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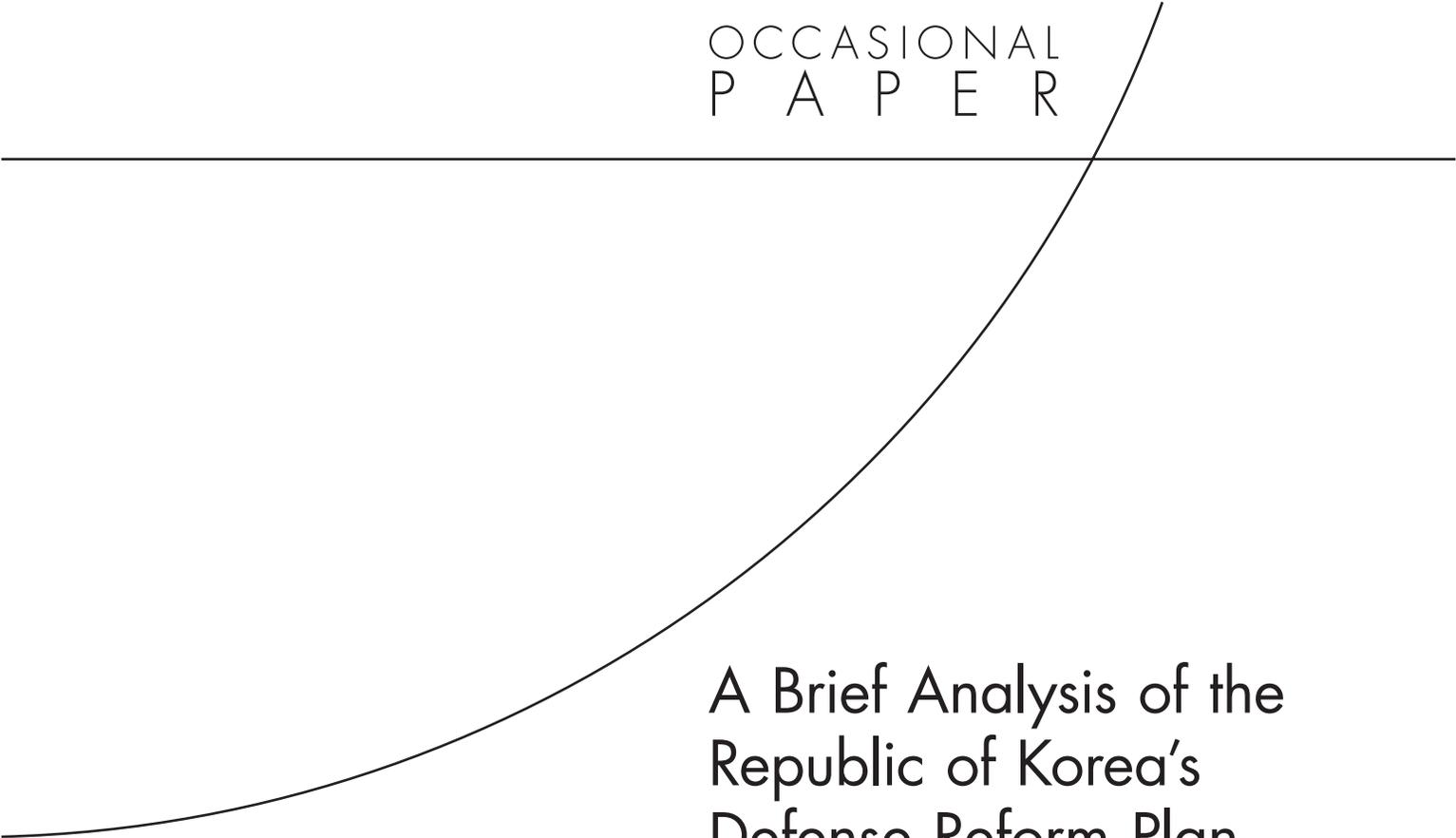
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A Brief Analysis of the Republic of Korea's Defense Reform Plan

Bruce W. Bennett

Prepared for the Republic of Korea Ministry of National Defense

Approved for public release; distribution unlimited



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Preface

In mid-September 2005, the Republic of Korea (ROK) Ministry of National Defense announced a Defense Reform Plan designed to modernize ROK military equipment and achieve a higher level of professional military personnel. The plan was controversial from the beginning, including initially a roughly 11 percent per year military budget increase in an era when the ROK government often downplays the North Korean military threat.

About one month later, ROK National Assemblyman Jin-Ha Hwang asked the author to perform a broad feasibility study of the Defense Reform Plan. As a member of the National Assembly's National Defense Committee, he asked the author to analyze the core aspects of the plan and provide a U.S. perspective on the various policy options associated with the plan. The study, completed at the end of November 2005, supported the Defense Reform Plan in general, though recommending a number of adjustments to it. The plan has actually experienced some adjustments already, including a reduction in the 2006 budget increase from about 10 percent to 8 percent and adjustments in the ROK Navy's submarine construction schedule.

This paper was distributed in Korean at the end of December 2005. To provide further discussion of this paper, Assemblyman Hwang organized a seminar at the National Assembly building on January 19, 2006. The author made a brief presentation on the paper and then responded to commentary by representatives of the military, the Office of the Minister of National Defense, and a nongovernmental organization. The proceedings were broadcast on the National Assembly's television network.

The research contained in this paper was funded by Assemblyman Hwang. But to provide greater visibility for the Defense Reform Plan and its related issues, he agreed to it being published in English under the auspices of the International Security and Defense Policy Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

The primary audience for this paper includes English speakers with an interest in Korean military affairs. Comments and inquiries are welcome and should be addressed to the author. For more information on RAND's International Security and Defense Policy Center, contact the Director, James Dobbins. He can be reached by email at Dobbins@rand.org; by phone

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A Brief Analysis of the Republic of Korea's Defense Reform Plan

This analysis of the Republic of Korea (ROK) Defense Reform Plan (DRP) was done at the request of Assemblyman Jin-Ha Hwang, a member of the National Assembly's National Defense Committee.¹ It examines the overall nature of the DRP, identifies major risks in the plan, and discusses how those risks can be managed. It concludes that the DRP is a good approach to potential ROK security dilemmas, but the plan faces major risks, especially in meeting some possible security requirements. The DRP could be strengthened by adding concepts for managing its major risks.

This analysis does face several limitations: (1) A number of DRP details have yet to be settled, (2) some planned weapon systems have not yet been developed, (3) many of the plan details are classified by the ROK and thus not available to the author, and (4) this author has only limited experience with military budgets and force acquisition.

This paper begins by discussing the background of the DRP and the manpower problem it needs to address. It then presents the author's estimates of the force changes that would occur and how those forces appear to fit the force requirements the ROK will likely face in the coming years. It examines the budget requested for the DRP and whether it will cover the necessary costs. It addresses the effects that the DRP could have on ROK military morale and how the United States may view the DRP. It concludes by recommending steps the ROK could take to manage the key risks identified throughout this analysis.

Background

The ROK Ministry of National Defense (MND) formally announced its DRP the week of September 12, 2005. The MND has been working on defense reform for many years now, and the current plan resembles the work of the Defense Reform Commission more than five years ago.² The DRP seeks to improve the qualitative characteristics of the ROK military while reducing the quantity of military manpower and weapon systems. ROK military manpower

¹ The views expressed herein are those of the author and do not reflect the official policy or position of the RAND Corporation, the U.S. Department of Defense, or the U.S. government.

² The Defense Reform Commission talked about reducing the ROK military over time to between 400,000 and 500,000 personnel. See "Defense Ministry to Reduce Military Force," *Korea Herald*, August 20, 1999; "Armed Forces to Be Trimmed to 400,000–500,000 by 2015," *Korea Times*, August 19, 1999.

would be reduced from the total a few years ago of 690,000 to 500,000 in 2020, reflecting the declining birth rate that will provide insufficient young men to sustain the current force size.

The DRP calls for replacing nearly every outdated major weapon.³ According to the MND, the weapons to be replaced currently constitute one-third to one-half of existing systems by type.⁴ In addition, MND plans to transition to a more professional force with a smaller fraction of draftees. To pay for these changes, the ROK military originally projected the need to increase the budget 11.1 percent per year through 2015, and then 7 percent per year through 2020, or an aggregate of some 683 trillion won⁵ between 2006 and 2020.⁶ Of this budget, almost 290 trillion won were to be spent on force investment. However, the MND then reduced its budget requirement in October 2005, saying that 621 trillion won through 2020 would be sufficient. Of this, 272 trillion won were required for force investment (about 40 times the 2005 force investment budget) and 349 trillion won for personnel and operations.⁷

The ROK DRP thus differs from the post–Cold War U.S. and European defense reforms that reduced both manpower and budgets to provide more money for national social welfare (see the comparison in the Appendix). The DRP seeks to sustain defense capabilities by obtaining better equipment and personnel quality—what the U.S. Department of Defense has been suggesting for the ROK's forces—as a tradeoff against less quantity.

In addition, a key issue in this reform effort has been the desire to achieve a better balance among the services, because the ROK Army has had just over 80 percent of the ROK military personnel and that degree of control in the various joint activities. Almost all of the force reductions will occur in the ROK Army, and joint assignments will be balanced, with army personnel holding only one-half of the total positions.

The ROK Manpower Problem

The ROK has little choice but to reduce its military manpower over time. The MND gets most of its active-duty manpower from a draft (about 78 percent in 2003). The draft is mainly

³ Some argue that the reduction in ROK military manpower will help pay for equipment modernization. But the planned reduction in 220,000 draftees will reduce the ROK salary payments (in terms of draftee pay) only about 0.1 trillion won per year, less than the basic salary increase expected from adding 17,900 noncommissioned officers and 20,000 contract personnel.

⁴ For example, almost 1,100 ROK tanks are modern K-1s or Russian T-80s, versus about 1,250 ROK tanks that are still M-47s or M-48s, or about 54 percent. Similarly, of the 530 ROK fighter aircraft, only about 160 are newer KF-16s, so about 70 percent of fighter aircraft need to be replaced.

⁵ As of November 2005, \$1 was equal to about 1,000 Korean won.

⁶ Increasing the MND budget by 11.1 percent per year through 2015 and then by 7 percent per year through 2020 would have amounted to an aggregate budget of 750 trillion won, making it difficult to understand how the number 683 trillion won was reached.

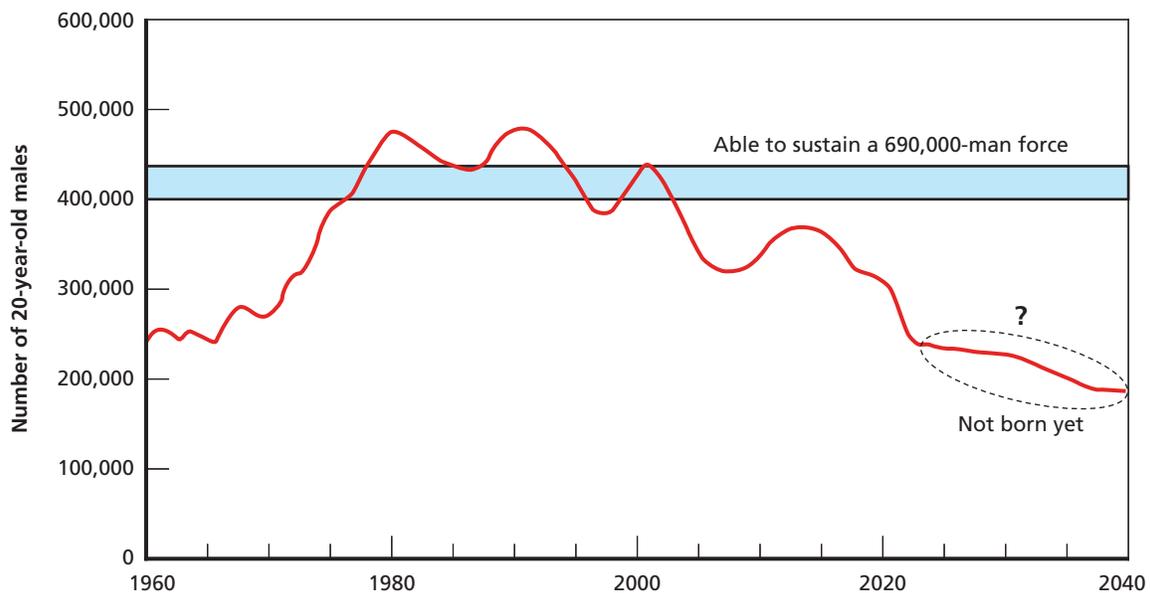
⁷ “Defense Reform Budget Requirement,” available in Korean at www.mnd.go.kr. This document argues that 67 trillion won of force investment is purely for the DRP, though herein it is assumed that the entire 272 trillion won force investment is associated with the DRP.

applied to 20-year-olds.⁸ Almost everyone is drafted, though in years of excess draftees, the MND has allowed some other agencies (like the National Police Force) to use up to a quarter or so of those draftees available.

According to the Korean National Statistical Office, 20-year-old men numbered generally more than 400,000 from 1977 to 2003, as shown in Figure 1, which was quite sufficient to sustain the 690,000 active-duty military population that had been maintained in the 1990s. But in 2008, the number of 20-year-old men is projected to fall to 317,000, creating a serious manpower shortage. This number is projected to rebound up to 368,000 in 2013 and then fall nearly continuously. The number is projected to reach 308,000 in 2020, 233,000 in 2025, and to fall below 200,000 in 2036 (but this number is obviously questionable, since the births for this group have not yet occurred).

The MND's other major manpower concern is a desire to transition to a more professional, volunteer military. The ROK has used the current national problems with job availability to recruit more volunteers, but, even so, the number of volunteers to be officers or non-commissioned officers (NCOs) without prior service is only about 6 percent of young males (compared with the current U.S. rate of 7 percent or so), and many of these volunteers join to avoid the draft and would not volunteer without it.

Figure 1
The Number of 20-Year-Old ROK Men



SOURCE: Korean National Statistical Office, <http://www.nso.go.kr/eng/index.html> (population projections).

RAND OP165-1

⁸ Older young men can be drafted after they are deferred for some period. There are only about 4,000 women among the 680,000 ROK active-duty personnel (0.6 percent). "Women Soldiers Mark 55 Years in the Forces," *Chosun Ilbo*, September 6, 2005, <http://english.chosun.com/w21data/html/news/200509/200509060025.html>.

The 2004 Force and the Postulated 2020 Force

The MND provides only very limited information on its military force structure each year as part of the *Defense White Paper*. For example, it discusses the number of tanks or fighter aircraft, but not the number of tanks or fighters by type. While there are a number of open sources that seek to fill in these data, these sources are often dated and incomplete. To provide a basis for estimating the effects of the DRP, Tables 1 through 3 present an indication of the 2004 ROK force structure and the force structure in 2020 after completion of the DRP. Based on open sources, the tables may well contain errors; nevertheless, it is important to provide a general sense of the effects of the DRP in replacing outdated systems and changing the ROK military capabilities.

Table 1 addresses the ROK Air Force. In the DRP, the number of personnel in the ROK Air Force is not scheduled to change significantly. But the DRP will replace many of the outdated aircraft (especially fighters, trainers, and reconnaissance and transport aircraft), provide some new capabilities [e.g., high-end fighters, Airborne Warning and Control System

Table 1
Comparison of ROK Air Force, 2004 Versus 2020

Force Type	2004	2020
Air force personnel	64,000	65,000
Fighter aircraft	0 high end 150 F-16 380 F-4, F-5, A-37	60 KF-15, 60 KF-X 170 KF-16 130 A-50?
Forward air control	30 O-1, O-2	20 KO-1
Reconnaissance	27 RF-4C, RF-5, Hawker	24 RKF-16, Hawker
Search and rescue	6 CH-47, 3 AS-232	7 Ka-32
AWACS	0	4
Tankers	0	4
Training aircraft	18 Hawk, 30 T-38, 15 T-41, 54 F-5, 25 T-33, 55 KT-1	90 KT-50 80 KT-1
Transport aircraft	2 B-747, 1 B-737, 1 C-118 10 C-130H, 20 CN-235M	3 VIP transports 20 C-130J, 20 CN-235M
Transport helicopters	3 UH-60	?
Unmanned aerial vehicles	3 Searcher, 100 Harpy	More numerous, diverse
Air defenses	200 Nike, 110 I-Hawk	SAM-X, M-SAM

SOURCES: Data are based on (1) information on the DRP provided to the author by the ROK National Assembly; (2) MND, *2004–2005 Defense White Paper*, Seoul, 2005; (3) International Institute for Strategic Studies, *Military Balance 2004–2005*, London; (4) *Jane's Sentinel Security Assessments*, Coulsdon, Surrey, U.K.: Jane's Information Group, 2005, <http://sentinel.janes.com/public/sentinel/index.shtml>.

NOTES: The author has estimated the character and quantity of 2020 forces where possible. AWACS = Airborne Warning and Control System.

(AWACS), and tankers], and replace the dangerously antiquated strategic surface-to-air missile systems. It will do so at the cost of reducing the fighter force by just over 100 aircraft, though the resulting force should be a significant improvement in aggregate capabilities. The new capabilities will help the ROK Air Force transition from primarily a fighter force that could support U.S. air forces to a more balanced air force with some independent capability.

Table 2 addresses the ROK Navy and Marine Corps. In the DRP, the number of personnel in the ROK Navy remains roughly the same, while the ROK Marine Corps decreases in size by about 4,000 personnel (removing the independent brigade and independent regiment). The DRP will largely replace its outdated surface combat ships, upgrade the submarine force, and expand the amphibious capability from a battalion to a brigade-sized landing force. The number of surface combat ships will be reduced mainly because fewer new patrol craft will be acquired than will be retired. Meanwhile, the addition of Aegis capability to the surface combat ships will substantially enhance the role of these ships, both at sea and in protecting the coastal areas of the ROK against aircraft and theater ballistic missiles (TBMs). Both the navy and marine forces will get more helicopters, and the marine maneuver elements will acquire improved armor, a longer-range artillery (a multiple rocket launcher), and unmanned aerial vehicle (UAV) capabilities for reconnaissance out to a considerable distance (about 80 km). While many of the naval improvements were already well under way before the DRP was announced, the DRP will complete the transition of the ROK Navy from a coastal force to a “blue water” naval force.

Table 3 addresses the ROK Army. As noted earlier, nearly all of the DRP personnel reductions come out of the army, which will have one-third of its personnel reduced. Associated with this personnel reduction is a significant reduction in the ROK Army force structure, in particular decreasing the current force of 47 divisions (active duty and reserve) down to a force of about 24 divisions.⁹ The DRP calls for replacing the antiquated ROK Army equipment (such as M-47 and M-48 tanks) with far more capable equipment (e.g., the K1A1 tank), and increasing the range out to which a force can see (with UAVs) and attack targets (with the planned multiple rocket launcher). While individually the revised ROK Army units will be more powerful, it is important to note that this would be a much smaller force. It would likely do well against very visible threats (such as, attacking North Korea forces that expose themselves) and less well against concealed threats (e.g., North Korean special operations forces [SOF] or North Korean forces defending against a counteroffensive).

This reduction of 23 divisions raises an important question: Will it reduce equipment from all of the units inactivated, or will the ROK Army try to retain its current equipment totals? For example, the loss of 23 divisions means that the artillery regiment (about 72 artillery pieces) in each of those divisions will be lost, dropping the ROK Army from about 5,300 artillery pieces to about 3,700 artillery pieces, thereby creating what will be referred to herein as the “Reduced” force size. To retain the artillery force at roughly the current size, the ROK Army would have to take such action as adding a second artillery regiment to many of its divisions, or

⁹ The 2020 force will also have four Mobilization Reserve Divisions (MRDs) “activated in wartime,” though it is not clear how these would differ from other reserve divisions.

Table 2
Comparison of ROK Navy and Marine Corps, 2004 Versus 2020

Force Type	2004	2020
Navy/Marine Corps personnel	67,000	64,000
Surface combatants		
Destroyers	3 KDX I, 2 KDX II	3 KDX I, 6 KDX II, 6 KDX III
Frigates	9 Ulsan	17 FFX
Corvette	28	0
Patrol	82	40 PKM-X
Submarines		
KSS-3	0	9?
KSS-2 (Type 214)	0	6
Type 209	9	3
Mini-sub (KSS-1)	11	0
Mine warfare	17	10?
Amphibious ships	4 LSTH, 4 LST	5 LPD, 7? LSTH
Major support ships	6	8?
Aircraft	8 P-3C, 8 S-2A, 5 Caravan	16 P-3C, 5 Caravan
Navy helicopters	30 Lynx	30 Lynx, 8 Mine Hunter, 60 KHP?
Marine divisions	2	2
Marine brigades/regiments	2	0
Tanks	60 K-1	60 K-1A1
Other armor	100	100
Artillery	150	150
Helicopters	6 SA-316	60 KHP?

SOURCES: Data are based on (1) information on the DRP provided to the author by the ROK National Assembly; (2) MND, *2004–2005 Defense White Paper*, Seoul, 2005; (3) International Institute for Strategic Studies, *Military Balance 2004–2005*, London; (4) *Jane's Fighting Ships*, Coulsdon, Surrey, U.K.: Jane's Information Group, 2005, <http://jfs.janes.com/public/jfs/index.shtml>.

NOTE: The author has estimated the character and quantity of 2020 forces where possible.

else it would have to form many extra separate artillery brigades, creating what will be referred to as the “Sustained” force size. An initial analysis of the proposed 2020 ROK Army structure suggests that a force of 370,000 active-duty personnel is consistent with a Reduced force, and that a Sustained force would need to be closer to 400,000 active-duty personnel. Because these are significant differences, both force descriptions will be discussed herein to evaluate the alternative implications. Nevertheless, it is anticipated that the ROK Army probably will look more like the Reduced force in 2020.

Table 3
Comparison of ROK Army, 2004 Versus 2020

Force Type	2004	2020 Force; Equipment	
		Reduced	Sustained
Army active-duty personnel	560,000	370,000	390,000–400,000?
Forward ground forces			
Top echelons	2 armies, 8 corps	1 command, 6 corps	
Active divisions	5 mechanized, 17 infantry	3 mechanized, 10 motorized	5 mechanized, 8 motorized
Reserve divisions	6 HRDs, 9 MRDs	5 HRDs [+4 MRDs]	
Heavy brigades	4 armor	3 armor, 1 mechanized	
Light brigades	3 infantry	4 security	
Rear ground forces			
Divisions	7 HRDs, 3 MRDs	6 HRDs	
Brigades	3 commandos	1 commando	
Reserve personnel	3,000,000	1,500,000	
Tanks	2,300	1,700	2,300
Armor vehicles	2,400	1,900	2,400
Artillery/multiple rocket launchers	5,300	3,700	5,300
Missiles	30		~50?
Helos	600	400?	600?

SOURCES: Data are based on (1) information on the DRP provided to the author by the ROK National Assembly; (2) MND, *2004–2005 Defense White Paper*, Seoul, 2005; (3) International Institute for Strategic Studies, *Military Balance 2004–2005*, London; (4) *Jane's World Armies*, Coulsdon, Surrey, U.K.: Jane's Information Group, 2005, <http://jwar.janes.com/public/jwar/index.shtml>.

NOTES: The author has estimated the character and quantity of 2020 forces where possible. HRD = Homeland Reserve Division.

Across all of the ROK military services, the DRP creates a force that is in some ways significantly smaller, quantitatively, than the 2004 force. The army suffers the largest reduction in size, but the 2020 air force will have fewer fighter aircraft, the 2020 navy will have fewer surface combat ships, and the marines will lose an independent brigade and regiment. These reductions pose the risk that the 2020 ROK military will be perceived by some as being weaker than the 2004 ROK military, despite its qualitative improvements, and this will be particularly true if the ROK Army adopts the Reduced force structure discussed above. Such a perception could disrupt regional deterrence and increase the coercion that the ROK feels. It will therefore be very important for the ROK to develop authoritative analysis showing that the quality of the 2020 force will make it stronger than the 2004 force across the range of ROK military requirements, the subject of the next section.

Military Force Requirements

Traditionally, assessments of ROK military requirements have focused on thwarting a North Korean invasion of the ROK, operating in alliance with the United States. But, in the future, the ROK could face a number of other security challenges, including attacks on the ROK by terrorist groups and perhaps nation-states, attacks on ROK commerce, the need to stabilize the ROK in the aftermath of unification, and support of international stability operations.

The author is not familiar with any methodology being used to evaluate these diverse ROK security challenges. This section thus outlines what such a methodology needs to consider. This short paper is not the place for a detailed development of these issues, and therefore it seeks to identify the key issues in a relatively simple, transparent manner and to offer the author's initial judgments to illustrate the methodology with a specific focus on risks. In doing so, the author hopes to make it possible for others who hold differing views to substitute their judgments to see how much different a view of ROK military requirements is generated.

What Security Challenges and Requirements Will Korea Have?

Before trying to characterize these security challenges, it is important to note that any threat involves two dimensions: (1) an adversary capable of posing a threat and (2) an adversary with the intent to pose a military threat. In planning for the future, it is extremely difficult to predict intent: Any leader could quickly change his intent, or leaders could be replaced by others with hostile intents. Therefore, the key to estimating military requirements is focusing on the military capabilities that neighbors and others could use against the ROK. In addition, it is usually not helpful to the ROK's international relations to identify specific nations as likely future adversaries; rather, the key is characterizing the size and kind of forces that could be used against the ROK or ROK interests (similar to the capabilities-based approach used by the U.S. Department of Defense).

All of the ROK's neighbors have substantial conventional force capabilities that could become a threat to the ROK in some manner. Other groups, including terrorists, also have conventional weapon capabilities that could threaten the ROK. The threats posed against the ROK are fundamentally escalated by the possession of weapons of mass destruction (WMD) by the ROK's neighbors and other parties. With conventional weapons, and short of an invasion, an adversary can cause only limited damage to the ROK, though this damage would still likely be unacceptable. But an adversary possessing WMD can seriously imperil the well-being of the ROK without ever invading the ROK.

Figure 2 shows the security challenges anticipated over the next 15 to 20 years and the corresponding military requirements. This figure connects the challenges with corresponding requirements, a solid line showing a definite connection, and a dotted line reflecting a potential connection, depending on how the challenge develops. The following text briefly describes the challenges.

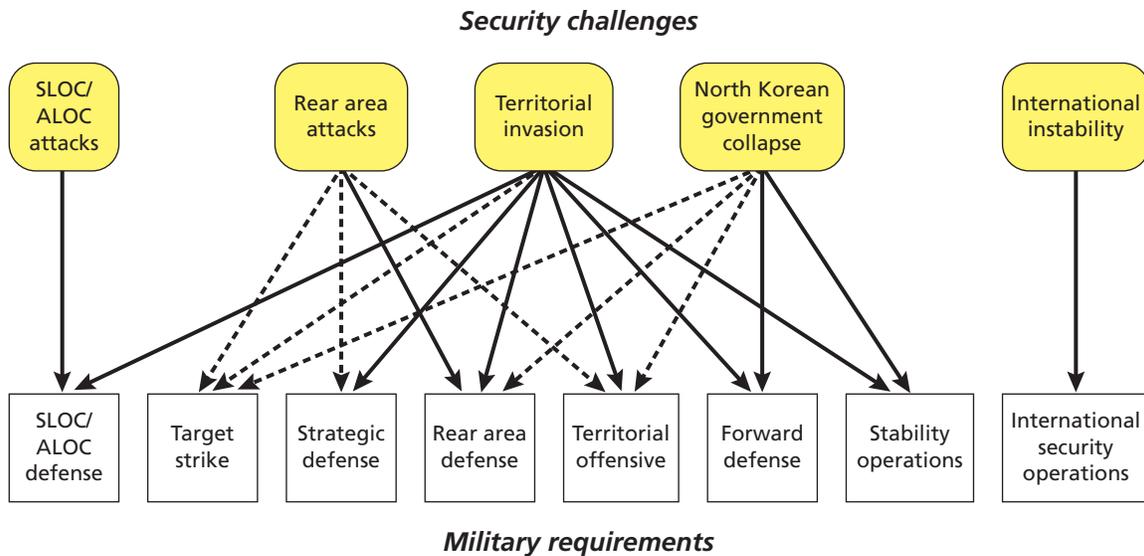
Territorial Invasion. For over 50 years now, the ROK has done most of its military planning against a potential North Korean invasion. An invasion of the ROK would require a ground force of nearly a million men or more, plus supporting air and naval forces. Geographically, only the ROK's four immediate neighbors and their allies could carry out such an invasion,

and this kind of challenge from some of them is quite unlikely: Japan does not have a force anywhere close to the required size, and Russia has an even smaller force deployed within a thousand kilometers of Korea. While Japan could in theory increase the size of its ground forces, it would take years (more likely decades) to produce the equipment such a force would need and to train the force, and Japan would have difficulty finding the land area to train such a large force. To develop such a large force, Japanese nationalism and antagonism toward the ROK would have to soar; thus, the best ROK defense against such a development is to manage ROK/Japanese relations.

While China does have a force large enough to invade the ROK (or, more likely, a unified Korea), it would have to bring ground forces from throughout all of China to amass the necessary force size, leaving China vulnerable to internal turmoil. Thus, while a Chinese invasion challenge cannot be totally ruled out, it also seems unlikely. Nevertheless, if unification occurs, the ROK will need to decide how large a military is needed to deter China from contemplating an invasion of Korea.

The only serious invasion challenge that the ROK faces in the next few decades, therefore, is from North Korea. However, the North Korean military faces many difficulties in posing such a challenge. The major difficulty is that North Korean equipment is becoming antiquated, while the ROK and the United States deploy increasingly modern and capable equipment. To offset this trend, North Korea has chosen to emphasize so-called “asymmetric” threats, such

Figure 2
Connecting Security Challenges to Military Requirements



NOTES: The security challenges (at the top) are connected with the corresponding military requirements (at the bottom). A solid line shows a definite connection. A dotted line shows a potential connection, depending on how the challenge develops. SLOCs = sea lines of communications; ALOCs = air lines of communications.

as WMD, apparently hoping to offset ROK and U.S. conventional advantages. Against combined ROK and U.S. strength, such a war would be an extraordinarily risky gamble by North Korea, so risky that it is unlikely to attempt it, short of desperate circumstances (probably associated with a major internal control failure). Thus, this challenge is not a high probability, but the probability is also not zero.

The military requirements for responding to an invasion challenge include:

1. *Forward Defense.* Stopping the ground component of the invasion in the forward area, where the greatest risk is some form of adversary breakthrough that would endanger the defending military forces and potentially allow great damage to the civilian population.
2. *Rear Area Defense.* Protecting the ROK behind the front lines and countering attacks by long-range artillery, missiles, aircraft, and special forces.
3. *Target Strike.* Destroying the adversary's key military targets, especially WMD, while seeking to minimize damage to the adversary's civilians. These strikes are limited by intelligence on the adversary's targets, which may force the ROK to launch a territorial offensive to find and destroy these targets.
4. *Territorial Offensive.* Offensive operations designed to recover captured ROK territory, secure the adversary's territory, and find and destroy the adversary's major military threats. These operations may also remove the adversary's political leaders.
5. *Strategic Defense.* The use of strategic weapons to deter the adversary's use of WMD and to destroy the adversary's military forces and WMD if deterrence fails.
6. *Stability Operations.* Military efforts to secure captured territory and populations. Historical cases suggest the need for 10,000 to 20,000 or more ground-force personnel per million residents to succeed in stabilization.¹⁰

Note that North Korean possession of WMD, coupled with North Korean information denial, would compel the ROK to pursue a territorial offensive against North Korea in a conflict to fully resolve the North Korean WMD threat. In addition, the high level of military training in North Korea and the likelihood that North Korean military personnel would become disaffected in the aftermath of a conflict, coupled with the vast and highly distributed North Korean ammunition supplies, suggest that the stabilization requirement in the North could be even larger than in historical cases.

As the United States is finding now in Iraq, stabilization of an area can be far more difficult than conquering it. Stabilization difficulties will contribute in the future to countries being reluctant to conquer their neighbors. For example, if postunification Korea has a population of 70 million or so people, an adversary would likely need about a million-man

¹⁰ James T. Quinlivan, "Burden of Victory: The Painful Arithmetic of Stability Operations," *RAND Review*, Summer 2003, <http://www.rand.org/publications/randreview/issues/summer2003/burden.html>; James Dobbins, "Nation-Building: The Inescapable Responsibility of the World's Only Superpower," *RAND Review*, Summer 2003, <http://www.rand.org/publications/randreview/issues/summer2003/nation1.html>.

ground-occupation force to stabilize Korea, probably for many years after conquering it. None of Korea's neighbors are prepared for that magnitude of commitment, suggesting that they are unlikely to challenge Korea with conquest after Korean unification.

North Korean Government Collapse. The instability in North Korea suggests that at some time in the next several decades, the North Korean government could collapse; indeed, a collapse seems far more likely than a North Korean invasion of the ROK. It could lead to the North Korean leadership accepting absorption by the ROK, a civil war, or anarchy. Depending upon the actual circumstances, a North Korean collapse, especially one involving civil war that spills into the ROK and China, could involve all of the requirements of an invasion challenge, with the potential exception of strategic defense.

Rear Area Attacks. If future adversaries are unlikely to invade the ROK, they may still try to use military power to coerce the ROK, threatening and potentially carrying out attacks against the ROK's rear areas. For example, in peacetime an adversary could coerce the ROK, threatening to damage some aspect of its infrastructure, such as its power distribution or some critical industrial capability. In wartime, an adversary might target key ROK military facilities, such as command and control sites, air bases, or ports. If these attacks use WMD, they could cause considerable damage to the ROK, forcing the ROK to defend itself and even to seek to eliminate the adversary's weapons via attacks on the adversary's territory. The level of ROK military capability will help determine whether the ROK is able to deter such attacks.

SLOC/ALOC Attacks. In the traditional North Korean invasion scenario, the sea lines of communications (SLOCs) and air lines of communications (ALOCs) would be essential to the war fight, securing the flow of U.S. forces into Korea. North Korea would naturally attack the SLOCs and ALOCs to stop the U.S. force flow. In peacetime, other states or terrorist groups might seek to coerce or punish the ROK by attacking ROK merchant shipping or commercial aircraft as they operate around the world. For example, North Korea or China could sink a few oil tankers headed to the ROK,¹¹ perhaps even anonymously (to avoid censure and/or retaliation), driving tanker insurance rates very high and significantly increasing the cost of oil in the ROK, severely disrupting the ROK economy. An adversary might interdict ROK shipping to impede ROK competition in critical markets or to increase the quantity of oil available to the adversary. In such cases, the ability of the ROK to protect its SLOCs and ALOCs is key to deterring as well as defeating such attacks.

International Instability. The ROK must assist the international community in controlling international instability (including terrorist activity) in order to reduce attacks on the ROK and protect ROK interests. The ROK is already participating in Operation Iraqi Freedom to assist in this effort and previously participated in stabilizing East Timor for similar reasons. Further efforts will be required in the future.

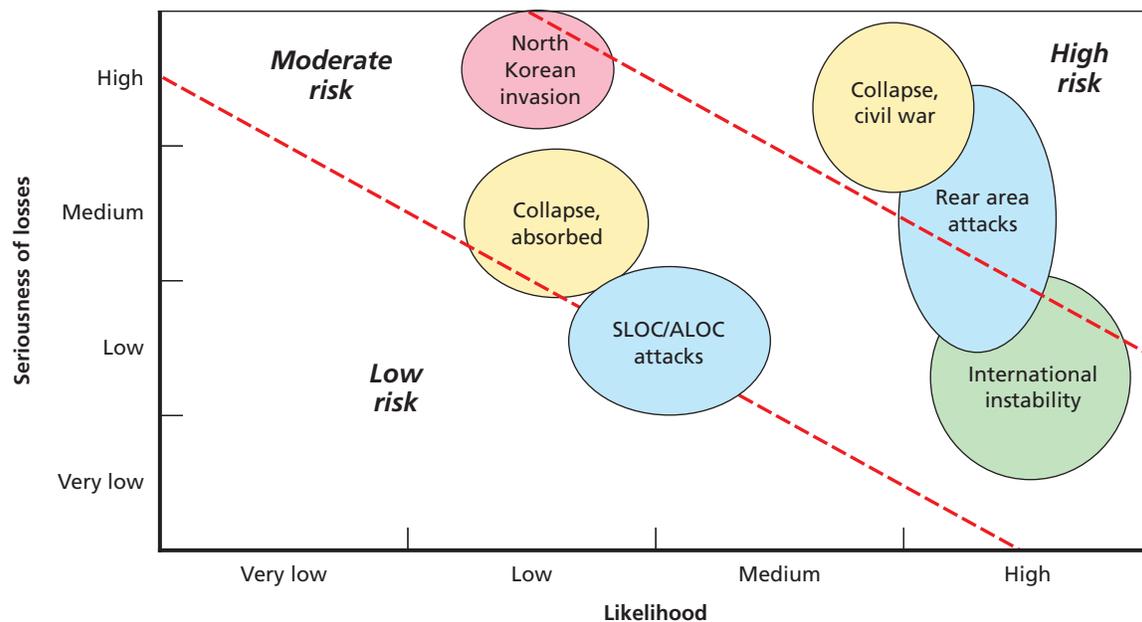
¹¹ President Roh has worried that China could take such action against the ROK if the ROK supported U.S. intervention in a Chinese invasion of Taiwan.

The Relative Level of Risk

Risk with a security challenge is a combination of the consequences of the challenge and its likelihood. It is not possible to predict these aspects with precision, but Figure 3 suggests one perspective. Rear area attacks could become the major ROK challenge of the future, though at some point a collapse of North Korea is also likely. A North Korean collapse might not lead to unification, but if it did, the collapse could involve a range of scenarios, from a civil war to North Korea simply being absorbed by the ROK. The consequences associated with a collapse into civil war or rear area attacks appear to pose the highest risks, and thus deserve the greatest focus in ROK defense planning.

The differences in the level of risk shown in Figure 3 are important but do not provide clear priorities for ROK security requirements. For example, while independent SLOC/ALOC attacks are shown as likely being the lowest risk in Figure 3, many of the other challenges could involve SLOC/ALOC attacks; therefore, SLOC defense and ALOC defense would tend to have a relatively high priority. While a final assessment of ROK security requirements needs to determine the relative priorities among the requirements, such an effort goes beyond the scope of this short paper. It is sufficient for this paper to characterize the alternative security requirements.

Figure 3
Level of Risk from North Korea, to 2025



NOTE: Based on author's notional assessments.

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Describing the ROK Security Requirements

Table 4 seeks to further define the military requirements identified in Figure 2. This table disaggregates some of the military requirements because of key differences; for example, a rear defense against aircraft has a very different character and very different requirements than a rear defense against electronic and information warfare. The middle two columns use a sliding scale to indicate whether the focus of the requirement is more on military or civilian defense, where both will often be involved in the future. Most military requirements have traditionally been characterized in terms of supporting a defense against a North Korean invasion, and thus inherently emphasize military issues. But many of the future challenges will be more focused on protecting ROK civilians, thereby changing the nature of the requirements. Shifting the emphasis to civilian defense usually increases the number of locations that must be defended; it also increases the importance of a near-perfect defense. Table 4 also describes the nature of the risks that each military requirement is seeking to address.

Table 4
The ROK Security Requirements

Security Requirement	Relative Emphasis		Nature of Risks
	Military	Civilian	
Forward defense	X		Breakthroughs, ground force collapse, civil damage
Rear defense vs. aircraft		X	Damage to bases, force flow, cities
Rear defense vs. TBMs		X	Damage to bases, force flow, cities
Rear defense vs. SOF/terrorists	X		Damage to bases, military forces, cities, NEO; reduced force flow
Rear defense vs. electronic and information warfare	X		Damage to C4I, economy, resolve, international support
Rear defense vs. WMD		X	Attrition, casualties, panic
Territorial offensive	X		Unification failure, regime survives, more civil/military damage, new war
Target strike	X		Cannot identify targets, collateral damage, retaliatory damage to ROK
Strategic deterrence		X	Conflict, escalation
ALOC defense	W-----P		Force flow, economic flow
SLOC defense	W-----P		Force flow, economic flow
Stabilize refugee flow		W-----P	SOF infiltration, destabilize ROK
Stabilize a North Korean collapse		X	Civil war, instability, spillover/damage, WMD proliferation
Stabilize postunification		X	Instability, spillover/damage, WMD proliferation
International security operations		X	Global instability

NOTES: With ALOC and SLOC defense and stabilizing refugee flow, the relative emphasis varies between peacetime ("P") and wartime ("W"). NEO = noncombatant evacuation operation; C4I = command, control, communications, computers, and intelligence.

Will ROK Conventional Capabilities Be Maintained?

Considering only ROK forces, Table 5 compares the capabilities of the forces estimated for 2020 against the 2004 forces for each of the military requirements formulated above, as well as the level of risk associated with the 2020 forces against conventional threats; against chemical and biological weapon (CBW) threats; and against nuclear, biological, and chemical (NBC) threats. Military risk is measured in traditional terms: “low,” “medium,” “high,” “very high,” and “unacceptable.” This table reflects a rough assessment by the author, combining the quantity and quality of ROK forces. It argues that while the postulated 2020 force will generally be superior to the 2004 force, the 2020 force may be inferior relative to the 2004 force in areas where the size of the ground forces matters, including defense against SOF and terrorists and in stabilization efforts. Not enough is said in the DRP literature to evaluate the ROK military efforts in electronic and information warfare or in countering WMD for 2020 versus those efforts for 2004.

Table 5
Rough Assessments of the DRP 2020 Force Versus the 2004 Force and 2020 Military Risks

Military Requirement	2020 Force vs. 2004 Forces	2020 Level of Risk If ROK Operates Alone		
		Conventional Threat	CBW Threat	NBC Threat
Forward defense	Equivalent	Medium	Very High	Unacceptable
Rear defense vs. aircraft	Improved	Low	Medium+	Very high
Rear defense vs. TBMs	Improved	Medium	High	Very high
Rear defense vs. SOF/terrorists	Worse?	High	Unacceptable	Unacceptable
Rear defense vs. electronic and information warfare ^a	?	High	High	High
Rear defense vs. WMD	?	NA	Unacceptable	Unacceptable
Territorial offensive	Improved?	High	Very high	Unacceptable
Target strike	Improved	High	Very high	Unacceptable
Strategic deterrence	No change	High	Very high	Unacceptable
ALOC defense	Improved	Medium	High	Very high
SLOC defense	Improved	High	High	Very high
Stabilize refugee flow	Worse?	Medium	Very high	Very high
Stabilize a North Korea collapse	Worse?	High	Unacceptable	Unacceptable
Stabilize postunification	Worse	Very high	Unacceptable	Unacceptable
International security operations	Improved	Medium	Very high	Very high

NOTE: NA = not applicable.

^a Not primarily a military responsibility, especially in peacetime.

The MND believes that the 2020 force under the DRP will be far more capable than the 2004 force:

The ministry plans to reduce its 691,000 troops by one-fourth—177,000 from the Army and 4,000 from the Marine Corps—to 500,000 on a gradual basis by 2020. But actual military strength will be boosted as much as 1.8 times from the current level by acquiring sophisticated ground, air and naval weapons systems.¹²

The author introduced an aggregate measures methodology in 2000¹³ that best reflects a forward defense against a North Korean attack. According to this methodology, the aggregate capability of the DRP's 2020 force would be about 25 percent (for a Reduced army) to 50 percent (for a Sustained army) higher than the 2004 force's capability, though the improvement in individual weapon categories would be higher (e.g., the average fighter capability is about 80 percent higher, and, in aggregate, fighter capability is about 50 percent higher, given the reduction in the number of aircraft). This assessment may be appropriate for some of the military requirements in Table 5 but is clearly not the case for others (e.g., the ability to stabilize a North Korean collapse, where the quantity of manpower is a clear factor in military capability).

Will the ROK Forces Meet the Requirements and Be Self-Reliant?

The short answer to this question is no, especially if ROK adversaries possess and use NBC weapons. As shown in Table 5, facing adversaries with only conventional weapons, the ROK 2020 forces would face risks running from low to very high, depending on the identity of the adversary and the details of that adversary's capabilities. The high and very high risks even without adversary WMD use would be:

- *Rear Defense Versus SOF/Terrorists.* The history of North Korean SOF actions against the ROK has led the ROK to develop a fairly robust defense against SOF and terrorists. Nevertheless, that defense has still failed on occasion (e.g., at Kangnung in 1996). The DRP reduces the rear area defense force from ten to six divisions and turns coastal defense over to the ROK police. Moreover, as the size of the draft-age group declines significantly, the personnel available for service in the ROK National Police will also decrease. The resulting defense against SOF and terrorists could be quite thin, suggesting a high risk.
- *Rear Defense Versus Electronic and Information Warfare.* The material available on the DRP says very little about how this area will be strengthened. All of the countries surrounding the ROK already have cadres of either organized or individual "hackers" who pose a serious stand-off threat to the ROK. And North Korea has demonstrated its ability to influence the ROK significantly with its strategic communications (a type of infor-

¹² Jung Sung-ki, "W620 Tril. Needed for Defense Reform 2020," *Korea Times*, October 24, 2005, <http://times.hankooki.com/lpage/nation/200510/kt2005102420021611950.htm>.

¹³ Bruce W. Bennett, "North Korea: A Changing Military Force—A Threat Now and in the Future," presented to The Council on Korea-U.S. Security Studies, October 26–27, 2000.

mation warfare). Thus, these threats are already high and will continue to grow in the absence of substantial ROK intervention.

- *Territorial Offensive.* While the modernized equipment being fielded by the ROK will enhance the ROK's ability to execute a territorial offensive, this ability will be jeopardized if the ROK Army adopts the Reduced equipment levels, giving the ROK Army insufficient depth and ability to sustain attrition and mechanical failures. In addition, the lower quantity of ROK infantry jeopardizes offensive operations if attrition rates are too high, as could occur in defending against a North Korean invasion.
- *Target Strike.* The DRP will improve the execution part of target strikes (better aircraft and likely better munitions), something that would significantly reduce risks. But the ROK capabilities for target strikes are currently impaired by a lack of information required to identify likely targets. For example, if the ROK decided to destroy North Korean nuclear weapons in response to a North Korean invasion, it may well not be able to do so because it will not know the location of the North Korean nuclear weapons, leaving a high risk.
- *Strategic Deterrence.* The ROK lacks an independent strategic deterrent; it depends on the U.S. nuclear umbrella. In a campaign limited to conventional weapons, this strategy is a high risk but not unacceptable. But if the ROK had to establish escalation control against WMD, it lacks the independent means to do so.
- *Stabilizing a North Korean Collapse.* A North Korean collapse, especially one that led to a civil war, would be very difficult for the ROK to deal with, especially with limited numbers of active-duty ground-force personnel who would be needed to sort out the various participants in a civil war. Even if WMD were not used, the ROK would still need to rapidly secure North Korean WMD to prevent threats and proliferation, and it would likely have insufficient personnel to do so while trying to stabilize North Korea.
- *Stabilizing Postunification.* For most North Korean military and security personnel and political elites, a ROK-controlled Korean unification would be a disaster: Their elite status would be lost, and many could be imprisoned or precluded from most jobs. These personnel may therefore form an active insurgency against the ROK, potentially requiring the deployment of hundreds of thousands of ROK ground-force personnel—probably at least 400,000 to 500,000¹⁴ (more than the planned active-duty ROK Army and Marine Corps)—in the North for many years. Moreover, U.S. forces have found that a rotation of forces in Iraq has been necessary to sustain active-duty training and to provide rest and relaxation necessary to mitigate combat stress. In addition, the ROK Army would have to significantly increase its logistical support. In wartime, it expects to mobilize this support from the civilian sector, but the civilian sector will have few resources to offer the military in a protracted stabilization, given the need for these resources in the civilian economy to help pay the costs of unification. Unless a new strategy is developed to minimize the potential for insurgency, this is a very high risk area for the 2020 forces if the threat is purely conventional.

¹⁴ As argued earlier, RAND's review of historical stabilization cases suggests that a ground force of about 2 percent or more of the population could well be required to deal with a serious insurgency. Given a North Korean population of 22 million or so, that could amount to 440,000 ROK ground-force personnel.

Almost all of these risks increase significantly if the adversary uses WMD, and especially nuclear weapons. These higher risks include both military mission failure and damage to the ROK civilian society. In short, the DRP 2020 force is not a self-reliant force across the range of challenges that the ROK might face.

What Will Be the Value of the ROK-U.S. Alliance?

Many of the risks described above are significantly mitigated by the fact that the ROK is allied with the United States for defense of the ROK. The importance of the ROK-U.S. alliance can be measured against the potential future ROK security challenges in two ways: (1) What does the United States contribute to the ROK military through the alliance, and (2) how does the addition of the U.S. military to the Combined Forces Command (CFC) of the alliance reduce the risks described in Table 5? We examine each of these.

What Does the United States Contribute to the ROK Military Through the Alliance? The United States military makes many contributions to the ROK military through the alliance. Some of these contributions include:

- *Providing Unique Capabilities to the Alliance.* The United States contributes a range of unique capabilities to the alliance. The U.S. military budget has been roughly 20 times the ROK military budget, and the U.S. expenditures on force improvement are more than 15 times the comparable ROK expenditures. These expenditures have allowed the United States to acquire unique systems, such as stealthy bombers to deliver large payloads of precision munitions (enough, e.g., to potentially crush an adversary when massing), the Joint Surveillance Target Attack Radar System aircraft for situational awareness, the EA-6B and many other aircraft for electronic warfare, the RC-135 aircraft for strategic intelligence, satellites for intelligence and communications, the Sound Surveillance System and T-AGOS ships for detection of ships and submarines, and aircraft and helicopters designed for the insertion of special forces. The United States also has a wide, unique range of precision munitions, including many with standoff attack capabilities to reduce the losses suffered in delivering them. And the United States is developing new capabilities like the airborne laser that will be able to destroy ballistic missiles in flight, a major improvement in the defense against nuclear weapons carried by ballistic missiles.
- *Research and Development.* The United States spends nearly 100 times what the ROK does on military research and development (R&D) each year. Many of the resulting weapon designs have been shared with the ROK. If the ROK had to maintain a ratio of R&D expenses to acquisition expenses comparable to that of the U.S. military budget (about 80 percent in recent years), the ROK military budget would need to be increased by about 2.5 trillion won per year.
- *Force Size and Quality.* As long as the ROK-U.S. alliance remains strong and U.S. forces are able to deploy into the ROK, U.S. forces can more than double ROK conventional force capabilities in a conflict, hedging against failures and significantly reducing the risks in many operations. For example, even after the ROK purchases four AWACS aircraft for its own use, about enough to keep one in the air at any time during a crisis or conflict assuming no losses, the United States has some 30 land-based AWACS aircraft

and some 70 comparable carrier-based aircraft. Thus, U.S. naval and air forces allow CFC to extend sea and air surveillance well beyond ROK territory, reducing the ability of any adversary to pose threats against the ROK or its interests.

- *Maritime Security.* If China were to become an adversary in the future, it could pose a serious maritime threat to ROK commercial or military shipping, a threat that ROK naval assets would be insufficient to independently handle. Pirates could also pose a threat to ROK shipping. With any significant warning, the U.S. Navy has the size and capabilities to provide good security against such a Chinese naval threat.
- *More-Secure Basing.* All major ROK Air Force aircraft are based at airfields in the ROK, airfields that would likely be subjected to many ballistic missile and special forces attacks in a conflict. The United States can base many of its aircraft at bases in other countries, including in the United States, and has the airborne refueling assets to bring these aircraft securely to the theater.
- *Strategic Deterrence.* The United States military has a large and diverse inventory of nuclear weapons that it uses to reinforce the deterrence of attacks by adversaries, and especially adversaries' use of WMD. But if an adversary did use WMD, these nuclear weapons could be used to help defeat the adversary's WMD threats, even if they are deeply buried underground.
- *Logistical and Resource Support.* The U.S. military has constructed logistical and support capabilities that are the envy of other countries. For years, the ROK has depended on being able to rely on these capabilities, including the War Reserves Stockpile for Allies (WRSA) in the ROK, a stockpile worth about 5 trillion won that the United States has recently decided to terminate.

To evaluate the U.S. military contribution to the ROK-U.S. alliance, it is useful to estimate what it would cost the ROK to develop a comparable force on its own. In a conflict, "U.S. augmentation forces, including the army, navy, air force, and marine corps, are composed of approximately 690,000 troops."¹⁵ The ROK cannot match this force with purely an increase in its active-duty personnel because of its manpower limitations, and so it is useful to consider what it would cost to create an enhanced ROK reserve force to replace the U.S. forces. In terms of equipment alone, it would likely cost the ROK more than 600 trillion won¹⁶ to acquire much of what the United States would bring to the ROK if the need arose. Assuming a roughly 30-year life cycle, at least 20 trillion won per year would have to be invested in acquiring and then replacing this equipment. In addition, the maintenance cost of this equip-

¹⁵ Ministry of National Defense, Republic of Korea, *Participatory Government Defense Policy, 2003*, 2003, p. 57.

¹⁶ The DRP anticipates spending about 270 trillion won for force investment, of which about 210 trillion won would be spent on R&D and new force acquisition to replace less than half of ROK military equipment, and the ROK military equipment even after modernization would lack many of the unique forms of U.S. military equipment. The estimate used in the text is based on these numbers.

ment would likely be at least 20 trillion won per year.¹⁷ The force would likely require about 70,000 full-time reserve professionals, and it would have a personnel and operations cost of about half of what is planned for the ROK military from 2006 to 2020 (350 trillion won), or about 20 trillion won per year. Nevertheless, such a reserve force, lacking the experience and training of U.S. active-duty personnel, would likely have no more than half the capability of a comparable U.S. active-duty force. It would also require far more basing and training area in the ROK than is currently used by U.S. Forces Korea. In short, it would likely cost the ROK about 60 trillion won or more per year to generate a reserve force that is “comparable” to the U.S. commitment without some of the unique U.S.-force qualities and with perhaps only half of the overall U.S. capabilities.

How Does the Addition of the U.S. Military to the CFC Reduce the Risks Described in Table 5? Most of the serious risks in Table 5 reflect the fact that the proposed 2020 ROK force is neither large enough nor capable enough to independently meet the requirements it could face. The most cost-effective way for the ROK to reduce these risks is to maintain a close alliance with a country that can make up many of the deficits in ROK capabilities. As Table 6 shows, the ROK-U.S. alliance does much to overcome these risks, but the alliance must be maintained to achieve these effects. Many of the military risks in Table 6 are at most “medium”; the high entries generally reflect risks to the ROK civilian population, which the U.S. forces can help reduce but not fully mitigate.

What Are the Risks in the Alliance, and What Must Be Done to Sustain That Alliance?

Many younger ROK citizens have difficulty understanding the value of the ROK-U.S. alliance. They tend to see U.S. forces in Korea as some form of occupation force, and many argue that they see the United States as a greater threat to the ROK than North Korea. For years, there have been anti-American demonstrations in the ROK. Nevertheless, the majority in the ROK has tended to support the presence of U.S. forces in the ROK.

The weight of ROK anti-Americanism has tended to have a greater impact on the United States in recent years. This anti-Americanism has been coupled with statements by the ROK leadership, and President Roh in particular, that have been unpopular with the U.S. national security community. Of particular concern has been President Roh's attitude toward U.S. force flexibility: the ability of the United States to dispatch forces based in Korea to deal with other regional contingencies.¹⁸ In addition, President Roh is insisting on ROK assumption

¹⁷ The author examined a table of major military equipment acquisition versus annual maintenance costs for 20 different systems. The percentage of annual maintenance costs per system ran from 0.5 percent of the acquisition cost to over 20 percent of the acquisition cost, with a median of 5 percent of the acquisition cost. Being conservative, the author assumed a 3.3 percent maintenance cost per year; thus, if the equipment would have a total acquisition cost of at least 600 trillion won, its annual maintenance cost would likely be at least 20 trillion won.

¹⁸ President Roh's fear of Chinese retribution for the ROK allowing U.S. forces to intervene in a conflict with Taiwan raises questions about whether the United States should base forces in the ROK. Many in the United States feel that few U.S. forces can be forward deployed around the world, and if they cannot be free to be used where needed, the United States ought to base them somewhere else.

Table 6
The Level of Risk in 2020 Military Requirements for Combined ROK and U.S. Forces

Military Requirement	Conventional Threat	CBW Threat	NBC Threat
Forward defense	Low	Medium	High
Rear defense vs. aircraft	Low	Low	Low
Rear defense vs. TBMs	Low	Medium	High
Rear defense vs. SOF/terrorists	Medium	High	High
Rear defense vs. electronic and information warfare ^a	Medium	Medium	Medium
Rear defense vs. WMD	NA	High	High
Territorial offensive	Low	Medium	High
Target strike	Medium	High	High
Strategic deterrence	Low	Low	Medium
ALOC defense	Low	Medium	Medium
SLOC defense	Medium	Medium	Medium
Stabilize refugee flow	Medium	High	High
Stabilize a North Korea collapse	Medium	High	Very high
Stabilize postunification	High	Very high	Very high
International security operations	Low	Medium	High

NOTE: NA = not applicable.

^a Not primarily a military responsibility, especially in peacetime.

of operational control of its forces in wartime, without apparently understanding that such a change will likely mean the end of the CFC.¹⁹

The U.S. Department of Defense has concluded in recent years that it pays a heavy burden for keeping forces overseas (not only in the ROK). Because about half of its personnel are married, the U.S. Army, for example, is seeking to assign soldiers at a single U.S. base for about seven years at a time to give them and their families a stable environment. Because of the lack of family housing for the U.S. military in Korea, most personnel go to Korea on one-year unac-

¹⁹ The U.S. military is generally unwilling to subordinate its forces to a foreign commander in wartime. As a result, the current CFC has a U.S. commander, just as does the current NATO Supreme Allied Command, Europe. But President Roh is insisting that a ROK officer command all ROK forces in wartime. Since such an officer would also command U.S. forces if the CFC framework were retained, this change would require terminating CFC. U.S. forces could still potentially remain in Korea, though the number would probably be significantly reduced, and U.S. forces would likely transition to a supporting role to the ROK military. Alliance planning would be replaced by separate ROK and U.S. planning.

companied assignments, assignments that have been relatively unpopular. There has also been concern about the limitations on training in Korea, limitations that tend to erode personnel skills, even during an assignment as short as one year.

These various frictions and many others place the ROK-U.S. alliance at risk. Unless these frictions can be reduced, the alliance could be in jeopardy. Both sides need to develop a better understanding of what they gain from the alliance, and they need to share that understanding with their political leaders and their voters. Without strong support in these groups, the alliance may not last.

Producing the Reformed Force

This section evaluates the ability of the DRP to field the forces that it describes. It does so by examining the ability to secure the required MND budget, the ability to acquire and maintain the planned systems, whether weapon modernization will be complete by 2020, the ability to recruit the desired levels of officers and NCOs, whether anticipated conscripts will be sufficiently numerous, and whether an all-volunteer force is possible.

Can the MND Get the Required Budget Increases?

The DRP is based on a budget for the MND that grows robustly from 2006 through 2020. The anticipated annual budget is shown in Figure 4. This budget grows by about 9.9 percent per year from 2006 through 2010, then by about 8.8 percent per year from 2011 through 2015, and then on average 1 percent per year from 2016 through 2020. This budget plan is based on the assumption that ROK gross domestic product (GDP) and ROK government expenditures will grow in parallel at roughly 7.1 percent per year from 2006 to 2020, though at a slightly faster rate early in this period (7.4 percent) and at a slower rate later (6.7 percent). Thus, the MND budget is projected to increase as a percentage of GDP from about 2.55 percent in 2005 to about 3.2 percent in 2015, and then decline back to 2.4 percent in 2020.²⁰

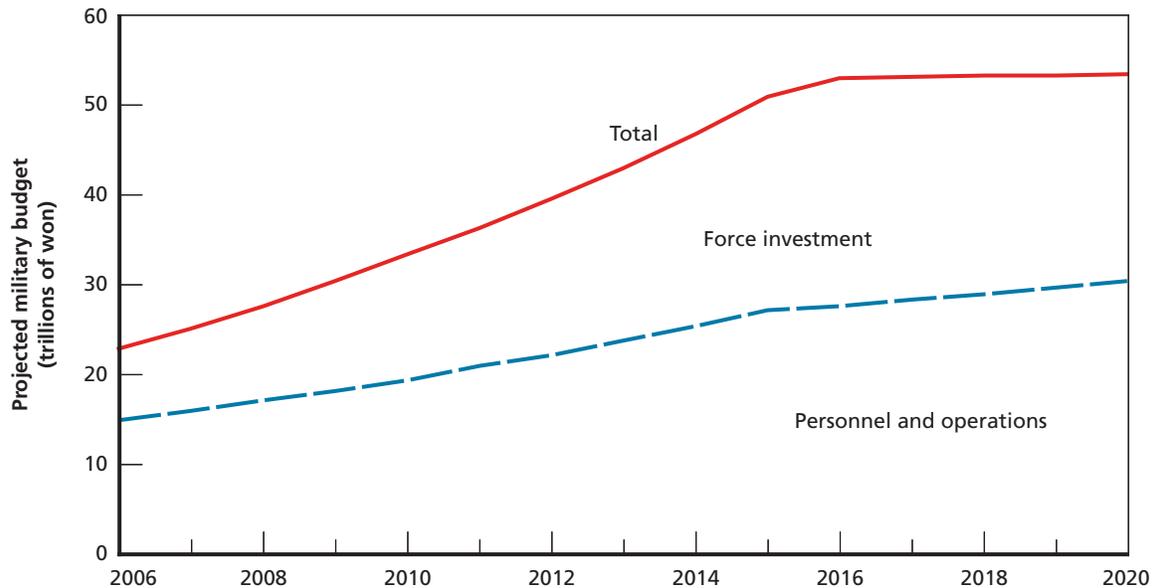
With these assumptions in mind, we can expect the following risks regarding the MND budget:

- GDP may not grow at the rates projected, in part because the ROK could suffer another major economic reversal over the coming 15 years. ROK GDP growth is projected at less than 4 percent in 2005, and about 5 percent in 2006. Recently, the Bank of Korea published a paper arguing that future GDP growth would be about 4.6 percent per year from 2005 through 2014.²¹ Economic growth at this reduced rate may make it difficult

²⁰ MND information gives lower percentages in 2015 and 2020 largely based on a projected GDP for 2006 of 877 trillion won. While this was apparently a reasonable projection in early 2005, by late 2005, several sources had lowered the projected GDP level for 2006 to something more like 850 trillion won, which was used in making the projections here.

²¹ Bank of Korea, "Factors Reducing the Growth Potential of the Korean Economy and the Future Outlook," <http://www.bok.or.kr/eng/index.jsp>, October 6, 2005.

Figure 4
The Projected ROK Military Budget



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for the economy to sustain the planned growth in the MND budget. If the MND budget is maintained at the expected percentage of GDP (e.g., about 3.2 percent in 2015) but the GDP grows at only a 4.6 percent rate, the aggregate MND budget through 2020 would be only about 510 trillion won, or some 110 trillion won short of the planned 621 trillion won DRP budget.

- If the GDP grows more slowly, the ROK government budget will also likely grow more slowly. In addition, there will be pressure on the government budget to spend relatively more on domestic issues and on North Korea, and this will be particularly true if the government budget grows more slowly than expected. The MND will thus find itself in serious competition for the government budget, and it could well lose that competition, leading to even smaller MND budget increases.²²
- The MND is more likely to lose the competition for the ROK government budget if the ROK leadership continues to argue that North Korea no longer poses a serious threat to the ROK. It is hard to argue that MND budget increases of nearly 10 percent are required under circumstances where there are no serious security threats to the ROK. The only alternative may be to argue that Japan and/or China are posing a threat to the ROK that justifies a significantly higher MND budget. Such arguments would only fan growing

²² It was reported that for 2006, the National Assembly made such a shift from the military budget to domestic spending, “allotting 30 billion won more to the Ministry of Health and Welfare’s subsidy scheme for low-income households. It instead cut the same amount from the Defense Ministry’s plan to modernize military facilities” (“Parliament Approves W4.5tr Extra Budget,” *Korea Herald*, November 17, 2005).

antagonism and nationalism within the region, likely leading to some form of arms race that jeopardizes the stability of the region and could add to the ROK military investment requirements even beyond the DRP.

- The DRP budget estimate of 621 trillion won is apparently not adjusted for inflation to a constant won amount. The MND projects inflation at roughly 2.3 percent per year, which would reduce the 621 trillion won figure to about 520 trillion won in 2006 terms, a reduction of about 100 trillion won in real spending. This would be a substantial reduction in the funding available. Higher inflation rates are also possible.

In short, many factors could reduce the projected 621 trillion won MND budget through 2020, cutting potentially 10 to 40 percent or more in terms of 2006 won. The MND will need contingency plans to respond to shortfalls beyond baseline inflation; if such plans are a part of the DRP, the author has not seen them.

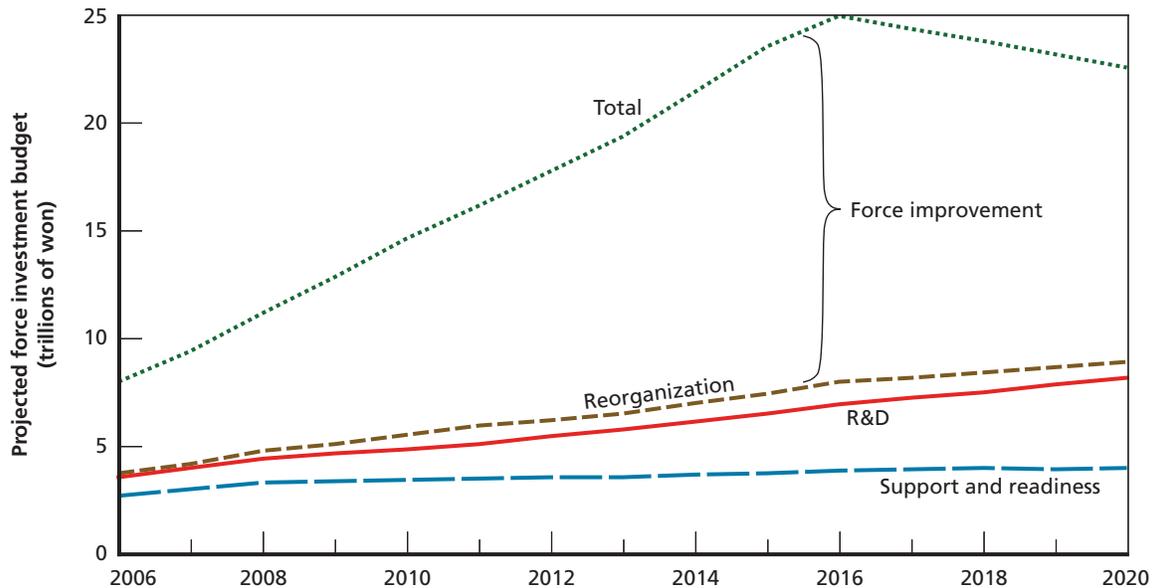
Will the Planned Force Investment Program Be Sufficient?

As noted earlier, the MND plans 272 trillion won for the Force Investment Program for 2006 through 2020. In this period, the Force Investment Program involves four components: (1) force support and readiness (equipment maintenance and miscellaneous procurement, 52 trillion won), (2) research and development (35 trillion won), (3) reorganization (force changes, especially in ROK Army units, 10 trillion won), and (4) force improvement (equipment acquisition, 175 trillion won). This author's estimates are shown over time in Figure 5, starting with the defense budget in the 2004–2008 Mid-Term Expenditure Framework described recently by the Korea Institute for Defense Analyses (KIDA).²³ The KIDA work shows a projected 7.8 trillion won force investment budget in 2006. Of that, roughly 33 percent is support and readiness (2.6 trillion won), roughly 11 percent is R&D (0.9 trillion won), and roughly 55 percent is force improvement (4.3 trillion won).

The MND aggregate estimate of support and readiness of 52 trillion won requires reducing the KIDA estimates in this category for 2007 and 2008, and then allowing this category to grow only about 2 percent per year; this is much too little, as will be discussed below. KIDA shows the R&D budget growing by 14.9 percent per year through 2008, and this increase must continue at about 14 percent through 2016 and then at about 7 percent through 2020 to reach the aggregate indicated. KIDA shows the force improvement budget growing at 18 percent per year through 2008; to reach an aggregate of 175 trillion won by 2020, it would grow about 13 percent per year through 2016 but then decline by more than 5 percent per year through 2020.

²³ Juhyun Park, "Medium-Term Expenditure Framework and Year 2005 Defense Budget," Korea Institute for Defense Analyses, KIDA Papers No. 9, March 2005, <http://www.kida.re.kr/english2005/>. This estimate is through 2008 and does not include reorganization expenses.

Figure 5
The Projected Force Investment Budget



SOURCE: Based on author's estimates and starting with estimates from Juhyun Park, "Medium-Term Expenditure Framework and Year 2005 Defense Budget," Korea Institute for Defense Analyses, KIDA Papers No. 9, March 2005, <http://www.kida.re.kr/english2005/>.

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The aggregate force improvement budget of 175 trillion won is 64 percent of the aggregate 272 trillion won for force investment. However, once the 2.3 percent annual inflation deflator is taken into consideration, this amounts to about 145 trillion in 2006 won. This is the amount of the budget that would be available for new equipment acquisition. And this amount is subject to a number of risks:

- The estimate for support and readiness appears much too low. This cost involves two major fractions: (1) support of existing weapon systems and (2) burden sharing and related costs of the ROK-U.S. alliance. The cost of support can be modeled as a fraction of the acquisition cost of systems. Some 20 existing ROK systems were examined, and the typical annual support cost averaged about 5 percent of the purchase price of the system; in aggregate, this cost can be expected to be at least 3 percent of the installed capital cost. The actual support cost ought to grow significantly during the DRP because of the substantial acquisition of new systems that are far more complex than the systems they are replacing. The cost of burden sharing should grow somewhat over coming years, though the cost of U.S. troop relocation will be high in the next few years. Combining these factors suggests that support and readiness costs would increase to about 7.7 trillion won per year in 2020, compared with about half that much to reach the MND aggregate figure.

The total support and readiness budget through 2020 would be about 70 trillion won, which would reduce funds available for force improvement by about 20 trillion won.

- The support and readiness budget must also pay for war reserve materials. The United States is about to terminate its WRSA stockpiles in Korea, worth some 5 trillion won in ammunition and other items. It has invited the ROK to pay for these, and it may remove the stocks if the ROK does not. Either way, the ROK would have to add several trillion won to the above estimate to replace the WRSA in coming years or have negligible artillery stocks, in particular, for a major war.
- The ROK military R&D budget is very low. Compared with the roughly \$0.75 billion spent by the ROK in 2005, the U.S. military planned to spend over \$65 billion on research, development, testing, and evaluation (RDT&E). Each year, funding for U.S. defense RDT&E runs about 80 percent of acquisition funding (currently around \$80 billion per year); ROK R&D spending is only 20 percent of its acquisition budget. As ROK equipment becomes more sophisticated, it may need to increase its R&D more quickly than suggested in Figure 5 (which still leaves R&D expenditures less than a third of acquisition expenditures in 2020), potentially reducing funds for acquisitions.
- If the force investment budget did not grow (if defense spending had no growth above the 2006 amount), the force improvement budget through 2020 would amount to only 65 trillion won versus the 175 trillion won suggested above. Thus, the funding for force improvement is heavily based on the projected large budget increases for the MND. If these budget increases do not occur or are more limited than projected, the funding available for force improvement could be substantially reduced.
- For years, the MND has faced significant constraints on its force improvement budget, forcing it to cancel or postpone many desired acquisitions. A major problem with the trend in force improvement shown in Figure 5 is that it peaks in 2016, at some 3.5 times the 2006 force improvement budget. Because the MND has already begun reducing manpower, it would prefer to have a larger force improvement budget in the 2006 to 2010 period. To do so, the MND is talking about establishing a “defense investment firm” that will borrow funds to make force improvement purchases in the next few years, and then the MND will pay off those loans with funds likely available in the 2012 to 2020 period.²⁴ This borrowing will increase the cost of each purchase by the interest that must be paid on the loans, reducing the total funds available for force improvement. It also poses a risk if the 2012 to 2020 force improvement budget is not as big as planned, since a part of those funds will already have been spent.
- The rapid reduction in the force improvement budget after 2016 suggests that the MND's major force acquisitions would be largely done by then. Yet the DRP argues that outdated systems in the ROK military amount to only 30 to 56 percent today. If most systems should have about a 30-year life cycle, and if only 30 to 56 percent of ROK military weapon systems will be replaced from 2006 through 2020 (half of that cycle), the ROK military will continue to have a major requirement for acquisitions after 2020, just to sustain the force it is building. In addition, the many risks and gaps noted above suggest

²⁴ “MND Plans to Establish a Defense Investment Firm,” *Korea Defense Daily*, November 3, 2005.

that after 2020, the ROK military should be seeking to acquire other new capabilities to provide a more self-reliant ROK defense.

For the force improvement budget to be adequate, it must be sufficient to purchase the planned weapon systems and other needed defense equipment. Table 7 summarizes the major equipment acquisitions that appear to be planned through 2020. Note that this list of programs, the number of systems to be purchased, and the approximate system costs are the author's estimates, often without much detail from the MND to provide guidance in making these estimates. In some cases, acquisition is already under way, and so only a part of the total number of systems needs to be purchased from 2006 through 2020 (e.g., only three of the KDX-II). In a few other cases, these acquisitions are unlikely to be complete by 2020 (e.g., the new main battle tank or replacement of outdated artillery), and the author has indicated a number of systems that he expects would be acquired through 2020. The ranges shown for ground-force systems reflect the Reduced and Sustained force estimates.

The systems in Table 7 are only the main purchases in each category. These are summarized by force category in Table 8. In 2005, the acquisition of main systems accounted for 70 percent to 87 percent of the total acquisitions in each of these categories. To estimate total acquisition costs, the main systems costs are divided by this factor. Table 7 covers only three of the four main equipment categories; the other, C4I, has recently run a cost of about 10 percent of the total cost of the other three, so that fraction is used to estimate costs through 2020 in Table 8. When these numbers are added, Table 8 shows that the force improvement acquisitions from 2006 to 2020 could amount to 114.9 trillion won to 125.1 trillion won. Assuming that nothing major has been missed in these estimates, and assuming that about 145 trillion 2006 won will be available for force improvement from 2006 to 2020, it appears that the DRP budget is adequate for the planned equipment acquisitions.

The major risk in this assessment is the cost growth of planned weapons. It is quite possible that a number of the acquisitions, especially ones not yet started, will cost more than projected. If they do so, there appears to be some margin for cost growth in the DRP acquisition budget, but not too much.

Can the Required Procurements Be Completed by 2020?

As noted above, almost all of the planned acquisitions appear to be completed by 2020. This judgment is subject to the risks in the force improvement program and to the completeness and accuracy of the data in Table 7. There is also a risk in the growth of costs for these systems.

There appear to be three categories of exceptions:

- Some systems, like the new battle tank, the new IFV, and the artillery replacement, enter production so late in this period that they are unlikely to be completed by 2020; it may be 2025 or so before completion of acquisition. But if the Reduced army posture is followed, such that fewer weapons are required, the MND may come fairly close to completing modernization in these areas by 2020.

Table 7
Major Acquisitions in the 2006–2020 Force Improvement Program

Force Type and Equipment	Number of Systems (2006–2020)	Cost (in trillions of won)
Air forces		39.1
KF-15s	60	7
KF-Xs	60	6
A-50s	130	6
RKF-16s	24	3.5
AWACs	4	1.7
Tankers	4	1
KT-50s	94	4.2
VIP aircraft	3	0.7
C-130Js	20	1
SAM-Xs	?	2
M-SAMs	?	2
Short-range air defense systems	?	2
Short-range air-to-air missiles	?	2
Naval forces		21.5
KDX-IIIs	3	1.1
KDX-IIIs	6	4.8
FFXs	17	1.5
PKM-Xs	40	2.2
KSS-2s	6	2.2
KSS-3s	9	4
LPDs	5	2
LSTHs	3	0.5
P-3Cs	8	0.7
Helicopters	60	1
Antiship missiles	?	0.7
Antiaircraft missiles	?	0.8
Ground forces		25–32.1
K1A1 tanks	350–550	2.3–3.6
New main battle tanks	500–700	5–6.7
New IFV/KAAVs	500–900	1–1.6
K-9 artillery	400–600	2.6–3.6
New multiple rocket launchers	400–600	1–1.4
Trucks	4,000–5,000	0.3–0.4
UAVs	?	1–1.5
Utility helicopters	245–300	8.5–9.3
Attack helicopters	120–150	3.3–4

Table 8
Estimating the Force Improvement Program Costs
(in trillions of won)

Force Category	Main Systems	Fraction	Total Cost
Air forces	39.1	87%	44.9
Naval forces	21.5	87%	24.8
Ground forces	25–32.1	70%	35.9–46.1
C4I	NA	NA	10.6
Total			116.2–126.4

NOTE: NA = not applicable.

- The DRP is mainly a modernization plan, with limited efforts to build new capabilities. For example, while some U.S. analyses show that the ROK needs 25 Patriot/SAM-X batteries to defend its major urban areas, the ROK may not be able to afford more than about six batteries. But the ROK should seriously consider more-complete acquisition of such capabilities as the SAM-X, high-performance aircraft, advanced surface ships like the KDX-III, and the ROK new main battle tank, all of which would likely occur after 2020.
- The United States has learned in its future combat system (FCS) development that delays in completing new systems can occur and can be lengthy. This is especially true of complicated systems. For example, while the U.S. FCS development was due to field the first unit sets in 2012, that time will likely change to around 2025 or so for complete FCS deployment. This is an extreme example, given the complex and developmental nature of FCS, but delays of several years are not uncommon.

Can the Required Manpower Be Acquired?

In 2003, officers and NCOs made up about 22 percent of active-duty ROK military personnel. The MND's objective is to increase the fraction of these volunteers to 40 percent of active-duty personnel in 2020.

In 2005, the MND had approximately 73,000 officers, 98,000 NCOs, and 510,000 conscripts, or about 681,000 personnel total; conscripts are thus about 75 percent of the active-duty force today. By 2020, the DRP projects reducing the number of draftees by 220,000 and the number of officers by about 1,300, but increasing the number of NCOs by 17,900 and adding 20,000 military personnel referred to as “contracted troops” (conscripts retained after their two years of service, but apparently not NCOs). The MND currently has some number of conscripts who decide to stay after their two years of service to become NCOs; presumably, it is personnel such as these who would become the new contracted troops. In 2020, this would produce a force of roughly 71,500 officers, 136,000 NCOs and contracted personnel, and 290,000 conscripts, slightly more than the advertised 500,000 personnel.

Table 9 projects the number of officers, NCOs (including contract personnel), and conscripts who could be serving in the military each year (not the number joining the military), given the size of the age cohort and MND assumptions about the officers and NCOs it can recruit. The table compares the total available force to the force size required in the DRP, and it shows how much larger the force could be than the MND is planning, given the size of the male age group. From now through 2009, it projects a shortfall in the personnel available because of the sharp downturn in the age group size. The model, however, does not reflect personnel deferred from the draft who become available in years after their primary age group is conscripted, which should have balanced the shortfall in 2005 but likely not in 2006 through 2009.

It is important to recognize that the numbers in Table 9 reflect the force size, not annual accessions. The difference is illustrated in Table 10 for the period 2015 to 2020. In this period, roughly 27,000 officers and NCOs without prior service are expected to volunteer each year, and about 4,500 conscripts would decide to stay in the military after their conscription period is complete. These numbers lead to somewhat more than 200,000 officers and NCOs in the ROK forces. Each year in this period, there are also a number of conscript accessions. Because conscripts serve for two years, the total number of conscripts in 2016, for example, is the sum of the conscript accessions from 2015 and 2016. Note that these numbers reflect the available force in 2020, some 640,000 personnel, compared with the DRP's goal to have only 500,000 personnel in this period.

Can the ROK meet its military manpower requirements? Table 9 indicates that after 2009, the ROK will have more than enough manpower to meet the DRP goals as long as the necessary officers and NCOs can be recruited.

To better address the issue of making the DRP volunteer goals, Table 11 shows the number of volunteers (officers and NCOs) in 2005, 2020, and 2030 under two assumptions. It shows that even today, officers and NCOs constitute a high fraction of the air force and navy but a lower fraction of the army.²⁵ In total, over 6 percent²⁶ of the age group must volunteer to provide this number of officers and NCOs in 2005. In 2020, the MND will need to acquire 8.7 percent of the age cohort as officers and NCOs to meet the planned force level, and the decline in the age cohort by 2030 would require about 12 percent to volunteer if the number of officers and NCOs is to be sustained at the levels for 2020. If instead the MND can attract only the same fraction of the age group as officers and NCOs in 2030 as it did in 2020 (8.7 percent), it will have many fewer volunteers and a total force size of only 473,000, less than the desired 500,000. Indeed, if this assumption holds, the MND would suffer a manpower shortfall starting in 2026.

²⁵ The air force and navy (including marines) have been grouped together here because officers and NCOs constitute about the same fraction of total personnel in each service, though officers are a larger fraction of the air force personnel and NCOs a larger fraction of the navy personnel.

²⁶ The change in the size of the age cohort has increased this percentage from 2003, when just over 5 percent of the age cohort needed to volunteer to be officers or NCOs.

Table 9
Projecting ROK Military Personnel

Year	Officers and NCOs ^a	Total Conscripts	Available Force	Required Force ^b	Excess Available
2005	171,200	503,300	674,500	681,000	-6,500
2006	173,500	476,500	650,000	680,000	-30,000
2007	175,100	455,200	630,300	665,000	-34,700
2008	176,200	446,500	622,700	650,000	-27,300
2009	177,200	447,700	624,900	634,500	-9,600
2010	178,700	456,700	635,400	619,000	16,400
2011	182,400	474,800	657,200	605,500	51,700
2012	190,200	494,700	684,900	592,000	92,900
2013	194,600	504,100	698,700	573,500	125,200
2014	198,500	504,900	703,400	555,000	148,400
2015	201,700	503,000	704,700	547,500	157,200
2016	204,300	498,000	702,300	540,000	162,300
2017	206,400	484,300	690,700	530,000	160,700
2018	207,800	459,600	667,400	520,000	147,400
2019	208,200	441,100	649,300	510,000	139,300
2020	207,600	432,600	640,200	500,000	140,200
2021	207,400	420,000	627,400	500,000	127,400
2022	207,100	380,500	587,600	500,000	87,600
2023	206,900	334,600	541,500	500,000	41,500
2024	205,800	317,400	523,200	500,000	23,200
2025	206,200	311,900	518,100	500,000	18,100
2026	206,700	310,100	516,800	500,000	16,800
2027	206,900	309,700	516,600	500,000	16,600
2028	207,600	307,000	514,600	500,000	14,600
2029	207,600	305,000	512,600	500,000	12,600
2030	207,400	303,000	510,400	500,000	10,400

NOTE: This table is based upon a simplified spreadsheet model of the ROK military manpower system. It assumes levels of volunteers sufficient to fill the number of officers and NCOs needed in 2020 and assumes the average historical term of service for officers and NCOs. It includes the current number of female officers and NCOs and assumes that MND will meet its 2020 goals for female officers and NCOs, reducing male requirements.

^a Includes contracted personnel.

^b The required force is the force size defined by the DRP, and assuming 500,000 personnel would be sustained after 2020.

Table 10
Accessions Versus Available Force Size, 2015–2020

Year	Officers/NCO Accessions	Conscripts Who Stay ^a	Officers and NCOs	Conscript Accessions	Total Conscripts
2015	26,800	4,600	201,700	251,000	503,000
2016	26,900	4,500	204,300	247,000	498,000
2017	26,900	4,500	206,400	237,300	484,300
2018	26,900	4,500	207,800	222,300	459,600
2019	26,900	4,300	208,200	218,800	441,100
2020	26,800	4,000	207,600	213,800	432,600

^a Contracted personnel.

Table 11
Volunteers Needed As a Percentage of Age Group

Force Category ^b	Officers and NCOs		Annual Officer and NCO Accessions ^a	
	Total	Percentage of Force	Total	Percentage of Age Group
2005				
Air force and navy	61,000	46%	8,500	2.5%
Army	110,000	20%	13,700	4.0%
2020				
Air force and navy	80,000	62%	11,100	3.6%
Army	127,500	34%	15,700	5.1%
2030 (same size as 2020)				
Air force and navy	80,000	62%	11,100	4.9%
Army	127,500	34%	16,200	7.2%
2030 (same percentage as 2020)				
Air force and navy	61,100	47%	8,100	3.6%
Army	93,700	27%	11,500	5.1%

^a Number of officers and NCOs joining without prior service.

^b The navy numbers include both the navy and the marines.

Increasing the fraction of the age group that volunteers to become officers and NCOs will be challenging. The increases required in 2020 and 2030 would come in a period when ROK perceptions of the North Korean threat have declined and are declining further, perceptions that affect the level of volunteers. The laws of supply and demand suggest that the MND will need to pay a much higher salary and general compensation package to youth to increase the volunteers even to 8.7 percent in 2020, though it is hard to project how high a compensation package will be needed. Because so many youth in the ROK are disaffected to the military, it

may not be possible to increase the fraction of volunteers to 8.7 percent with any reasonable level of compensation, let alone achieve more than 12 percent of the age group as officers and NCOs in 2030.

Of the 349 trillion won the MND plans to spend between 2006 and 2020 on personnel and operations, it plans to spend 211 trillion won on personnel-related costs. This amount would support a roughly 6.5 percent increase per year through 2015, a significant increase. Nevertheless, the MND has more commonly increased its personnel budget by 8 percent per year in recent years to sustain the current level of officers and NCOs (through 2003) and then to expand the number of officers and NCOs, especially as a percentage of the age group (from 2003 to 2005). But this expansion has likely been facilitated more by difficulties in the ROK economy and the problems young people have experienced trying to find jobs, even after graduating from college. In addition, because of the much smaller growth in the MND budget from 2016 through 2020, the personnel budget would support only about a 3 percent per year growth in that period, likely not enough to even sustain the force size, let alone cause it to grow.

The following risks are anticipated in the ROK military manpower planning:

- If inflation runs at 2.3 percent per year as projected, the real increase in the personnel budget per year through 2015 will be more like 4.2 percent. In real terms, the MND will have about 47 percent more personnel funding available in 2020 (about 13.4 trillion 2006 won) than in 2006 (about 9.1 trillion won). But from 2001 to 2004, the inflation deflator varied from 2.7 to 3.5 percent. At these rates, the aggregate percentage increase in the real personnel budget from 2006 to 2020 would be less: 23 to 39 percent.
- While ROK Army active-duty personnel will decline significantly in number by 2020, the ROK Army will seek to replace many of the support positions with contractor personnel, much as the U.S. Army is doing. The cost of replacing conscripts with contract personnel will be substantial, and it could consume a significant percentage of the personnel budget increase.
- It seems unlikely that an average personnel budget increase of 6.5 percent per year (4.2 percent after inflation) can produce the increase in volunteers needed by 2020 to 8.7 percent of the age cohort, and this is even less likely if the hiring of contractor personnel or other activities further reduces the available funding. Achieving 8.7 percent volunteers may be possible if the ROK economy remains weak, but if so, the budget required by the DRP is likely to be reduced (as argued above). And if the ROK economy becomes strong again, a significantly higher personnel payment would be required to get 8.7 percent of the age group to volunteer to be officers and NCOs, absent a substantial growth in threat perceptions and/or ROK nationalism.
- Table 12 examines the implications of the MND being able to obtain alternative levels of officers and NCOs from the age group each year. Across the range of the 5 percent to 12 percent rate of volunteers, there will still be significant excess in total personnel available in 2016 and 2020. For example, Table 9 showed that in 2020, an 8.7 percent volunteer rate would provide the ROK military with 140,200 personnel more than the 500,000

Table 12
Effects of the Achievable Volunteer Rate

Issue	Effect If Officers and NCOs Can Be a Given Percentage of the Age Group			
	Up to 12%	Up to 8.7%	Up to 6.5%	Up to 5%
Excess in 2016	162,300	162,300	149,200	124,300
Excess in 2020	140,200	140,200	119,800	95,200
Excess in 2030	10,400	-27,000	-53,000	-69,300
Year force is too small	NA	2026	2024	2023
Officers/NCOs in 2016	204,300	204,300	184,100	148,000
Officers/NCOs in 2020	207,600	207,600	173,700	139,300
Officers/NCOs in 2030	207,400	154,800	119,300	95,900

NOTE: NA = not applicable.

“needed” personnel. But if this volunteer rate is retained through 2030, the total ROK military would amount to only 473,000 personnel, some 27,000 below the target of 500,000 personnel. By 2023 to 2026, the MND may not be able to sustain the full 500,000 personnel targeted by the DRP. And while the overall force size after 2020 is a concern, the number of officers and NCOs is even more of a concern. If the MND is not able to obtain 8.7 percent of the age cohort in 2020 and 12 percent in 2030, it could wind up with a considerably smaller professional cadre, especially in 2030, and thereby a much less capable force.

- Finally, given the plans to radically reduce the active-duty force structure, it is unclear why the number of officers should not be reduced more consistently with the reduction in the overall force size. Even if all of the officer reductions came out of the army, the army would still have about 50,000 officers in 2020, unless it decided to further reduce its number of officers, for a total force of 370,000 personnel. With the loss of one-third of its force structure, the army would also lose roughly one-third of its officer positions that exist today. Table 13 illustrates this problem. Air force and navy officers would likely increase about 3,000 by 2020, from 15.6 to 18.6 percent of the force, requiring the air force and navy to define many new officer roles. And while the number of army officers might decline by 10 percent, the size of the army will decline by almost one-third, causing a net increase in the fraction of the army personnel who are officers, and, with the increase, raising many questions on the roles that army officers will be asked to play. See the discussion below on military morale relative to these changes.

Table 13
Officer Changes

Issue	Air Force and Navy		Army	
	2005	2020	2005	2020
Force size	133,000	129,000	548,000	371,000
Number of officers	20,800	24,000	52,000	47,500
Percentage of officers in the force	15.6%	18.6%	9.5%	12.8%

How Might MND Manage Its Manpower Acquisition Through 2020?

Table 9 suggests that if the ROK conscription system is continued as currently constituted, and if the MND achieves its desired level of volunteers, the MND will have more personnel available than the DRP calls for from roughly 2010 through 2030. For example, in 2020, the draft could actually provide a force of some 432,000 conscripts compared with the 292,000 or so who would be needed. The MND would therefore need to decide what to do about the extra 140,000 conscripts. These numbers suggest that the MND could have chosen to have the DRP retain a much larger force structure at least through 2020 or so—the declining age cohort will not constrain military manpower in that period. Instead, the MND made the decision to reduce manpower more rapidly than it had to, apparently in response to anxiety about adjusting force structure and to saving some budget funds. Nevertheless, the MND must still decide how to handle this excess manpower.

There are fundamentally three ways to deal with this issue, each with its own potential benefits and risks:

- The MND could make the excess conscripts available to the national police and other organizations, as it has in the past. But the estimate in Table 9 already assumes that some personnel are provided to these organization, and the MND has not had this magnitude of extra conscripts to resolve in the past. Even after providing personnel to these other organizations, it might still have 60,000 to 80,000 extra conscripts.
- As European countries have done, the ROK could reduce the conscription period from 24 months to perhaps 16 or 18 months to reduce the number of conscripts. But one risk in doing so is that once the conscription period has been lowered, it will be extraordinarily difficult politically to raise it again. Yet, as Table 12 shows, by 2024, even a 24-month conscription period will not be sufficient, unless its aggressive officer and NCO levels (above 6.5 percent) can be sustained (which is unlikely). The other major risk of such a change would be reducing the training of military personnel. Many in the U.S. military feel that European conscripts serving for 12 to 18 months have generally not had sufficient training and experience to perform their tasks well. Taking this approach could significantly reduce the qualitative capabilities of the ROK forces.
- The other option is to institute a selective draft, where only a portion of the eligible personnel is drafted. For example, the ROK could hold a lottery by birth date and only draft

young men whose birth dates fall within the first two-thirds or so of the list. The risk in this approach is that a selective draft always appears arbitrary and is subject to abuses (especially bribery). Such abuses could undermine the legitimacy of the draft.

One attractive alternative to the DRP in this area would be to retain more of the ROK Army personnel and force structure until either 2024, when a force larger than 500,000 likely cannot be sustained, or until after unification, when the number of active-duty personnel would be less critical relative to stabilization of the North. Doing so would reduce the stabilization risks outlined in Table 5, but it would increase personnel and operations costs somewhat. This approach is outlined below.

Is an "All-Volunteer Force" Possible?

If the ROK would need to have 8.7 percent volunteers from the age cohort to produce a force with 40 percent volunteers among active-duty personnel, then it would need over 20 percent of the age cohort to volunteer in 2020 before it could eliminate the draft. By 2024 or so, this fraction would increase to 30 percent because of the further decline in the size of the age cohort. It seems extraordinarily unlikely that the ROK could get this high a percentage of officer and NCO volunteers. In addition, many of the volunteers today are "draft induced": individuals who choose to become an officer or an NCO because they view that alternative as better than being a draftee. While the percentage of officers and NCOs may have risen a little bit in recent years, it may well decrease in the coming years with an improving economy along with the decline in perception that North Korea is a threat. In addition, if the draft were terminated, draft-induced volunteers would be lost. At the current level of salaries, the ROK military may be able to obtain only 3 to 4 percent of the age cohort as volunteers under such circumstances, well short of what would be needed, and perhaps only sufficient to support a force of 100,000 or so in 2020, and much less by 2025.

In short, the draft will remain essential to the ROK military throughout the foreseeable future.

Major Risks in Producing the Reformed Force

To summarize the analysis of this section, there are several major risks in producing the reformed force:

- The MND may not be able to secure the overall budget level planned in the DRP, especially if the ROK government downplays national security threats.
- While the force improvement budget planned by the MND appears quite adequate, it could be reduced if the overall MND budget is reduced. The force improvement budget could also be jeopardized because the support and readiness budget appears underestimated and the R&D budget may need to grow more than even the rapid rate projected. The force improvement budget could also be challenged by weapon system cost growth.
- The personnel budget in the DRP appears inadequate to secure the desired growth in NCOs, especially given the declining size of the age group from which they would be drawn. The planned downturn in the overall MND budget growth from 2016 to 2020

will make it even more difficult to obtain a larger fraction of the age cohort as officers and NCOs, while offering little more in terms of compensation; inadequate compensation could also affect the retention of officers and NCOs. Moreover, it may be difficult to get the number of officers and NCOs desired at any cost if the ROK government downplays national security threats and especially if the ROK economy gains strength.

- As noted earlier, the DRP will not produce a fully self-reliant ROK military.

How Will the Plan Affect the Morale of the Military Forces?

The DRP will have a variety of effects on the morale of the ROK military, including the following:

- All services will be getting new weapon systems to replace antiquated weapons. Most personnel will view such changes as being very positive. But new systems, and especially ones with high-technology content, are often difficult to maintain and could prove frustrating to maintenance and logistical personnel, and also to combat personnel if their weapons are often not operational.
- The ROK Air Force and ROK Navy will become a much larger fraction of the ROK military, and they will have greater influence, something they have desired for many years. This will enhance their morale, but the morale of the ROK Army, and especially ROK Army officers, will almost certainly be lowered by this change. And some ROK Army officers will be discouraged by the fact that the air force and the navy will get one-half of the joint staff positions despite their combined services amounting to only one-quarter of the total force.
- The competition for rank advancement and senior command positions has always been tough among ROK Army officers. The reduction of command positions by perhaps one-third or more, coupled with a likely reduction in the number of senior officers, will make promotion competition even more significant, thereby lowering morale for many officers in the army. In addition, if many army officers are assigned to positions that were previously given to NCOs, their morale may decline as a result.
- Similarly, increasing the number of NCOs so significantly, despite the decline in force structure, especially in the ROK Army, would require that many NCOs take over jobs previously done by conscripts. While this may be very logical, for some period of time this may well have a negative effect on morale, especially in the army. The ROK services can counteract this reduced morale in many ways.²⁷

²⁷ The psychological literature on the “Hawthorne” effect suggests that the negative effects of lower job assignments can be counteracted by skillful action of supervisors who make these assignments appear “special.”

How Will the United States Likely View the Plan?

As outlined in the Appendix, many in the United States will likely associate the DRP with the NATO force reductions at the end of the Cold War, which were reductions of both manpower and military budget. U.S. decisionmakers would likely find such a change in the ROK forces as being contrary to U.S. objectives for improved ROK defense capabilities and may well feel that the ROK has made such changes because the ROK feels that North Korea no longer poses a significant threat (as was the case relative to the former Soviet Union in the post-Cold War era). From a U.S. perspective, the ROK-U.S. alliance is fundamentally based on the North Korean threat, and the United States has made great sacrifices to defend against it. If the North Korean threat were no longer significant, many in the United States would feel that the ROK-U.S. alliance would no longer be necessary, and that reductions in or elimination of U.S. forces in the ROK would be justified.

The ROK will therefore need to make a significant effort to inform U.S. decisionmakers that the DRP will actually increase the ROK military budget and military capabilities. Such increases will be viewed positively in the U.S. national security community. Understanding the implication of the ROK's declining birthrate, U.S. decisionmakers will better understand the motivation for the ROK's changes, and the potential for actually strengthening the alliance is quite good. The greatest risk to a positive view will likely come if the Reduced army structure outlined above is used, as expected. Such a serious reduction in ROK Army equipment, regardless of the qualitative improvements, will be viewed by some as producing a ROK military of lower capability. In addition, many U.S. personnel will pay attention to the fraction of GDP being spent on defense. If the ROK military budget declined to 2.4 percent or so of GDP in 2020, it would generally be viewed as a reduction in ROK commitment (note the use of this measure in the Appendix).

In addition, at least some Americans will be very sensitive to the range of DRP risks outlined above. They will want to monitor the DRP over time to confirm ROK movement in the desired direction. And they may view any major failure of the DRP assumptions (especially in the budget increases) as a negative sign relative to the overall implications of the DRP. They will also pay particular attention to potential weaknesses in the DRP and adjust their evaluation of the DRP relative to whether these weaknesses are resolved.

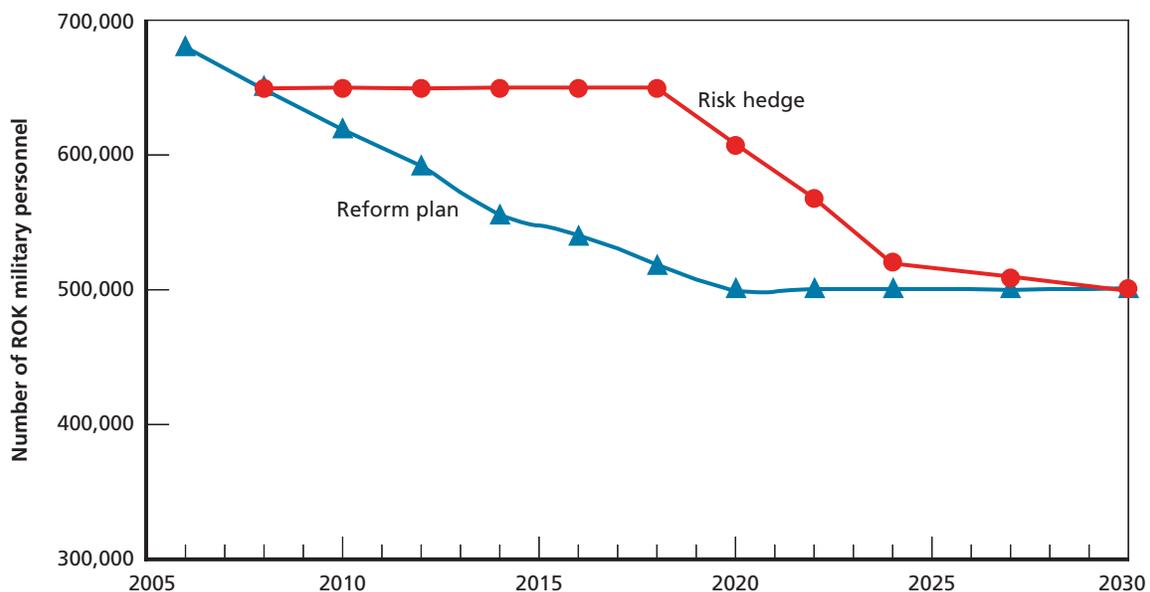
Managing the Risks

The discussion above points out many risks associated with the DRP. The ROK is likely able to manage many of these risks, reducing their severity and thereby limiting the potential that these risks could impair ROK capabilities and/or undermine deterrence. In brief, the following are some key means for managing DRP risks:

1. First and foremost, the ROK government must decide whether the value it gains from the ROK-U.S. alliance is worth the sacrifices it must make to sustain the alliance. If so, the ROK government needs to strengthen and sustain the ROK-U.S. alliance, explain-

- ing to its population what it gains so that they understand the value of the alliance and support it. Otherwise, the ROK needs to invest in true military self-reliance, which will cost a great deal more than the DRP.
2. The MND should reduce the force structure and manpower cuts in the DRP until either they are necessary (after 2020) or until unification and the high military manpower requirements of stabilization have been satisfied. Figure 6 shows an alternative size for ROK forces as a hedge against the many risks, assuming the MND meets its planned levels of officers and NCOs. Maintaining the extra force of draftees with old equipment would add relatively little cost to the defense budget (a few percent?) compared with the DRP, and yet it would provide more military capability for diverse future missions until that manpower was either not needed or not available.
 3. The DRP appears to reduce the growth in the MND budget too much after 2015. To support officer and NCO acquisition and to provide the funds required for further equipment modernization, the MND should consider a budget increase of at least 3 to 5 percent per year from 2016 through 2020. This would also leave the MND budget at 2.7 to 2.9 percent of GDP, a much better level for affecting ally perceptions of ROK efforts (important in sustaining the ROK-U.S. alliance).
 4. The MND needs to develop a new budget requirements methodology. Rather than focusing on a North Korean threat, this methodology should focus more on balancing ROK military capabilities with those of its neighbors, seeking to sustain deterrence and

Figure 6
Contemplating a Larger Force to Hedge Against Risks



NOTE: Figures assume some adjustments in conscription policies.

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peace in the region.²⁸ It should consider the areas described in Tables 4–6 to avoid critical gaps in ROK military capabilities.

5. The MND should build contingency plans to hedge against serious DRP risks, such as an inadequate defense budget, greater than expected costs, or fewer than expected officer/NCO volunteers. These plans should consider alternative threat conditions, different budget sizes and divisions, delays in force size changes or procurements, and changes in alliance support. For example, if the ROK fails to sustain the ROK-U.S. alliance, the ROK would be forced to acquire many more naval force assets to secure its commercial shipping. It would want to extend the capability to build ships, such as the KDX-II, well beyond current acquisition plans. Failing to do so would jeopardize ROK shipping if it were attacked and would also undermine deterrence of such attacks.
6. The MND should pay greater attention to countering WMD threats. The DRP is not very explicit about what will be done to address these threats. WMD threats could be reduced by enhanced active defenses, enhanced passive defenses, and better WMD elimination capabilities. The DRP does not say much about passive defenses against WMD, but it will make some improvements to active defenses (e.g., the AWACS, the Aegis on the KDX-III, the SAM-X, and the M-SAM). Still, the DRP appears to reduce the ROK military's ability to counter SOF and terrorists by reducing the infantry and related forces that would be performing such functions. The reduction in ROK infantry could also jeopardize WMD elimination efforts.
7. The ROK should enhance its military infrastructure. The ROK military has a very limited number of major airfields, ports, and command and control facilities.²⁹ Adversaries with several dozen or more nuclear weapons could damage a major fraction of the ROK military and its support capabilities associated with these bases. The ROK needs to consider more dispersal sites for these functions, especially if it is faced with nuclear threats.
8. The ROK should enhance its intelligence. The ability of the ROK and the United States to perform strikes against adversary targets is generally limited today by a lack of intelligence on the targets. More efforts to develop such intelligence are necessary to empower some of the high-technology weapons the DRP envisions buying.
9. The MND should improve logistical support. The ROK military has traditionally relied heavily on the U.S. military for logistical support and would find itself challenged in this area by future threats. The ROK needs to develop more self-reliance in this area, including munitions, other supplies, and transportation assets.

These efforts generally do not rely on major weapon system acquisitions, a major focus of the DRP, and therefore they may be a part of the DRP without this author being aware of them. But it is also possible that the DRP does not adequately address them and needs to.

²⁸ The author began discussing such an approach with his colleagues at KIDA in 1995 and has described several alternative ways that this could be done.

²⁹ The ROK military has built a couple of very capable airfields and contributed to port development in recent years, but more infrastructure development of this type should probably be done.

Conclusions

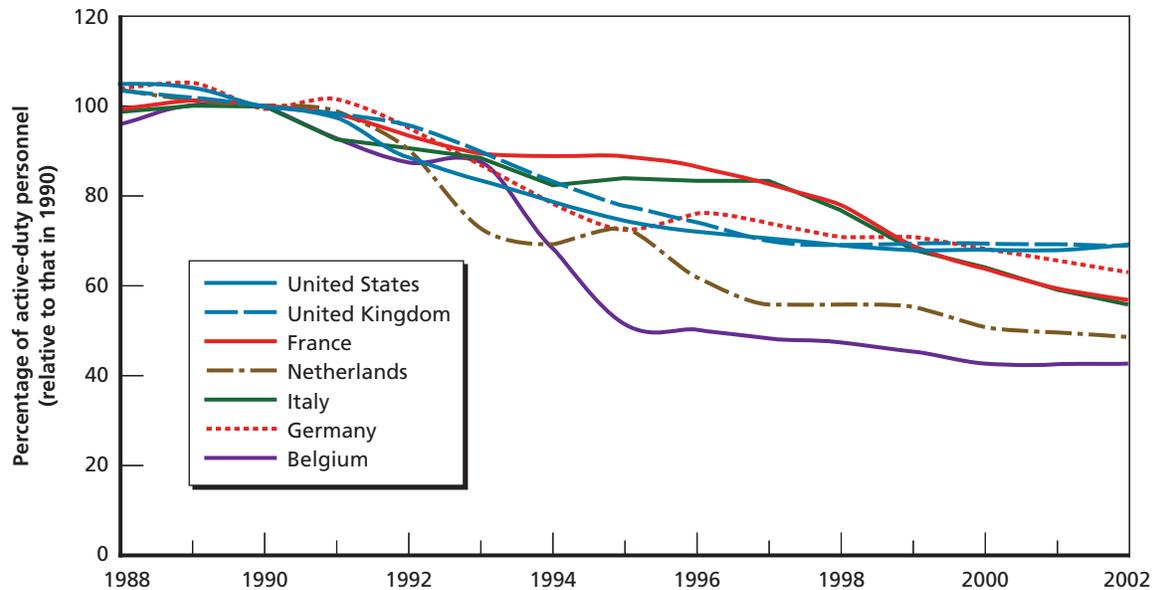
While the author has had limited access to information on the ROK DRP, the DRP appears to provide a useful approach to future ROK military forces that will enhance ROK capabilities against most future security challenges. It clearly reflects very deep thinking about how to improve ROK military capabilities, with a focus on the traditional North Korean invasion threat. However, there are some security challenges against which the DRP forces appear to perform less well than do current forces; a more thorough review of those challenges may be able to identify corrections at reasonable costs, along the lines discussed above in terms of managing ROK risks. And quite a number of risks to the DRP could cause it to fail and perhaps jeopardize ROK security.

The author recommends that a more comprehensive analysis of the DRP be performed, using more-complete information and data than the author has had available. This comprehensive analysis should seek to resolve the weaknesses in the DRP relative to some security challenges, and it should establish a risk management approach to the major DRP risks. These results would place the MND in a better position to manage the DRP in the coming years, and they would give the Blue House and the National Assembly greater ability to monitor the DRP's progress and to support needed corrections.

Comparative Historical Cases of Defense Reform

Many military experts will think of the ROK DRP as being similar to the NATO (including U.S.) military force reductions in the aftermath of the Cold War. In the 1990s, many NATO countries reduced both their military manpower and their military budgets, the latter generally done to provide a “peace dividend” of extra funds for social programs. Figure A.1 shows how seven NATO countries, including the United States, reduced their military manpower in the aftermath of the Cold War. Reductions ranged from 30 percent to 60 percent relative to 1990 force levels. All of these countries reduced their active-duty manpower over the 12 years since 1990 by a larger percentage than the ROK plans to reduce its active-duty manpower over the next 15 years.

Figure A.1
NATO Military Manpower After the Cold War (Versus 1990)



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Figure A.2 compares the planned ROK active-duty manpower drawdown beginning in 2004 against the U.S. Cold War drawdown, assuming the U.S. drawdown began in 1990. The U.S. drawdown was relatively rapid, reducing to 72 percent of the 1990 force size by 1996; the United States reduced the force size somewhat further over the subsequent years. The ROK plans to reduce its forces to 72 percent of its 2004 manpower over a 16-year period, ending in 2020, giving it more opportunities to slow its reduction or to make other adjustments in case situations change.

Figure A.3 shows the military budget of the seven NATO countries as a fraction of national GDP over the same period. The six NATO countries other than the United States reduced their defense budgets to less than 2.5 percent of GDP, and some have fallen as low as 1 percent. In contrast, the ROK military budget has fallen to 2.55 percent of GDP in 2005, but the MND plan, even before defense reform, was to raise the budget to 3.2 percent of GDP by 2009. If the MND is successful in achieving its planned 9.9 percent annual budget increase, it will reach a budget level of about 3.2 percent of GDP in 2015. But the decline to about 2.4 percent of GDP envisioned by 2020 would tend to reinforce the view that the DRP is more like the NATO drawdowns.

Figure A.2
ROK Versus U.S. Active-Duty Drawdown

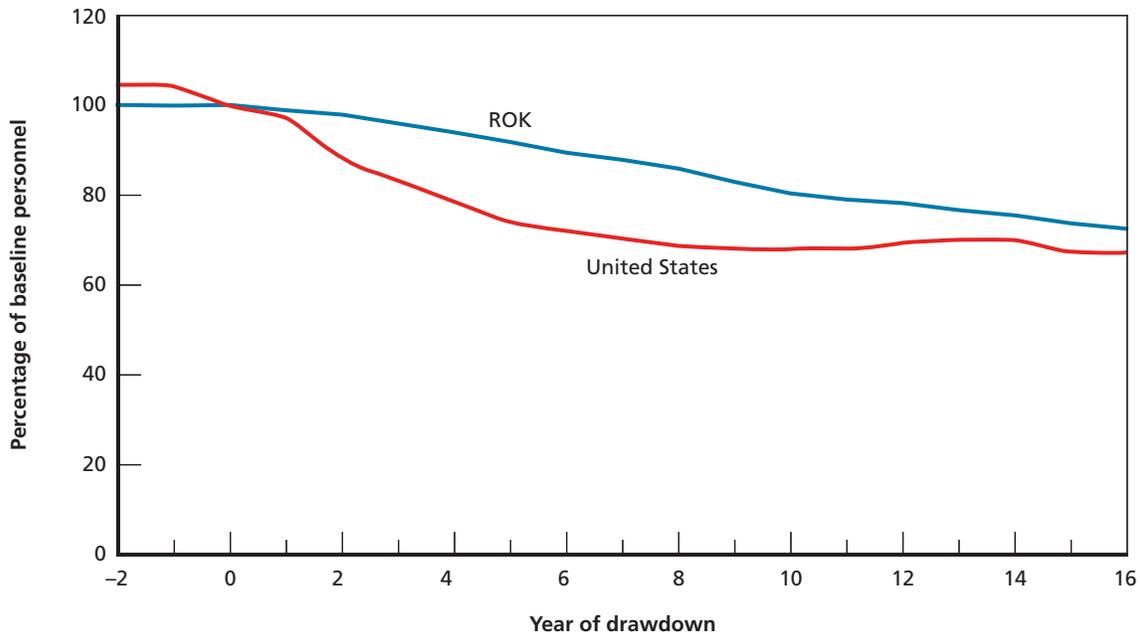
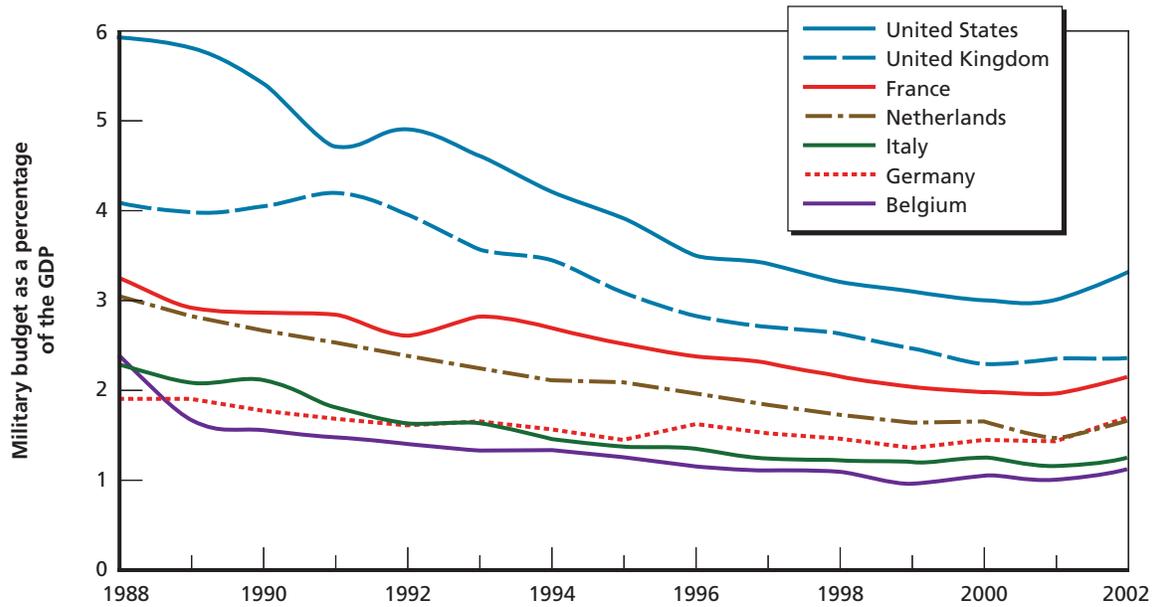


Figure A.3
NATO Military Budgets After the Cold War (Versus 1990)



RAND OP165-A.3

Thus, there is a substantial difference between the ROK DRP and the NATO defense reforms after the Cold War. While the NATO countries reduced their militaries to provide higher levels of domestic budgets, the ROK plan will trade equipment for manpower, assuming the necessary budget is acquired. But the ROK must carefully manage this image to ensure that its efforts are being properly perceived.