South Korea does not have enough capabilities to initiate an attack. As shown in Sec. IV, however, the possibility of using Team Spirit as an initial attack, as North Korea has claimed, was analyzed to dispute the North Korean position as groundless. Explicit assumptions on scenarios will be made in the beginning of each alternative. Whether the two Koreas will develop legally binding agreements will be assessed based on their past practices and objectives discussed in earlier chapters. Whether those alternatives are negotiable will be tested comparing the objectives and proposals of the two sides. Lastly, the verifiability of these measures will be contrasted in light of the intrusion requirements imposed on both sides. This study will not address the availability of technical means to support verification or uncertainties regarding the impact of future events on prospects for negotiation.

ALTERNATIVE 1: CSBMS ONLY

CSBMs here include all declaratory measures and CSBM measures suggested in Sec. VI:

- Nonaggression treaty or declaration.
- Mandatory notification of military maneuvers and movements of 26,000 troops and 600 tanks at least 45 days in advance.
- 116 -

- South and North Korea must accept on-site inspections from the other side of military maneuvers and movements of 26,000 troops and 600 tanks by air, ground, or both.
- Inspection teams should be given freedom of movement and observation with their own equipment within the designated inspection sites.
- South and North Korea must stop military activities involving more than 50,000 troops, unless they are notified 2 years in advance.

Assumptions and Observations

South and North Korea will discuss only declaratory measures and CSBMs proposed by the South, as summarized above. Claims of violations of the agreed CSBMs will continually menace South-North relations, after these are agreed to. Furthermore, North Korea can undo the full effects of CSBMs in a matter of hours, if they wish. Thus, the CSBMs have clear limitations on maintaining the CSBM regime itself. They might be invalidated, as experienced in the case of the Armistice Agreement. If constraint and reduction measures are not followed, major sources of threat to the South remain unchanged. Significant among them are North Korea's forward-deployed forces and its intention to initiate a surprise attack at any time. Arms competition is expected to continue without major changes.

Evaluations

Military Stability.122 The CSBMs do not affect the asymmetric balance and offensive military doctrine and posture of North Korea. Factors that might cause North Korea to initiate a surprise attack remain largely unchanged. Thus, the CSBMs are fundamentally limited in redressing military instability. The possibility that North Korea may initiate a standing start attack in the guise of notified military maneuver and movement in a massive scale constitutes another cause of instability. The possibility of

122Military stability is quantified by the area gained or lost and specifically means no loss in territory for the defending side (here South Korea) in a simulated war in which the arms control policy measures have been assumed to be in place. The methodology described in Sec. III in concert with the COSMOKT model described in App. A is used to perform these calculations.
South Koreans' false sense of security and domestic instability noted in the previous section add to this instability.

The combat outcome based on these alternative measures shows little nominal effect and possible more losses than that of the base case, if the preparedness of South Korean forces is to be abated as a result of declining threat perceptions and rising false sense of security. Figure 7.1 shows the effects of the CSBMs on military stability. In this case, the possibility of a one-day surprise is assumed to remain. North Korea could penetrate into South Korea up to 60 km over all axes of attack within the first month. It is highly likely that Seoul will fall into the hands of the North within one month of battle. If Seoul gets a false sense of security, it would aggravate the problem, making North Korean penetrations more likely than in the base case. Thus, if CSBMs are not immediately followed by other reductions or constraint measures, military stability might be worsened by CSBMs, because of the possibility of a “false negative” warning.\textsuperscript{123}

\textsuperscript{123}It was maintained by Richard Darilek that CSBMs would not resolve problems that result from false negative warnings: the defending side mistakes the attacker's true attack for legitimate movements or maneuvers for its own defense or training. On the other hand, a false positive warning is associated with the defending side's overreaction to the other's military maneuvers in situations with political crisis. See Ben-Horin and Darilek, \textit{Building Confidence and Security in Europe}, p. 12.
Fig. 7.1--North Korea’s Average Penetration with a Surprise Attack

Legally Binding. Whether the two Koreas could agree on making these accords legally binding will depend on the willingness of the political leadership. North Korea’s traditional attitude toward agreed measures would provide insights on how they will respond to these measures. Because these measures can be undone within minutes or hours, North Korea may agree to them provided there were no effective sanctions against their violation. To ensure that the accords are legally binding, stipulations to provide freedom of movements to the inspection teams should be made.

Though mandates for the CSBM s are not possible, there is a certain utility in this approach even with politically binding agreements. Once agreement on even a limited number of CSBM s is reached, it can help promote institutionalized interaction mechanisms between the military establishments of the two Koreas, one which will work as a springboard for further negotiation. If they succeed in creating regimes, further progress will be built on the initial success for comprehensive confidence-building measures. This is important, when compared with the lack of an arms
control regime noted in Sec. IV. This will encourage the two Koreas to have a regular channel for talks on military affairs, which was not the case after the July Fourth Communiqué in 1972.

**Verifiability.** Whether or not one side violates the notification threshold of military movement and maneuver is hard to verify, especially when it is violated within a small margin. On-site inspection teams will constitute a big group representing all Koreans rather than the teams of the NNSC which turned out to be a failure as explained in Sec. IV. Inspections of every notified event will involve high costs. Circumvention of notification is hard to dispute without allowing ad-hoc inspections of the two sides.

**Negotiability.** As noted in Sec. VI, North Korea has no incentive to agree only to the CSBMs. If they could be linked to other measures such as constraint and reduction measures, North Korea might have incentives for agreeing on measures for confidence building. Chances of North Korean agreement to some CSBMs would improve if the U.S. would improve relations with Pyongyang, including the signing of a peace treaty. These declaratory measures alone could make a major breakthrough in South-North relations. However, such concession on the ROK-U.S. side is unlikely to happen.

If North Korea concludes that the benefits of having CSBMs exceed the benefits of keeping their military options open, chances of having CSBM agreements improve. This will be a possibility only when the North judges that political and economic benefits resulting from their open policy toward the external world will offset the losses caused by forgoing military options. Establishment of normal relations with Japan and the United States could alter North Korea's payoff structure. South Korea's provision of economic assistance to the North could also contribute.

South Korea's expectation that CSBMs would lead the two sides to sign reduction measures later on is not well founded. In Europe, the CSBMs were agreed ahead of the reduction measures (CFE), but there is no causal relationship proving that CSBMs brought about success in the CFE. Rather, the CFE process was accelerated by political changes in Eastern Europe and the Soviet Union. It is worthwhile to caution Koreans so that they will not be misled by the spurious relationship between CSBMs and reduction measures. South Korea may not be satisfied with negotiated outcomes that are only limited to CSBMs, if reduction measures are not followed in the near future.
CSBMs are likely to acknowledge the North Korean military superiority as a de facto balance. South Korea may have to develop strategies to prevent the adverse effects of CSBMs (i.e., steps to prevent a surprise attack), which would be done either by a U.S. provision of defense or by South Korea's continuous modernization with an effective offensive defense strategy. These efforts in South Korea may, in the short-run, fail to induce changes in North Korea's defense policy. Consequently, chances for agreement regarding the CSBMs may be low.

ALTERNATIVE 2: ESTABLISHMENT OF ASYMMETRIC NON-DEPLOYMENT ZONES (NDZ) OF 40 KM TO THE NORTH OF CURRENT MILITARY DEMARCATION LINE (MDL) AND 20 KM TO THE SOUTH OF MDL

Assumptions and Observations

The basic idea is to widen the DMZ in an asymmetric way by acknowledging the fact that Seoul is far closer to the MDL than Pyongyang. North Korea will agree to withdraw their forces 40 km to the north of the MDL at the same time that South Korea will withdraw forces 20 km south of the MDL. If one side crosses the non-deployment zone, it will be regarded as an attempt to invade the other side. For example, if North Korea is moving forces southward beyond this zone, South Korean observation posts will report this directly to command and control headquarters which, in turn, will send tactical aircraft to destroy North Korean forces that transgress the NDZ.

It is assumed that a war following the enactment of this policy would have the following characteristics. It will take one day for North Korean forces to arrive at the MDL, and they will not have the advantage of surprise because South Korean surveillance will know the points of concentration before the North Koreans' arrival at the MDL. South Korea will not have the advantage of a prepared defense, because they have to race to the MDL to engage North Korean forces there. In this alternative, the race toward the MDL is a critical issue and strategic warning and following reaction will affect the war outcome seriously.

The best case is that South Korean forces send troops the moment North Korean forces transgress into the zone and initiate air attacks on forward moving North Korean forces. The worst situation will be a South
Korean delay of one day in response to a North Korean violation. North Korea could arrive at the southern boundary of the NDZ, that is, 20 km to the south of the MDL and a war would start 20 km south in the South Korean territory. Since South Korea knows the points of North Korean concentration, it will be a war of attrition. Here the defending forces (South Korea), however, would have the benefit of defensive preparations on their own terrain.

Evaluations

**Military Stability.** This measure will improve military stability by enabling both sides to detect the other's violation of agreed measures. As shown in Fig. 7.2, the outcome of the best case will be for South Korea to succeed in preventing any North Korean penetration. The numbers on the category axis indicate axes of North Korean force movements. The outcome of the best case is on the category axis. Since South Korean air forces could attrite advancing North Korean forces in the upper area of the NDZ, the number of North Korean attacking forces would be less than that of currently deployed forces. Thus, this outcome is better than that of the base case in which South and North Korean forces engage in attrition warfare under the current military balance.

In the worst case, North Korea starts a war in the southern area of the NDZ below the MDL. North Korean forces would not advance beyond the southern boundary of the NDZ, because of South Korean prepared defense in this area. In this case, North Korea may advance 20 km into the South in all axes. Compared with a 40 km advance in the base case, the outcome of the worst case is not that different on average. However, it is unlikely that this worst case would happen because South Korea has plenty of time to respond to the advancing North Korean forces, at least, the moment that North Korea transgresses the MDL. Therefore, this alternative enhances military stability in the peninsula.
Fig. 7.2--Effects of Non-Deployment Zone (North Korea's Advance on D+30 Days)

Legally Binding. Certainly, this measure will require a substantial amount of political will to obtain an agreement. Once agreed to, it is easy to prove each side's willingness to keep this provision in effect. Mandates are easy to comply with. If reneging on the agreement is costly, this regime could be maintained for a long time. If North Korea still digs tunnels below the NDZ, however, it will undermine the effectiveness of this measure. However, this measure may have to exempt some force deployment to the NDZ for alert situations. This would require prior notification through the hotline to the other side immediately after a need for an alert occurs.

Verifiability. At the initial stage of this measure, the two sides have to check whether they will completely withdraw men and arms from the NDZ. The size of the initial inspection teams will be much larger than that required for other arms control measures. This constraint measure will require more intrusive and extensive verification provisions that provide the utmost in
timely warnings of violations. Stationing observation posts of one side in the other side's territory is hard to agree on, unless the two sides are truly willing to give up intentions to attack. As an alternative to the stationing of observation posts in the other's territory, building observation posts along the current MDL and allowing aerial inspections over the NDZ on a periodical basis could be useful.

However, a total absence of armed units and activities in the NDZ is much easier to verify than negotiated limits on the same items or events. Since the geographical area of application for the NDZ is much narrower than the entire peninsula, verification is simplified.

**Negotiability.** The two sides may be reluctant to agree on this measure. Military circles, especially, will not like this idea given the fact that the two sides fought entrenched warfare for two years between June 1951 and July 1953 just to prevent the other side from obtaining an inch of territory. However, expanding the idea of demilitarization of the DMZ to a wider zone may not be unreasonable to contemplate. This may be easier to achieve than the alternative of requesting North Korea's unilateral force reduction down to the level of the South. Mutuality of interests have already been shown in the common proposal for demilitarization of the DMZ.

Nevertheless, North Korea's agreement on an asymmetric NDZ would require a reciprocal concession on South Korea's part. Also, stationing one side's guard posts in the other side's territory is hard to negotiate. This may be one of the reasons why it has proved harder to agree on force reductions in Europe. However, this is a matter of sequence. Once the two sides agree on substantial amount of reductions, they might prefer to have greater flexibility to operate remaining forces under their own sovereignty and strategy. Once this constraint measure, however, was accepted, the two sides might not be as serious about reduction measures as they would otherwise be.

If North Korea could accept a South Korean proposal for North Korea's withdrawal of forward-deployed forces to 40–50 km north of the DMZ, South Korea could incorporate North Korea's position on the *Team Spirit* exercises in return. Because Seoul, the center of command and control and political and economic activities, is located some 50 km to the south of the DMZ, South Korea would be adversely affected on combat readiness and effectiveness as a result of suspending *Team Spirit*. South Korea could legitimately claim that
North Korea either reduce its excess forces or withdraw its forces beyond the asymmetric non-deployment zone.

**Related issues.** Without the NDZ, simple demilitarization of the DMZ may increase instability by leaving North Korean forward-deployed forces intact. This demilitarization would remove the mines and tank barriers that the South has built as prepared fortifications. If Pyongyang chooses to violate the demilitarization of the DMZ, it could do so in a matter of minutes. Thus, expanding the demilitarized zones to the NDZ could correct problems resulting from the demilitarization of the DMZ. Again, chances for agreement on this measure will depend on initial moves made on the part of each so as to anchor the other to the negotiation (e.g., mutual concessions in withdrawing troops from the front area and reduction of Team Spirit).

**ALTERNATIVE 3: SCALE-DOWN OF TEAM SPIRIT EXERCISES AND NORTH KOREA'S REDUCTION OF FORWARD-DEPLOYED FORCES**

**Assumptions**

Two cases will be tested to show how war outcomes are sensitive to the reduction of the *Team Spirit* exercises. The first case will be to cut the size of *Team Spirit* by half. Accordingly, the combat readiness and effectiveness of the ROK-U.S. combined forces, regular forces and reserve forces, is assumed to decrease by 5 percent. In this case, ED scores of South Korean and U.S. forces will be scaled down by 5 percent. The second case will be to terminate *Team Spirit* completely. In the second case, the combat readiness and effectiveness of the allied forces is assumed to be reduced by 10 percent. Though a 10 percent reduction of combat readiness is regarded as a best guess, a 25 percent reduction will be tested as a boundary case to show sensitivity of combat outcomes to the reduction of combat readiness.\footnote{There could be differing views on how the suspension of Team Spirit would affect the combat effectiveness of ROK-U.S. combined forces. Also, the combat effectiveness will not be a linear function of the number of troops involved in Team Spirit. Nevertheless, it is assumed that South Korean forces and U.S. forces currently stationed in South Korea will continue combined exercises and some kinds of South Korean exercises will be in place for ground forces. For the worst case scenario, a 25 percent reduction of the combat effectiveness is not totally unreasonable.} In the first case, ROK-U.S. joint military exercises will be conducted in a smaller scale than now, while South Korea will conduct independent exercises as a
substitute for *Team Spirit* on her own below the agreed threshold level in the second case. However, U.S. reinforcement capabilities are assumed to be unchanged in both cases. In addition, to identify how many North Korean forces should be cut down in an exchange for the reduction of the *Team Spirit*, sensitivity analyses will also be conducted.

This alternative measure starts from the recognition of the legitimacy of the security concerns of the two Koreas. It is assumed that North Korea is going to reduce its forward-deployed forces if South Korea agrees to scale down the size of *Team Spirit*. North Korea's force reduction will happen in the form of down-scraping of major offensive weapons (tanks, artillery and armored personnel carriers) in the front to prevent North Korea's violation of agreed measures.

**Evaluation**

**Military Stability.** Downscaling the size of *Team Spirit* will affect the combat readiness of South Korean forces. Figure 7.3 clearly presents how the war outcome is affected by the reduction of *Team Spirit*. Assuming that South Korean forces are 5 percent less effective in the first case, North Korea would advance into the South on average of 5 km more than the base case.

The estimated war outcome for a 5 percent decrease does not show any significant difference from the base case. The 10 percent decrease shows a significant difference in the predicted war outcome. If *Team Spirit* is to be suspended and the combat effectiveness of the ROK-U.S. combined forces is to decrease by 10 percent, North Korea could make penetrations into the South as much as 90 km within 30 days of battle. This estimated war outcome is 25–30 km more than in the base case. The upper curve is derived from the assumption that termination of *Team Spirit* may undercut the readiness and effectiveness of the ROK-U.S. forces by 25 percent. It is estimated that North Korea could penetrate 90 to 100 km more than the case of a 10 percent decrease. This represents an intolerable situation that could only be permitted with offsetting concession from North Korea.

---

125 Training reductions could also be interpreted as delaying reinforcements. Because of the short time examined in these cases, we have not included a delay component directly. However, there is a way to consider this effect in the model by allowing a change in the U.S. reinforcement schedule. See Apps. A and C.
Fig. 7.3--North Korea's Average Penetration Associated with Reduction of Team Spirit Exercises

To compensate for the loss in combat readiness on the South Korean side, North Korean forces should be decreased. In essence, our interpretation of force readiness is translated into quantity reductions in EDs. To identify the relationship between North Korea's reduction of forward-based forces and its degree of penetration into the South under a different level of combat readiness of South Korean forces, a substantial number of cases were examined. The results are given in Fig. 7.4. In the base case, the North can penetrate 60 km into the South within 30 days of battle over all the axes, as shown in the lowest curve. If North Korea cuts down 11 EDs from its forward-deployed forces, North Korea would not be able to make advances at all. At that point, forward-deployed forces of the two sides will reach equality. The curve represents the relationship between the level of North
Korean force reduction and the degree of South Korean combat readiness affected by the reduction or suspension of *Team Spirit*.

Two more curves are imposed on top of the curve for the base case. The middle curve shows how many kilometers North Korea can penetrate into the South under different levels of force reductions when South Korean combat readiness is decreased by 10 percent as a result of the suspension of *Team Spirit*. On average, the North can make 25–30 km more than the base case. Based on the simulation result, North Korea should cut down 3 to 4 EDs to compensate for South Korea's suspension of *Team Spirit* under the assumption that combat effectiveness of the South will be decreased by 10 percent.

Fig. 7.4--Relationship Between Reduction of North Korean Forces and Reduction of Combat Effectiveness of South Korean Forces
If Team Spirit is to be reduced by half and consequent effects on readiness are a 5 percent decrease, approximately 1 to 1.5 EDs should be cut down by the North. If the suspension of Team Spirit cuts down 25 percent of South Korean combat readiness, the North should cut down 7–8 EDs from its forward-deployed forces.

This measure can clearly improve military stability in the peninsula under the assumption that the North should cut its forces to compensate for the loss in South Korean combat readiness resulting from changes in Team Spirit. Besides, this measure would create a window of opportunity for other measures to follow.

Legally Binding. Scale-down of Team Spirit will require the ROK-U.S. alliance to adjust their combined defense strategy, while a complete suspension would need a complete change in operation and command of the security alliance. Consultation between the two allies should take place before reaching a decision on Team Spirit. Though it would be difficult to reach these decisions, South Korea and the United States could be bound by those agreements if they are agreed to, as shown in the case of the Armistice Agreement. The U.S. side waited for a long time to reverse its decision to comply with the Armistice Agreement. For North Korean forces to be drawn down in return for the reduction of Team Spirit, the North should agree on mandates for reductions. Provisions for reduction should be clearly stated to bind the North legally, because it might violate the provisions later as witnessed in the case of the Armistice Agreement.

Verifiability. For verification, the North should accept South Korean invitations for on-site inspections of reduced weapons to assure that the implementation of the agreed provisions is conducted as stipulated.

Negotiability. This measure was originally conceived in an attempt to make negotiation possible. North Korea’s immediate concern about Team Spirit was well considered and South Korea’s immediate concern about the asymmetric forces deployed in the front was well addressed. On the other hand, it may be difficult for South Korea and the United States to accept the North Korean proposal, because the Team Spirit exercise is a cornerstone of U.S. regional security policy, which is based on forward deployment and
coalition strategy. This factor is well observed in U.S. attitudes toward the CFE negotiations where the Soviet Union insisted upon U.S. reduction of joint military exercises but failed to get consent from the United States. The size of joint military exercises in Europe did not change even after the CSBMs were agreed on in Stockholm in 1986. South Korean defense circles may be reluctant to raise this issue without being assured of North Korea's commitment to change in its policy and attitude toward arms control and reduction.

In addition, it is not clear to what level North Korea will be requested to reduce their forces in return for changes in Team Spirit. Before the two sides agree on analytic results as to how Team Spirit affects the readiness of South Korean forces, it would be hard to reach the agreement on this alternative.

ALTERNATIVE 4: REDUCTION OF THE ROK-U.S. FORCES AND REDUCTION OF NORTH KOREAN FORCES

The final alternative will be tested regarding the effects of reductions of the ROK-U.S. forces on the one hand, and North Korean forces on the other, to show how the war outcome is sensitive to reduction measures of arms control. Two cases will be run in the following:

- Case 1: Complete U.S. withdrawal with/without reinforcements and North Korean force reduction
- Case 2: South and North Korean force reduction (no U.S. withdrawal)

Assumptions and Observations

Case 1 assumes that the United States will pull out ground and air forces stationed in South Korea (1 BD and some 100 tactical aircraft). U.S.

---

126 Some experts hold the view that joint military exercises should be continued or be stepped up to show a strong U.S. commitment to the defense of South Korea at a time when the United States explicitly stated that it is going to reduce forces from South Korea during the 1990s in a phased manner as noted in Sec. IV. See detailed discussion, Charles Wolf, Jr., et al., Korean and U.S. Forces and Responsibilities in the Changing Asian Security Environment: Executive Summary, RAND, R-4095-NA/USDP, 1991.
reinforcements in the event of a North Korean attack will be considered in two ways—with or without reinforcements. Under no U.S. reinforcements, South Korean forces by themselves should defend against North Korea. If U.S. reinforcements are to be made based on provisions of the alliance treaty, combined forces will fight a defensive war against a North Korean initial attack as observed in the Korean War. It is assumed that U.S. reinforcements would not be delayed, because ROK-U.S. joint military exercises are still in place. In this case, an appropriate level of reciprocal North Korean force reduction is estimated.

Case 2 assumes that U.S. forces still remain on South Korean soil, but South and North Korean forces will be reduced to achieve a stable balance. In this case, a reciprocal North Korean reduction of forces that should be suggested in return for South Korean arms reductions are estimated. The second case would be a possibility for policy consideration. If the war outcome of the first case is not desirable from the alliance policy point of view, maintaining the current ROK-U.S. deterrence strategy while accommodating a need for arms reductions on the South Korean side could be a possible option. This case could be acceptable to North Korea because of its concern for future South Korean military superiority. In this case, reducing South Korean ground forces in an exchange for North Korean forces will be considered.

Evaluation

Military Stability. As shown in the upper curve of Fig. 7.5, in the case of a complete U.S. pullout and no reinforcements, North Korean forces would penetrate into the South as much as 160 km within one month of battle. This is the most militarily unstable case of all the measures that we discussed. As the middle curve presents the case of U.S. ground and air force withdrawal and preplanned reinforcements, the war outcome of this case is not as serious as that of the first case.

U.S. reinforcements would be more plausible than no reinforcements. Reminiscent of the Korean War, the United States deployed its forces back, after they had completely pulled out. Nevertheless, the possibility of U.S. reinforcement is likely to decrease over time considering that the United States is experiencing a stringency in defense spending and domestic demand
for diverting resources from the defense sector to the commercial sector is rising. Thus, from a defense policy point of view, the case for no U.S. reinforcements was chosen to evaluate the effects of U.S. withdrawal on combat outcome.

Fig. 7.5--Effects of U.S. Force Withdrawal from the ROK on North Korea's Average Penetration

Combining simulation results together, Fig. 7.6 shows North Korea's reciprocal arms reduction. In the case of U.S. complete withdrawal of ground and air forces and no reinforcements, Seoul should propose that Pyongyang reduce as many as 12 EDs in return for a U.S. pullout so as to reach a militarily stable outcome where South Korea as the defending side would not lose any territory.
North Korea's reduction of 12 EDs will leave them 13 EDs in the front. The equality of forces in the front will be obtained through this reciprocal reduction. The reduction ratio of U.S. forces to North Korean forces is translated to 1 to 12, in which U.S. force reductions of 1 ED and 100 aircraft and no reinforcement will be traded for a North Korean reduction of 12 ED at the front. If we relax the definition of military stability as an outcome where North Korea would not be able to gain South Korean territory more than 20 km, the reduction ratio could be lowered to 1 to 8.

From the test of South and North Korean force reductions, we can derive how many forces of the North should be cut to reach a militarily stable outcome for the South. Figure 7.7 shows the relationship between North Korean force reductions and its ability to penetrate into the South Korean territory. To prevent the possibility of a North Korean attack, South Korea
should propose that North Korea unilaterally reduce 11 EDs without South Korean reciprocal reductions. This is in line with the South Korean government's argument that North Korea should reach the force level of the South first and then the two sides will discuss further arms reductions. Figure 7.7 clearly presents to what level North Korean forces should be cut down to reach a stable balance from the South Korean point of view. If North Korea cuts down its forces on a small scale, it would not noticeably contribute to the stability of the peninsula. If the reduction level reaches more than 4 EDs, the combat outcome declines slowly. This means that an initial reduction of forward-deployed forces unilaterally made by North Korea would make a substantial contribution to the stability of the peninsula.

Fig. 7.7--Effects of North Korea's Reduction of Forward Forces

The North Korean approach that the lower the force levels of the two sides, the more stable the balance becomes seems at first appealing. However, it is not always true. At lower force levels, two general military
principles should hold to ensure stability: (1) Minimum forces are required to cover the front densely enough to hold a coherent defense by the defensive side, and (2) A required minimum differs depending on the terrain of the front area. Thus, minimum level of forces to ensure stability is estimated to be 16–17 EDs. (See App. C.) For a stable outcome, North Korea should reduce 11 EDs unilaterally to reach equality and then the two Koreas should agree on the reduction of 11 EDs on a reciprocal basis. Thus, the final force level that the two Koreas must maintain is approximately 16–17 EDs, as shown in Fig. 7.8.

![Graph showing EDs reduction](image)

Fig. 7.8--Reduction of South and North Korean Forces

**Legally Binding.** The United States would be legally bound by these measures if it agreed to pull out forces from Korea. However, this is unlikely to happen. The United States would neither negotiate with North Korea
directly, nor engage in tripartite talks. South Korea would not discuss the issue of U.S. troops with the North before Seoul reaches consensus with the United States. Assuming that all diplomatic requirements are cleared, then South Korea would be in an unfavorable position since it would be more difficult for the United States to come to the South than for the North to undo treaty provisions. This will retard progress in reduction measures.

Verification. To implement these reduction measures, the common ceiling approach is proven more effective than cutting the personnel level as in the European conventional arms reduction approaches. However, it is hard to set ceilings on the numbers of weapons and men because there will be a big discrepancy between what they report and what the other side claims they have.\(^\text{127}\) The verification system should stress minimizing significant dangers by (1) concentrating on accounting for the most modern and dangerous vehicles, i.e., those positioned forward in active units, and (2) assuring that the adversary force would have difficulty bringing any concealed vehicles, once this initial count has been agreed upon. That objective could be accomplished through measures like tagging, controlling storage, and reducing the number of permitted storage sites.\(^\text{128}\)

Negotiators should decide whether agreement obligations like ceilings refer only to tanks in active units, in storage, in reserve units, in production or warehoused for export as well. Definition of different units and weapons would also take a long time. In particular, how to inspect new entry of weapons from abroad and replacement of weapons from domestic production will be as difficult as the tasks mentioned earlier. Because the dependency of the two Koreas on the external arms market is different, this area would

\(^{127}\)North Korea's cheating is worrisome, considering other cases of concealing information; North Korea and China had been notorious in concealing information on the number of POWs. On December 18, 1952, in the first exchange of its holdings of POWs, North Korea disclosed a total of 11,559 names. The UN list comprised 132,474 names. The UN Command argued that the Communists were withholding about 88,000 names. On October 27, 1952, UN Commander Matthew Ridgway had cabled the Pentagon that he estimated the Communists held a maximum of 6,000 non-ROKs and 28,000 ROKs. On July 27, 1953, the Communist side released 12,773 UN prisoners excluding the number repatriated. See Blair Clay, The Forgotten War, p. 235.

again be a thorny issue. The armistice regime failed to prevent entry of new weapons from abroad.

Reduction measures will be one or a combination of several measures: withdrawals, departures, disbandment, export, destruction, and other types of elimination. To make verification easier, initial means should be destruction and disbandment, if the South and North agree to those measures. For the United States, withdrawal is the basic means. Monitoring withdrawals and disbandment requires the same intrusive measures necessary to verify compliance with other constraint and reduction measures.

**Negotiability.** Since South Korea apparently wants to avoid problems that will arise as a result of the need to reduce U.S. forces first, it may be reluctant to pursue these measures by any means. The United States also seems to be reluctant to consider these measures seriously, as witnessed in the MBFR and CFE talks. The alliance must spell out policies to link U.S. withdrawal of forces to the progress of overall arms reductions in the peninsula. The current passive approach is compounded by South Korea's understanding that a rather revolutionary Soviet unilateral reduction, as a numerically superior side, enabled the CFE process to unfold. Thus, South Korea takes the position that it is better to push the North into doing the same thing. Before North Korea does that, it is not in South Korea's interest to raise the issue of reductions. Though this is a difficult problem, South Korea should face the issue squarely and try to take advantage of the possibility that North Korea may be forthcoming in its reduction approach.

Though North Korea has always emphasized these reduction measures from the position of numerical superiority, their true incentive will be U.S. withdrawal. As seen in the analysis of the cases of U.S. withdrawal, it is clear what kind of situation they want to see following a U.S. withdrawal. They expect that an initiation of another war would give them a success before their weapons become obsolete. South Korea's understanding of this situation rather induces it to slow the process of arms reduction.

---

129 The United States wanted to wait for the Soviet Union to take the initiative to move toward reductions as a way to resolve the diverging views of how to reduce forces in Europe. See Jonathan Dean, "Will Negotiated Force Reductions Build Down the NATO-Warsaw Pact Confrontation?" *Washington Quarterly*, Spring 1988, pp. 60–84.
COMPARISON OF ALTERNATIVES

In this section, we will compare alternative arms control measures in light of these findings to show which alternative is better to achieve the arms control objectives of the South Korean government. In comparing alternatives in terms of military stability, some quantitative cross-evaluations will be made by providing numerical yardsticks as to how many kilometers the North Korean forces could advance in a one-day surprise attack in each alternative case. However, it is hard to evaluate alternatives with the other criteria because of their qualitative nature. Thus, we will provide some qualitative judgment of comparisons made in terms of these other criteria.

Military Stability

From the standpoint of military stability, establishing the NDZ (Non-Deployment Zone) and structural arms control measures (reducing North Korean forces first) enhance stability the best. As shown in Table 7.1, North Korea could not advance at all in the best case of the NDZ. North Korea’s asymmetric reductions should ensure stability in the peninsula if North Korea were to reduce more than 12 EDs in return for a complete U.S. withdrawal and no reinforcements. A combination of down-scaling Team Spirit exercises and some North Korean reduction of forward-deployed forces is designed to maintain the status quo. In negotiating for North Korea’s reduction of forward-deployed forces, linking the level of reduction of Team Spirit to the level of North Korean arms reduction would provide a more stable outcome than just accepting North Korea’s proposal for termination of Team Spirit as a precondition.

However, the reduction of U.S. and North Korean forces on a reciprocal basis presents a problem in that the United States may withdraw faster than the pace of North Korean reductions. The worst case tested in this study turned out to be incomplete North Korean compliance with agreed reductions and no U.S. reinforcements. The CSBMs (Confidence- and Security-Building Measures) would not only contribute to stability. Rather, they may jeopardize the military stability by being unable to stop North Korea’s offensive doctrine and posture coupled with its asymmetric forward-deployed forces.
Thus, alternative 2 (NDZ) presents the best result to enhance stability and prevent the possibility of war in the peninsula.

Table 7.1

COMPARISON OF ALTERNATIVES IN TERMS OF MILITARY STABILITY

<table>
<thead>
<tr>
<th>ALTERNATIVES</th>
<th>MILITARY STABILITY (North Korea's Penetration: km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CSBMs only</td>
<td>60 KM+</td>
</tr>
<tr>
<td>2. Non-deployment zone (NDZ)</td>
<td>Best case: 0 km</td>
</tr>
<tr>
<td></td>
<td>Worst case: 20 km</td>
</tr>
<tr>
<td>3. Reduction of Team Spirit and North Korean arms reduction</td>
<td>For the status quo: 10% reduction of readiness: North should cut 3-4 EDs</td>
</tr>
<tr>
<td>4.1. U.S. troop withdrawal and North Korean arms reduction</td>
<td>No reinforcements: 160 KM+: North Korea should cut down 12 EDs</td>
</tr>
<tr>
<td>4.2. South and North arms reduction</td>
<td>For stability: North should cut 11 EDs first and then cut down 11 EDs for the two sides</td>
</tr>
</tbody>
</table>

Legally Binding

Without a fundamental change in North Korea's attitudes toward agreed treaties and provisions with other nations, it is hard to bind the North to arms control measures that will be agreed upon between South (including the U.S.) and North Korea. The North Korean behavior of not respecting agreed-to rules and norms underlies their strategy to pursue talks when they are weak and to use military forces when they are strong. These findings were well noted in Sec. IV. However, agreeing on reciprocal and verifiable measures using the lessons learned from the Armistice regime could ensure that North Korea will be legally bound by agreed arms control provisions. Furthermore, by making it harder and more costly for North Korea to violate those provisions, we can ensure their compliance.

In this respect, alternative 2 (NDZ) and alternative 3 (Team Spirit and North Korean reduction of forward-deployed forces) in Table 7.2 could be better options to bind North Korea to the agreed measures than other options. Alternative 1 (CSBMs) is not desirable, because it would take too much time and cost when North Korea attempts to violate the agreed provisions. The U.S. force withdrawal and North Korean force reduction are
hard to bind to each other. However, alternatives 2 and 3 are relatively easy to bind.

Table 7.2

<table>
<thead>
<tr>
<th>ALTERNATIVES</th>
<th>LEGALLY BINDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CSBM only</td>
<td>Hard to bind the North legally</td>
</tr>
<tr>
<td>2. Non-Deployment Zone (NDZ)</td>
<td>Easy to bind both sides legally</td>
</tr>
<tr>
<td>3. Reduction of <em>Team Spirit</em> and North Korean arms reduction</td>
<td>Easier to bind the South than the North</td>
</tr>
<tr>
<td>4.1 U.S. troop withdrawal and North Korean arms reduction</td>
<td>Not as difficult as North Korean unilateral reductions, not as easy as the NDZ</td>
</tr>
<tr>
<td>4.2 South and North Korean arms reduction</td>
<td>Hard to bind the North because of initial unilateral cuts</td>
</tr>
</tbody>
</table>

Verifiability

To see which alternative is more easily verifiable by each party, Table 7.3 is presented below. Since CSBM are limited only to notified military maneuvers and movements, the notification itself and the invitation to another nation would be regarded as intent to show one side's military activities to the other side. This would require less intrusive inspections. Verification of the NDZ is initially difficult, because it would require the same degree of intrusive inspections as those required in the reduction measures. However, it would become easier later, once initial verifications are completed. Furthermore, verifying in the smaller geographical areas within the NDZ will be far easier than verifying in the entire peninsula.

Reduction of *Team Spirit* is as easy to verify as the CSBM, but it would be hard to verify North Korean reduction of weapons because it would require intrusive verification. Verification of reduction measures required of North Korea, the United States, and South Korea will be the most difficult task of all the alternatives.
Table 7.3

COMPARISON OF ALTERNATIVES IN TERMS OF VERIFIABILITY

<table>
<thead>
<tr>
<th>ALTERNATIVES</th>
<th>VERIFIABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CSBM only</td>
<td>Invitation of inspection teams, less intrusive</td>
</tr>
<tr>
<td>2. Non-Deployment Zone (NDZ)</td>
<td>Requires a strong intrusive inspection on both sides</td>
</tr>
<tr>
<td>3. Reduction of Team Spirit and North Korean arms reduction</td>
<td>Requires more intrusive verification into the North</td>
</tr>
<tr>
<td>4.1. U.S. troop withdrawal and North Korean arms reduction</td>
<td>Requires a strong intrusive verification</td>
</tr>
<tr>
<td>4.2. South and North Korean arms reduction</td>
<td>Requires a strong intrusive verification</td>
</tr>
</tbody>
</table>

Negotiability

The negotiability criterion will show which side has an incentive to agree on each alternative. As summarized in Table 7.4, North Korea does not show any incentives for alternative 1 (CSBM only). As noted in Sec. VI, North Korea is interested in constraint and reduction measures. In alternative 2, we attempted to extrapolate interests of both South and North Korea in demilitarization of the DMZ in a direction to resolve strategic problems and asymmetric military balance. This could be negotiable to some degree. The third option is a scale-down of the Team Spirit exercise and North Korean arms reduction. This allows convergence of security interests of the two Koreas to some extent.

United States reduction of forces from South Korea will not be negotiable, because the United States does not show any interest in being involved in negotiations with the North directly or in the tripartite talks. As the United States has strategic interests in Northeast Asia in a broad sense, it would not link any U.S. troops to North Korea's reduction. Without Soviet and Chinese involvement in the arms negotiations, it would not be feasible to include U.S. troops in the arms control negotiations between the South and the North. To mitigate problems associated with U.S. troop withdrawal, negotiating South Korean arms reduction with a North Korean arms cut first could enhance chances for negotiated settlement of security in the peninsula.
Table 7.4
COMPARISON OF ALTERNATIVES IN TERMS OF NEGOTIABILITY

<table>
<thead>
<tr>
<th>ALTERNATIVE</th>
<th>NEGOTIABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CSBM only</td>
<td>North Korea has no incentives</td>
</tr>
<tr>
<td>2. Non-Deployment Zone (NDZ)</td>
<td>South and North have some incentives</td>
</tr>
<tr>
<td>3. Reduction of <em>Team Spirit</em> and North Korean arms reduction</td>
<td>In case of North Korea's reciprocal arms reduction, the South will have incentives to down-scale <em>Team Spirit</em></td>
</tr>
<tr>
<td>4.1. U.S. troop withdrawal and North Korean arms reduction</td>
<td>U.S. and South Korean consultation should precede</td>
</tr>
<tr>
<td>4.2. South and North Korean arms reduction</td>
<td>If North Korea agrees to its reduction and the U.S. maintains presence, this is a thinkable option</td>
</tr>
</tbody>
</table>

**SUMMARY**

As seen in Table 7.5, alternative 1 (CSBM only) turned out to have shortcomings in preventing the possibility of a North Korean surprise attack, in binding North Korea legally to the agreed measures, and in inducing Pyongyang to come to the negotiation table for arms control talks, though these measures are relatively easy to verify.

The second option to establish the NDZ turned out to have merits in enhancing military stability in the peninsula, in providing incentives for the two Koreas to cooperate for arms control, and in legally binding the two sides to the agreed measures, though it is somewhat difficult to verify.

The third option of down-scaling *Team Spirit* exercise and requesting a reciprocal arms reduction on the North Korean side proved useful to maintain the status quo and is easier to bind the South than the North. The appropriate level of North Korean reciprocal reductions will be determined by different assumptions as to how much the combat readiness of South Korean forces will be affected by changes in *Team Spirit*. 
Table 7.5
COMPARISON OF ALTERNATIVES

<table>
<thead>
<tr>
<th>Criteria Options</th>
<th>Military Stability</th>
<th>Legally Binding</th>
<th>Verifiability</th>
<th>Negotiability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>0/-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>+</td>
<td>+</td>
<td>0/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>0/+</td>
<td>0/-</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Alternative 4.1.</td>
<td>0/+</td>
<td>-</td>
<td>-</td>
<td>+/-</td>
</tr>
<tr>
<td>Alternative 4.2.</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+/-</td>
</tr>
</tbody>
</table>

NOTE: For stability: + = stable, 0 = no change, - = unstable.
For the legally binding criterion: + = binding, 0 = no change, - = nonbinding.
For verifiability: + = easy, 0 = medium, - = hard
For negotiability: + = positive reaction from North Korea, 0 = no effect, - = negative reaction.

The verification method of this combined measure differs in the South and the North. Verifying North Korean arms reduction will be harder by requiring more intrusive methods. However, this option could be used as a doorstep toward more radical reductions of troops and weapons, or toward achieving the second option.

The fourth option was analyzed in two ways: One is to see how many North Korean forces should be cut in return for U.S. complete withdrawal without follow-on reinforcements. The other one is to assess how many North Korean forces should be cut in return for South Korean force reduction. The conclusion was that in the case of no reinforcements, North Korean forces should be reduced by 12 EDs. In the case of South and North Korean arms reductions, North Korea should reduce its “excess” forces of 11 EDs first to achieve a stable outcome in the event of war. However, in lower force levels, the final force levels for each side should not be less than 16–17 EDs, provided that sufficient force-to-space ratio should hold to prevent an unstable outcome. These reduction measures would be hard to bind the concerned parties legally as well as to verify. The prospects for negotiation of the reduction measures are not promising.
From the analysis summarized above, we reach the following conclusions:

- For a militarily stable outcome, constraint measures, the NDZ and down-scaling of *Team Spirit* and reduction measures should be a priority agenda for South Korea.
- To ensure legally binding agreements, constraint measures should be proposed in arms control talks with the North.
- For the ease of verifiability, the CSBMs and the NDZ are better options.
- To induce both Koreas to negotiate for mutual security, sources of threats that each side perceives should be addressed to raise the possibility of negotiated settlements.
VIII. CONCLUSIONS AND POLICY RECOMMENDATIONS

INTRODUCTION

This study pursued four objectives. First, it identified security problems that the Korean arms control process should address. In so doing, it conducted a case study of the Korean Armistice regime and the historical development of arms competition and analytic military simulation of the current military balance from the viewpoints of South and North Korea, respectively. Second, it postulated arms control objectives of the two Koreas and the United States. This was done to systematically relate the arms control objectives of South Korea to its defense policy, which is compelled to deal with the military threat from North Korea. Third, it proposed arms control measures relevant to Korean security problems and arms control objectives and discovered more effective arms control measures to resolve the Korean security problems. Finally, the consequences of those alternative measures were evaluated in light of four criteria specifically set up to relate those measures to arms control objectives of the South Korean government.

This section presents some conclusions drawn from the arguments made in this study and concludes with a series of policy recommendations for Korean defense and arms control policies for the South Korean community.

CONCLUSIONS

As Sec. IV indicated, the major security problems in the Korean peninsula include: (1) the lack of effort to replace the Armistice regime that failed to prevent the arms race; (2) an asymmetric military balance that provides the opportunity of a surprise attack from the North, a nation whose offensive doctrine and posture once was used for invading the South; and (3) North Korea's increasing threat perception because of the strategic situation of the peninsula, and the fact that South-North competition puts the North in an unfavorable light might lead to deterrence failure. Arms control can make a useful contribution toward resolving these problems in the 1990s.

South Korean arms control objectives are based on a clear recognition of those problems: building confidence and trust with the North, preventing
misperceptions and misunderstandings by the North, preventing possibilities of surprise and all-out attacks, and promoting further arms reduction. Among these, prevention of a surprise attack has to be the most important objective because North Korea could still obtain a substantial amount of territory if it initiated a surprise attack. Prevention of misperceptions and misunderstandings is less important and less relevant to the Korean situations unless the function of the UNC were to be replaced by another regime. The UNC has played as an intermediary between the two Koreas to lessen possibilities of misperceptions and misunderstandings to a somewhat successful degree. An analysis of arms control objectives shows U.S. regional defense strategy as having pluses and minuses for improving the chances for arms control talks. To minimize the tradeoffs between arms control objectives and defense policy objectives and further defense objectives, the criterion of military stability was adopted as an overarching goal to guide the arms control talks in the peninsula. To strengthen an arms control regime, criteria of legally binding requirements, verifiability, and negotiability were also derived from the analysis of the Armistice regime and the arms control objectives. It was also observed that without inducing reciprocal changes in traditional defense policies, it is nearly impossible to create a cooperative regime in the peninsula.

Alternative measures to achieve South Korean objectives in arms control were designed after critical analysis of the arms control proposals made by the two Koreas and a closer examination of European arms control measures. It was illustrated that CSBMs (Confidence- and Security-Building Measures) of the Stockholm Document of 1986 are more relevant to the Korean situation than earlier CBMs of the Helsinki Final Act of 1975 because those CSBMs are more binding and militarily significant. Thus, they assure more constraints on North Korea. In order to affect North Korean combat capabilities more adversely and prevent the possibility of a surprise attack, constraint measures that had not been implemented in the European theater were designed, such as the establishment of the Non-Deployment Zone (NDZ). To accommodate the North Korean concern of threat, reduction or suspension of Team Spirit exercises was adopted as an alternative measure. To directly resolve the problem of an asymmetric balance, reduction
measures (mutual reduction of U.S. troops and North Korean forces or South and North Korean forces) were selected as the fourth option.

Having selected four alternatives, limitations were assessed in South Korean proposals for arms control. These tend to disregard the importance of constraint and reduction measures because South Korea emphasizes an incremental approach so as not to undermine the current military status quo. Considering the fact that Korea does not have a multilateral security regime equivalent to the CSCE of Europe, the likelihood for CSBMs was estimated to be low provided that Seoul did not provide incentives to North Korea in a reciprocal way. Furthermore, since CSBMs and structural arms control measures should be discussed in one channel, agreeing on CSBMs alone would not be feasible. Thus, a need to link the reduction and constraint measures to CSBMs was suggested to broaden the scope of negotiation and, as a consequence, the possibility of cooperative outcomes.

In the previous section, these alternative measures were reorganized for a negotiation agenda for future arms control talks. Four sets of alternatives were illustratively suggested: Alternative 1: CSBMs only; Alternative 2: Establishment of the Non-Deployment Zone (40 km to the north of the DMZ and 20 km to the south of the DMZ); Alternative 3: Scaledown of Team Spirit exercises and reduction of North Korean forward-deployed forces; and Alternative 4: Mutual reduction of North Korean forces and U.S.-South Korean forces. These four alternatives were tested against the four criteria established in Sec. IV.

From the standpoint of military stability, the non-deployment zone appears to provide the best outcome, one that would successfully prevent the possibility of a North Korean surprise attack and obtain a robust conventional balance. Unilateral reduction or suspension of Team Spirit exercises would clearly aggravate the stability problem. The case of U.S. withdrawal without reinforcements produced the worst outcome because it would allow North Korea to penetrate into the South Korean territory as far as 160 km over all axes within one month of battle. Thus, a huge North Korean unilateral reduction of their “excess” forces (11 EDs) would be required to ensure stability on the peninsula. Interestingly, CSBMs alone would not enhance stability. Indeed, they may undermine stability by inducing South Korea to fall into a false sense of security, while generating
political instability in South Korea as a result of heightened anti-American sentiments partly aroused by North Koreans.

To ensure sufficient legal safeguards within the arms control regime, stronger mandates would be required. In this light, the NDZ and structural reduction measures would meet this criterion, while piecemeal violations would undermine the effectiveness of the legally binding nature of a CSBM regime. This latter point was illustrated by examples of past North Korean violations of the Armistice Agreement.

Regarding verifiability, CSBMs and a scale-down of the *Team Spirit* exercises are more easily verifiable than the NDZ and mutual reduction measures because the latter measures would require more intrusive verification measures. As observed in the European case, acceptance of intrusive verification and provisions of accurate military information occur at the last stage of arms negotiations. In this light, reduction measures and the establishment of the NDZ would take a substantial amount of time to assure verifiability.

Negotiability assesses whether the two sides are willing to make concessions on each alternative and what consequences North Korean requests would bear on the stability and security of the peninsula. It was pointed out that accommodation of the other party's first priority (main threat) would be needed. North Korean reduction of its forward-deployed forces should be tightly linked to any reduction of *Team Spirit* on the South Korean side. Establishment of the NDZ would be another alternative to bind the two sides to the negotiation. Full-fledged mutual arms reductions might have to wait for a long time, not only because it would need close consultation between the ROK and the United States, but because prior unilateral North Korean massive reductions would be the requirements for the start of mutual reductions. CSBMs would have to be settled at the same talks for other alternatives to improve chances for settlement of deadlocked situations.

POLICY RECOMMENDATIONS FOR SOUTH KOREA

The results of this study suggest certain policy guidelines for South Korea in its arms control negotiations with North Korea and for its future policy planning.
First, confidence- and security-building measures (CSBMs) as well as constraint and reduction measures should be discussed in one forum because such discussions would not only improve the chances for a negotiated settlement of the security problems, but would also contribute to greater security and stability. As earlier noted, it may not be possible for South Korea to reach any arms control agreement with North Korea if it holds onto CSBMs only. Moreover, adoption of certain kinds of CSBMs, without other North Korean policy changes, might not necessarily contribute to improved military stability of the peninsula.

Second, developing a more coherent long-term arms control policy is required. As noted in the historical case study of the Armistice regime, arms control objectives would not be achievable if those objectives are contrary to the defense policy objectives of any nation involved in the negotiation. Progress in arms control is possible only within the limits of defense policies whose main tenets include major security interests. In this light, accommodating U.S. long-term regional defense policy in arms control measures is a critical requirement. Should the United States reduce troops gradually from South Korea, the reductions can be used in negotiating with the North to ensure the long-term stability in the peninsula. The need for a long-term view does not necessarily mean that we either have to defer to the distant future the difficult issues or that measures that would not change the status quo should be pursued in the arms negotiations first. In the negotiations, measures that would improve long-term security interests, e.g., security and stability of the peninsula, should be brought up consistently. This point leads to the third point.

Third, military stability should be an overarching goal to systematically relate South Korea's arms control policy to its defense policy. Military stability does not imply adherence to the status quo devoid of change. It implies that a militarily stable outcome can be achieved through changes in key components of defense policy as a result of changes in the arms control or security environments. This stability criterion is, as earlier noted, to ensure that the defensive side can defend against any attack without losing any territory. This criterion can provide a sense of security and stability to South Korea and its alliance partner, the United States. In this regard, constraint
measures and reduction measures turn out to be key issues for a negotiating agenda for arms control with North Korea.

Fourth, establishment of the Non-Deployment Zone (NDZ) and reduction of North Korea's forward-deployed forces should be adopted as priority proposals. The NDZ measure is the best in achieving a militarily stable outcome. It benefits from a combination of advantages of both the CSBMs and the reduction measures. It would enhance transparency and reduce the chances of a surprise attack as earlier noted. North Korea's initial reduction in exchange for South Korea's partial reduction of Team Spirit would not necessitate its complete unilateral cut-down of all asymmetric forward-deployed forces (11 EDs). To ask North Korea for unilateral reductions would not be feasible.

Fifth, reduction of Team Spirit or linkage of the U.S. drawdown of troops from South Korea should be guided by a thorough analytic study of the effects of those changes on stability. It was well illustrated in this study how sensitive the effects of those measures are to the various assumptions on the components of combat capabilities. Taking the upper-bound case from this study, a 25 percent reduction of combat readiness of the ROK-U.S. forces, as a result of complete suspension of Team Spirit, should request North Korea's reduction of 7-8 EDS from its forward-deployed forces. Complete withdrawal of U.S forces with no reinforcements should be matched with North Korean reductions of 12 EDs. Given the inherent limitations of the military simulation model used in this study, these numbers should not be taken too seriously. They are meant to be suggestive, not definitive. Nevertheless, analytic results clearly present tradeoffs among alternative arms control measures. This point brings up the last point.

Sixth, training experts in the area of defense and arms control policy should be part of future planning. As witnessed in the case of European arms control, building consensual knowledge of the effects of arms control and defense policy contributed to the dissemination of sound information to the public and to the improvement of mutual understanding between the two opposing blocs. Above all, sound analysis of the impact of arms control is a requirement to guide it in a desirable direction.
Appendix A

COMBAT SIMULATION MODEL OF THE KOREAN THEATER (COSMOKT)

MODEL DESCRIPTION

This section explains the algorithmic flow of the ground combat and the air campaign in the combat simulation model of the Korean Theater (COSMOKT). A complete set of input variables is also presented.

Operation of Ground Combat

The model of ground combat engagements follows the seven distinct stages during each day as shown in Fig. A.1. The model proceeds in day increments until a user-defined horizon is reached. The stages of ground combat are as follows:

1. **Identify attacker**: On the first day, the attacking side is specified by the user. On subsequent days, the decision to attack or defend depends on the combat outcomes of the previous day (explained in Step 4).

2. **Allocate forces in axes**: The theater commander of the attacker allocates forces in each of seven axes according to specified doctrine. The defender also allocates forces in each axis based on combat conditions. For a war of attrition, the defender knows the points of the attacker's concentration and allocates reserves accordingly. The defender does not know the attacker's concentration in a war of breakthrough and allocates forces approximately evenly across the front.

3. **Compute attrition**: Attrition of opposing forces is calculated by first modifying force levels by multipliers, such as the attacker's surprise, terrain, and the defender's extent of prepared defense and fortifications. Fixed attrition levels are then used to reduce the modified forces.
Fig. A.1--Flow of Ground Combat

4. Update force ratio: At the end of each day, the force levels in each axis are adjusted. The corresponding force ratio is used to drive allocation decisions for the next day of battle. The attacker will continue attacking if the force ratio in an axis is still greater than a given critical force ratio (e.g., two to one). When the updated force ratios pass the critical force ratio threshold, the attacking side stops advancing and a stalemate in that axis ensues. The defender will start counterattacking if the force ratio scorings change in favor of the defender. This updated force ratio is also used to change the rule of reserve allocation to each axis. More reserves are allocated to the axes whose force ratios are greater than those in other axes. In addition, the model allows reinforcements to be brought into the reserve
forces pool after some training delay. This force pool is then allocated to each axis relative to the force ratio. For example, suppose that there are two axes in the model. If the force ratio in Axis 1 is 2 and the force ratio in Axis 2 is 3, 60 percent of reserve forces will be allocated to Axis 2 and the rest of reserves will be allocated to Axis 1.

5. **Compute relative loss rates:** The relative loss rates (RLR) of the two sides are calculated in each axis at the end of the day. These RLRs are used for the calculation of movement rates in each axis.

6. **Compute movement:** The velocity of movement is calculated with the use of the relative loss rates in each axis as explained later in the section on mathematical calculation.

7. **Update Flot position:** The FLOT positions of the two sides are updated at the end of each day. The FLOT positions are calculated by adding or subtracting new movements to or from those of the previous day. At this time, a one-time award of 20 km is given to the attacker if forces of the defender are less than a minimum level required to hold the front, which is called the break density. A constraint is included to control the length of flanks along rapidly advancing axes. If the differences among adjacent axes are larger than 60 kms, the attacking side stops in the rapidly advancing axis and allocates more reserve forces to the adjacent axes. This makes rather balanced advances.

The seven stages are iterated each day until the end of the war period. Or the war stops if the attacking side achieves the maximum penetration depth of 400 kms. For example, a war stops on the 30th day from the beginning of an initial attack in this model. However, it is possible to produce a longer war with this model.

**Other Aspects of the Ground Combat Model**

**Terrain Factor.** This factor is used to account for the geographic nature of the combat field and has been adjusted based on the actual record of the Korean War. This historical example demonstrates that combat conditions for both the Communists and the United Nations were affected by the terrain. Terrain affects the combat effectiveness of each side and the speed of movement of the attacking side. The combat effectiveness of the attacking side is more adversely affected by terrain because of the movement along the
axes over the terrain. The effective forces of the attacking side are the actual forces in each axis normalized by the terrain factor in that axis. For instance, if the attacking side allocates 4 EDs in one axis whose terrain score is 1.5, then its effective forces become \( \frac{4}{1.5} = 2.67 \) EDs. The terrain scores range from 1 (in open terrain) to 1.5 (in high mountainous areas). Figure A.2 presents terrain scores on the peninsula as an approximation to the geographical differences and as a partial reflection of the combat outcome of the Korean War.

**Defensive Preparations and Fortifications.** The defender prepares the initial forward battlefield with mines, dug-in pitches, and concrete blocks. After penetration by enemy forces, it is assumed that forces are relatively unprepared. They engage in mobile warfare without preparing the defense. As explained in Sec. III, a penalty is given to the attacking side to account for the defensive side's prepared defense. This is done by reducing the combat effectiveness of the attacker by a factor of 1.2.

**Force Density.** If the front coverage falls below the break density, it is assumed that the defender can no longer maintain a coherent defense in response to attacks; a breakthrough results if the opponent is capable of attacking. When a breakthrough occurs, a one-time attrition penalty is assessed, and the defender must continue to withdraw until sufficient reinforcements have arrived to achieve a coverage better than the break density. Below the minimum level, the one-time penalty for a defender is a 20 km withdrawal. In this model, the minimum force required to hold a coherent defense is:
Fig. A.2--Terrain Features of the Korean Theater

- 1.5 EDs for open terrain (Axes 1, 2, 3, and 4 in the South; Axes 1, 2, and 3 in the North)
- 1 ED for mountainous terrain (Axes 5, 6, and 7 in the South; Axes 4, 5, 6, and 7 in the North)

**Air Combat Engagement Rule**

Air forces are allocated to three distinct missions, as presented in Fig. A.3. The mission types (air-to-air, air base attack, and air-to-ground) are based on individual aircraft characteristics. Aircraft allocated to each mission are further allocated daily by user-scripted decision commands. The allocation of ground attack aircraft is handled by an automated process which distributes the missions along each axis of enemy ground forces so that the
defender can react to the axis of greatest threat, and the attacker can reinforce his most successful axes.

Arrows in Fig. A.3 represent interaction among various missions. For example, South Korean air-to-air aircraft destroy flying North Korean air-to-air, air base attack and air-to-ground attack aircraft, while North Korean air-to-air aircraft destroy all kinds of flying South Korean aircraft. Air base attack aircraft also target all kinds of enemy aircraft either by directly attacking air bases or by preventing the aircraft from flying (suppression). However, air-to-ground aircraft do not target air-to-air or air base attack aircraft and only destroy the enemy’s ground forces. Reinforcements are allowed to each mission depending on each side’s reinforcement schedules.

Fig.A.3--Flow of Air Force Engagement Model

1. Attrition in air-to-air combat is assessed based on the number and capability of aircraft engaged during each time period. In this model, one side’s aircraft assigned for this mission engage all kinds of enemy aircraft in the air.
2. Air base attack is divided between suppression and destruction of aircraft at air bases. Suppression does not last long but is an easier mission. Destruction is a more difficult one but has a greater payoff. Air base attack aircraft reduce the enemy's aircraft available for air-to-air, air base attack, and air-to-ground attack missions. Attrition in air base attack is assessed by a mathematical calculation described below.

3. Attrition of air-to-ground attack aircraft is determined by the effectiveness of both air defense system (aircraft and surface-to-air missiles) and air base attack. Ground attack aircraft have an additional effect on slowing the advance rate of attacking ground forces independent of the kills associated with these aircraft. Attrition in air-to-ground attack is assessed by a mathematical calculation.

4. The enemy's ground forces killed by the other side's air-to-ground attack are calculated by a mathematical formula described below.

5. Reinforcement of aircraft will be made according to the reinforcement schedule. It is assumed that North Korea's reinforcement of air does not exist because neutrality of China and the Soviet Union is assumed.

**Input Variables**

The input variables shown in Table A.1 are used for combat adjudication in the model. Calculations are performed in a spreadsheet to represent the conflict between the two Koreas. The attacker could be North Korea or South Korea. Parameters on the attrition and combat effectiveness of several missions can be changed to incorporate more accurate aspects of military combat.

Several points about input variables are worth noting. Effectiveness of North Korean air-to-ground attack aircraft is assumed to be inferior to that of South Korea. North Korea has deployed 64 percent of its forces forward, while keeping the rest in the rear. The same fraction of South and North Korean aircraft are allocated to the air-to-air plus air base attack missions and to the air-to-ground attack mission because the data shows that each side has approximately the same number of aircraft for these two categories.
North Korea's reinforcement schedule is three days earlier than that of South Korea's during the first three weeks. 130

---

130 Kwan-Chi Oh, “The Military Balance on the Korean Peninsula,” in The Korean Peninsula: Prospects for Arms Reduction Under Global Detente, Young-Koo Cha and William J. Taylor, Jr. (eds.), Westview Press, Boulder, San Francisco, and Oxford, 1990, p. 96. According to Dr. Oh, North Korean capability to mobilize some 23 reserve divisions (500,000 troops) within 12 to 24 hours comes from its Instructional Units that are the top level forces of the Military Districts Commands. However, this author estimated that North Korea would need time to train them before sending the mobilized forces to the front. At any rate, North Korea’s mobilization schedule is ahead of that of South Korea.
Table A.1
INPUT VARIABLES OF SOUTH AND NORTH KOREAN COMBAT CAPABILITIES

<table>
<thead>
<tr>
<th>Name of variables</th>
<th>South Korea</th>
<th>North Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground loss rate when defending</td>
<td>$\alpha_d$</td>
<td>.01 ED/day</td>
</tr>
<tr>
<td>Ground loss rate when attacking</td>
<td>$\alpha_a$</td>
<td>.02 ED/day</td>
</tr>
<tr>
<td>Air base attack suppression effectiveness</td>
<td>E(ABAS)</td>
<td>1 AC/sortie</td>
</tr>
<tr>
<td>Air base attack kill effectiveness</td>
<td>E(ABAK)</td>
<td>.25 AC/sortie</td>
</tr>
<tr>
<td>Air-to-ground attack effectiveness</td>
<td>$\gamma$</td>
<td>.004 ED/sortie</td>
</tr>
<tr>
<td>Air-to-air attack effectiveness</td>
<td>E(AA)</td>
<td>.1 AC/sortie</td>
</tr>
<tr>
<td>Attrition for AC in the air-to-ground mission</td>
<td>$\beta$</td>
<td>.1 AC/sortie</td>
</tr>
<tr>
<td>Attrition for AC in the air base attack mission</td>
<td>$\delta$</td>
<td>.2 AC/sortie</td>
</tr>
<tr>
<td>Sortie rates per day</td>
<td>$S$</td>
<td>3</td>
</tr>
<tr>
<td>Maximum velocity of movement</td>
<td>$V_{max}$</td>
<td>20 Km/day</td>
</tr>
<tr>
<td>Initial ground forces in the front</td>
<td>14 EDs</td>
<td>29 EDs</td>
</tr>
<tr>
<td>Initial reserves in the rear</td>
<td>14 EDs</td>
<td>14 EDs</td>
</tr>
<tr>
<td>Number of air base attack AC</td>
<td>108</td>
<td>210</td>
</tr>
<tr>
<td>Number of air-to-air attack AC</td>
<td>162</td>
<td>140</td>
</tr>
<tr>
<td>Number of air-to-ground attack AC</td>
<td>270</td>
<td>350</td>
</tr>
<tr>
<td>Movement factor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Critical force ratio</td>
<td>2:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Reinforcement schedule</td>
<td>10 EDs at D+10</td>
<td>10 EDs at D+7</td>
</tr>
<tr>
<td></td>
<td>11.5 EDs at D+20</td>
<td>10 EDs at D+14</td>
</tr>
<tr>
<td></td>
<td>12 EDs at D+30</td>
<td>10 EDs at D+21</td>
</tr>
<tr>
<td></td>
<td>10 EDs at D+30</td>
<td></td>
</tr>
<tr>
<td>U.S. ground reinforcement</td>
<td>.17 ED/day</td>
<td>0</td>
</tr>
<tr>
<td>U.S. air force reinforcement</td>
<td>6.67 AC/day</td>
<td>0</td>
</tr>
</tbody>
</table>

NOTE: Aircraft is abbreviated as AC, data inputs except for ground forces are expressed as ED scores and the number of aircraft is hypothetical.

MATHEMATICAL CALCULATIONS

Ground Force Attrition

There are two basic sources of attrition to the ground forces: (1) ground-force engagements, and (2) conventional attacks by air-to-ground aircraft. Here nuclear attacks are not considered, though we can incorporate that aspect in this model.
Let $\Delta G_{ait}$ be attrition for attacker’s ground forces in axis $i$ on day $t$.
This is calculated by

$$\Delta G_{ait} = \alpha_a \cdot G_{dit} + \gamma_d \cdot S_d \cdot AG_{dit} (1 - \beta_d)$$

where

- $G_{dit}$ is the defender’s ground ED score in axis $i$ on day $t$. This value itself is calculated iteratively by
  
  $$G_{dit} = G_{di,t-1} \cdot \Delta G_{di,t-1} + R_{dit}$$

  - $G_{di,t-1}$: Ground forces (ED score) of the defender available on day $t-1$ in axis $i$
  - $\Delta G_{di,t-1}$: Attrition of defender’s ground forces in axis $i$ on day $t-1$
  - $R_{dit}$: Defender’s reserve forces allocated in axis $i$ on day $t$

  according to the automatic allocation rule described above.

- $\gamma_d$ is air-to-ground attack effectiveness of the defender.
- $S_d$ is the sortie rates of defender’s aircraft.
- $AG_{dit}$ is the number of air-to-ground attack aircraft allocated in axis $i$ on day $t$ by the defender defined iteratively by

  $$AG_{dit} = AG_{di,t-1} (1 - \beta_d)$$

  - $AG_{di,t-1}$: The number of air-to-ground attack aircraft allocated in axis $i$ on day $t-1$ by the defender according to the allocation rule described above.

- $\beta_d$ is defender’s aircraft attrition rate for air-to-ground attack.

Let $\Delta G_{dit}$ be attrition of defender’s ground forces in axis $i$ on day $t$.
This is calculated by

$$\Delta G_{dit} = \alpha_d \cdot [(s \cdot G_{ait})/(\zeta_i \pi_i)] + \gamma_a \cdot S_a \cdot AG_{ait} (1 - \beta_a)$$

where

- $\alpha_d$ is ground loss rate when defending.
- $G_{ait}$ is attacker’s ground ED score in axis $i$ on day $t$. For calculation of this, refer to the formula of $G_{git}$ described above.
- $s$ is surprise factor.
- $\zeta_i$ is terrain factor for axis $i$.
- $\pi_i$ is defender’s prepared defense factor in axis $i$. 
• $\gamma_a$ is air-to-ground attack effectiveness for the attacker.
• $S_a$ is sortie rates for attacker's aircraft.
• $AG_{ait}$ is the number of air-to-ground attack aircraft allocated in axis i on day t by the attacker. $AG_{ait}$ is also calculated according to the same rule as described for the calculation of $AG_{dit}$.
• $\beta_a$ is attacker's aircraft attrition rate for air-to-ground attack.

Let $RLR_{ait}$ be relative loss rates for an attacker in axis i on day t.

This is calculated by

$$RLR_{ait} = \Delta G_{ait}/\Delta G_{dit}$$

Let $V_{ait}$ be velocity of an attacker in axis i on day t. Ground forces will advance at the speed calculated according to the rule noted earlier. Major variables affecting the velocity include: relative loss rates, updated force ratio in each axis, degree of flanking positions among axes and force to space ratio. Velocity of attacker in each axis is daily calculated by

$$V_{ait} = V_{max}*e^{-(RLR_{ait}^2)}$$

where

• $V_{max}$ is maximum velocity (e.g., 20 km/day).
• $RLR_{ait}$ is relative loss rate for an attacker in axis i on day t.

**Air Force Attrition**

Air force attrition occurs in three ways. Here air attrition for the attacker is shown. For the defender, the same formula can be used by switching the attacker with the defender.

Let $\Delta AA_{at}$ be the air-to-air attrition for an attacker on day t. This is calculated by

$$\Delta AA_{at} = E(\Delta A)_d*N(\Delta A)_d*t*S_d$$

where

• $E(\Delta A)_d$ is defender's air-to-air effectiveness.
• $N(\Delta A)_d$ is defender's aircraft allocated to the air-to-air mission on day t.
• $S_d$ is defender's sorties per aircraft.
Let $\Delta ABA_{at}$ be attacker's air base attack attrition on day $t$. This is calculated by

$$\Delta ABA_{at} = \delta_a \cdot N(ABA)_{at} \cdot S_a$$

where

- $\delta_a$ is attacker's attrition for air base attack mission.
- $N(ABA)_{at}$ is the number of attacker's aircraft allocated to the air base attack mission on day $t$.
- $S_a$ is attacker's sortie rates per aircraft.

Let $\Delta ABAS_{at}$ be attacker's aircraft suppressed by enemy's air base suppression on day $t$. This is calculated by

$$\Delta ABAS_{at} = E(ABAS)_d \cdot N(ABAS)_{dt} \cdot S_d$$

where

- $E(ABAS)_d$ is the effectiveness of defender's air base suppression.
- $N(ABAS)_{dt}$ is the number of defender's aircraft allocated to the air base suppression mission on day $t$.
- $S_d$ is defender's sortie rates per aircraft.

Let $\Delta AG_{ait}$ be attacker's attrition of air-to-ground aircraft in axis $i$ on day $t$. This is calculated by

$$\Delta AG_{ait} = \beta_a \cdot AG_{ait}$$

where

- $\beta_a$ is aircraft attrition rate for air-to-ground attack of the attacker
- $AG_{ait}$ is the number of attacker's air-to-ground aircraft in axis $i$ on day $t$. 

Appendix B

REPRESENTATIVE SENSITIVITY ANALYSES

This appendix presents four scenarios. To assess the sensitivity of input variables change in response to input variables in the COSMOKT model, the four cases examine the effects of the critical force ratio on combat outcomes, the effects of the effectiveness of air-to-ground aircraft on combat outcomes, the effects of a U.S. delay in reinforcements on combat outcomes, and the minimum number of EDs required for stability.

Case B.1: Effects of changing the critical force ratio on combat outcomes. In this case, we compare the effects of changes in critical force ratios on war outcomes. The model results seem to be close to stable in the case of the 3-to-1 critical force ratio because North Korea is not able to penetrate more than 14 kilometers on an average. The lower the critical force ratio is, the more North Korea can penetrate as shown in Fig. B.1. It appears that there is a critical point between a 2.6-to-1 ratio and a 3-to-1 ratio. As the critical force ratio threshold required for breakthrough approaches a 3-to-1 ratio, North Korea may end up achieving the 3-to-1 force ratio in fewer axes than in relatively lower critical force ratios. In the case of the 3-to-1 critical force ratio, North Korea may change its strategy to reduce the number of main-thrust axes.

In the base case for this dissertation, the 2-to-1 force ratio was selected to determine an attacking or defending decision. Sensitivity analysis does not show excessive differences in the range from 2:1 to 2.6:1. Though conventional wisdom tends to support that a 3-to-1 force ratio is required for breakthrough warfare, it often tends to disregard the fact that even a 1.5-to-1 force ratio in the theater level can be concentrated to obtain a 3-to-1 force ratio in several main-thrust axes.\textsuperscript{131} Also, a simple 2-to-1 force ratio can be changed into a 3-to-1 effective force ratio by accounting for other factors such

as a surprise. This is more relevant to the Korean case as will be later presented in App. C, which examines the Korean War.

---

**Fig. B.1**--Relationship Between Critical Force Ratio and North Korean Penetration

**Case B-2: Effects of changing the effectiveness of air-to-ground aircraft on war outcomes:** As shown in Figure B.2, the base case for this

---

\[\text{Trever N. DuPuy, Understanding War: History and Theory of Combat, Paragon House Publishers, New York, 1987, p. 156. DuPuy maintained that in the Korean War, North Korea could achieve a 3-to-1 effective force ratio because of surprise and mobility of North Korean forces, though its overall force ratios were approximately 2 to 1. Though overall force ratio is 1.5 to 1, a numerically superior side can achieve a force ratio of 3 to 1 in a few axes.}\]
dissertation is that the effectiveness of the South Korean air-to-ground aircraft is twice as high as that of North Korea (e.g., .004:.002). The reason for this is that South Korea’s tactical aircraft is superior in its performance, combat radius, armor, and electronic warfare capabilities, let alone pilot competency and maintenance capability.\textsuperscript{133} In particular, the South Korean Ministry of National Defense explicitly says that South Korea has strong air-to-ground attack capability relative to North Korea.\textsuperscript{134}

If this assumption is changed to .002:.002, holding everything else constant, North Korea could eventually penetrate into South Korean territory twice as far as the base case. If the effectiveness ratio is .002:.001, the curve for North Korea’s penetration is between the two cases explained above.

This implies that the effectiveness of South Korea’s air-to-ground aircraft should be absolutely and relatively greater than that of the North in order to slow down North Korea’s speed of movement on the ground. Strength of the air-to-ground attack aircraft significantly affects war outcomes.


\textsuperscript{134}\textit{Ibid.}
Fig. B.2—Relationship Between Air-Ground Effectiveness and North Korean Penetration

Case B-3: Effects of U.S. delay in reinforcement on war outcomes under the scenario of attrition warfare (no surprise). To test how U.S. delay in reinforcements to the Korean theater affects war outcomes, simulations for three cases (0 day, 5 days, and 10 days) are run and the results are presented in Fig. B.3. This shows how many kilometers North Korea can penetrate into South Korea in each axis.

North Korea does not make any advance in Axis 1 under the assumptions given in this model. The difference between no delay and a five-day delay does not seem to be significant. The delay effect increases significantly as the delay gets longer from 5 days to 10 days.

Comparing this outcome with that of the base case shown in Fig. 4.4 in Sec. IV, we can conclude that surprise effects are more serious in the base case than delay effects. Surprise effects dominate delay effects in the case of a North Korean surprise attack because surprise has already determined war
outcomes so seriously that some delays in U.S. reinforcements would not make a big difference in war outcomes.

However, delay effects can affect war outcomes seriously in case of attrition warfare because the success of attritional war will hinge on the availability of war stockpiles and close air support required to hold a coherent forward defense. Under a war of attrition, the two Koreas will choose to consume most of the firepower in the earlier phase of war to create a momentum to penetrate into the other side’s territory. Thus, there might be a threshold where South Korea will decisively lack firepower to halt North Korea’s penetrations. According to Fig. B.3, this threshold seems to exist at a point between 5 days and 10 days.

This implies that the ROK-U.S. alliance should maintain a close security cooperation in order not to adversely affect the speed of U.S. reinforcements in the event of war on the peninsula. For planning purposes, defense circles should guard against negative consequences of change in the current combined force structure on U.S. reinforcement schedules.
Case B-4: Minimum forces required for operational minimum. To identify how many EDs are required to ensure stability on the lower force levels, a formula presented in Fig. B.4 is used. (Also see Fig. 7.8 in Sec. VII.)
Number of EDs Needed = \[
\begin{bmatrix}
\text{Frontage of open terrain} \\
\text{Km/div for open terrain (e.g., 20)}
\end{bmatrix}
\times \begin{bmatrix}
\text{Frontage of closed terrain} \\
\text{Km/div for closed terrain (e.g., 30)}
\end{bmatrix}
\times \text{reserve factor (e.g., 1.5)}
\]

For South Korea, number of EDs required to hold a coherent forward defense,

\[\left[\frac{160}{20} + \left(\frac{90}{30}\right)\right] \times 1.5 = 16.5 \text{ EDs is needed at minimum.}\]

Fig. B.4--Minimum Force Required for Stability at Low Force Levels
Appendix C
THE VALIDATION OF THE COSMOKT MODEL

This appendix tests the validity of the COSMOKT model for parameters extracted from the Korean War. This example calibrates the general input parameters limited by the major characteristics of the Korean War and general military rules. Several assumptions on major input variables and scenarios were made based on the historical records of the Korean War.

Assumptions:

- Number of axes: Five axes of attack
- Initial Force Ratio: 2 to 1 in the front
- Days of Surprise: 3 days
- Break density: several axes did not have minimum forces to hold the front
- Prepared defense for South Korea: No
- Penetration within 30 days: average 400 kms
- Maximum velocity of the FLOT: 20 km/day
- No TAC-Air: mainly ground battle

It is assumed in Table C.1 that North Korea allocates its force evenly in the front axes.\textsuperscript{135} Since South Korean forces did not have a prepared defense in 1950, an advantage of prepared defense is not allowed in this scenario. Since forces in all axes are less than the minimum required to hold the front, a one-time penalty of 20 km is given to the defender (South Korea) to withdraw, until it receives reserves to each axis to maintain more than the break density. Once South Korean forces have more than the level of the break density, North Korean forces advance according to the usual velocity calculation method. South Korean forces in axes 1, 2, and 3 are less than the minimum force-to-space ratio required to hold a coherent defense in the front.

\textsuperscript{135}According to Trever DuPuy, manpower force ratio between North and South Korea in the Korea War is estimated to be 2.6:1 (Axis 1), 2.2:1 (Axis 2), 2.3:1 (Axis 3), 2.4:1 (Axis 4), and 1.6:1 (Axis 5). Major weapons that North Korea allocated in Axes 2, 3, and 4 are 30, 80, and 30 tanks, respectively. See Trever N. DuPuy, \textit{A Study of Breakthrough Warfare}, p. 86.
Table C.1
ASSUMED INITIAL GROUND FORCE ALLOCATION IN EACH AXIS IN THE KOREAN WAR (EDS)

<table>
<thead>
<tr>
<th>Axis</th>
<th>North Korea</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The lower density in Axes 1, 2, and 3 allows North Korean forces to advance at the full velocity of 20 km each day for the first several days. The changing force ratios between the North and the South are presented in Fig. C.1. This clearly shows that North Korea achieves an advantage of a surprise attack during the first three days of battle, which remains effective up to D+7 and D+8.

Fig. C.1--Changing Force Ratio in the Korean War
Figure C.2 presents the estimated North Korean penetration in Axis 2 (Seoul) in the Korean War. North Korea is estimated to have occupied Seoul at D+3 and D+4, which matches well with the historical record.

**NORTH KOREA'S ADVANCE RATES WITHIN 30 DAYS IN THE MAIN AXIS 2 (SEOUL)**

![Graph showing North Korea's advance rates within 30 days in the main axis 2 (Seoul).]

DAYS OF BATTLE

Fig. C.2--Estimated North Korean Penetration in Axis 2 in the Korean War
Fig. C.3.-North Korea's Penetration into the South Korean Territory

Figure C.3 presents North Korea's daily FLOT position. The striking features of these graphs are: (1) North Korea could advance at maximum velocity of 20 km within the first five days of the Korean War. The historical fact that North Korea occupied Seoul within three days by advancing 60 km south of the 38th Parallel compares well. (2) South Korean forces defending axes 4 and 5 maintained a better defense later in the war. This is clearly shown in this simulation. The main reason for this is certainly the terrain factor, which reduces the combat effectiveness of North Korean forces. Also, reinforced forces later from the United States were allocated in these axes.

The predicted outcomes of the Korean War in each axis on D+30 days are given in Fig. C.4. Notably, no significant difference exists between the predicted and the actual outcomes. The advance in Axis 2 goes beyond the end of the peninsula. If the model incorporated the aspect that North Korea would stop advances in the axis to augment other axes when it reached 400 km in this axis, the predicted outcome could be closer to the actual outcome.
However, there is no significant difference in Axes 4 and 5 between the actual and the predicted outcome.

NORTH KOREA'S PENETRATION INTO THE SOUTH IN THE KOREAN WAR (ACTUAL VS. PREDICTED)

![Bar chart showing actual vs. predicted penetration distances for different axes.]

Fig. C.4--Actual vs. Predicted North Korean Penetration in the Korean War

From the validation process, it is worth noting that the model needs an improvement by incorporating the aspects of maneuvers and encirclements, which are main features of a breakthrough warfare. Since the movement in this COSMOKT model is basically a piston movement, it does not incorporate military commanders' rapid changes in their operational tactics and strategies. It was true that North Korean forces used the strategy of maneuvers and encirclements after the initial success in penetration.
Appendix D
ARMS CONTROL PROPOSALS MADE BY SOUTH AND NORTH KOREA

ARMS CONTROL PROPOSALS MADE BY THE SOUTH KOREAN GOVERNMENT AT THE PRIME MINISTERS’ TALKS, SEPTEMBER 5, 1990 136

1. Measures building political trust and confidence:

   (a) Recognition of each other's political and social system and suspension of all forms of assassination, slander, and vilification, discontinuing spread of leaflets and loudspeakers across the DMZ.
   (b) Allowance of freedom to information on each other's society.
   (c) Establishment of permanent liaison mission in both Seoul and Pyongyang to facilitate contacts and consultations.

2. Measures building military confidence:

   (a) Implementation of mutual visits and exchanges between military personnel.
   (b) Disclose and exchange military information.
   (c) Notification in advance of the movement and maneuvers of military units of a certain size or larger, and invite observers to those notified exercises. Beginning on January 1, 1991, notify each other of the movement of military units and military maneuvers of brigade size or larger 45 days in advance.
   (d) Immediately establish and operate a telephone hot line between the ministers of national defense of each side to prevent an accidental armed clash and to keep such a clash from escalating.
   (e) Demilitarization of DMZ and its use for peaceful purposes.

3. Measures of implementing South-North arms reductions:

   (a) Transform offensive military posture into a defensive one, reducing offensive military weapons first.
   (b) Agree on possession of equal number of troops and weapons so that a balance of military power be maintained, the side with larger armed forces should first reduce them to the level of the other side to achieve an equilibrium. Both sides should progressively reduce their armed forces by equal numbers.
   (c) Reduce the number of troops in accordance with reductions in their arms, while also reducing their reserve and paramilitary troops.
   (d) Both sides should allow the other side to conduct on-the-spot verifications and monitoring to ensure that agreed matters

---

regarding arms reductions are implemented. Both sides should form and operate a joint verification group and permanent monitoring groups. 

(e) The final reduced level of armed forces that both sides may maintain should be determined through mutual consultation in consideration of the military capabilities needed by a unified state.

NORTH KOREA'S RECENT PROPOSAL FOR ARMS CONTROL AT THE SOUTH-NORTH PRIME MINISTERS' TALKS, ON SEPTEMBER 5, 1990

1. North Korea proposed steps for arms control and disarmament:

(a) A nonaggression declaration stipulating that the South and the North will not invade the other side should be adopted.

(b) A peace agreement should be signed between the DPRK and the U.S. to ease tension and ensure durable peace in Korea.

2. Measures for removal of political confrontation:

(a) Cease slandering and instigating confrontation.

(b) Removal of all legal and institution mechanisms contrary to national unity and reunification.

(c) Guarantee press freedom.

(d) Removal of physical barriers.

(e) Free travel and contacts between political parties, organizations, and people of all strata.

(f) Jointly proceed to the international political arena and cooperate there.

3. Measures for removing military confrontation:

(a) Limit military training and military exercises.

- all joint military exercises and military training with foreign troops should be prohibited
- military training and military exercises of divisional scale and above
- military exercises along the military demarcation line should be totally prohibited
- military exercises of foreign troops in either side's area should be prohibited
- the other side should be notified in advance of military exercises.

(b) Both sides should make the DMZ along the demarcation line a peace zone.

- withdrawal of all military personnel and equipment deployed in the DMZ
- removal of all military facilities in the DMZ
- opening of DMZ to the civilians and for peaceful uses.

\(^{137}\)FBIS-EAS-90-172, September 6, 1990.
(c) Both sides should take steps to prevent accidental clashes and their expansion.
   - a direct telephone line between high-level military authorities
   - prohibition of military provocation in areas along the demarcation line.

(d) Reduction of forces.
   - three-stage reduction within three or four years time frame: to 300,000 men, to 200,000 men, and to less than 100,000
   - military equipment should be reduced and eliminated in keeping with a phased personnel cutback
   - in the first stage of reducing regular armed forces, all civilian armed forces should be disbanded.

(e) Both sides should suspend qualitative innovations of military equipment.
   - discontinuing introduction of new military technology and equipment and the development suspension of import of foreign advanced military technology and equipment.

(f) Both sides should notify the other side of conditions of arms reduction and should conduct inspections.
   - the conditions of arms reductions should be given to the other side
   - through mutual field inspection of the other side’s area, the conditions of implementation of arms reduction agreement should be inspected.

(g) Withdrawal of foreign troops.

(h) Turning the Korean peninsula into a nuclear-free zone.
   - joint efforts to withdraw all nuclear weapons from Korea
   - inhibition of production and purchase of nuclear weapons
   - banning of entrance and passage of foreign planes and warships carrying nuclear weapons.

(i) Both sides agree to remove all foreign forces off the peninsula.
   - U.S. troops be withdrawn from the South in proportion to the arms reduction of the two Koreas
   - proportionate to the withdrawal of the U.S. troops, their military bases in Korea should be dismantled.

(j) Guarantee peace during arms reduction and thereafter.
   - the neutral nations’ supervisory troops may be deployed in the DMZ along the Demarcation Line
   - to discuss and solve problems on arms control and military disputes that may occur between the North and South, a North-South joint military committee, headed by the chief of staff-level officers of the North and South, should be created.

4. North-South Nonaggression Declaration:¹³⁸

(a) Article 1: The North and the South as a single nation shall not use arms against the other side in any case or infringe upon the other by force of arms.

(b) Article 2: The North and the South shall settle possible differences and disputes peacefully through dialogue and negotiation.

(c) Article 3: The demarcation line for non-aggression between the North and the South shall be the military demarcation line laid down in the agreement in the military armistice in Korea dated July 27, 1953.

(d) Article 4: The North and South shall stop the arms race and reduce the armed forces stage by stage in order to firmly guarantee the mutual promise on non-aggression.

(e) Article 5: The North and South shall, for the present, install and operate direct telephone links between the military authorities of the two sides in order to prevent accidental arms conflict and its expansion.

(f) Article 6: This declaration on non-aggression can be revised or supplemented through agreement between the South and the North.

(g) Article 7: This declaration shall be valid from the day when the North and the South go through procedures needed for its vitality and exchange a notice informing each other of the result and shall remain valid until the reunification of the country unless any side informs the other of its abrogation.
Appendix E

THE ARMISTICE AGREEMENT (EXCERPTS)\textsuperscript{139}

\textit{The Armistice Agreement consists of five main articles: (1) MDL and DMZ, (2) concrete arrangements for the cease-fire and armistice, (3) arrangements relating to prisoners of war, (4) recommendations to the governments concerned on both sides, and (5) miscellaneous. Quoted here is the second article in regard to arms control.}

Article II: Concrete Arrangements for Cease-Fire and Armistice

12. The Commanders of the opposing sides shall order and enforce a complete cessation of all hostilities in Korea by all armed forces under their control, including all units and personnel of the ground, naval, and air forces, effective twelve (12) hours after this Armistice Agreement is signed. (See paragraph 63 hereof for effective date and hour of the remaining provisions of this Armistice Agreement.)

13. In order to ensure the stability of the Military Armistice so as to facilitate the attainment of a peaceful settlement through the holding by both sides of a political conference on a higher level, the Commanders of opposing sides shall

\textup{(c) Cease the introduction into Korea of reinforcing military personnel; provided, however, that the rotation of units and personnel, the arrival in Korea of personnel on a temporary duty basis, and the return to Korea of personnel after short periods of leave or temporary duty outside of Korea shall be permitted within the scope prescribed below. 'Rotation' is defined as the replacement of units or personnel by other units or personnel who are commencing a tour of duty in Korea. Rotation personnel shall be introduced into and evacuated from Korea only through the ports of entry enumerated in paragraph 43 hereof. Rotation shall be conducted on a man-for-man basis; provided, however, that no more than thirty-five thousand (35,000) persons in}

\textsuperscript{139}Documents on International Affairs 1953, Oxford University Press, London, 1956, pp. 386–05.
the military service shall be admitted into Korea by either side in any
calendar month under the rotation policy. No military personnel of either
side shall be introduced into Korea if the introduction of such personnel will
cause the aggregate of the military personnel of that side admitted into Korea
since the effective date of this Armistice Agreement to exceed the cumulative
total of the military personnel of that side who have departed from Korea
since that date. Reports concerning arrivals in and departures from Korea of
military personnel shall be made daily to the Military Armistice Commission
and the Neutral Nations Supervisory Commission; such reports shall include
places of arrival and departure and the number of persons arriving at or
departing from each such place. The Neutral Nations Supervisory...

(d) Cease the introduction into Korea of reinforcing combat aircraft, armoured
vehicles, weapons, and ammunition; provided, however, that combat aircraft,
armoured vehicles, weapons, and ammunition which are destroyed, damaged,
worn out, or used up during the period of the armistice may be replaced on
the basis of piece-for-piece of the same effectiveness and the same type. Such
combat aircraft, armoured vehicles, weapons, and ammunition shall be
introduced into Korea only through the ports of entry enumerated in
paragraph 43 hereof. In order to justify the requirement for combat aircraft,
armoured vehicles, weapons, and ammunition to be introduced into Korea for
replacement purposes, reports concerning every incoming shipment of these
items shall be made to the Military Armistice Commission and the Neutral
Nations Supervisory Commission; such reports shall include statements
regarding the disposition of the items being replaced. Items to be replaced
which are removed from Korea shall be removed only through the ports of
entry enumerated in paragraph 43 hereof. The Neutral Nations Supervisory
Commission, through its Neutral Nations Inspection Teams, shall conduct
supervision and inspection of the replacement of combat aircraft, armoured
vehicles, weapons, and ammunition authorised above, at the ports of entry
enumerated in paragraph 43 hereof.

(e) Ensure that personnel of their respective commands who violate any of the
provisions of this Armistice Agreement are adequately punished.
(g) Afford full protection and all possible assistance and co-operation to the Military Armistice Commission, its Joint Observer Teams, the Neutral Nations Supervisory Commission, and its Neutral Nations Inspection Teams, in the carrying out of their functions and responsibilities hereinafter assigned; and accord to the Neutral Nations Supervisory Commission, and to its Neutral Nations Inspection Teams, full convenience of movement between the headquarters of the Neutral Nations Supervisory Commission and the ports of entry enumerated in paragraph 43 hereof over main lines of communication agreed upon by both sides, and between the headquarters of the Neutral Nations Supervisory Commission and the places where violations of this Armistice Agreement have been reported to have occurred. In order to prevent unnecessary delays, the use of alternate routes and means of transportation will be permitted whenever the main lines of communication are closed or impassable.

(h) Provide such logistic support, including communications and transportation facilities, as may be required by the Military Armistice Commission and the Neutral Nations Supervisory Commission and their Teams.
REFERENCES

I. LITERATURE ON KOREA AND ASIAN ARMS CONTROL

Korean Authors


Ha, Young Sun, War and Peace on the Korean Peninsula: Structure of Military Confrontation, Chonggye Youngoos, Seoul, Korea, 1989.


Arms Control in Korea and Asia by Foreign Authors


II. LITERATURE ON THE KOREAN WAR (ARMISTICE REGIME), ROK-U.S. ALLIANCE, AND KOREAN MILITARY BALANCE


United Nations General Assembly, A/3167, Aug 16, 1956 (mimeo.).


_________, and Yong-Sup Han, Korean and U.S. Economic and Technological Capabilities to Support Defense Burdens, RAND, forthcoming, 1991.


III. CONVENTIONAL ARMS CONTROL IN EUROPE

Negotiations and General Theory


**Confidence-Building Measures**


Holst, Johan Jorgen, Confidence and Security in Europe: A Long Term View, Norsk Utenrikspolitisk Institutt, Nr. 296 (B), March 1984.

Holst, Johan Jorgen, Confidence and Security-Building Measures in Europe: A Possible Agenda for the Stockholm Conference, Norsk Utenrikspolitisk Institutt, Nr. 290 (B), December 1983.


MBFR and CFE I & II


**Verification**


IV. MILITARY MODELING AND ANALYTIC SIMULATION OF ARMS CONTROL


Conventional Balance in Europe


**Deterrence Theory**


