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DEFENSE PLANNING AND MILITARY EXPENDITURE IN KOREA:
An Analysis of National Security Policy for an Uncertain Era

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Abstract of Dissertation

Title: Defense Planning and Military Expenditure in Korea:
An Analysis of National Security Policy for an Uncertain Era

For a country with serious security threats like South Korea, how to structure the nation's defense policy is one of the most important decisions an administration must make. This study first examines Korea's political, economic and military history as it relates to security issues in order to provide a context for Korea's military planning over the past several decades. Given the degree of conflict and tension between the two Koreas, South Korea's allocation for defense is neither excessive nor beyond the country's economic capability. The universal conscription military system and the presence of U.S. forces have enabled South Korea to maintain a high level of military preparedness without excessive investment in the military for past several decades.

This study reviews several internal and external factors that impact defense spending in Korea and pays close attention to budgetary incrementalism, the arms race model, and the alliance effect. Regression analysis demonstrates the significance of budgetary incrementalism in defense budgeting. Also, as the "action- reaction model" suggests decision-making on security issues in South Korea has been sensitive to the behavior of the primary military adversary, North Korea.

This study also investigates the direct and indirect effects of military preparation on the economy. As a consequence of military preparation, military spending tends to stimulate economic output. Although military expenditure contributes directly to Korea's economic expansion, however, the externality effect of military spending on the growth of the economy has been negative.

The statistical results suggest that the extinction of the military threat posed by North Korea would not result in the financial rewards South Koreans expected. Although the peaceful settlement of the South-North relationship could generate positive externalities on the economy, it is hard to expect an immediate significant reduction in military expenditure or a realization of the benefits of a "peace dividend," considering the substantial influence of incrementalism on the defense allocation process and perplex effects of defense spending on economic growth.

If a unified Korea needs a 500,000-personnel military force, with the current conscript system, the estimated military expenditure as a percentage of GNP would be about 2% for the next decade. If it needs a small but professional military force, a unified Korea should spend more than 4% of its GNP on the military for the next ten years, maintaining 300,000-personnel all volunteer forces if unification occurs today.

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Chapter One: Introduction

Importance of the Study

Defense planning and determining how to allocate resources for defense are important decisions for any government. For a country with serious security threats like South Korea, such defense-related decisions are some of the most critical choices the president, bureaucrats, the military, and the public must make.[1]

Since military preparation requires a long lead-time from the initiation of defense planning to the execution of policies and programs, the appropriate allocation of resources and efficient planning are imperative for long-term security. During the Gulf War in the early 1990s, for example, the U.S. military demonstrated a different war strategy from the previous era in its use of state-of-the-art technology. The technologies used in the Gulf War were developed during the 1970s and purchased during the early 1980s. For the Korean Fighter Program (KFP), which was initiated in the early 1980s by the Chun Doo-Hwan government, a decision to procure 120 F-16 Falcons was made by

[1] For simplicity, in this dissertation the Republic of Korea is referred to as South Korea or Korea and the Democratic Peoples' Republic of Korea as North Korea.

the Roh Tae-Woo administration in 1989, production began during the Kim Young-Sam government, and the program is expected to be completed during the Kim Dae-Jung administration. The completion of this program will take more than fifteen years.

Defense budgeting – a monetary representation of military planning – is an input: a cost of providing military security. Security, the output, is a public good, and is an appropriate governmental activity in a market economy (Hewitt 1992). A study of a nation's defense budget is important because it indicates not only the decision-makers' preferences and policy priorities in developing military systems, but also gives a rough estimate of a nation's military capability.

Defense planning also influences international relations. If the level of military expenditure influences the behavior of allies or adversaries, "budget totals then become an instrument of foreign policy" (Wildavsky 1997, 232). A nation's decisions about the size of its defense budget signal its intentions in the international arena (Korb 1996, 15). The Korean government is sensitive not only to the military build-up of North Korea, but also to the defense strategies of Japan and China, which are regarded as potential allies and/or adversaries in the future.

A nation must continually assess and adjust its national security policies, especially in the post-Cold War era in which security threats become less clear as a multipolar international system emerges. Structural change in international politics as well as potential changes in military alliances in the post Cold-War era could affect military strategies and weapon system requirements, thereby requiring resource allocation adjustments.

In addition, military spending has long-term and short-term social and economic effects. Since a quarter of the Korean central government's expenditure is spent on the military, this nation's military spending has particularly significant social and economic effects. Since the onset of the Korean War, which officially has never ended, the defense sector has consumed a significant amount of available resources. After the Armistice Agreement of July 1953, actual and potential military confrontation between South and North Korea has influenced various aspects of the resource allocation process.

Until the early 1990s', most of the issues involved in defense planning and the costs of security were unquestioned by academia and the media in Korea. The military and the President could present a bill to the public outlining the security services they would provide based on their national security objectives and threat assessment. The administrations enjoyed unchallenged public support, as far as military issues were concerned. With recent rapid democratization, however, widespread debates on the subject have made military expenditure and defense planning important policy issues not only for decision makers but also for the general public. Rigorous analysis of defense planning issues is still rare in Korea, although the impact of military preparation is significant. Korea is ranked as the 10th largest country in the world in its military spending and the 7th largest in its number of armed forces.

In the future, national security issues will likely change. Even though the two Koreas still confront each other as a legacy of the Cold War, future military conflict may take a different shape from that of the Cold War era. In addition, as democratization continues, the process of allocating government resources, as well as national program priorities, will change. Events such as a peaceful settlement with North Korea and/or the

possibility of shifting alliances around the world (particularly in Northeast Asia) may prompt such changes.

In the long term, due to the lead-time necessary for effective military preparation, the size and role of the armed forces in a unified Korea should be considered in planning South Korea's current force structure. Although several potential scenarios exist for the timing and means of unification of the two Koreas, the impetus for unification might have to come from the South, which is more developed and has a closer relationship with the international community.

The military capabilities that could be generated by a unified Korea could hinder the generation of support from neighboring countries, whose collaboration would be essential for the unification process. They may feel threatened by the potential military strength of a unified Korea. The nations which have strategic interests in Northeast Asia may not want a unified Korea with huge standing forces and sophisticated equipment threatening their interests. Ironically, those nations might become a security threat to a unified-Korea, as they pursue regional dominance in Northeast Asia. Thus, maintaining an appropriate military posture while not threatening the interests of neighboring countries could be one of the toughest tasks a unified Korea will face. Although it seems too early to raise questions of security planning after unification, without any collective security arrangement, like the "Four Plus Two Treaty" in the German unification process, the defense planning issues entailed by a unified Korea could create a great deal of controversy even before unification occur.

The prospect of an uncertain future means that Koreans must think deeply about what confronts them, what options are available, what methodologies and procedures

might be employed, and ultimately what they could pursue. This study ultimately tries to deal with future security scenarios in order to manage the uncertainty confronting a unified Korea. A scenario, a story about the future, should include stories about the past and present as well as an assessment of potential security environments after unification.

Scope and Method of the Study

This study first covers the past thirty five years (1962 to the present) in order to analyze the evolution of Korean defense policy. The year 1962 is significant in modern Korean history. In 1961 a military government, which obtained its authority through a military coup, initiated an economic development plan. 1962 thus marks the beginning of a modernization process that permeated every aspect of Korean society. This study describes Korea's political and economic background as it relates to security issues to provide a context for Korea's strategies of military preparation over the past several decades. The chronological approach demonstrates how military preparation occurs in response to political and military events that affect national security policy in various ways. This study also attempts to analyze defense policy in the context of the budget-making process and evaluate models which have been designed in western developed nations for analyzing events occurring in countries at different developmental stages.

Military expenditure is accepted as a symbol of a nation's commitment to its security. It seems valuable to investigate the determinants of military expenditure, which are directly connected to a country's demand for security. The determinants of defense allocation are multidimensional. Determinant variables which previous theoretical

models suggest are applied empirically to explain the determinants of defense expenditure in Korea. This analysis reviews explicit cognizance of several internal as well as external factors that impact defense spending in Korea and pays close attention to budgetary incrementalism, the arms race model, and the alliance effect as influential factors in the defense allocation process. Information on military expenditure and other related data come from various issues of the *Defense White Paper, Korea Statistical Yearbook,* and *Forty-Year History of Public Finance in Korea.*

This study also examines the impact of military preparation on economic growth in Korea between 1962 and the present. The economic impact of military preparation is a long-standing, controversial issue for scholars in any country. Korea has maintained a high rate of economic growth with a relatively high military burden. The average rate of growth of the GNP in Korea has been 8 percent whereas about 4.7 percent of the GNP has been devoted to the defense sector. This study analyzes the relationship between military expenditure and economic growth in Korea. It seeks to verify direct and indirect links between Korea's defense and its economy, concentrating on the longitudinal relationship between economic performance in terms of the nation's growth rate and its defense burden in terms of expenditure allocation. This study uses a defense-growth model, that has evolved through four steps by Mintz & Huang (1991) and Huang & Mintz (1992), and which is based on the economic growth model initiated by Denison (1985) and Ram (1986).

Most studies of the determinants and economic effects of defense spending have concentrated on the determinants of total military expenditure and its economic effect. Underlying this assumption is the idea that military spending has homogeneous causes

and effects. However, as Huang & Mintz (1992) pointed out, whether different components of defense spending have similar or different effects deserves additional analysis. In particular, there is no reason to expect that the impact of the procurement of weapon systems on the economy is similar to the impact of allocations for personnel and maintenance on the economy. In order to distinguish between the causes and effects of military procurement expenditures and military maintenance expenditures, this study separates the military expenditure into two sub-sectors: military procurement and military operations & maintenance.

Since the end of the Cold War, the world's military expenditures have drastically decreased. Many countries enjoy the economic benefit of reduced military preparation commonly called the "peace dividend." However, in Korea, without a tangible shift in the North-South Korean relationship, analyses of the determinants of defense allocation and the economic effects of military preparation for the Cold War era still provide useful insights. Although it is risky to predict when and how the relationship between the two Koreas will change, the end of military confrontation or a possible unification means an end to the current clarity in Korean national security policy. After the unification of the Korean peninsula, reduced defense spending should allow Koreans to take advantage of a "peace dividend." This study couples an analysis of the expected economic impact of reduced defense spending with an empirical investigation of past experiences.

Drawing upon empirical research, this study discusses possible future directions for defense planning in Korea. It elaborates short-term and long-term policy issues which will affect future defense planning, especially after the unification of the peninsula.

Whether unification comes peacefully or through conflict, the security environments after unification will be quite different from what they are today. Changes in security environments prompt a nation to rethink its military strategy and force structure in order to accommodate those changes. After unification, with the absence of imminent security threats, the question of the continuing need for large standing forces will surface.

Such possible changes as unification require defense policy makers to prepare defense policies appropriate for both pre- and post-unification scenarios. A unified Korea will need a new national security strategy. Planning issues to accommodate these changes also will be examined. This study discusses the following defense planning issues: 1) future potential security environments, 2) the level of military expenditures required by these security environments and 3) the policy options relating to the defense spending, given a unified Korea.

If one examines the long-term situation, Korea's planning strategy should be changed. Different security scenarios require different approaches to defense planning. The applicability of those approaches depends on the particular security problems the nation will face, which are likely to be different from those faced in the past. Past schemes for creating and evaluating national security policy may not be applicable or suitable for future situations. Under rapidly changing circumstances, some parameters are relevant and others are not. This research attempts to assess carefully those models and how well they will meet future national security needs.

Chapter Two: The Political Economy of Defense Budgeting in Korea

Political and Economic Background

Korea's modern history dates from August 1945, when Japanese rule ended after thirty-six years of colonization.[2] Although Korea was liberated from Japan, it did not become independent. The United States and what was then the Soviet Union entered the peninsula and occupied the former Japanese territory. To disarm the Japanese forces, the North was occupied by the Soviet Union and the South by the United States. Korea was divided arbitrarily by the two super-powers, against the will of the Korean people.[3] Although the division was intended as an operational expediency to disarm the Japanese army, it persisted, causing tremendous suffering for the Korean people. Post World War II competition between the United States and the Soviet Union spurred ideological and

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[2] By the end of the 19th century, the Korean peninsula had become an arena in which the interests of the major powers created confrontation. After Japanese victories in the Sino-Japanese War in 1895 and the Russian-Japanese War in 1904-05, the Japanese stepped up their aggressive annexation of Korea.

[3] The Soviet Union declared war on Japan a week before the Japanese surrender and its forces moved into the northern part of the peninsula. To prevent Soviet control of the peninsula, the U.S. proposed that a line of demarcation be drawn at the 38th parallel and that its forces occupy the South.

political competition between the two Koreas and resulted in the formation of two separate governments in 1948. On August 15, 1948, the Republic of Korea (ROK, South Korea) was founded with Dr. Syngman Rhee as its first president. On October 10, 1948, the Democratic People's Republic of Korea (DPRK, North Korea) was established with Kim Il-Sung as its first prime minister. Both sides defame the other as illegitimate.

While the Russians trained North Korean troops and turned over military equipment, Washington arranged neither economic nor military support for the security of South Korea, based on the assessment that Korea was strategically unimportant. The U.S. Secretary of State, Dean Acheson, declared in early 1950 that the Korean peninsula was outside of the defense perimeter of the U.S. This decision was considered an "open invitation" to the North Korean communists, sponsored by the Soviet government, to attack (Lee 1997, 184).

On June 25, 1950, the Korean War broke out and continued for three years. South Korean forces were too weak to stop the North Korean forces, which numbered two hundred thousand troops equipped with 242 Soviet T-34 tanks and Yak fighter planes.[4] The North occupied almost all of the southern territories except for the southeastern corner of the peninsula. Only after the arrival of United Nations forces did the security of the South seem safeguarded.[5] When the hostilities ceased with the ratification of the

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[4] When the Korean War broke out, the South was totally unprepared to fight the North. Some 67,559 officers and enlisted men were poorly equipped and inadequately trained. The Army had no tanks; the 6,474-man Navy and the 1,241-man Marine Corps had only small, light crafts; and the Air Force had only 22 planes, which were trainers (Nahm 1988, 505).

[5] On June 27, 1950, the Security Council recommended that U.N. member nations furnish military and other assistance to help stop the North Korean aggression. On June 30, U.S. President Truman ordered General MacArthur to use U.S. forces in Japan to help defend South

Armistice Agreement on July 27, 1953, a three-mile-wide Demilitarized Zone (DMZ) was established. The Korean casualties alone were estimated at over three million -- 1.3 million South Koreans and 1.5-2 million North Koreans, or about ten percent of the total population.[6] After the devastating war, national security became the highest priority for the leaders of the nation. Avoiding "another war on the peninsula became an obsession" not only for the leaders but also for the public (Yoon 1995, 53). During the rest of the 1950s, borders were tightly closed. As a result of the Korean War, the military had become the largest potent force in South Korea. Economic aid from the U.S. reached around $200 million annually, and mainly was used to support the military.

The Rhee Syngman government emerged in 1948 and disbanded in 1960, under pressure from the massive student movement against the authoritarian regime. The Chang Myon regime, which adopted a parliamentary form of government, was then instated after a short period of interim government. Although the economy had somewhat recovered from the War during the twelve years of Rhee's tenure as President, it was still in a deep economic depression. On May 16, 1961, thousands of army and marine troops, led by Major General Park Chung Hee, overturned the Chang Myun Government. After that, the military greatly influenced politics for the following thirty years.[7]

Korea. The first elements of the 24th U.S. Division arrived in Korea from Japan on July 2 and initially engaged with North Korean forces at Osan on July 4.

[6] The 1949 census showed that the total population of South Korea was twenty million and the total population of North Korea was almost ten million at that time.

[7] A survey of the Korean government power elites' career backgrounds shows that the elites with a military background in the administration sector reached 21.1% during the first period of Park regime (1961-1971), 16.2% during the *Yushin* period (1972-1979), 21.5% for the

Civilian constitutional rule was restored on December 17, 1963 with Park Chung-Hee as the President. After the success of its economic development program in the 1960s, the Park Government took an authoritative step in 1972.[8] After the constitutional amendment was implemented,[9] the *Yushin* regime lasted for seven years, until Park was assassinated by his intelligence director in 1979. Despite the authoritarian nature of the regime, its successful implementation of modernization programs made Park known as the most successful president in modern Korean history. Oliver (1993) described him as the "ruling authority" for two decades. He added,

> During that time the country underwent fundamental changes - politically, economically, diplomatically, and socially...For along with closing the door, decisively, on Korea's immediate past, Park Chung Hee was unquestionably the directing force of the vast and fundamental changes for which his revolution paved the way (Oliver 1993, 281).

During Park's presidency, South Korea experienced extensive economic growth, rapid industrialization, and an increased standard of living. The problems of authoritarian governance, however, exacerbated by wide-spread economic inequality symbolized by *chaebol* (big family-owned groups of enterprises), oil-shock, and world recessions, intensified.[10]

Chun regime (1980-1987), and 12.7% in the Roh regime (1988-1992) (Yang 1994, 531). During Kim's presidency, the rate significantly decreased to 8.9 %.

[8] The rapidly deteriorating situation in South Vietnam, a sudden change in U.S. Asian policy, and the U.S. policy toward the People's Republic of China, coupled with the growing anti-Park activities of the opposition parties and students led President Park to take an extraordinary step in strengthening his power (Nahm 1988, 456).

[9] The new constitution, known as the *Yushin* (Revitalizing Reform) Constitution, gave the president enormous powers, authorizing him to issue emergency decrees and to nominate one-third of parliamentary members.

[10] The *chaebol* established their dominance over the economy: the combined net sales of the top ten chaebol rose from 15.1 percent of GNP in 1974 to 55.7 percent in 1981 (Amsden 1989, 116).

The national defense posture was much improved during this period. President Park initiated several measures including the Force Improvement Plan, the Defense Surtax, increasing the defense budget to strengthen Korea's military forces, increasing the number of divisions and units in the military, and improving equipment.[11]

With the demise of the Park government in 1979, the Chun Doo-Hwan government, headed by an ex-army general, came into power in 1980. Although he was another authoritarian president, he contributed to the nation's political development. His peaceful exit from the presidency and transfer of power to Roh Tae- Woo, an ex-general elected as President by popular vote in December 1987, was the first constitutional exercise of its kind (Yang 1994, 557). Chun also made contributions to the nation's economic progress. He undertook to free the economy from the centralized governmental controls that had at first stimulated rapid growth and later handicapped it (Oliver 1993, 317). However, the military exercised as powerful an influence on politics during the Chun government as during his predecessor's and suppressed public demands for more liberal and democratized forms of rule.

Although Roh was another ex-Army general, under his rule Koreans enjoyed more democracy than at any other time in the previous thirty years.[12] For example, for the first time since 1961, local elections were held to select representatives to city, county, and district assemblies.

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[11] For details see chapter "The Force Improvement Plan and the Defense Industry."

[12] Roh Tae-Woo issued the June 29 Declaration in 1987 when he was the ruling party presidential candidate. His eight-point declaration included the direct popular election of the presidency, the releasing of political prisoners, and guaranteeing freedom of the press.

Much has changed in Korean politics since the mid-1980s. The democratization process is still under way. The Kim Young Sam government, launched in 1993, was the first civilian government since the Chang regime, which was overthrown by the military in 1961. Although great public support of Kim and favorable international economic and political environments marked the government's beginning, the ineffectiveness of its economic policies and unceasing corruption scandals have made the regime one of the most poorly performing governments in the nation's modern history. The poor performance of Kim's government finally led to economic and financial crises in Korea. The government asked for an IMF (International Monetary Fund) bailout a month before the presidential election in 1997 due to a lack of liquid foreign reserve.[13] Although there are many explanations of the economic crisis in Korea – political and economic, internal and external, optimistic and pessimistic – everyone agrees that the "breakdown of the government's supervisory and monitoring functions" (Mo and Moon 1998), caused by Kim's incompetence as a president, is a major factor.

In early 1998, Koreans experienced a transfer of power to the longtime opposition leader Kim Dae-Jung. As a result of the financial and economic crises of the Kim Young-Sam government, the ruling party candidate failed to gain a majority vote in the presidential campaign in 1997 for the first time in modern Korean history.

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[13] On November 21, 1997, the South Korean government asked the IMF (International Monetary Fund) for stand-by loans, which finally reached U.S. $60 billion dollars. An obsolete banking system, inefficient *chaebol*, excessive government intervention, bureaucratic corruption, and excessive short-term debts are the elements most frequently mentioned as the causes of the Korean economic crisis. See Mo & Moon (1998) and Feldstein (1998) for details.

Before the economic and financial crises began in late 1996, Korea's economy had performed well despite unfavorable initial conditions for development, such as a lack of natural resources, a narrow domestic market, small domestic savings, and above all, an immense security threat. The past thirty-five years witnessed the transformation of the Korean economy from a small, agricultural economy into one of the Newly Industrialized Economies (NIEs), along with the economies of Hong Kong, Singapore, and Taiwan.

Just as much has changed in the political realm, Korea's economy has also been transformed during the past half-century. The Korean War began in June 1950 and devastated the nation's economic structure. During the 1950s, reconstruction was the top economic priority. Import substitution policy and efforts to produce basic necessities domestically comprised the major government policies. Economic growth was very slow.

After the military coup of May 1961, Park Chung-Hee built the base for an export-oriented industrialization, thereby supplanting the import-substitution policy of the 1950s.[14] His main objectives were twofold: to eliminate widespread poverty and to lay the foundation for continued economic growth based on an export-oriented industrialization strategy.[15] In the 1970s the government began to emphasize the

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[14] On the contrary, North Korea is a closed society and has developed an inward-directed, autarkic economy with an emphasis on heavy industry (T. Kim 1996, 191). The State Planning Commission is responsible for economic policies, setting production and activity levels for all economic entities. In the 1950s and 1960s, the system seemed to work well. Since the mid-1960s, however, the planned economy seems to have run into trouble. One estimate shows that the South Korean economy was nineteen times larger than that of North Korea in 1995, with the gap continuing to widen (U.S. CIA, The World Factbook 1995). The Bank of Korea estimated that North Korea's GDP suffered minus growth of 4.6 percent in the same year.

[15] Incentives to promote export include currency devaluation, tax exemptions for exporters, tariff exemptions for imports used in the production of exports, subsidized interest rates for exporters, and state infrastructure support for export production.

development of heavy and chemical industries. According to the Heavy and Chemical Industrial Development Plan proposed in 1973, iron and steel, nonferrous metals, shipbuilding, machinery, electronics, and petrochemicals were to become the center of the industry. From 1962, when Korea launched its first five-year development plan, until 1995, the economy recorded an average annual growth rate of about eight percent. In that period, per capita GNP rose from US $82 to US $10,037[16], and exports soared from US $55 million to US $100 billion at current market prices. Table 1 outlines major economic indicators since 1970. As the indicators demonstrate, the economy has grown rapidly, unemployment has declined, and the ratio of government spending to GNP has remained relatively stable. With recent rapid industrialization, however the ratio of government expenditure to GNP has been gradually increasing, due to accelerating demands on welfare and other activities.

Table 1 : Major Economic Indicators: 1970-1995

Year	Population (million)	GNP/capita (current dollars)	Unemployment rate(%)	Central Government Budget as % of GNP
1970	31.5	252	4.4	15.8
1975	34.7	594	4.1	15.3
1980	37.4	1,597	5.2	17.6
1985	40.4	2,242	4.0	15.6
1990	43.4	5,883	2.4	15.4
1995	44.8	10,076	2.0	14.7

Source: MFE, Annex to summary of 1995 Budget
National Statistical Office, ROK, Korean Statistical Yearbook, 1995
Korean Statistical Association, Social Indicators in Korea

[16] The Bank of Korea announced that per capita GNP fell less than ten thousand dollars in 1997 after the economic crisis began due to the devluation of the local currency, won. The number is expected to decline to seven thousand dollars in 1998(*Chosun Ilbo* [Chosun Daily Newspaper], March 18, 1998). The growth rate is expected near one percent in 1998, compared to an estimated growth of 5.9 percent in 1997. Korea Development Institute projects that inflation will rise by 9.4 percent in 1998 and unemployment rate is estimated to climb to more than 6 percent from 2 percent in 1997.

The Military Capability of South Korea

Since 1953, the security threat posed by North Korea has forced South Korea to bear a rather heavy defense burden.[17] In 1995, South Korea's military expenditure reached $14.4 billion, the tenth largest amount in the world, and the nation maintained the seventh largest armed forces in the world, according to the *World Military Expenditure and Arms Transfer (WMEAT)*.[18] Expanding the communist system throughout the Korean peninsula has been a major long-standing national policy of North Korea. According to the WMEAT, North Korea's military spending reached $6 billion, the 20th largest amount in the world, and the country had 1,040,000 armed forces (making the North Korean military the fifth largest in the world).

Table 2 shows a comparison of indicators of the current military capabilities of the two Koreas. A look at the number of troops and major weapon stocks indicates the quantitative superiority of North Korea. Although North Korea retains a quantitative

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[17] The major provocations made by North Korea include attempts to assassination the South Korean presidents (1968, 1974, 1983); seizing the U.S.S. Pueblo in 1968; hacking American officers to death in the DMZ in 1976; murdering 17 South Korean officials in Rangoon in 1983; constructing infiltration tunnels under the DMZ; blowing up KAL Flight 858 in 1987; and the submarine incidents in 1996.

[18] The table below shows the military expenditures of upper-middle income countries with per capita GDP between 8,000 U.S. dollars and 12,000 U.S. dollars in 1995. As it indicates, the total military expenditure in Korea is the largest among the countries whereas per capita consumption reaches about 300 US dollars, which is the third largest among the nations compared.

International Comparison of 1995 Military Expenditures (ME)

Country	*Chile*	*Greece*	*Korea*	*Malaysia*	*Mexico*	*Portugal*	*Saudi Arabia*	*Taipei*
GDP/capita($)	9,200	8,300	11,000	9,000	8,100	8,900	10,100	11,100
ME (billion US$)	1.17	3.36	14.36	2.41	2.05	1.60	13.2	9.93
ME/Capita ($)	137	406	294	135	18	225	1,109	524

source: Military Balance 1995-96

advantage over the South in terms of its number of forces and equipment. for those who have a special interest in this issue, the qualitative nature of military capability is arguable. For example, South Korean K-1 tanks – a Korean version of the U.S. M1 Abrams – equipped with detection and targeting sensors, are much more capable than Soviet-style T-62 tanks. which entered production in the early 1960s. *The Washington Times* reported that a steady decline in the quality North Korea's military forces shifted the military balance in favor of South Korea (December 13, 1996, A18). The quantitative edge of the North is offset by the South's superiority in non-quantifiable elements (i.e. weapon quality, training. war experience, geography, terrain, and defensive posture) (S. Lee 1997, 178).

Table 2 : Comparison of the Military Capabilities of South and North Korea

Classification		South Korea	North Korea
Troops	Army	560,000	996,000*
	Navy	67,000**	48,000
	Air Force	63,000	103,000
	Total	***690,000***	***1,147,000***
Army	Tanks	2,150	3,800
	Armored Vehicles	2,250	2,270
	Field Artillery	4,800	11,200
Navy	Combatants	180	430
	Support Vessels	40	335
	Submarines	5	40
Air Force	Tactical Aircraft	550	850
	Support Aircraft	180	510
	Helicopters	630	310

Source: Defense White Paper 1997-1998, p.241

**including Marine Corps troops within the Army*

***including Marine Corps troops within the Navy*

In terms of military personnel, North Korea has maintained a larger number of troops on active duty as well as in the reserves. For weapon systems, the two countries seem to be equal, given the numerical superiority of North Korea and South Korea's

more advanced conventional weapon system. North Korea, however, developed biological and chemical weapons with its own offensive missile technology whereas South Korea does not have any of biological or chemical weapon systems.

The Korean military is a mixed force consisting of 22 percent volunteers and 78 percent conscripts. The system is essentially a conscript system based on the principle of universal military service. All males, except for those who are considered physically or socially undesirable for military service, could be drafted into the military. Korea has approximately 690,000 personnel in its active duty force under three uniformed services, each commanded by its own chief of staff. A chairman of the Joint Chiefs of Staff coordinates the three services. There are 3,000,000 personnel in its reserve force, in which those who are discharged from active duty must serve for seven years. For the first four years after discharge, the reserve forces emphasize mobilization exercises to increase the standing army in case of a contingency. After that, reservists are scheduled to participate in military exercises for twelve hours per year for an additional three years to focus on homeland defense operations.

The Army consists of three armies and the Capital Defense Command, twenty-one regular divisions including two mechanized divisions, and various specialized units. The Army possesses Honest John surface-to-surface missiles along with Hawk and Nike surface-to-air missiles. The majority of its 2,150 main battle tanks are M-47s and M-48A5s produced in the U.S. and domestically-produced Type 88 main battle tanks – a Korean version of the US M1 Abram tank. It has more than 4,500 towed and self-propelled artillery pieces. The TOW antitank weapon is in the inventory, as are about 140 attack helicopters.

The Navy is responsible for coastal defense, particularly the countering of North Korean maritime infiltration. The Navy has five submarines,[19] seven destroyers, 33 frigates, 14 mine warfare and 17 amphibious craft. Its destroyers and frigates are equipped with advanced electronic equipment, anti-submarine weapons, and Harpoon missiles. The navy is organized into three Fleet Commands, with 67,000 personnel including 25,000 marines. The naval forces of the two Koreas are said to be balanced with the numerical superiority of North Korea offset by the South's superiority in the total tonnage of the battle ships.

The primary missions of the Air Force are close combat support for the Army and defense against North Korean aircraft and submarines. The Air Force has a strength of about 63,000. The Air Force is equipped with 550 tactical aircraft, including 60 F-16C/Ds, 130 F-4s, and 195 F-5E/Fs. Armament includes Sidewinder and Sparrow air-to-air missiles and Maverick antisubmarine missiles. The South Koreans manufactured F-5 E/F Fighters under license during the 1980s and in 1995 they started licensed production of F-16 C/D's. The Korean Fighter Program which was allotted more than $5 billion, began to produce F-16s. The Air Force will have 120 fighter planes by the end of 1999.

As the *Defense White Paper* points out, Seoul, the South Korean capital, with a population of 12 million people, is located 25 miles south of the DMZ, is the weakest point of defense, and has little strategic depth. The Seoul metropolitan area is highly concentrated, with a major share of the population and economy. Since the North Korean military adopted the "Blitzkrieg" strategy, the defense of Seoul in the case of military

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[19] Three more submarines licensed from Germany will be available soon.

provocation by the North has been a top planning priority for military planners in the South.

If defense preparation is regarded as a form of insurance for national security, policy makers sometimes must choose between wide coverage of every possible scenario with minimum protection, and selective but in-depth coverage of more probable scenarios. During the Cold-War period, when the Pyongyang could get military assistance and political support from its allies (China and the Soviet Union) for another military action against Seoul, South Korea needed to prepare militarily for every probable scenario in order to mitigate the military threat and defeat an armed attack from North Korea. Although defense planners still have a military reason to prepare the ROK forces for another "Korean War," the need for such preparation is decreasing, whereas the need to prepare for unconventional military activity involving terrorist attacks[20] from the North, and for new threats after unification, is increasing.

The Military Capability of North Korea

Despite the failure of its planned economic system, the leaders of the North have emphasized military build-up and utilized it as leverage in their relations with other countries. North Korea's nuclear program[21] and military assistance to Iraq during the

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[20] The 1983 Rangoon bomb attack on a visiting South Korean presidential party and the 1987 in-flight bombing of a Korean Air jetliner demonstrate the capability of a North Korean terrorist attack.

[21] Considering that North Korea completed a nuclear fuel cycle and conducted high explosive detonation tests from 1983 to 1988, it is estimated that the North has secured all of the technologies required for the production of nuclear weapons and that it possesses nuclear

Gulf War show its potential military capability. Its conventional military capability also poses a significant threat to South Korea. The North Koreans have concentrated 65 percent of their offensive elements and up to 80 percent of their estimated firepower within sixty miles of the DMZ. Forward deployment of its force level so near the DMZ shortens the warning time of military attack to less than 24 hours for South Korea, although that fact is not revealed in a quantitative military capability comparison of the two Koreas. Former CIA Director John Deutch testified when he was in office that North Korea could launch an all-out assault against the South with little to no warning (Testimony before the Senate Select Committee on Intelligence, February 22, 1996).[22]

The North Korean military currently suffers from the deterioration of the economy. The "1997 Strategic Assessment," published by the U.S. military, stated that although the Korean People's Army (KPA) has been "shielded from the effects of the food crisis, the shortage of fuel, lack of hard currency, and loss of major-power sponsorship reduce its combat readiness." The "Strategic Assessment" also asserted that large-training exercises have been canceled, pilot proficiency is low as planes sit idle owing to lack of fuel, and new equipment and spare parts are in short supply. According to The Analytical Science Corporation, the North Koreans have the overall firepower of only five modern U.S. heavy-division equivalents in their force structure (O'Hanlan 1998).

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materials. It is not clear, however, whether or not North Korea has actually produced nuclear weapons (Defense White Paper, 1995-1996).

[22] Kugler even questioned previous defense assessments that South Korean forces should be able to rebuff an attack if the U.S. provided air, naval, and logistics support (1994, 118). He was concerned that the North Korean army might succeed in capturing Seoul, thus compelling a counterattack that a battered South Korean military might not able to launch. On the other hand,

North Korean leaders also have become obsessed with national security after suffered great losses in the Korean War (Moon 1993). Based on the "Four-Point Military Guidelines,"[23] North Korean military policy is to militarize and fortify the entire territory to defend the country from internal and external threats. North Korea's estimated military expenditure has reached 20 to 25 percent of its GNP for the past several decades. Since the early 1960s, North Korea has maintained larger forces and more weapons and equipment than South Korea.

The Central Military Commission of the Workers' Party functions as the supreme military agency. The People's Armed Forces has a single combined command system, under which the Chief of General Staff commands the army, navy, and air force. The North Korea ground force is composed of 20 corps commands, including four mechanized and two artillery corps. Major combat units consist of 26 infantry divisions, 24 truck mobile infantry brigades, 15 armored brigades, 24 Special Operation Forces (SOF) brigades, and 30 artillery brigades. The nation possesses over 3,800 tanks, including 800 new model T-62 licensed-production Soviet tanks and 2,270 armored vehicles, including the M-1973 (DWP 1997-1998). It also possesses about 10,000 surface-to-surface missiles, 5,000 mobile air-defense guns, and 3,000 fixed air-defense guns (O'Hanlon 1998). North Korea maintains SOF of approximately 100,000 troops, which represents one of the world's largest bodies of elite, specially-trained soldiers with means for infiltration (Bermudez 1998).

O'Hanlon (1998) concluded that the chances of capturing Seoul by force would be slim although he admitted that there would be no warning time in case of a North Korean invasion.

Its navy consists of two fleets, the East and Yellow Sea Fleets, equipped with mainly small, and high-speed boats. Its equipment includes 40 submarines with torpedo and mine-laying capabilities, three frigates, and more than 400 light fast-attack and coastal patrol craft. The Air Force is composed of over 1,600 aircraft and includes about 60 advanced tactical aircraft such as MiG-23s, MiG-29s, and others. South Korea possesses more advanced combat aircraft including F-16s, but North Korea has a larger number of combat aircraft, largely built on the 1950s and 1960s Soviet model.

Along with controversial nuclear and chemical weapons, North Korea imported Scud-B missiles from Egypt in the early 1980s and produced their variants with a range of about 300 kilometers for a one-ton payload. North Korea built a longer-range version of the Scud, the Scud mod-C, with a range of 500 kilometers with a 700-kilogram payload. It is currently estimated to possess the production capability of no fewer than 100 Scud-B/C missiles per year. North Korea has so far developed and test-fired Rodong-1, which is capable of carrying chemical[24] and nuclear weapons with a range of 1,000-1,300 kilometers for a one-ton payload (*DWP* 1997-1998, *Washington Post*: June 6, 1996, *Military Balance* 1995-1996).

Along with its missile program, the nuclear program of North Korea, which is now frozen under the "Agreed Framework" brokered by the United States in 1994, could

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[23] The Guidelines adopted in 1962 at the Central Committee of the North Korean Workers' Party include arming the entire population, fortifying the entire territory, instilling leadership potential in all military personnel, and modernizing all troops.

[24] *The Janes's Defence Weekly* reported in the late 1980s that North Korea had the world's third largest chemical warfare capability, with 180-250 tons of chemical and biological munitions (vol. 11, no.2, January 1989, 54).

be an important issue again in the future.[25] Although the North agreed to close its old reactors, which were capable of producing fuel for nuclear weapons, in exchange for two 1,000mw light-water reactors and heavy fuel oil, the construction of the new reactors, which will take a decade to complete and will be funded largely by South Korea, is fragile in environmental impact. For example, when a North Korean submarine ran aground off the East coast of the Southern territory during its reconnaissance mission in 1996, it delayed further implementation of the agreed framework for several months. Thus, potential nuclear threats are currently only "frozen," not "passed." In addition, whether North Korea already has sufficient plutonium to make a nuclear weapon or even possesses a nuclear weapon remains unknown. Due to the fragile structure of the "Agreed Framework" and the strategic advantages of having a nuclear arsenal, the nuclear issue in North Korea can reemerge anytime.

Economic incentive could be an important reason for North Korea's possible return to nuclear development. In order to draw attention from the world community, especially from the U.S., the North is ambiguous about whether it already possesses several bomb's worth of fissile materials, or even the nuclear weapons themselves. The North Koreans might believe that possession of a nuclear weapon would increase the willingness of the U.S., Japan, and South Korea to provide economic aid packages to ward off the possibility that economic collapse would lead to the loss of control of the

[25] The rationale for a North Korean nuclear program is compelling given the DPRK's security mindset. The reasons are obvious enough. Nuclear weapons would (1) provide a countervailing deterrent against U.S. nuclear threats, (2) act as a deterrent against the conventional threat to the North, (3) compensate the North for the loss of its nuclear ally, Russia, and (4) ensure that the North is taken seriously as a major player in the region (Mack 1993).

nuclear weapon and its possible use by a faction in a civil war or a criminal group (Shulsky 1996).

A North Korea with nuclear power is intolerable not only to South Korea, but also to great powers like Japan, the U.S., and China. It could lead to nuclearization in Japan, which might cause Korea and China to develop or to accelerate their nuclear programs. Even though anti-nuclear sentiment is strong in Japan, the existence of nuclear weapons on the Korean peninsula could provide powerful incentives to the Japanese to build a nuclear armament. With its ambitious civilian nuclear energy program, a large and growing supply of plutonium, and technical capabilities in precision machining and other nuclear weapon-related industries, there is little doubt that Japan could produce nuclear arms relatively quickly if it chose to do so (Levin 1996).

One of the important lessons Seoul's defense planner learned from the nuclear crisis is the significance of military intelligence activities, which detect an enemy's potentially threatening military activities. More specifically, the defense planners learned the importance of developing South Korea's own intelligence capabilities, complete with advanced technologies such as military satellites and high-tech reconnaissance aircraft. Without its own intelligence capabilities, Seoul has to rely on the limited intelligence information provided by the U.S. which has been criticized for releasing limited and selective information in order to control the military activities of South Korea.

The Korea-U.S. Security Relationship

The Korea-U.S. combined defense system has played a key role in security policy since the Korean War. The basic framework of the security relationship between the two

countries was established by the terms of the 1954 Mutual Defense Treaty and a series of joint statements issued by the annual Korea-U.S. Security Consultative Meeting (SCM). The SCM, which has been held alternately in Seoul and Washington between the U.S. Secretary of Defense and the ROK Minister of Defense since 1969, has played a significant role in managing the military alliance. The meeting provides the forum for consultation and discussion of security affairs in the Korean peninsula. Since the late 1980s, security issues such as defense burden sharing, the North Korean nuclear program, and U.S. troop reduction have been the central topics of the meeting.

The U.S. military presence has been a critical element of the security alliance. It has deterred Northern aggression against the South. The U.S. commitment to defend Korea was part of its overall global determination to contain the former Soviet Union's expansion in the post World War II era. U.S. troops – especially the ground component – have become a type of peacekeeping force in Northeast Asia and are charged with the mission of maintaining the status quo (Park 1994, 225). U.S. forces in Korea currently number about 37,000, with two fighter wings and one infantry division. U.S. forces are equipped with advanced weapon systems in terms of mechanization and fire power. Its Air Force plays an essential role in intelligence gathering and early warning, as it possesses a highly sophisticated strategic warning system that the ROK forces do not have (S. Lee 1997, 169).

The strategic importance of the U.S. military presence in East Asia, including the Korean peninsula, is revealed in the 1996 Annual Defense Report of the U.S. DoD. The Report says that

> the U.S. is a powerful but distant state, its forward-deployed forces are viewed by regional actors as a reassuring presence. Any significant

> diminution of the U.S. military presence in the East Asia-Pacific, absent a corresponding reduction in potential threats there, would risk creating the perception of a regional power vacuum. This, in turn, could touch off a regional arms race, threatening vital U.S. economic, political, and security interests. So, the U.S. would remain active in this region.

In strategic terms, U.S. security policy on the Korean Peninsula seeks 1) to prevent a power hostile to U.S. from dominating the Peninsula and the nearby area, 2) to encourage an environment supportive to U.S. interests, 3) to guarantee accessibility to markets and resources for U.S. economic interests.

American troops first entered Korea in September 1945, shortly after the Japanese surrender. The United States Army Military Government in Korea was established south of the 38th Parallel. The National Constabulary, a paramilitary organization, was established in 1946 under the auspices of the Military Government and later, the National Defense Force was created in August 1948 when the first president of the Republic of Korea (ROK), Rhee Syngman, was inaugurated. The main weapon systems provided by the U.S. were mostly out-of-date weapons used during World War II (Yoon 1991). At the beginning of the Korean War, security assistance from the U.S. increased rapidly. U.S. military aid during the Korean War and in the mid-1960s totaled more than $2 billion (SIPRI 1971, 146-7). South Korean dependence upon the U.S. for security began with the U.S. occupation and was almost total during the Korean War and the 1950s.

The security relationship between South Korea and the U.S. has changed since the Korean combat troops' participation in the Vietnam War. The alliance relationship between Korea and the U.S. precipitated Korea to station fifty thousand troops on a

rotating basis.[26] The South Korean government perceived that its contribution was indispensable to the American efforts in Vietnam and tried to take maximum advantage of the situation.[27] After South Korea dispatched its troops to Vietnam in 1965, U.S. military aid was increased to $210 million in 1966 and reached $480 million in 1969. The U.S. also purchased military supplies from Korea, stimulating the local economy. The military modernization program started right after South Korea's involvement in Vietnam. In 1965, the U.S. began honoring its commitment to South Korea. By 1970, due in large part to the military aid and assistance provided by the U.S., South Korea began gradually developing military equipment (Yoon 1991). For the U.S. there were political as well as economic reasons to ask for Korean participation in the Vietnam War. Politically, participation of foreign troops other than those of the U.S. legitimated American involvement in the name of a collective security effort on behalf of the free world against the Communists (Kim 1995). Economically, it was cheaper to finance Korean troops than American troops.[28]

In 1971, under the new principle of foreign policy known as "the Nixon Doctrine," U.S. President Nixon began to reduce the U.S. presence in Korea by withdrawing the 7th Infantry Division. Only the 2nd Infantry Division remained after this withdrawal; the total number of U.S. military forces declined from approximately

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[26] The total number of ground forces dispatched to the Vietnam War reached more than 300,000 for the eight-year involvement, with 4,000 killed in action.

[27] Lyman (1968) suggested five major reasons for Korean involvement in the Vietnam War: 1. A sense of obligation to repay foreign troops that had fought the Korean War; 2. A desire to strengthen Korea's position in its alliance with the U.S. 3. The potential financial benefits from the participation; 4. The prospect of enhanced international prestige; and 5. The feeling that the security of South Vietnam, as a "fellow anti-communist country."

[28] The cost of keeping a Korean soldier in Vietnam (in FY 1970) was about $5,000, compared with $13,000 for an American (Han 1978).

60,000 troops to 40,000. The Doctrine was understood as a weakening of the American commitment to its military alliances in Asia. The withdrawal policy greatly influenced Korea's security policy. As a result, in the early 1970s, President Park launched a major effort, known as the Military Modernization Plan, to increase industrial capabilities so that the country would become as self-sufficient as possible in producing military hardware.

During his presidential campaign in 1976, Carter pledged that he would withdraw all combat forces from Korea. In 1977, President Carter announced his plan to withdraw all U.S. ground forces from South Korea within five years, leaving only Air Force and Army support units numbering about 16,000 men. From the beginning, however, those who were involved with Korean affairs in the Pentagon and State Department opposed the withdrawal plan on the grounds that it would jeopardize U.S. security interests. President Carter suspended and later canceled his plan in 1979, facing inner-circle objections to force reduction by bureaucrats, the military, and Congress. On the contrary, President Reagan demonstrated the U.S.'s strong security commitment to South Korea and agreed to strengthen South Korea's defense capability as well as the military strength of the U.S. forces in Korea.

The Bush administration slightly reduced the U.S. force level in Korea, in response to the pressure of a shrinking defense budget after the collapse of the Soviet Union. Under the Nunn-Warner Amendment, which required the review of U.S. military commitments to Asia, President Bush introduced the East Asia Strategic Initiative (EASI). This initiative set a specific timetable for the phased withdrawal of U.S. forces in Korea and called for greater burden sharing (T. Kim 1996, 187).

After slight adjustments in the number of American forces in Korea during the Carter and Bush administrations, President Clinton declared that "peace on the Korean peninsula remains a vital American interest," and announced that he would continue to station forces in Korea "as long as the Korean people want and need them there" (*New York Times*, 11 July 1993, p.6). In 1994, the Clinton administration initiated a series of carefully planned force upgrades in South Korea, including the deployment of Patriot air defense units, in response to the continuing diplomatic crisis over North Korea's nuclear program (Baker 1996). In 1995, President Clinton reaffirmed "our nation's pledge to keep American forces in Korea as long as they are needed and the Korean people want them to remain" (The President's News Conference, July 27, 1995). Gen. John Shalikashvili, then Chairman of the Joint Chiefs of Staff, said in May, 1995, that North Korea's huge conventional military is East Asia's biggest security threat. He remarked that "I think it is very useful for South Korean forces and our forces to remain watchful and maintain a high state of preparedness" (*Washington Post*, June 7th 1996, A30).

It is widely questioned whether the Clinton administration's defense policy, based on a "win-win" strategy of fighting two simultaneous major regional conflicts, is plausible. According to the Bottom-Up Review (BUR), the Clinton administration's defense policy is based on the post-Cold War security environment of the United States, while the U.S. military's overall level of readiness will be far lower in the future. While the BUR identified North Korea as a major regional threat,[29] one critic cautiously stated as follows,

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[29] The BUR described the danger posed by North Korea as follows (1993, 7): "The continuing military preparations underway in North Korea, including the development of nuclear

> ...the ability of the U.S. military to respond to a crisis in Korea might well be jeopardized. Any U.S. military commander, called upon to fight a Korean War, would know full well that North Korea's armed forces -- their size, equipment, and morale -- are considerably stronger than the Iraqi Republican Guard and that a swift, resounding victory like that achieved in Desert Storm would be virtually impossible (T. Kim 1996, 197).

After the collapse of the Soviet Union and its Communist ideology, it is said that the strategic focus of the U.S. shifted to regional threats and economic interests. The removal of the Soviet threat is expected to result in the reduced forward presence of U.S. forces overseas. Although the planned partial U.S. troop withdrawals are currently on hold because of the North Korean nuclear crisis and Washington's desire to keep its forces stationed in Korea, the trend of withdrawal, especially for ground forces, seems inevitable. The role of U.S. forces in defending Korea will shrink and the defense of Korea will depend more and more on its own capabilities.

The Force Improvement Plan and the Defense Industry

The Military Modernization Plan (1971-1975) was launched after the pronouncement of the Nixon Doctrine. After the announcement of U.S. troop withdrawals in 1969, the U.S. persuaded South Korea to agree to its troop reduction plan in return for a promise of U.S. assistance with Korea's Military Modernization Plan, which needed a total of $5 billion (Yoon 1991, 178). As a result, the amount of Foreign Military Sales (FMS) credits given to Korea increased from $0.4 million in 1971 to $70.9

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weapons and longer-range missiles -- both of which are viewed with alarm by their neighbors,

million in 1975. Washington provided nearly $1.3 billion in military assistance, including $890.4 million in grant aid and FMS credits and $140.1 million in excess defense equipment transferred for five years (S. Lee 1997, 174). In addition to U.S. support, the Special Law on the Defense Industry was enacted in Korea in 1973 to bolster the defense industry through tax reduction and exemption and other financial support.

South Korea launched its own vigorous Force Improvement Plan (FIP, 1977-1981), coded as the *Youl-Gok Project.*[30] to develop an indigenous defense industry. Moon(1993) summarized Park's ambitious heavy-industrial drive, which boosted the defense industry, as follows:

> In order to maximize military capabilities, Park opted for force modernization and the development of military-industrial capabilities sufficient to keep up in the arms race with the North. The shift in emphasis from security dependence on the U.S. to military self-help required heavy investment in the defense sector...Between 1975 and 1979, during which period defense industrialization was actively pursued, more than 75 per cent of available investment funds was allocated to the heavy industrial sectors which had linkages to the military industrial sector.

Yoon (1991) provides more details about investing in heavy and chemical industries:

> the Park government emphasized heavy and chemical industrialization because industrial sectors on which defense production depends heavily for input were mostly heavy and chemical industries producing iron and steel, machinery, transport equipment, and electrical machinery. For example, such defense categories as aircraft, missiles, and communication equipment were expected to cause a sharp production increase with the technological localization in such

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could spur massive rearmament throughout East Asia."

[30] The Youl-Gok Project, named after Yi Lee, who was a politician during the middle of Yi dynasty (1395-1910), asserted that the government should strengthen military capability in order to protect the nation from Japanese invasion. However, the government did not accept his military build-up proposal. Japan invaded Korea in 1457 and the war continued for 7 years. The Project has two objectives: (1) to develop the capability for self-defense through an indigenous defense industry, and (2) to develop within five years an indigenous force structure capable of dealing effectively with the North Korean threat with only limited U.S. assistance (such as air and logistic support) (Yoon 1991, 183).

related sectors as electrical machinery and precision instruments. Therefore, the park government pursued heavy industrialization in various sectors in anticipation of high forward linkage effects with the defense industry.

To finance the MMP and FIP, a defense surtax was levied on a number of existing taxes in 1975, shortly after the launching of modernization plan. The defense surtax, which originally was to be levied for only 5 years and was to fund the modernization program, was sustained for 15 years through legislative amendments. About 80 percent of the defense surtax was spent for the specified purposes and the remainder went to other defense projects, such as the construction of military facilities (Hyun 1990, 172). A surtax ranging from 0.2 to 30 percent was added to taxes on incomes, commodities, imports, telephone charges, and advertising rates. By the mid-1980s it accounted for about 12 percent of total tax revenues (Cooper 1994, 137).

Seoul has pursued a defense-industrial expansion policy to increase its self-sufficiency through the indigenous production of conventional weapons. Most defense systems are produced by *chaebol*, including Samsung, Daewoo, and Hyundai. Defense production accounts for only a small percentage of these companies' total output. The Hyundai K1 is derived from the US M1 with a German power pack. An upgrade of the K1 entered production in 1996 and initial planning for a follow-up design, the K2, began. Daewoo produces the K200 Korean Infantry Fighting Vehicle (KIFV), a variant of the US M-113/AIFV (armored infantry fighting vehicle). South Korea also sought to export its own arms manufactures to other countries, both to utilize its production capacity and to increase foreign trade earnings, but its ability to do so is limited by U.S. license restrictions (McDonald 1996, 238).

Pertaining to weapons trading, both Koreas have been leading importers of major conventional weapons. According to the Stockholm International Peace Research Institute (SIPRI) Yearbook, North Korea ranked as the 5th largest country in terms of aggregate import volume of conventional weapons in the Third World, whereas South Korea ranked 9th in the period from 1986-1990 (Table 3). Among all countries, including developed nations, these ranks are 7th and 14th, respectively. These rankings shifted dramatically during the period of 1991-1995. The total amount of conventional weapons imported reached 3,776 million dollars (1990 constant prices) in the South, making it the 8th leading recipient of major conventional weapons, whereas North Korea only imported 743 million dollars of conventional weapons, less than 20 percent of the South's figure. In the volume of deliveries of major conventional weapons in 1996, South Korea ranked number two, at 1,677 million dollars (in 1990 prices), second only to China (1,696 million dollars in 1990 prices). On the other hand, the volume of deliveries of major conventional weapons to North Korea fell by 98 per cent during the last ten years, due to its economic problems and the collapse of the Soviet Union. It is likely that the conventional military capability of North Korea has degraded since 1990, given the dramatic reductions in imports (SIPRI 1996).

Table 3: Import of Major Conventional Weapons, 1986-1996 (US million dollar)

	1986-90 (1985 price)	Rank	1991-95 (1990 price)	Rank	1996 (1990 price)	Rank
South Korea	3,125	14	3,776	8	1,727	2
North Korea	4,900	7	743	42	n.a.	
Ratio (South/North)	0.64		3.65			

Source: SIPRI Yearbook, 1991, 1995, 1996, 1997

The other estimation conducted by the IISS shows the potential obsolescence of the North Korean military after the end of Cold-War. After its peak in 1988, the amount of arms imported by North Korea declined rapidly, from 1,249 million dollars to 100 million dollars in 1996.[31] In terms of exports, North Korea delivered 626 million dollars of goods for the last five years (1990 price, 16th, 1992-96), whereas the South exported 113 million dollars of goods (1990 price, 28th, 1992-96) (SIPRI 1997).

Korea's R&D budget has been increasing as a fraction of the total defense budget and reached 3.12% of total military expenditure in 1997, as shown in table 4. The SIPRI estimation shows that the R&D budget remained between one and two percent of the total defense budget during the 1980s, jumped up to the two percent level in the early 1990s, and now has reached the three percent level. Most R&D is carried out by the Agency for Defense Development (ADD) established in 1970.

Table 4: Trends in South Korean Expenditure on Military R&D

Year	1971	1976	1981	1986	1991	1992	1993	1994	1995	1996
Current b. won	0.34	36.0	66.5	56. 2	186	219	276	292	330	373
1990 b. won	2	130	100	71	170	190	230	230	250	270
1990 US $m.	3	170	140	100	240	270	320	320	350	370
As % of ME	0.2	5.1	2.5	1.3	2.5	2.6	3.0	2.9	3.0	3.0

Source. SIPRI Yearbook 1997,232

[31] The following table shows arms deliveries to the two Koreas from 1987 to 1996:

Year	87	88	89	90	91	92	93	94	95	96
S. Korea	906	812	697	1,224	1,216	1,200	1,327	1,435	1,500	1,100
N. Korea	544	1,249	719	230	99	32	5	92	100	100

Unit: constant 1995 US million dollar
Source: IISS, Military Balance 1997-98

The History and Pattern of Defense Budgeting in Korea

A government determines its defense allocation on the basis of the availability of revenue, political constraints, public opinion, the priorities and beliefs of the political leaders, and security needs. That a large amount of the total budget is devoted to defense signifies the high priority the Korean government places on security in general. The leaders' perceptions of national security also might be reflected in the allocation process. Policy priorities as well as leaders' perceptions of security vary according to time and regime. The international security environment greatly influences these priorities and perceptions. Due to the defense budget's "symbolic value," it can also become an instrument of foreign policy when its levels are regarded to affect the behavior of potential foreign threats (Wildavsky 1997).

The ratio of defense spending to Gross National Product (GNP) is the most widely used measure of a society's military burden. It is a major index of the resource cost of defense as well as a nation's security requirements. Since the 1960s, Korea has devoted about 4.7 percent of its GNP, and about 29 percent of the central government budget, to the defense sector (see Tables 5 and 7).[32] Since the beginning of the 1990s these ratios have fallen, gradually reaching 3.27 percent and 21.1 percent, respectively, in

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[32] Classification of the government budget by function defines the military budget as "defense outlays." These include MND budget, expenditures for the administration of military affairs under the jurisdiction of the Office of Military Manpower Administration, and expenses for the Combat Police and Maritime Police under the Ministry of Home Affairs (Ministry of National Defense, Defense White Paper 1993-1994, 151-3).

1997. Defense spending remains, however, the largest single piece of Korea's budget pie. The numbers just cited seem to be relatively low considering the conflicts between the two Koreas. The draft system, along with the presence of U.S. forces, makes it possible to maintain a somewhat moderate allocation. The real costs of maintaining the current force structure might be higher than those nominal values, once these two factors are taken into account.

Table 5: Military Expenditure in Korea, 1965-1995 (1990 constant price)

Year	1965	1970	1975	1980	1985	1990	1995
Total Military Expenditure[a]	892	1,218	2,022	4,236	4,951	6,856	8,414
Government Military Exp.[a]	440	846	1,852	4,236	4,951	6,856	8,414
GME/GNP(%)	3.7	3.9	4.7	6.1	5.5	4.4	3.3
GME/GOVT(%)	31.9	23.2	29.4	35.6	30.7	25.0	23.0

a. Total Military Expenditure = Military Grant Aid + Government Military Expenditure, million won

Foreign military aid also has been an important source of revenue for the military build-up of developing countries, especially during the peak of the Cold War period. Korea received large amounts of grant aid from the United States for military purposes until the mid-1970s. In other words, as shown in Table 5, total military expenditure in Korea, which is now completely self-financed, could have been categorized by two main sources-- government military expenditure and military grant aid -- until the mid-1970s. As shown in the Table 7, the ratio of military expenditure to GNP was relatively stable during the 1960s, when U.S. military aid constituted a significant portion of total military expenditure. During the 1960s and early 1970s, the ratio of defense spending to GNP remained around four percent. The ratio of defense budget to total government budget ranged from 25 percent to 30 percent during that period. The U.S. military aid amounted

to more than half of the total amount of government military expenditure. The vast amount of resources were devoted to maintenance and personnel costs, whereas investment for force improvement only reached around five percent of total military expenditure until 1968.

Strengthening military capability has been one of the top policy priorities of the Korean Administrations for the last three decades, although the emphasis on military build-up has been declining recently. Table 6 shows a summary of public investment priorities from 1972 to 1996, priorities that were officially declared in government documentation for the Five Year Economic Development Plans, which were launched in 1962 and later renamed the Economic and Social Development Plan.

Table 6: Priority of Government Budget Allocation, 1972-1996

Period	Priority #1	Priority #2	Priority #3
1972-1976	Self-reliance Defense	Rural Development	Heavy & Chemical Industry
1977-1981	Strengthening Defense Capability	Economic Development	Social Development
1982-1986	Price Stabilization	Social Development	Strengthen Defense Capability
1987-1991	Social Development	Economic Development	Strengthening Defense Capability
1992-1996	Infrastructure	Strengthening Science and Technology	Social Welfare

Source: reorganized from official documents, Korea Development Institute, *40 Years History of Public Finance in Korea* (in Korean), EPB, *Public Finance in Korea* (in Korean), MND, *Defense Spending in Korea* (in Korean)

Table 7: Annual Military Expenditure in Korea: 1960-1997 (unit: million won, %)

Year	Defense Expenditure	General Budget	GNP	ME/budget	ME/GNP	deflator 1=1990	ME at 1990 price
1960	14,707	41,995	244,930	35.02%	6.00%		
1961	16,599	57,153	294,180	29.04%	5.64%	28.79	477,911
1962	20,474	88,393	355,540	23.16%	5.76%	26.32	538,952
1963	20,479	72,839	502,900	28.12%	4.07%	21.84	447,239
1964	24,926	75,180	716,310	33.16%	3.48%	16.22	404,226
1965	29,874	93,534	805,720	31.94%	3.71%	14.74	440,381
1966	40,542	140,942	1,037,040	28.77%	3.91%	13.21	535,486
1967	49,553	180,932	1,281,230	27.39%	3.87%	11.95	591,991
1968	64,708	262,064	1,652,930	24.69%	3.91%	10.78	697,353
1969	84,382	370,532	2,155,270	22.77%	3.92%	9.58	808,101
1970	102,335	441,329	2,788,400	23.19%	3.67%	8.26	844,787
1971	140,468	546,277	3,419,100	25.71%	4.11%	7.28	1,022,351
1972	179,675	701,143	4,193,500	25.63%	4.28%	6.54	1,175,545
1973	189,131	651,586	5,377,500	29.03%	3.52%	6.34	1,199,142
1974	305,448	1,018,872	7,591,700	29.98%	4.02%	5.08	1,552,499
1975	455,600	1,550,214	10,129,200	29.39%	4.50%	4.06	1,849,484
1976	720,076	2,127,046	13,899,700	33.85%	5.18%	3.52	2,537,829
1977	950,031	2,739,935	17,795,800	34.67%	5.34%	3.20	3,043,098
1978	1,307,596	3,538,675	24,062,700	36.95%	5.43%	2.80	3,655,362
1979	1,556,229	5,053,242	30,872,100	30.80%	5.04%	2.37	3,681,117
1980	2,308,437	6,486,054	36,857,000	35.59%	6.26%	1.84	4,237,919
1981	2,675,500	7,907,837	45,702,900	33.83%	5.85%	1.51	4,047,845
1982	3,171,235	9,178,908	52,460,500	34.55%	6.04%	1.41	4,478,367
1983	3,357,473	10,180,764	62,086,000	32.98%	5.41%	1.37	4,583,500
1984	3,510,099	11,072,062	71,044,600	31.70%	4.94%	1.33	4,682,717
1985	3,802,457	12,406,393	79,301,100	30.65%	4.79%	1.30	4,954,522
1986	4,327,806	13,796,462	92,909,300	31.37%	4.66%	1.27	5,487,891
1987	4,801,013	15,794,454	109,726,500	30.40%	4.38%	1.23	5,905,305
1988	5,540,000	18,024,996	131,371,300	30.74%	4.22%	1.15	6,362,529
1989	6,165,000	21,653,120	147,941,600	28.47%	4.17%	1.09	6,692,874
1990	6,856,192	27,436,744	178,862,100	24.99%	3.83%	1.00	6,856,192
1991	7,961,013	31,283,510	214,239,900	25.45%	3.72%	0.91	7,283,635
1992	8,624,959	33,362,459	238,704,600	25.85%	3.61%	0.86	7,428,905
1993	9,158,170	37,268,004	265,517,900	24.57%	3.45%	0.82	7,525,201
1994	10,127,910	42,794,678	303,772,600	23.67%	3.33%	0.77	7,832,877
1995	11,367,636	51,498,089	348,284,300	22.07%	3.26%	0.74	8,414,238
96(budget)	12,736,036	58,822,835	390,020,000	21.65%	3.27%		
97(budget)	14,350,473	67,578,600	436,870,000	21.24%	3.28%		

During the 1970s, due to the U.S. force withdrawal policies under the Nixon and Carter administrations, along with other changes in the security environment, the Korean government devoted its policy efforts to stimulating heavy and chemical industries as well as the defense industry. Seoul invested in major military equipment programs, especially shipbuilding, the manufacture of land vehicles, and the aerospace industry. An observer even argued that national security concerns have influenced the scope, timing, and trajectory of economic development in Korea during this period (Kapstein 1988). After launching the defense industry, South Korea was able to produce, with U.S. technological assistance, its own M-16 rifles, remodeled M48 tanks, 500MD helicopters, 155mm Howitzers, Vulcan anti-aircraft guns, and patrol boats.

The ratio of military expenditure to GNP and its ratio to government expenditure grew since the late 1960s and peaked in 1978-1982. As shown in Table 7, the *Yushin* period, after the launch of the Force Modernization Plan, could be regarded as an age of military build-up in Korea. The ratio of force improvement expenditure to total military expenditure jumped to 38 percent in 1976, from 13 percent in 1974 and 24 percent in 1975. From the mid-1970s to the 1980s, those ratios remained high, peaking at thirty-nine percent in 1988.

In 1979, under pressure from the U.S. government, Seoul and Washington made an agreement that South Korea would spend about 6% of its GNP on its own defense. The "6%-of-GNP formula" was requested in return for the deferment of the withdrawal of U.S. forces from Korea. Seoul used the 6% formula only from 1980 to 1982, although the U.S. expressed concern over South Korea's spending level during the mid-1980s.

After peaking in the early 1980s, the indicators have fallen gradually, reaching 3.27 percent (ratio of military expenditure to GNP) and 21.2 percent (ratio of military expenditure to government expenditure) in 1997. Since 1982 the ratio has fallen without exception.

The absolute amount of defense spending, however, has been increasing for the last 35 years without exception, although the exact amount of spending varies according to the sources of information. For example, the SIPRI Military Expenditure Database indicates that expenditure in 1994 was three times larger than that in 1984. Additionally, real growth of government military expenditure has been positive during the last 35 years with two exceptions: 1962 and 1981 (in 1990 constant price). Again, the SIPRI data shows that during the last decade, 1993 was the only year that witnessed a decrease in military expenditure in real terms.

It is debatable whether the amount Korea spends on defense is large or not considering the degree of conflict and tension between the two Koreas and its geopolitical position. In spite of the end of Cold-War confrontation, Northeast Asia is still regarded as a possible future conflict area, with four major powers maintaining their forces at the same levels as those of the Cold War Era. [33]

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[33] According to the Military Balance (1996-1997) the number of U.S. Asia-Pacific Forces is 106,200, Russian Far Eastern Forces is 560,000, Japanese SDF is 235,550, and Chinese PLA is 2,935,000. The BUR requires that the U.S. maintain the ability to fight two major regional conflicts (MRCs) occuring nearly simultaneously. The Korean peninsula is treated as one potential theatre along with the Middle East in the BUR.

The conscript army system and the presence of U.S. forces[34] are two major factors that have made Korea's moderate allocation on defense possible. These factors have lessened the military burden financially.[35]

The real cost of the conscript army system is far greater than the current cost of personnel indicated in the budget in several ways.[36] It should be noted that the current nominal amount indicated in the defense budget does not reflect the real cost of draftees. Conscription should be viewed as a tax with potential economic inefficiencies. The conscript military system has been influenced not only by defense spending but also by the military structure, in terms of weapon systems and personnel management. The unit cost of personnel under the conscript system is undervalued compared to its real social cost. Through the conscript system the military can obtain labor for less than market wages and can use excessive amounts of labor versus capital in its production of defense. As a result, the structure of the military inevitably becomes labor intensive.

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[34] In 1989, the MND estimated that the Korean government should have to spend eight percent of its GNP for defense in order to replace the strength of the U.S. forces in Korea in five years (White Paper 1989, 132). The MND estimated in the early 1990s that it would cost an additional 25.9 billion dollars for five years to replace U.S. forces with ROK forces (MND, Defense White Paper 1995-1996, 200). The following table shows the substitution expenses of U.S. forces in Korea.

Equipment	Ammunition	Early Warning	Maintenance	Total
8.8	4.6	3.5	10.0	25.9

Unit: U.S. billion dollar (1988 price), as of 1992

[35] On the other hand, those who advocate a radical arms reduction assert that both the conscript system and the U.S. forces in Korea have accelerated the arms race between North and South Korea, making North Korea carry a tremendous military burden and making the South put any possible surplus resources into the defense sector.

[36] Oi (1982) measured the cost of acquiring and retaining military personnel in the conscript system in three ways: budgetary cost, financial cost to economy (opportunity cost), and full economic cost. Budgetary cost is defined as government expenditure including wage, clothes, and other compensation needed to acquire and maintain a certain level of military personnel. Financial cost to the economy is defined as the value of civilian outputs that could have been produced by the labor resources which were allocated to the armed forces. This concept provides

Under the current system, accession to military service is of three types: (1) volunteers who choose military service over alternative job opportunities, (2) reluctant volunteers to the Air Force and the Navy who enlist in preference to being drafted to the Army, (3) draftees who are involuntarily inducted. The last two groups are coerced to serve.

Individuals who are drafted or who volunteer at the rank of private can get only small allowances for compensation. Even reluctant volunteer officers, normally college graduates, because of the draft system, get less than half of the market wages for their compulsory service period. The budgetary cost of personnel would be enormous if the opportunity cost of those draftees and those who would not volunteer without the conscript system is considered.[37]

The Defense Budget Formulation

The three stages of the Korean budgeting process are 1) the formulation of the budget proposal by the executive branch, 2) the review and approval of the budget by the National Assembly, and 3) the execution of the budget. Figure 1 and Table 8 show the budget formulating process in Korea.

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a measure of technical efficiency in terms of civilian outputs that were foregone to achieve a given level of military preparedness.

[37] Even the opportunity cost concept cannot reflect occupational preferences for military versus civilian employment. For example, if an individual has a preference for military service over a civilian job not because of financial reasons but because of other reasons, in a voluntary

Decisions about government expenditure in FY_t are made during fiscal year FY_{t-1}. These decisions would be based on actual receipts in FY_{t-2}, together with forecasts of revenues and expenditures in FY_t. Responsibility for the preparation and administration of the budget lies with the Ministry of Finance and Economy (MFE). The MFE is responsible for the overall planning of the macro-economy as well as the formulation and execution of the national budget. The MFE, previously called the Economic Planning Board (EPB) until 1993, has played a coordinating role in the economic development of Korea, deciding which industrial sectors would get government support and directing the flow of credit. Through the government's resource mobilization and allocation activities, which include implementing regressive indirect taxation, favorable fiscal incentives for private savings and investment, and maintaining a low level of welfare expenditure, the Korean government subsidized the industrial sector, focusing on export and heavy & chemical industry (Ha 1997).

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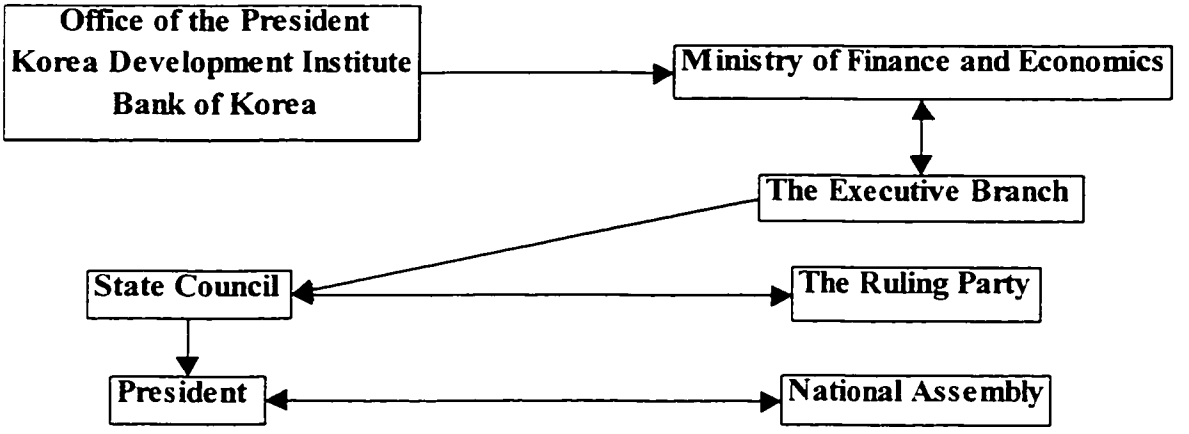
military system he would be willing to serve to the military for less than the market wage he could get.

Figure 1: Budget Formulating Process in Korea



Source: modified from Sangmok Kim, "Budgetary Process and Bureaucratic Control."

At the initial stage, the Korea Development Institute (KDI) and the Bank of Korea (BoK) provide information and data that permits economic forecasting for the next fiscal year. They provide information on the inflation rate, economic growth rate, unemployment rate, etc., based on assumptions about prospective developments in the world economy. The fiscal year begins on first day of January, as the calendar year, and ends on the last day of December. The Office of the President, which has to consider the political feasibility of the budget, sets policy priorities and economic guidelines for budget formulation. The priorities of the President have become the number one consideration in the budget allocation process.

The Budget Office in the MFE distributes guidelines for the compilation of the budget for the next fiscal year at the end of March. The guidelines include not only basic economic assumptions and revenue estimation, but also the policy priorities of the President.

Each ministry and independent agency begins its internal process at the end of FY_{t-2} in order to prepare a ministry draft for FY_t. They are asked to submit their plans for new programs for the following fiscal year by the end of February. By the end of May, based on the budget guidelines of the MFE, all ministries and agencies submit their formal budget requests. The Office of the Budget in the MFE reviews the budget requests and negotiates with each ministry in preparation for the administrative draft, which is submitted to the President and the National Assembly. After discussions with the various Ministries, by the end of August a draft budget is submitted to the Deputy Prime Minister, the Prime Minister, and the President. In most cases, the total size and composition of the budget are virtually determined through this process.[38]

Budgeting is dominated by the executive branch. The legislative branch plays a minimal role. Before submitting the budget to the National Assembly, consultations between the ruling party and the administration take place during the summer. Since the National Assembly does not have the authority to increase the total size of the budget or add any new expenditure item to the budget, the majority party attempts to alter the spending priorities and the composition of the budget to reflect its constituents' demands before the regular session of the National Assembly (Ha 1997).

The President submits the Administration draft to the National Assembly at least 90 days before the beginning of the new fiscal year. The National Assembly organizes an ad hoc committee during the regular session, which is held from the beginning of

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[38] For example, between 1990 and 1995, more than 20 percent of the original budget requests were cut by the Budget Office. In contrast, the difference between the executive budget and the final budget approved by National Assembly only ranged between 0.1 percent and 0.4 percent (Ha 1997, 63).

September to the beginning of December, called the Special Committee on Budget and Account (SCBA). This committee plays a key role in reviewing the budget. The SCBA and sixteen standing committees review and modify the President's proposal and ratify the budget 30 days before the new fiscal year, which begins on January 1st.

Table 8: Time Table for Budgeting

March 31: Ministry of Finance and Economics (Office of the Budget) submits *Guidelines for Budget Compilation* to the other ministries. The Guidelines outline priority concerns and the economic assumptions of the next fiscal year, including the inflation rate, exchange rate, etc. The Korea Development Institute and the Bank of Korea provide information, data, and economic expectations to the MFE.
May 31: Each Ministry and independent agency submits its *Requirements for Budget* (Ministry Draft). To do this, each ministry (Budget Bureau) begins its internal process in the beginning of the previous December.
June-August: The MFE (Office of the Budget) revises the *Requirements for Budget* of each ministry – first draft. Cooperating with the Office of the President and various agencies, the MFE coordinates and modifies the agency drafts and submits the budget proposal to the State Council (cabinet meeting).
September: Consultation with ruling party leaders. State Council and Presidential ratification-Budget Bill.
October 2 (90 days before the end of fiscal year): The President submits the budget bill to the National Assembly (regular session).
October-November: All sixteen standing committees submit their own reviews of the budget to the Special Committee on Budget and Account (SCBA) (an ad hoc committee). This committee has the key role of reviewing the budget in the National Assembly. The committee submits a final draft.
December 2 (30 days before the end of the fiscal year): The National Assembly is expected to pass its revision of the budget bill at least 30 days before the beginning of a new fiscal year. It rarely increases the budget submitted by the president but often cuts a certain amount of the total budget.

The Defense Budget: The Ministry of National Defense (MND) is responsible for military affairs, including force development, budgeting, personnel, reserve forces, logistics, the defense industry, and the military education system. After launching the Military Modernization Plan in 1975, more effective management of defense resources was required and as a result, the Planning Programming and Budgeting System (PPBS)

was introduced in the early 1970s and implemented in 1979.[39] The PPBS was first introduced by Robert McNamara[40] of the U.S. Department of Defense (DoD); Charles Hitch and Alain Enthoven outlined the relationship between defense plans and budgeting. The core of the PPBS lay in its division of weapons systems and forces into output-related programs, its incorporation of cost and force projections for each program, and its linking of the planning and budgeting processes (Jordan et. al. 1993).

According to the several studies (Chung 1990, Jung 1989) that analyzed the adoption of the system by the Korean MND, the introduction of PPBS was prefigured from the early 1970s after the first force modernization plan was launched. A government document described the necessity of the system as follows:

> Our national defense planning and management system was adopted and developed in line with the transformation of the security environment in the 1970s. Since U.S. military aid decreased sharply and our own defense budget requirements significantly increased, we needed to readjust the old management system based on heavy aid from the U.S. (Defense White Paper 1995-1996, 166).

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[39] Arthur Smithies summarizes the process: 1. Appraisals and comparisons of various activities in terms of their contributions to objectives; 2. Determination of how given objectives can be attained with a minimum expenditure of resources; 3. Projection of activities over an adequate time horizon; 4.Comparison of the relative contributions of private and public activities to objectives; 5. Revisions of objectives, programs, and budgets in the light of experience and changing environment (Smithies 1968, 26-27). The important features of this budget are (1) its output orientation, (2) that it requires quantifiable output, and (3) its extended time horizon (Korb 1973, 334-341).

[40] McNamara (1968, 95-96) stated the four purposes of the PPBS as follows: 1. It provides the mechanism through which financial budgets, weapons programs, force requirements, military strategy, and foreign policy objectives are all brought into balance with one another, 2. It produces the annual Five-Year Defense Program, which is perhaps the most important single management tool for the Secretary of Defense and the basis for the annual proposal to Congress, 3. It permits the top management of the Defense Department, the President and the Congress to focus their attention on the tasks and missions related to our national objectives, rather than on the tasks and missions of a particular service, 4. It provides for the entire Defense Establishment a

Since 1983 the formal process through which the Ministry of National Defense (MND) prepares its budget has been known as the Planning, Programming, Budgeting, Execution, and Evaluation System (PPBEES); it is an updated version of PPBS that includes an emphasis on the execution and evaluation functions. The PPBEES process is designed to be the principal mechanism through which the MND prepares its own internal, long-term financial plan.

The PPBS is both a "process" and a "method" for linking resources with objectives and those objectives with the forces needed to obtain them (Kaufmann 1986, 95). The system was intended to persuade decisionmakers to think of goals to accomplish and the costs involved in reaching those goals. The system produces not only an annual budget but also a long-term defense and budget plan for the following four years. As a result of recent reforms, the basic national defense policy is to be authorized by the President and to become a guideline for the whole process.[41]

The planning phase of the PPBEES process is designed to identify potential security threats, develop overall national security objectives and strategies, and determine future defense plans to carry out the strategies. Programming focuses on the development of programs to meet the security objectives established in the planning phase. It is a more detailed version of the planning stage. Programming is composed of the identification of program alternatives, forecasting and evaluating the consequences of program alternatives, and deciding which program alternatives to carry out (Jones 1994,

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single approved plan, projected far enough into the future to ensure that all the programs are both physically and financially feasible.

[41] MND Directive No.500

57). The Mid-Term National Defense Plan is established according to the capability requirements that were proposed at the planning level, given the available resources. The annual defense budget is expected to be set within this mid-term plan. It is expected that in this stage the MND will analyze the costs and benefits of each project, in comparison with the alternatives. The program, then, consists of the most meritorious projects. The Mid-Term Plan announced in 1996 by the MND called for a 12 percent increase in the defense budget annually from 1998 to 2002. Under the plan, 100.8 trillion won would be spent on defense. The plan included the purchase of two early warning control systems, more than eight P3C anti-submarine vessels, and radar systems for units guarding coastal areas. It also planned to build two Korean-style destroyers. Smithies (1968, 43) explained the logic of programming as follows:

> The need for programming arises from the limitations of human beings and the obstinacy of the physical environment. In the first place, it is not sufficient to invoke the Constitution and seek to promote the general welfare. The general welfare can only be understood in terms of components and by choosing among them. Second, the process of relating ends to means is immensely complicated in a modern society. The process must be broken down into a hierarchy of optimizations and sub-optimizations. Third, results cannot be achieved instantaneously, and frequently long lead-times are involved. Moreover, resources once committed to a purpose are not readily transferable elsewhere. Consequently, programming is required (Smithies 1968, 43).

The system represents the process that brings the government's national security objectives together with a detailed annual spending plan. A budget is approved in order to implement the projects for the Mid-Term Plan. In the budgeting phase, the cost and efficacy of the program are reviewed. This phase includes the formulation and acquisition of the budgets based on the budget proposals of each service of the armed

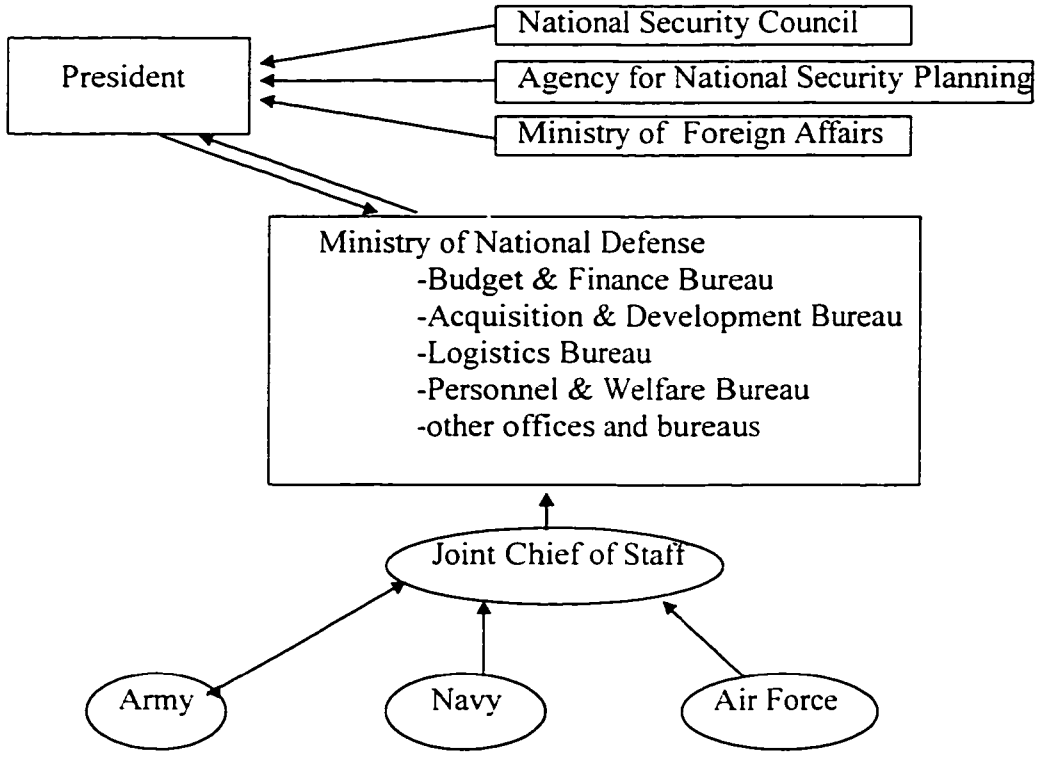
forces and each organization. In the evaluation phase, all of the phases from planning to execution are analyzed and evaluated, so as to enable further planning.

The MND is responsible for formulating the defense budget every year. Each service submits its budget proposal, with long-term and short-term force improvement plans, to the Joint Chief of Staff (JCS) and the MND. In 1995, as a result of organizational reform, budget and financial functions were integrated into the Budget and Finance Bureau.

Figure 3 indicates the flow of the defense budget formulation process in preparing an MND draft. The National Security Council (NSC), the Agency for National Security Planning (NSP, former KCIA), and the Ministry of Foreign Affairs provide information on the security environment. Based on the information provided by these agencies, as well as the MND's own evaluation, the whole process begins. Each service – the Army, the Navy, and the Air Force – competes for resources. The services have separate facilities, training programs, and budgets.[42]

[42] In the U.S., to improve coordination among the services, the Congress passed the Goldwater-Nicholos Reorganization Act, which clarified the role of the Joint Chief of Staff and strengthened its role (Wildavsky 1997, 226). The Act tried to break down barriers between the services and promote greater "jointness" (Davis, 1997).

Figure 2: Defense Budget Formulating Process



Chapter Three: The Determinants of Defense Budgeting

Research Questions and Literature Review

The aim of this chapter is to investigate the internal and external determinants of the demand for security in Korea for the last 35 years. A country's military expenditure is directly connected to its demand for security. Military expenditure is accepted as a symbol of a nation's commitment to security. Because it is expressed in monetary terms, a comparison of current military preparation with that of previous years is possible. Taking into account factors that affect the levels of military preparation, the objective is to find out what should be managed in order to achieve optimal defense management in the post-Cold War era, especially after a possible Korean unification.

Many attempts have been made to explain the determinants of the military expenditures of nations. Previous studies on the question of what determines military expenditure have been conducted by Chan (1988), Looney (1987; 1989a; 1989b), Looney and Frederiksen (1986; 1988; 1990), Griffin (1982), Harris (1988), Hewitt (1992), Hill (1978), Maizels and Nissanke (1986), McKinley (1989), Ostrom (1978), Ostrom and

Marra (1986), Thee (1982), Treddenick (1985), Ward and Mahajan (1984), and Weede (1986). Mok (1993) and Hong (1990) wrote pioneering works on the determinants of the Korean defense budget. Many empirical studies used multi-explanatory variables to discern the relative importance of different elements. In this chapter, determinant variables suggested by previous theoretical models and empirical studies are used to explain the determinants of defense expenditures in Korea. Following a review of the relevant literature, this study describes the model used to discern the determinants of the demand for security in the next two sections. The last section presents the empirical results and concludes with a consideration of the implications of the data.

Table 9 shows selective studies of military expenditure determinants and lists the authors' unit of analysis or region of interest and important explanatory variables. As the table indicates, studies of specific countries among the less developed nations in a longitudinal perspective are not as popular as studies comparing a group of countries, which provides a cross-sectional perspective at a given historical moment. There are two main reasons for the greater popularity of cross-sectional studies.

First, due to data limitations, statistically meaningful studies rarely are possible for developing countries. In many cases, it is hard to get sufficient longitudinal data. Second, political scientists are generally interested in finding systematic differences that affect various military expenditure levels among a group of nations rather than seeking policy alternatives for the future in terms of defense management or effective allocation of resources for a specific nation. As a result, researchers do not pay much attention to the individual country case study approach.

Table 9: Previous Studies on Military Expenditure and its Determinants

Authors	Year	Unit of Analysis	Time Period	Important Variables
Conybeare & Sandler	1990	European alliances	1880-14	Alliance effect
Chan	1988	Taiwan	1961-84	Multiple
Dunne & Mohammed	1994	Sub-Saharan Africa	1967-85	Economic factors
Looney	1987(a)	Argentina	1961-82	Regime change
	1987(b)	LDCs	1982	Economic variables
Looney & Frederiksen	1988	Latin America	1955-83	Government budget
	1989	LDCs	1973-88	Military industry
	1990	Asian Countries	1965-85	Economic variables
Harris	1986	ASEAN	early 1980s	Domestic economic factors
Hewitt	1992	125 countries	1972-88	Multiple factors
Hess & Mullan	1988	LDCs	1982-83	Economic factor
Hill	1978	LDCs	1945-65	Military influence
Looney	1989	Developing countries		Economic constraints
Maizels & Nissanke	1986	Developing countries	1978-80	Multiple factors
Ostroom	1978	U.S.	1955-73	ME of Soviet
Ostroom & Marra	1986	U.S.	1967-84	Soviet behavior
Treddenick	1985	Canada	1959-85	Domestic economic factor
Ward & Mahajan	1984	India	1952-70	Threat, government deficit
Fritz-Aβmus& Zimmermann	1990	Germany	1961-87	Multiple factors

West (1992) organized those studies into five categories, based on the studies' different explanatory hypotheses: (1) geostrategic consideration, (2) budgetary politics, (3) the influence of arms suppliers and domestic arms production, (4) financial and economic factors, and (5) multi-variable explanations of military expenditure. Some studies emphasized the economic conditions that influence levels of spending (Thee, Looney and Frederiksen, O'Leary and Coplin), while others focused on the political constraints that determine spending levels (Ostrom, Hill, Harris, Hewitt).

Hill (1978) and Ostrom (1978) stress political factors. Hill uses a sample of developed and developing countries in his synthesis of the multiple variables to explain the determinants of defense spending. He could not isolate one dominant factor that explained the variance in defense spending patterns among the samples. He concludes that the military spending level of any nation is likely to be a product of a number of separate forces which include arms races, military alliances, military aid, the size and wealth of the country, the form of government, and the extent of military involvement in politics.

Ostrom (1978) reasons that the defense expenditure of a country is affected by its internal and external environments. These environmental factors affect the decisions of policy-makers on defense spending. In the case of the U.S., these factors include (1) the defense expenditure of the Soviet Union, (2) international conflict, (3) congressional attitudes toward defense spending, (4) the foreign policy position of the President, and (5) the political party of the President.

On the other hand, Looney and Frederiksen emphasize the relative importance of economic variables as determinants of military expenditure levels. Financial capabilities are the most important variables for them, and they published several articles, with different units of analysis, which show empirical support for their hypothesis (Looney & Frederiksen 1986, 1988, 1990; Looney 1987 1989a, 1989b). Hewitt (1992) also emphasizes financial factors in his econometric examination of the determinants of military allocation in 125 countries.

Maizels and Nissanke (1986) conducted a cross-section study of eighty-three countries with average data compiled in 1978 and 1980. They hypothesize that there are

sixteen potential influences on the level of military expenditure in developing countries in national, regional, and global contexts. Their variables are political framework, military activity, and economic linkage. After estimating a regression equation for three regions (Afirca, Asia, and Latin America), they conclude that internal repression, relations with a global power bloc, foreign exchange availability, and the existence of regional wars all help which determine the relative size of a nation's military burden. The most important single determinant, however, is the size of the state budget under the various political and economic conditions. The authors note that these factors would vary from country to country.

Previous cross-national studies offer weak explanations of dominant factors that could be applied to every country to analyze the determinants of military expenditures. In the previous studies, varying units of analysis prompt different outcomes. The determinants of defense allocation are multidimensional. The vast majority of research has a cross-national design, and tends to generalize findings from the aggregate to the individual case study. However, as some researchers of those studies have noted (Hewitt 1992; Maisels & Nissanke 1986), conclusions from such studies shed little light on individual cases that have particular economic and political constraints as well as unique historical backgrounds.[43]

Several studies attempt to explain the determinant factors of Korean defense spending (Mok 1993, Hyun 1990, Lee 1992). Mok's integrated model shows that the economic considerations related to a nation's financial capability, along with the amount

[43] For example, Hewitt (1992) cautioned against the generalization of his findings after conducting cross-section studies on 125 countries.

of military aid from the U.S. and regime characteristics, have played an important role in determining military expenditure changes in Korea (Mok 1993). On the contrary, defense policy makers justify the increase in military allocation as a response to the security threat from North Korea.

Based on the previous studies, several potential explanations of the determinants of military expenditure in Korea are examined by asking the following research questions:

1. Does budgetary incrementalism affect military budget formulation in Korea?

2. What economic factors are likely to influence the defense budget allocation process?

3. Can military confrontation between the two Koreas be one important explanation of the defense spending level?

4. Can U.S. military aid be another factors?

5. Can the Presidents' policy priorities affect the nation's defense spending level?

One of the key insights suggested by recent research on defense spending is that its factors are not homogeneous. This means that one needs to disaggregate defense spending and analyze the different factors that influence different aspects of defense spending (Chan and Sommer, 76). The relative importance of determinant factors for military procurement expenditure might be different from those for total military expenditure. For example, it is possible that expenditure on military procurement is more sensitive than total military expenditure to the military threat posed by the North Korea.

Total military expenditure can be partitioned into two main sub-categories: (1) operation and maintenance costs for daily operation and (2) procurement and R&D costs

for force improvement. In this dissertation, the determinants of the sum of R&D and procurement costs are also examined, assuming that this expenditure, which comprised 28.9 percent of total military expenditure in 1997, might be relatively controllable.[44] Table 10 shows the changes in the composition of the defense budget during the last ten years. As the ratio of defense budget to central government expenditure has declined, the ratio of budget to force improvement expenditure has been shrinking. During the last decade, the amount of investment for new equipment, R&D, and stockpiling equipment has been constant after adjustment for inflation.

Table 10: Composition of Defense Budget, 1987-1997 (%)

Year	87	88	89	90	91	92	93	94	95	96	97
Force Improvement	38.8	39.0	38.1	36.8	34.8	33.0	31.6	30.2	29.1	28.0	28.9
O&M, Personnel	61.2	61.0	61.9	63.2	65.2	67.0	68.4	69.8	70.9	72.0	71.1

O&M: Operation and Maintenance

The following section details why and how those variables are regarded as potential explanations of military expenditure levels in Korea. The explanations consist of internal factors (budgetary incrementalism, economic constraints, and presidential priority) and external factors (reactions to the threat of North Korea and to the military alliance with the United States).

[44] *The Defense White Paper 1995-1996* (MND) states the uncontrollable aspects of a rapidly increasing budget for operation and maintenance costs as follows: "Because the MND has not been able to afford both the requirements for investment and operation and maintenance, it had to consider the basic requirements first."

Hypothetical Expectation

Internal factors

Budgetary Incrementalism: Incrementalism has a special importance in budgetary decision-making.[45] The decision makers will normally only make slight increases or decreases in base-year spending. Most studies of budget formulation emphasize the importance of the incremental aspect of governmental decision-making due to the bureaucratic nature of politics (Ward 1984, Harris 1988, Kamlet and Mowery 1987, Ostrom 1977). Budgetary incrementalism can be expressed by the following statement: An organization's budget for FY_t is formulated by making marginal adjustments to the budget for FY_{t-1}. The previous level may be the principal determinant of current spending. That is,

$$FY_{i,t} = a + b\,FY_{i,t-1} + e, \quad \text{where } FY_{i,t} = \text{an organization's budget at time t.}$$

The size of the previous fiscal-year budget could be the best predictor of the current budget because of the incremental nature of budgeting. It implies that each organization focuses on changes in behavior from one time period to the next. In other words, previous behavior is viewed as a base from which decision makers deviate only slightly (Ostrom & Marra 1986).

Bureaucratic politics, the bureaucratic pressures and inertia within the government, result in incremental budgets. The leaders and members of any government agency are concerned with the interests of their own organization. Maintaining and

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[45] Wildavsky (1992, 83) described the incremental aspect of budgeting as follows: "Budgeting is almost never actively reviewed as a whole every year, in the sense of reconsidering the value of all existing programs as compared to all possible alternatives. Instead

increasing their budget are primary concerns for leaders whose influence within an organization partly depends on the amount of their own available resources. Niskanen assumed that bureaucrats act to maximize the budget of their bureau, especially their bureau's discretionary budget, which is defined as the difference between the total budget and the minimum cost of producing the output expected by the political authorities (Niskanen 1990, 18). This implies that the base year's spending suggests what is plausible and what is needed for determining the next year's spending level.

In addition to bureaucratic pressure, the complexity of real-world problems induces decision-makers to formulate simple and acceptable solutions. Treddenick explained the inevitable aspect of adopting incrementalism as follows:

> Rational budget formulation, which attempts to choose among all possible alternatives on the basis of all possible consequences of each, and to do so from a zero base each year, is, it is argued, simply impossible. Impediments to rational budgeting include imperfect knowledge, time pressures and limits on human information processing. As a consequence, only a few alternatives will be considered at any given time, and any changes which are made will take place only at the margin. Under these circumstances, decision-making will tend to be made by 'disjointed incrementalism' or simply 'muddling through' (Treddenick, 1985, 80).

Military budgeting is no exception.[46] A glance at the level of military expenditure in Table 7 showed that they have been increasing every year, with few exceptions (in 1990 constant price).[47] Budgetary incrementalism is a prime determinant of defense

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it is based on last year's budget with special attention given to a narrow range of increase or decrease"

[46] Russett & Starr (1995) used as an example that when the B-52 bomber became nearly obsolete in the U.S. Air Force, the Air Force looked around for a new bomber to keep the people and resources employed. As a result, the Air Force got the B-1 bomber, which would do a similar job as the B-52 bomber.

[47] Even if there has been an incremental tendency in the military budget allocation process in Korea, it is questionable whether that explanation would be suitable for a future security

expenditure according to some scholars (Ward 1984, Harris 1988, Kamlet & Mowery 1987, Ostrom 1977).[48] One plausible reason for the trend in the military spending of some contemporary nations is the tendency for past expenditure levels to fuel future increments in spending (Ward 1984, 385). Harris (1988) concluded in his empirical study on ASEAN[49] countries that defense spending in the current year had positive relationships with defense spending and the central government budgetary position in the previous year. In Ostrom's analysis for the U.S. case, he hypothesizes that expenditures at one point in time are a linear function of expenditures at a previous point in time. He estimates that from 1954 to 1973, the incremental pressure for increases in U.S. defense expenditures was about 4% per annum (Ostrom 1977, 251).

Therefore, a first potential explanation of the determinants of the defense budget is the bureaucratic politics of the budgeting process, represented by incrementalism. The hypothesis is that "incrementalism has been positively affecting military budgeting in South Korea."

It is also expected that the partitioning of defense expenditure into subaccounts, in order to examine the different levels of spending on military procurement versus total expenditure, could provide additional insight into the existence of incrementalism. For example, the incremental aspect may be less influential on the procurement budget than on total military expenditure, when the procurement budget is somewhat controllable.

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environment. Great flexibility to meet future dramatic changes will be required, especially in a post-unification era when the primary security threats will be different from those of the pre-unification era.

[48] However, there are also many critiques of the theory of incremental budgeting. Domke (1984) showed that the shares of each service in the U.S. DoD often changes substantially, especially during the first year of an administration, as a result of changes in the direction of the presidential program.

Economic Constraints: The level of national income would seem to be a relevant variable for defense spending, since in a general way, national income reflects the overall ability of a country to maintain a particular volume of military expenditures (O'Leary & Coplin 1975, 112-42). All budgets are sensitive to changes in economic conditions (Schick 1995, 193). As its economy grows, a nation has more resources with which to provide security. In a broad sense, the production possibility curve of a country moves as the GNP grows, enabling the society to enjoy more military security as well as greater civilian output. Therefore, military expenditures and GNP are hypothesized to be positively related, so that defense is a normal good whose demand rises with income.

Harris (1986) examined the economic determinants of the military spending levels of five ASEAN countries and concluded that domestic economic conditions, like a nation's GNP, appear to exert at least a moderate influence on annual changes in defense expenditure. In other words, a higher GNP represents more resources available for financing military expenditures and a lower opportunity cost, and this implies a positive relation between the two variables (Hewitt 1992, 125). Mok's empirical study of Korea (1993) shows a significant positive relationship between the growth rate of the GNP and military expenditure rates in Korea from 1964-1988.

Military preparations are an economic burden. Whatever resources are devoted to national security are not available to other sectors. The more resources that are allocated to defense, the fewer that are available for social and economic development through investment in education, health and social welfare. In this sense, many studies (Russett

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[49] Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

1970; Domke, Eichenberg & Kelleher 1983; Hess & Mullen 1988) are devoted to the budgetary trade-off between military and welfare expenditures. Since the modern defense establishment is a heavy consumer of technical and managerial personnel and foreign exchange, especially in non-arms producing countries, one would expect the negative effect to be especially strong in those developing countries where these resources are particularly scarce (Looney 1988, 206).

Opportunity cost often is mentioned as the basic criticism of defense expenditure. If a government spends more on one item of its budget, it has to decide which items to sacrifice unless additional finances are available. In this regard, welfare expenditure, which may be vulnerable due to policy priorities on defense, should be treated as an explanatory variable with a potential negative relationship to military expenditure.

Presidential Priority: All budgets are affected by political pressure (Schick 1995, 193). Previous studies expected to find political influence on the military budget correlated with regime characteristics (Hill 1978, Mok 1993, Looney 1987). Regime characteristics are expected to have a particular strong influence on military expenditure in developing countries, where the allocation procedure has not been fully institutionalized. The regime in power has control over government expenditures and therefore differences in the patterns of budgetary allocations may be explained by particular regime characteristics.

One hypothetical inference is that the military will enjoy more resources when its influence on the allocation process is greater. This inference assumes that the military will pursue its self-interest. This political factor was one of the key variables for Hill (1978), who shows that the level of influence of the military on politics is positively

related to the level of military spending through interest group-like influences. Ball (1981) also points out the direct association between the political power of the military and its influence in deciding the amounts allocated to national defense. Hewitt (1992) shows that military governments spent more on defense than all other forms of government except monarchies, other conditions being equal. The control of the government by the military is associated with an on-average 2 percent higher level of defense allocation in Maizel and Nissanke's (1986) study. The military has an stronger influence (much like an interest group) on defense allocation when its involvement in politics is increased. On the contrary, research by Zuk and Thompson (1982) conclude that, *ceteris paribus*, military governments do not spend more on defense than civilian ones.

There is no doubt that the influence of the military on politics, as it relates to the resource allocation process, has been substantial in Korea during last 35 years, although the influence of the military on politics has been decreasing. Table 6 in Chapter Two shows the priorities of the budget allocation process during each period of the social and economic development plan. During the 1970s, due to various internal and external environmental changes, President Park Chung-Hee declared national security to be the number one national priority, and made an enormous investment in military build-up after launching an authoritarian political regime, the *Yushin*. As shown in Table 8, military expenditure as a percentage of GNP and as a percentage of central government expenditure sharply increased during the *Yushin* period (1972-1979). With the beginning of Chun's administration, those ratios have been gradually decreasing. Since 1989, the ratio of military expenditure to GNP has fallen below 5 percent, at a continually

decreasing rate, and went down to 3.27 percent in 1997. In this paper, the *Yushin* variable is included in the basic specification and represented as a dummy variable.

External factors

Threat: One of the most widely tested approaches to explain patterns of military expenditures has been the arms race model developed from Richardson's (1960) seminal work. It is assumed that the behavior of a nation interacts with other countries' behaviors. According to the model, military expenditures are influenced by political, psychological, and international parameters that emphasize each government's perception of its adversaries and the behavior of its allies and neighbors. Richardson's arms race model, known as the "action-reaction model," focuses on the interactive nature of military spending among nations in conflict. Change in one nation's level of armaments results in a parallel change in the level of the rival nation's armaments, for each nation seeks to maintain a desired ratio of spending with respect to its perceived adversary. In this sense, buying arms to counter what an adversary has acquired is a widely accepted explanation of armament (Russett and Starr 1995, 289).

Ostrom (1978) emphasizes external environmental factors that affect the decisions of policy-makers on defense spending. In his reactive linkage model, used to estimate the determinants of U.S. military expenditures from 1955 to 1973, 'international conflict' and 'defense expenditure of the Soviet Union' are treated as major factors affecting decisions. Deger and Sen (1983) also emphasize that threat perception should be taken into account when deriving the demand function for the defense expenditure of a country. They show that an increasing threat would decrease the marginal utility of civilian expenditure and

increase the marginal utility of security. McKinley (1989) also conducted a cross-sectional study of developing countries with the arms race model. McKinley's hypothesis is that military expenditure will be sensitive to the different levels of intensity of interstate conflicts. He determines that military expenditures rise in response to interstate conflicts. Higher levels of conflict intensity and duration predict higher levels of military expenditures.

In this context, the military threat posed by North Korea should be reviewed for analysis. The policy maker's perception of the threat posed by North Korea is important in shaping South Korea's defense spending level. The hypothesis is that the greater the flow of deeds by North Korea that are perceived as threats, the greater will be the military expenditure in South Korea.

Military Aid: Having a military alliance or being a member of a collective security treaty may influence a government's resource allocation process (Sandler 1992, Olson and Zeckhauser 1966). If countries A and B form a military alliance, the military capability of A would enhance that of B and vice versa. In terms of resource allocation, country A would have to spend more for the same amount of security if it were a member of the alliance.

Olson and Zeckhauser (1966) pointed out that because alliances provide the public good of collective defense, and because the marginal contribution of an economically smaller state to public goods is minimal, smaller states are likely to be "free-riders" on the defense spending of larger states (Ward, et.al. 1995, 43) In other words, the public good characteristic of defense in the domestic realm expands when a nation is in a relationship with a group of countries who share a public good in the form

of a security alliance. As with any public good, alliances can give rise to a free-rider problem between countries A and B if country A attempts to distort its preference for security in anticipation of reducing its share of the burden. Olson and Zeckhauser empirically found that defense burdens are positively correlated with the economic size of the allies as measured by GNP. When the U.S. asked its European allies to spend more on defense, the findings of Olson and Zeckhauser were used as the theoretical underpinnings of the discussion of burden sharing among the NATO countries. The U.S.-Korea military alliance may affect the allocation process during the period, especially when military aid plays an important role in military expenditure in Korea. [50]

Model Specification

The equation used to estimate military expenditure should include political and economic considerations and internal as well as external factors. To estimate the military expenditure demand function in Korea, this paper examines several variables, according to the following general form, from 1962 to 1996. The year 1962 is chosen as the starting point for the data series because it is the starting point of economic growth and modernization.

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[50] As discussed in the previous chapter, the U.S. foreign and military policies toward the Korean peninsula have greatly influenced the shape of the current Korean military posture. The U.S. DoD sometimes directly controls what the Korean military can procure and what it cannot. In 1979, the Korean government even reluctantly agreed to spend six percent of its GNP on defense, under pressure from the U.S. Although the U.S.'s indirect influence on the budget-making process is clear, this study confines its scope to direct U.S. military aid.

MILITARY EXPENDITURE = f (Incrementalism, Economic Constraints, Presidential Priority, Threat, Alliance)

describes the situation in which military expenditure depends on the prior-year's expenditure on defense, economic constraints, the threat of potential adversaries, and the nation's alliance structure. Also affecting this basic function are specific presidential priorities.

To estimate the military expenditure demand function, this study examines the following variables in a time series analysis. This study uses a generalized least square (GLS) regression with the Yule-Walker estimation procedure in order to adjust for possible autocorrelation in the data. This procedure is efficient when both the number of observations and the autoregressive parameters are small.[51] The variables used in the regression analysis are listed below.

Dependent Variables:

Two dependent variables of Korea's allocation of resources to the defense sector are examined in the regression analysis. The first is government military expenditure. It can be measured in several different ways. The dependent variable could be expressed as (1) the ratio of military expenditure to gross national product (gross domestic product), which shows the level of commitment to defense relative to the economic capacity of the nation, and/or (2) the ratio of military spending to government expenditure, and/or (3) the total amount of defense spending itself. The ratio of government military expenditure to GNP (ME/GNP) is used as the dependent variable in this study in order to reduce heteroskedasticity problems.

In addition to government military expenditure, a second dependent variable is somewhat controllable military spending, which is the difference between total military spending and the sum of operation and maintenance costs. The majority of controllable spending consists of military procurement, which comprises about 30 to 40% of total military expenditure. This amount may be more vulnerable to environmental change than personnel and maintenance costs. This variable is also measured as a share of GNP.

The military expenditure data come from various issues of the *Defense White Paper* (Ministry of National Defense), *Korea Statistical Yearbook* (Office of Statistics), and *Forty-Year History of Public Finance in Korea* (Korea Development Institute).

Independent Variables:

As independent variables, this study employs several operationalizations of potential explanatory variables. To measure incrementalism, the lagged endogenous variable ($\mathbf{ME}_{t-1}$) is treated as an explanatory variable.

For the economic constraints of the country, this study uses the unemployment rate as an independent variable. GNP per capita and GNP growth rate are inseparable from the problem of multicollinearity with the lagged endogenous variable of ME/GNP. Due to the trade-off relationship between the unemployment rate and economic growth, it is expected that the unemployment rate has a negative relationship with military expenditure, whereas the GNP growth rate has a positive relationship. The unemployment rate data come from various issues of *Social Indicator of Korea* (Office of Statistics).

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[51] See Chan (1988) for details.

To measure welfare expenditures, several categories of social spending in the central government expenditure are added together. These include the categories of 'education,' 'health,' 'social security and welfare,' and 'housing and community amenities.' This variable is also measured as a share of GNP. The data come from various issues of the *Korea Statistical Yearbook* (Office of Statistics).

To measure the threat from North Korea, the military spending of the country, if its record is reliable, may be the best indicator. The starting point of every discussion about defense spending is usually the perceived security threat. It is largely assumed that the military expenditures of the two confronting nations are interactive, with each country reacting to increases in defense expenditure by the other in order to keep at least a minimum level of defense. In this case threat can be measured by the estimated North Korean military expenditure.

Although many institutes publish their estimations of military spending in North Korea, these estimations are questionable for many reasons, as were those of the Soviet Union in the Cold War era.[52] In this study, the number of violations by North Korea of the Armistice Agreement, which is announced by the commander of the United Nations Forces in Korea, is used as a proxy to measure the threat level. It is likely that the greater the number of violations by North Korea, the higher the threat level, which results in a

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[52] For example, the estimation of the *Military Balance*, published by the International Institute for Strategic Studies (IISS), shows that North Korea's spending was relatively constant for over a decade, ranging from $4,068 million dollars to $4,277 million dollars during the 1980s, rising to $5,230 million dollars in 1990, and then falling to $2,360 million dollars in 1991. An expert on the North Korean issue says that "North Korea's actual military expenditures are largely shrouded in mystery. Its actual figures (military expenditures as a percentage of gross domestic product) may be two or three times higher than the reported amount, which was, according to *SIPRI 1991 World Armaments and Disarmament*, 10.7% in 1980 but 8.8% in 1989" (Yang 1994, 705).

larger allocation for the military in South Korea. To enable an optimal reaction time to the threat variables, the threat measure is lagged by one year, which is commonly used to test the arms race model.

Until 1977, there were fair amounts of capital inflow from the United States for a military buildup in Korea. The U.S. capital nearly equaled the South Korean government's spending on the military during the 1960s. The amount, which is not treated as part of the military expenditure of a government although it is used for military buildup, should be controlled for the analysis. On the basis of the public good attributes of military consumption, a negative relationship between U.S. military aid and the Korean government's military expenditure is expected.

To consider internal political factors, the basic specification has the *Yushin* (1972-1979) dummy variable with a value of 1 from 1973-1980 and 0 for rest of the period to test its significance.

Thus, the model can be specified as follows:

$$ME_t = \beta_0 + \beta_1 ME_{t-1} + \beta_2 UNE_t + \beta_3 WEL_t + \beta_4 THRE_t + \beta_5 MA_t + \beta_6 D_t + \mu_t$$

The variables used in the specification are listed below.

ME	the share of the GNP spent on government military expenditure
ME_{t-1}	the lagged share of the GNP spent on government military expenditure[53]
UNE	the unemployment rate
WEL	the share of the GNP spent on government welfare expenditure
THRE	the number of violations of the Armistice Agreement by North Korea

[53] In the presence of the lagged endogenous variable, the Durbin-Watson statistics is generally biased toward 2. In the presence of the lagged endogenous variable, the *Durbin-h* statitics, when calculable, provides a valid test for first-order serial correlation (see Kamlet and Mowery [1987] for details).

MA	the amount of U.S. military aid given to Korea (which is not included as government military expenditure in Korea)
D	a dummy variable for *Yushin*, 1 from 1973 to 1980, otherwise 0

Total military expenditure can be categorized into two main subaccounts – (1) operation & maintenance costs for daily operation and (2) procurement and R&D costs for force improvement. In this study, the sum of R&D and procurement (hereafter, procurement) is treated as another dependent variable, which consists of 28.9 percent of the total military expenditure in 1997.

(2) $PE_t = \alpha_0 + \alpha_1 ME_{t-1} + \alpha_2 UNE_t + \alpha_3 WEL_t + \alpha_4 THRE_t + \alpha_5 MA_t + \alpha_6 D_t + \mu_t$

where *PE* is the share of military procurement expenditure to the gross national product.

Empirical Results and Conclusion

The results of the regression analysis reveal several interesting and unexpected outcomes in terms of the hypotheses suggested. Table 11 displays the results of the specifications for (1) total military expenditure, and (2) controllable military expenditure. Most importantly, the results indicate the significance of previous-year spending levels both in military expenditure as a share of the GNP and military procurement expenditure as a share of the GNP. The results imply that budgetary incrementalism is the dominant

determinant of military expenditure level in Korea, as expected. In other words, the defense budget has been a function of last year's budget plus a little.

Table 11: Coefficient Estimates of the Model for Military Expenditure in Korea (1962-1995)

	Dependent Variable			
Independent Variable	Total Military Expenditure as % of GNP (1)		Military Procurement Expenditure as % of GNP (2)	
Constant term	-1.557**	(.549)	-.713	(.524)
ME_{t-1}	.775**	(.075)	.749**	(.139)
UNE	.102**	(.041)	.0196	(.039)
WEL	.467**	(.135)	.218	(.13)
THRE	.000005**	(2.146E-6)	.000003	(2.09E-6)
MA	.000007**	(2.064E-6)	.0000004	(2.40E-6)
Dummy	.859**	(.143)	.408**	(.125)
Durbin's *h* test	-.113		.019	

Note: Standard errors in parentheses.

** Significant at a 95% confidence level, two-tailed test.

The coefficients for the variables other than the lagged endogenous variable in model (1) are also statistically significant. Economic constraint variables, the unemployment rate, and welfare expenditure ratios, contrary to the hypothetical inferences, have statistically significant positive values in relation to military expenditure. One probable explanation for the unexpected positive sign of the unemployment variable is that the government has spent more on the military to achieve a macroeconomic objective while boosting the economy to reduce the unemployment rate when a high unemployment rate exists. Treddenick (1985) explained that the macroeconomic objective could be an important determinant of military expenditure.

Another implication of the result is that as the economic capability of Korea increases, the relative importance of allocation on defense decreases. The elasticity of the military on economic growth is less than one, so the military has the attribute of a necessity good in Korea.

There is no statistical evidence that a trade-off exists between welfare and military expenditure. It is contrary to general belief but consistent with a cross-country study by Hewitt (1992). He shows an autonomous increase in military expenditure in government spending:

> Increases in military expenditure lead to higher spending on all items when the budget constraint is not tight. The government spends more on social programs, while simultaneously increasing military spending, in order to appease competing interest groups. When the government is financially constrained, it is more likely that the government accommodates higher military expenditures by decreasing other types of government expenditures.

The threat variable assumes the expected sign in equation (1). This implies that decision-making on security issues has been sensitive to the behavior of the potential military adversary, as suggested by the arms race model. Although the needs of national security also had been used to justify the authoritarian rule of the regime during the 1970s and early 1980s, the empirical results of past patterns imply that defense allocation decisions have been based on the security threat posed by North Korea. The results of the equation imply that without a clear security threat after unification, pressure for reducing military expenditure will grow. The lack of a clear security threat makes it more difficult to persuade the public of the need for defense planning or the maintenance of military expenditure.

The positive military aid coefficient suggests little evidence of security free-riding by Korea on the military spending level. The military aid worked as an incentive mechanism for extra allocations on defense rather than as an incentive to lower expenditure for defense. In other words, the free-rider effects, which explain the defense spending pattern in NATO countries during the cold war era, did not occur in the U.S.-Korea security alliance relations, at least in terms of the military aid considered. However, it should be noted that U.S. direct military aid was only a part of the U.S. commitment. U.S. forces stationed in Korea and other security-related activities are not included in the model specification.

The dummy variable, *Yushin*, provides a strong explanation for the pattern of defense expenditure in Korea. It shows a strong leadership preference for high spending on defense during that period. To cope with a changing security environment, President Park Chung-Hee put forth a rigorous security policy to maximize Korea's own endogenous military capabilities. In order to finance force modernization, a defense surtax was introduced to develop military-industrial capabilities sufficient to keep up in the arms race with the North. Presidential policy priorities represent a potentially important influence on budgetary behavior.

Thus, the model can be re-specified as follows to test administrative-specific characteristics:

$$(1') \quad ME_t = \beta_0 + \beta_1 ME_{t-1} + \beta_2 UNE_t + \beta_3 WEL_t + \beta_4 THRE_t + \beta_5 MA_t + \beta_6 D1_t + \beta_7 D2_t + \beta_8 D3_t + \mu_t$$

$$(2') \quad PE_t = \alpha_0 + \alpha_1 ME_{t-1} + \alpha_2 UNE_t + \alpha_3 WEL_t + \alpha_4 THRE_t + \alpha_5 MA_t + \alpha_6 D1_t + \alpha_7 D2_t + \alpha_8 D3_t + \mu_t$$

where D1 is a dummy variable for *Yushin*, D2 is a dummy variable for Chun's administration (Fifth Republic, 1981-1988), and D3 is a dummy variable for the Sixth Republic (Rho and Kim, 1989-1995). Table 12 reports the results of adding administration-specific dummy variables to the basic specification. The coefficients for the remaining variables in both regressions are not substantially altered from their respective values in the basic model, except for the unemployment variable in equation (2). The administrative-specific variables show tentative evidence of a weakening presidential priority on military build-up even during President Chun's administration, as well as in the Sixth Republic administrations. The Chun's administration compared to the *Yushin* government, began to emphasize the importance of social welfare and social development as the society became more industrialized. During the Sixth Republic, the collapse of the Communist system and the widening of the gap between the economic capabilities of the two Koreas made defense spending less justifiable in South Korea.

Table 12: Coefficient Estimates of the Model for Military Expenditure in Korea (2) (1962-1995)

	Dependent Variable			
Independent Variable	Total Military Expenditure as % of GNP (1)		Military Procurement Expenditure as % of GNP (2)	
Constant term	-.425	(.569)	-.127	(.536)
ME_{t-1}	.648**	(.079)	.665**	(.139)
UNE	.049	(.038)	-.027	(.043)
WEL	.379**	(.116)	.138	(.126)
THRE	.000003	(2.728E-6)	.0000014	(1.98E-6)
MA	.000006**	(2.73E-6)	.0000005	(2.42E-6)
D1	.900**	(.142)	.409**	(.129)
D2	.343*	(.194)	.229	(.176)
D3	-.155	(.197)	-.064	(.185)
Durbin's *h* test	-.462		-.268	

Note: Standard errors in parentheses.
* Significant at a 90% confidence level, two-tailed test.
** Significant at a 95% confidence level, two-tailed test.

The statistical evidence in this chapter shows the importance of incrementalism, perceived threats, and regime characteristics on the defense allocation process. Without a tangible shift in the North-South Korean relationship, the determinants of defense allocation outlined here would provide a useful explanation for policy. Although Korea has been suffering from economic and financial crises since the end of 1997, economic consideration is only one of the determinants of defense allocation. With the Korean government facing financial constraints, it is likely that the government will lower its military expenditure in the short-run. Although a reduction in weapon purchases is widely expected due to the free-fall of its local currency value, the empirical results of the

past patterns imply that such economic impact would be minimal. Rather, after a short adjustment period to the new economic condition, weapon procurement would be continued without substantial reduction, unless a significant improvement occurs in the relationship between the two Koreas or substantial reorganization takes place in the defense planning and force structure.[54]

[54] Shortly after the beginning of the economic crisis with the devaluated local currency, MND announced cancellation or delaying several arms buildup programs, including the Navy submarine project, the Air Force KTX-2 training jet program, and 170 other defense programs (Korea Herald January 25, 1998). However, as of early March 1998, it is reported that the South is planning to buy 12 sophisticated launch and guidance systems for standard anti-ship missiles at a cost of U.S. $214 million (Reuters, March 5, 1998, US says South Korea wants Ship Missile System). It is also reported that a plan for the Navy to build three 1,500-ton submarines will be launched in 1999.

Chapter Four: The Economic Consequences of Military Expenditure

Research Questions and Literature Review

This chapter analyzes the relationships between Korea's defense burden and its economic development in aggregate terms. This chapter deals with the "Guns vs. Butter" issue, a long standing controversy among social scientists.[55] Researchers studying the relationship between defense burden/military expenditure and economic impact have generated inconsistent outcomes.

Even though defense spending is not intended to contribute to economic growth or development, some scholars believe that military expenditure has an aggregate positive impact on economic growth, with resource mobilization and demand inducement effects. Many others, however, doubt these results.

> The problem would be simplified if there were a very clear guns and butter, or tank and tractor, trade-off. If we could be sure that, always and everywhere, military spending reduces economic performance, the only remaining analytical task would be to quantify the negative multipliers.

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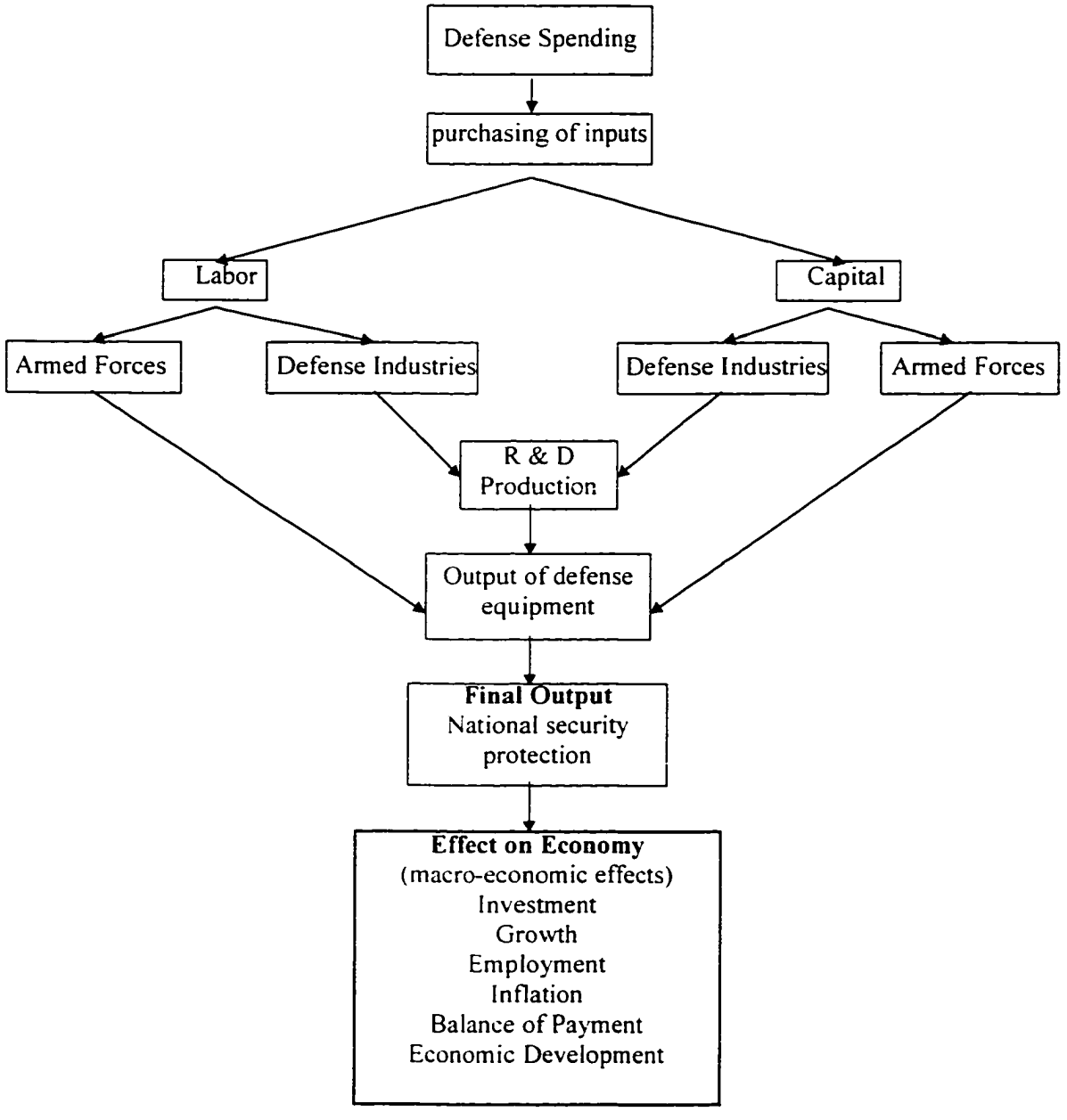
[55] After an extensive review of previous studies, Chan (1985) summarizes the four main perspectives on the effects of military expenditure: the modernization model (Benoit), the capital formation model (Deger, Smith), the balance of payment model (Rothschild), and finally, the technological displacement model.

> But this is not true. Empirical work now exists showing that defense expenditure also has some positive effects on the economy. The task of the analyst becomes more complicated, since both the sign and the amount of the effect is controversial (Deger 1992, 36).

The main consideration of defense spending is security, not the economy. A country uses its military capability to achieve its security objectives. Maintaining military capability - maintaining personnel, modernizing weapon systems, and investing R&D - requires expenditures. Although military capability and security are hard to quantify, the costs are measurable. Since the allocation of resources to the military produces economic effects, economic consequences are considerations in defense budget making and resource allocation processes. The economic cost and benefit of security protection should be properly analyzed in order to decide future resource allocations to defense activities.

Figure 3 shows a flowchart of the economic effects of defense spending. It shows the interrelationships between defense spending, the purchase of inputs (labor, capital, energy, materials, services, and management), the resulting outputs of the defense industries and the armed forces, and the consequent macro-economic impacts (Sandler and Hartley 1995, 263-4). The armed services and defense industries demand labor and capital to produce their final output: "national security protection." A country allocates its resources to the armed services and defense industries and triggers macro-economic effects such as investment, growth, employment, inflation, balance of payment, etc.

Figure 3: The Effects of Defense Spending



Source: Sandler and Hartley (1995)

Resources devoted to the military are not available for other purposes. From an economic point of view, military preparations are a burden on the society.

> The real cost to society of allocating productive resources to military programs is that these resources are not available for other purposes. In general, more missiles and tanks mean fewer new cars, homes, and schools (Weidenbaum 1974, 29).

As the society devotes more resources to the military, fewer become available for economic and social development through investment in education, technology, and healthcare. Since the modern defense establishment is a heavy consumer of technical and managerial manpower and foreign exchange, one would expect the negative effects of military spending to be especially strong in developing countries where these resources are particularly scarce (Looney 1988, 206). Military expenditure reduces the resources available for investment and consumption and finally reduces the rate of economic growth.

However, proponents of military expenditure often justify defense spending not only on the grounds of national security and stability, but also in economic terms. First of all, security and stability bring about a favorable environment for economic growth.

So far, empirical tests conducted on the defense-growth relationship have not yielded any generally applicable conclusions. Due to defense spending's possible positive as well as negative effects on economic growth, the empirical results are ambiguous and sometimes inconclusive. Furthermore, the effects are different in different historical moments.[56]

The debate on "guns versus butter" began with the seminal work of Benoit. His analysis (1973; 1978) focused on 44 developing countries during the 1950s and 1960s.

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[56] Ward, Davis & Lofdahl (1995) examine the relationship between military expenditure and economic growth in the U.S. and Japan and find that the relationship between the two in each country changes over time.

His analysis shows that heavy defense expenditures do not necessarily precipitate a lower rate of economic growth, even after adjusting for differences in foreign aid receipts and investment rates. He found a positive association between defense spending and the growth of civilian output per capita. Sometimes high defense spending caused economic growth.

As Benoit (1978, 277) noted, expenditures may contribute to growth by

> (1) feeding, clothing and housing a number of people who would otherwise have to be fed, housed and clothed by the civilian economy -- and sometimes doing so, especially in less developed countries, in ways that involve sharply raising their nutritional and other consumption standards and expectations; (2) providing education, medical care and vocational and technical training that may have high civilian utility; (3) engaging in a variety communication network, etc., that may in part serve civilian uses; (4) engaging in scientific and technical specialties...Military forces also engage in certain R&D and production activities which diffuse skills to the civilian economy and engage in or finance self-help projects producing certain manufacturing items for combined civilian and military use which might not be economically produced solely for civilian demand.

However, as Hewitt (1992) concluded, all of the growth benefits of military preparation could be achieved through various government activities at a lower cost. For example, education and health expenditures are more efficient means of enhancing human capital. Another major shortcoming of Benoit's work was that it ignores the socio-historical conditions of Less Developed Countries (LDCs) (DeRouen 1995). Deger (1986) also charges that Benoit's work ignores the indirect effects of defense spending, such as forgone savings on investment, and concludes that "the empirical evidence goes against the findings of Benoit and others regarding the positive effects of defense on growth in LDCs...Defense expenditure allocates scarce resources away from productive civilian investment and fails to mobilize or create any additional savings." She asserts

that previous researchers ignore the simultaneous nature of interrelationships that underlie the defense/growth structure and concludes that when the direct and indirect effects are considered, military spending will reduce the economic growth rate and retard development. Even though Benoit's work has been criticized for several conceptual, methodological, or theoretical shortcomings, his ideas on and empirical tests of the various ways military expenditure can affect an economy made "guns versus butter" debates possible for scholars in various fields of social science. In this regard, his work has been frequently cited and challenged.

Rothschild (1973), who studied the pattern of rank correlation across the growth, exports, and military spending of fourteen OECD countries from 1956-69, concluded that a sustained and serious diversion of capital and human resources away from the export sectors to the defense sectors would lead to slower export growth, which would in turn result in slower national economic growth.

An empirical study of 69 countries (Faini, et.al. 1984) shows that an increase of 10 percentage points in the defense burden (the share of the GDP devoted to defense) leads to a reduction in annual growth of 0.13%. Using pooled time-series data, this study shows that defense spending has a negative relationship with economic growth.

Grouping countries according to their geographical locations or economic conditions yields a more reliable analysis of the economic impact of military expenditure. Looney and Frederiksen (1985, 1986) specified an equation that includes investment and military expenditure as regressors, but they distinguish between resource-constrained and unconstrained LDCs. They concluded that for the resource-constrained countries defense expenditure siphons funds from investment and leads to slower growth, but for countries

that are less constrained financially, defense spending and economic growth are positively correlated.

David Lim's study (1983), which uses the Harrod-Domar model, concludes that high defense spending hurts economic growth in general but has no adverse effects on growth in Asia, the Mid-East, and Southern European countries. He uses a sample of 54 LDCs for the period spanning 1965-1973.

Mintz and Huang (1991) tried to find a reason why most of the previous studies failed to reach a firm conclusion on the trade-off relationship between "guns and butter" and determined that it "may be because prior studies only examine the direct budgetary trade-off." To examine the indirect effects of military expenditure, Biswas and Ram (1986) applied Feder's two-sector neoclassical model (1983), which examined the linkages between exports and the sources of growth, to their study of military spending in a cross-section of 58 LDCs. They used the "augmented neoclassical model" developed by Ram (1986) under the assumption that government size has a positive impact on economic growth. However, their results indicate that the military sector generates neither significant positive nor negative externalities. Their investigation of low-income LDCs and middle income LDCs for the periods 1960-70 and 1970-77 showed no statistically significant impact of military expenditures on growth of total economic output. This study is important because it distinguishes between the direct and indirect effects of defense spending on economic growth. Several subsequent studies were conducted using the specifications of Biswas and Ram's study (Ward, Davis and Chan 1993; Ward, Davis and Lofdahl 1995; Mintz and Huang 1990, 1991; Mintz and Stevenson 1995; DeRouen 1994, 1995; Heo 1997).

Ward et al. (1993) applied Biswas and Ram's model to the experience of Taiwan, which successfully combined rapid economic growth and a heavy defense burden. Their study shows that the military burden has not directly undermined the rapid economic expansion of Taiwan, although the expenditure indirectly dampened economic expansion. Mintz and Stevenson (1995) applied a neoclassical model of growth, which was developed by Mintz and Huang (1990) from the Biswas and Rams' model, to study 103 countries. They showed that military expenditures had a significant positive effect on economic growth in only eleven of the 103 countries studied. Their study of the "guns versus butter" issue in the U.S. shows no negative short-term effects but does show a significant indirect long-term trade-off. They found that military expenditure crowds out investment, which slows down economic growth in the U.S. (Mintz and Huang 1991). Ward et al. (1995) examined the relationship between defense spending and economic growth in the United States (1889-1991) and Japan (1879-1990) and found that the impact of defense spending on economic growth was different in each country. In the case of the U.S., the military had a positive impact on economic growth, one that outweighed the negative externality. An increase in military spending tended to stimulate economic output while at the same time it diverted resources and technology into the military sector and out of the civilian sector (Ward et al. 1995, 35-6). In the case of Japan, military spending had a negative impact on economic growth. Although military expenditure had a positive impact on the economy, the size effect was negative and outweighed the positive externality.

Whether defense expenditures impact economic growth positively or negatively must be empirically studied for each individual country. Chan suggests the limitation of a cross-sectional study (1985, 433):

> We have probably reached a point of diminishing returns in relying on aggregate cross-national studies to inform us about the economic impact of defense spending. Instead, it appears that future research will profit more from discriminating diachronic studies of individual countries.

Several studies raise the question of how defense allocation affects the economy of South Korea. As reviewed in the previous chapter, economic development and national security have been the top priorities of the Korean government. South Korea maintained a rapidly growing economy until 1997, along with a heavy defense burden. In Deger's 1992 study, South Korea was the only country that had a high quality of life and an equitable income distribution along with a high military burden. Heo (1997) examined the question from 1954 to 1988 and found no statistical evidence that defense allocation either promotes or hinders economic growth. Park's study (1993) also showed no statistically significant relationship between military expenditure and economic growth. Hong's study (1990), on the other hand, shows a negative relationship between the two variables. He used four different models – the investment reduction model, the demand stimulation model, the modernization model, and the export-led growth model – and showed that military expenditure adversely affected economic growth in all but the export-led growth model. Kim (1995) also claimed that military expenditure had a negative impact on the growth of the GNP, export expansion, and capital formation.

Model Specification and Hypothetical Expectation

To estimate the effect of military spending on economic growth, this study uses the defense-growth model, which has evolved through four steps by Mintz & Huang (1991) and Huang & Mintz (1992), and is based on the economic growth model initiated by Denison (1985) and Ram (1986). First, Denison's sources of growth model specified gross-output as a dependent variable determined by changes in labor (Δ**L**) and capital (Δ**K**). Feder (1982, 60) reasoned that "aggregate growth is related to changes in capital and labor through an underlying production function."

In other words, capital and labor are the two inputs assumed in every sector.

$$\mathbf{Y = f\,(Labor_i,\ Capital_i)}$$

Ram (1986) first assumes that there are two sectors in the economy, a civilian sector and a governmental sector. Each contributes to national economic output (GNP, Y).

$$\mathbf{Y = C + G} \qquad \mathbf{(1)}$$

C and G represent the civilian and government sectors of output, respectively.

To estimate the effect of the government sector on economic growth, Biswas and Ram's neoclassical production function model differentiates between the government sector and the rest of the economy. This model adds changes in government output (ΔG) as a third term in the equation, in which labor, capital, and government spending enter as

"inputs" into a single aggregated output (Y). Biswas and Ram hypothesize that the size of the sector output may differ in the civilian and government sectors.[57]

The estimating equation for Biswas and Ram's model is

$$\Delta Y/Y_{-1} = \alpha (\Delta K / Y_{-1}) + \beta (\Delta L / L_{-1}) + \gamma (\Delta G / Y_{-1}) \qquad (1')$$

where, $\Delta K = K - K_{-1} = I$ (investment)

Thus,

$$\Delta Y/Y_{-1} = \alpha (I / Y_{-1}) + \beta (\Delta L / L_{-1}) + \gamma (\Delta G / Y_{-1}) \qquad (1'\text{-}1)$$

In this model, the military is included as a part of the government sector.

Mintz and Hunag (1991), DeRouen (1994, 1995), and Ward et al. (1993, 1995) modify the model further and posit that there are two sub-sectors within the government sector: M and NM, the military and non-military components of output, respectively. They assume this in order to isolate the effect of military expenditures on economic growth. They disaggregate government output, measured by total government purchases of goods and services, into nonmilitary and military components. The military sector should be considered separately from the non-military sector because defense industries have a different set of incentives (Mintz and Stevenson 1995). The productivity of the military sector is assumed to be affected by inputs different from those in the private or non-military government sector.

$$G = M + NM \qquad (2)$$

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[57] Ram (1986) claimed that the inclusion of the government sector in the growth model is justified because government could affect growth either positively or negatively. Government could negatively impact the economy through its inefficient operations, regulation, and distortion of market incentives caused by government policy. It could be positive through its role in "settling conflicts between private and social interests," the prevention of foreign economic

In other words,

Economic Growth = f (Labor, Capital, Military, Non-military)

Mintz and Huang's growth equation is

$$\Delta Y/Y_{-1} = \alpha (I/ Y_{-1}) + \beta (\Delta L / L_{-1}) + \gamma (\Delta NM / Y_{-1}) + \eta (\Delta M / Y_{-1}) \qquad (2')$$

Most studies of the economic effects of defense spending have concentrated on the relationship between aggregate military spending and economic growth. Underlying this assumption is the idea that military spending has homogeneous effects on the economy. However, whether different components of defense spending have similar or different effects deserves more careful analysis (Huang and Mintz 1992, 349).

The major components of military activity are personnel, operation and maintenance, research and development, and procurement. The personnel costs of the Korean military accounted for 46 percent of the total military budget in 1994. Procurement and R&D spending accounted for 30 percent of the MND budget in the same year. Operation and maintenance expenditures accounted for about one-quarter of the defense budget. There is no reason to expect that the impact of the procurement of weapon system on the economy is similar to the impact of the allocations for personnel. In order to distinguish between the effects of military procurement expenditures and military maintenance expenditures on economic growth, this study further separates the military sector output into two sub-sectors: military procurement (MP) and military maintenance (MM), each of which may have different effects on the economy.

$$M = MP + MM \qquad (3)$$

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exploitation, the encouragement of productive investment, and the provision of a socially optimal direction for growth and development (Ram 1986)

(2') can be re-specified to separate the military sector into two sub-sectors.

$$\Delta Y/Y_{-1} = \alpha\,(\,I/\,Y_{-1}\,) + \beta\,(\Delta L / L_{-1}\,) + \gamma\,(\Delta NM / Y_{-1}\,) + \eta\,(\Delta MM / Y_{-1}\,) + \varphi\,(\Delta MP / Y_{-1}\,) \qquad (3')$$

The equations (1'-1), (2'), and (3') will be tested and evaluated in this study.

The equation considers the overall effects of military spending on economic growth. However, military expenditures produce "externalities." Positive as well as negative externalities arise when government spending "affects the productive capacity of non-government sector without being priced on competitive markets" (Huang and Mintz 1992, 36). The equation (3') does not show the economic side-effects of military spending. The externalities are hidden within the total effect of military spending in the production function (Huang and Mintz 1991, 1992; DeRouen 1994, 1995).[58] Huang and Mintz (1991) partialled out externality effects from the overall non-military and military effects.[59] Their equation is:

$$\Delta Y/Y_{-1} = \alpha\,(\,I/\,Y_{-1}\,) + \beta\,(\Delta L / L_{-1}\,) + \gamma_{nm}\,(\Delta NM / Y_{-1}\,) + \theta_{nm}\,(\Delta NM / NM_{-1}\,)(C/Y) + \gamma_{m}(\Delta M / Y_{-1}\,) + \theta_{m}\,(\Delta M / M_{-1}\,)(C/Y) \qquad (4)$$

---

[58] DeRouen explained the externalities of military expenditure as follows: "Defense externalities can have different effects on growth than non-defense externalities (Huang and Mintz). By crowding out investment, defense spending is a serious negative externality. Through defense spending the government can provide goods and services that may have otherwise been provided by or purchased in the private sector (see Deger 1986, Rasler and Thompson 1988). Government also uses capital resources that may have been used by private investors, resulting in production bottlenecks. Another deleterious externality could occur if defense spending causes interest rates to rise as government borrows from abroad to fund arms imports, thereby making it too expensive to borrow money" (DeRouen 1995, 31).

[59] Huang and Mintz (1991) have shown that military expenditures did not have a significant externality effect on economic growth in the post-1945 U.S. but that nonmilitary government expenditures had a positive and significant impact on economic growth through the externality effect.

where $(\Delta NM/N_{-1})(C/Y)$ is the externality effect of non-military spending on the economic growth rate and $(\Delta M / M_{-1})(C/Y)$ is the externality effect of military spending on the economic growth rate. γ represents the relative productivity effects of the non-military and military sectors and θ can be interpreted as the effect on economic growth of the interaction between the growth rate of the military (non-military) sector and the share of the civilian sector in total output (Y) (Huang and Mintz, 1991).

This model is sensitive to the externalities from defense spending and non-defense government spending. The productivity differences tell us whether or not the military's use of resources contributed to, or detracted from, growth. Therefore it is the size of the military's share of the overall economy that determines productivity differences. The externalities that defense spending can have on the civilian sector tell us whether defense spending ultimately dampens or stimulates civilian output (DeRouen 1994, 199).

Using the same theoretical inference, we can expect that the externality effect of military procurement will be different from that of military maintenance. Therefore, the equation is

$$\Delta Y/Y_{-1} = \alpha (I/ Y_{-1}) + \beta (\Delta L / L_{-1}) + \gamma_{nm} (\Delta NM / Y_{-1}) + \theta_{nm} (\Delta NM / NM_{-1})(C/Y)$$
$$+ \gamma_{mm} (\Delta MM / Y_{-1}) + \theta_{mm} (\Delta MM / MM_{-1})(C/Y)$$
$$+ \gamma_{mp} (\Delta MP / Y_{-1}) + \theta_{mp} (\Delta MP / MP_{-1})(C/Y) \qquad (4\text{-}1)$$

where θ_i is the externality effects of each sector and γ_i is the size effect of each sector.

Despite several shortcomings, this approach has the advantage of explicitly deriving both size and externality effects for military spending.[60]

Hypothetical Expectation:

Korea's economic growth was not accomplished without considerable investment. Thus, this research expects that the impact of investment on changes in economic growth should be significantly positive: $\alpha>0$.

One factor widely attributed to Korean economic growth is the huge pool of educated labor force. Not only has there been a shift in economic activity from the agriculture industry to the manufacturing and service industries, but the quality of human capital (i.e., labor) has advanced rapidly in Korea. A positive relationship between labor input and national income is expected: $\beta>0$.

Government purchases of goods and services create demand and thus stimulate economic activities. Thus, government spending, whether for military or non-military purposes, could have a positive impact on economic growth: $\gamma>0$.

The externality effects of government spending can be either positive or negative. If they create a favorable environment for economic activity, those expenditures have a positive externality. Conversely, by competing for scarce resources with the private sector, the government sector can create a negative externality: $\theta \neq 0$.

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[60] Ward et.al. (1995) explain as follows:
"The source-growth model contains a number of shortcomings. Important among them is the notion that government goods are not produced or valued solely in terms of prices. Defense spending, or social spending, as Schultze (1981) suggested, may have other collective benefits or costs associated with them, but their value to the society is difficult to measure in terms of prices. Second, Carr and others point out that government expenditures are more properly thought of as intermediate, not final demand. In addition it should be noted that there are difficulties in assuming that the political economy is comprised only of production, while demand is ignored."

Data and Method

The rate of increase in the GNP is taken as an indicator of economic growth.

Since it is widely accepted in this kind of analysis (Ward et.al. 1993), this research uses the rate of population growth as a surrogate for labor supply. The data come from various issues of the *Korea Statistical Yearbook* (Office of Statistics).

The military expenditure data and the government spending data come from various issues of the *Defense White Paper* (Ministry of National Defense), *Korea Statistical Yearbook* (Office of Statistics), and *Forty Year History of Public Finance in Korea* (Korea Development Institute).

Non-military government spending is defined as the difference between total government spending and military spending. Procurement military spending is defined as the difference between total military spending and military spending for "Operation and Management" and "Personnel." All financial data were collected in current price and deflated using a 1995 price deflator with the consumer price index.

Empirical Results and Conclusion

Table 13 presents the empirical results from equations (1'-1), (2'), (3') and (4-1) using a Yule-Walker estimator to correct autocorrelation. As expected by the production function, investment is shown to be significantly related to economic growth in Korea. Also as expected, the results indicate that the strength of the labor supply makes a positive contribution to output in Korea. The result of equation (1'-1) indicates that the government sector has a negative overall impact on economic growth.

Table 13: Empirical Results of the Growth Equation

(1`-1)

Investment	Labor	Government
.058*	.479*	-.053*
(3.617)	(2.36)	(-2.453)

(2`)

Investment	Labor	Non-Military	Military
.058*	.478*	-.108*	.324*
(3.993)	(2.571)	(-3.92)	(2.343)

(3`)

Investment	Labor	Non-Military	Military Maintenance	Military Procurement
.058*	.485*	-.100*	.250	.374*
(3.914)	(2.544)	(-2.732)	(.970)	(1.831)

(4-1)

Investment	Labor	Non-Military	Non-Military externality	Military Maintenance	Military maintenance externality	Military Procurement	Military Procurement externality
.065*	.593*	-.081	-.001	.198	-.190	.820*	-.489**
(3.696)	(2.666)	(-.457)	(.001)	(.115)	(-.028)	(2.477)	(-1.677)

*Statistically significant at 0.05 level
**Statistically significant at 0.1 level
figures in parentheses are t-statistics.

Of main concern in this inquiry is the size and externality effect of military spending on economic growth in Korea. It appears that the overall impact of the military on the economy is positive. Equation (2`) divides the government sector into two sub-sectors: military and non-military sectors. The results show that an increase in military spending stimulates economic output while an increase in non-military spending hinders it. Military expenditure contributes directly to the expansion of Korea's GNP. Military purchases of goods and services create demand and thus stimulate economic activities.

The positive effect of military expenditure mainly comes from military procurement spending, as shown in the results of equation (3`). Military maintenance also has a positive effect but the results are not statistically conclusive. It is consistent

with Looney's cross-national study that defense spending in arms-producing countries positively impacts the growth rate of Third World countries, while the reverse is true of non-producers (Looney 1988b). Defense spending can reduce arms dependency, and the deficits it entails, through import substitution (Looney 1990). The positive effect of military spending on economic growth may have resulted from South Korea's indigenous defense industry. Its defense industry includes the production of tanks, armored vehicles, frigates, submarines (licensed production), and F-16 fighters (licensed production).

The positive effect of military expenditures on the economy ultimately comes from the size effect of the military procurement which may stimulate the activities of the defense industry and other related industries. However, the results also show that the externality effect of procurement spending on the growth of the Korean economy has been negative and statistically significant. This implies that procurement expenditure diverts available resources which otherwise might have been invested in more productive purposes. The negative externality effect of military procurement expenditure indicates that resources used for arms import, which reached 1,677 million dollars in 1996 (in 1990 price), making South Korea the second largest arm's importer in the world according to the SIPRI, might have diverted resources which could have used more productively. Thus spending on defense imports has had a negative effect on the economy. Consequently, procurement expenditure can have an indirectly negative effect on economic growth, as shown in equation (4-1). Military maintenance spending also shows a similar pattern, but is statistically insignificant. The total size of maintenance spending has a positive effect on economic growth whereas the externality of maintenance spending is negative.

There are two explanations why military spending generates negative externalities on economic growth. The first is that a rise in military spending exerts a negative impact on the rate of investment in productive fixed capital. This occurs due to a crowding-out effect. An increase in military spending may be financed either by raising current taxes or by borrowing future taxes. In either case, it will lower the expected after-tax return on productive fixed capital.

As a consequence of military preparation, military spending tends to stimulate economic output. The growth equations show that the size effect of the military program positively impacts economic growth in Korea. However, military spending presents a negative externality in regards to both procurement and maintenance spending, suggesting the absence of spin-offs from military to civilian production and perhaps a "flow-in" the opposite direction, such that military spending may actually drain some creativity for new production possibilities.

Given these results, what we must now ask is what could happen when the relationship between the two Koreas is settled peacefully or the two nations unify? Will the "peace-dividend" occur after unification, as may Koreans expect? This may happen because a peaceful settlement might generate positive externalities to the economy through providing a more favorable investment environment. However, the direct economic impact of any change in the relationship between the two Koreas could be positive only if the resources devoted to the military were invested in a more productive way. More specifically, the resources used for arms import should be invested in more productive industry to obtain a "peace-dividend."

Chapter Five: Defense Planning Issues for an Uncertain Future

After the Cold War, world military expenditure declined in its constant value from $1.3 trillion in 1987 to $840 billion in 1994, according to the *World Military Expenditure and Arms Transfer (WMEAT)*. It is at its lowest level since 1966, 35% below the all-time peak in 1987. In the post-Cold War era, many nations enjoy a "peace-dividend" and a safer world system after the collapse of the two super powers' rivalry. The so called "peace-dividend" has been a policy issue for many countries, which apparently have redirected their resources from the military to other sectors. Who should benefit from the "peace-dividend" and how are the controversial issues for decision-makers. Many other countries, however, especially those vulnerable to ethnic, regional, and religious cleavages, face an uncertain and dangerous world system after the collapse of the stability which the two super powers' rivalry provided.

Today, defense planners are trying to cope with new challenges and refocus their forces and available resources to meet the changing security environment of the post-Cold War era. The U.S. and Germany are two countries that have drastically changed their own defense planning and military postures after the collapse of the communist bloc. The U.S. reduced its military size and budget by about 30 percent after 1990.

United Germany maintains one half of the 700,000 peacetime military troops that East and West Germany maintained before unification. It is not only the size but also the missions and structure of the military that must be adjusted to the new environment of the post-Cold War era. For example, one of the important missions newly emphasized in the U.S. military is operations other than war (OOTW).

Korea, however, still remains divided, each half confronting and competing with the other. For the past half century, the North has provided the South and U.S. defense planners with a benchmark against which to determine the appropriate quantity and quality of their combined forces. Without any substantial changes in the relationship between the two Koreas, analyses of the determinant factors of the defense posture in South Korea and the economic effects of military preparation still provide useful explanations even after the post-Cold War era. The paradigm for defense planning may not require substantial changes without a tangible shift in the relationship between the two Koreas.

However, several recent developments that impact military issues require adjustments in military planning for pre- and post-unification eras. The democratization of Korean society demands that defense planners implement more transparent and institutionalized decision-making processes on military issues. Military technology development representing a RMA (Revolution in Military Affairs) substantially changed operation concepts and enhanced military capability by integrating systems that collect, process, and communicate information within military forces. Demands on the Korean military to participate in peacekeeping, peacemaking, and humanitarian military

operations will increase as the economic capability of Korea increases and may require highly mobile and specially-trained forces.

Decisions about defense, including its planning and budgeting, have been made by a small group of military bureaucrats and the president, especially when the military had great influence (until the mid-1980s). After democratization in the mid-1980s, the authoritarian process was challenged by the National Assembly, the press, and academia in Korea. Defense planners should think "transparency" when thinking of military strategy and the allocation of required resources, the mobilization of which requires public support. Once unification occurs, the missions that the unified-Korean military will undertake, and the resources required to pursue those missions, should be determined by consensus in the society.[61] Due to the uncertainty of the security environments, a consensus in defense policy making in the post-unification era would not be as easy to achieve as it was during the pre-unification era.

As the society industrialized, the demand for social welfare, education, and other governmental activities, which no longer solely relied on individual expenditure, grew. Statistics show that the growth rate of the welfare expenditures of the Korean central government has been the highest of all of the functional categories of government spending since the early 1980s. In spite of continuing efforts to expand it throughout the last decade, the current welfare system includes only a six-year primary school education and social security for the elderly and the handicapped. Increasing demands for welfare and other social programs will discourage the military planners who want to consume a

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[61] Unification and defense planning in the post-unification era is discussed in the next section.

sufficient amount of resources to maximize the military capabilities of their force.[62] The concept of "capability-based-planning" allows for military planning to respond to the economic and social conditions of the society. Such a method, used for peacetime military planning instead of threat-based planning, is flexible and reflects the public's attitude toward the military.

The current conscript system also needs adjustment in the future. Under the current conscription system, all eligible young men must serve in the army for 26 months. They are paid only small allowances. This is the key to how the Korean military maintains more than 690,000 personnel at a relatively low cost. The rationale of the current system was never challenged during the Cold War era, when the threat of confrontation between the two Koreas was high and Korea had a pivotal place in East-West conflicts. The current system still is not actively challenged, as the North, heavily armed and with the highest military participation ratio in the world, continues to pose a threat to the South.

In the future, however, the public will challenge the large allocation of labor resources to the military as either the threat level drastically decreases or a shortage of labor dampens the economy. As the projection shows, the composition ratio of the male population age 20-24 will gradually fall and reach 6.7% in the year 2015. It is currently about 10%. The absolute number will also diminish from 2.3 million to 1.7 million.

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[62] Social policy experts expect that Korea will be able to reduce its defense spending while gradually increasing expenditures on social protection as the cold war era phases out (Kwon 1993, 163).

Table 14: Future Male Population Projection

(in thousands of people)

Year	1980	1985	1990	1995	2000	2005	2010	2015
Total	19,236	20,576	21,568	22,576	23,559	24,404	25,052	25,393
20-24	2,078	2,185	2,205	2,281	2,023	1,959	1,705	1,709
Ratio	10.80%	10.62%	10.22%	10.10%	8.59%	8.03%	6.81%	6.73%

Source: Korea Statistical Yearbook, 1995

Defense planners should think of a long-term manpower plan for the military since the opportunity cost of the conscription system will increase as the eligible male population diminishes. The first option is to transform the force structure into a more capital-intensive one. Technology-intensive equipment can be substituted for a large number of standing forces, which would reduce the number of troops needed. Second, the role as well as the number of women in the military should be expanded. The technology- and capital-intensive force structure will enable women to participate in the modern military as the roles they play in society widen.

In many countries, discussion of changes in the military, especially in terms of armed structure, took place after the collapse of the Soviet Union. Militaries based on the conscription system have been replaced by "high-tech" professional armed forces. Moskos and Burk (1994) distinguished between late-modern (Cold War) and post-modern (Post-Cold War) militaries. The changes occurring in military force structure include the shift from the mass armed forces common in European countries to the use of small, voluntary, professional forces that rely on reserve forces to accomplish their missions (Moskos & Burk 1994, 149).

The question to be answered is just how much money this shift to a small, professional, all-voluntary force (AVF) costs in Korea. The military expenditure

required to support a 300,000 AVF would be 5.57 percent of the total GNP in Korea in 1997, assuming the current wage structure of a professional military as a benchmark for estimation. If South Korea wants to maintain 500,000 professional forces, 9.29% of the total GNP should be invested on the military. In this estimation, the current ratio of military personnel cost to total military budget was used as a starting point. Forty-six percent of total military expenditure was required to maintain a 690,000-personnel military in 1997. About 80 percent of the total military personnel cost went to basic remuneration (wages and allowances) and other personnel costs (pension, medical insurance and etc.). In 1993, 97.2 percent of basic remuneration and other personnel cost was spent on officers and NCOs (J.M. Kim 1994, 77). If we assume that 40 percent of the total military expenditure is required for personnel costs, changing South Korea's military structure to a 300,000 AVF would require 5.57% of the total GNP while changing to a 500,000 AVF would require 9.29 percent of the nation's total GNP.

Table 15: Estimated Military Expenditure as a Percentage of GNP in AVF: 1997, 2006

Number of personnel	*300,000*	*400,000*	*500,000*
1997	5.57	7.43	9.29
2006 (3% economic growth)	4.27	5.69	7.12
2006 (5% economic growth)	3.59	4.79	5.99

If we assume that the current military expenditure would not increase in real terms for the next ten years, the ratio of military expenditure to GNP would be 4.27 percent for 300,000 personnel forces and 7.12 percent for 500,000 personnel forces in 2006, assuming three percent real economic growth. If South Korea could maintain a five percent economic growth rate, the ratio would be 3.59 percent and 5.99 percent of total GNP, respectively, in that same year.

Technological advances in a number of important areas which also facilitate the development of high-tech professional military forces – e.g., those equipped with precision navigation, advanced computing, sensors, and communications – could have a significant effect on future warfare. Many of these technologies are likely to be more widely available than in the past. The level of defense technology is the most important determining factor in modern warfare. *The Defense White Paper* of South Korea outlines the nation's current plans for advancing military technology and emphasizes the importance of technology in Korea's defense strategies (DWP 1995-96, 100-105). The Korean government supported the defense industry through various policy preferences, including tax reductions and other financial support.[63]

As technology advances, the current structure of the armed forces, which still rely heavily on the infantry, should be reviewed. South Korean forces are still labor-intensive, due to the availability of relatively cheap labor through the conscription system. The usefulness of such infantry forces lessens as high-technology weapon systems are implemented. The new security environment after unification may further dwindle their effectiveness.

The significance of the RMA for a future war has been a central concern for military planners in advanced countries. The RMA is defined as a "discontinuous

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[63] There are 83 defense contractors in Korea producing 319 defense products, as shown in the following table:

Classification	Total	Guns	Ammu-nition	Mobility	Communication /Electronics	Vessel	Aircraft/ Guided Weapon	Other
Product	319	41	92	33	78	18	18	39
Contractor	83	14	10	12	13	5	7	22

Source: DWP 1996-1997, 101

increase in military capability and effectiveness arising from simultaneous and mutually supportive change in technology, systems, operational methods, and military organization" (Metz and Kievit 1995, v). Metz and Kievit characterized the current RMA by four elements: 1) extremely precise, stand-off strikes; 2) dramatically improved C^4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance); 3) emphasis on information warfare; and 4) increased nonlethality. It is a revolutionary process rather than an evolutionary one because those changes result in dramatic shifts in the scope and application of military power. Those who make the right decisions will have a comparative advantage over others (Khalilzad 1996). Many of these advanced military technologies likely to be more widely available than in the past as those technologies are becoming more controlled by the private sector and arms trading moves from a "sellers' market" to a "buyers' market," as many nations becoming eager to sell military technologies and weapons systems given the end of Cold-War.

Another issue impacting Korea's military policy is the increasing demand for Korea's participation in international peacekeeping/peacemaking efforts. For the first time since it became a member-state of the United Nations in September, 1991, South Korea participated in an international peacekeeping effort. It dispatched engineering units and 252 personnel to help reconstruct Somalia in a humanitarian relief effort that lasted from July 1993 until March 1994. After that, the Korean military engaged in several PKO (Peace Keeping Operation) activities around the world. In June 1994, the UN requested Korea's participation in the PKO stand-by arrangement as a means of improving PKO activities. In March 1995 the Ministry of National Defense decided to participate in the arrangement. Possible forms and sizes of the prospective units

participating in the standby arrangement are one infantry battalion of 540 troops, one engineering company of 130 people, and one medical service unit of 70 to 80 people (Defense White Paper 1995-1996, 126-132). At the end of 1996, the country maintained 20 peacekeeping forces, composed mostly of medical staff in the western Sahara, six staff members at the U.N. Command in Angola, five military observers in the former Soviet Republic of Georgia, and nine observers in the border area between Pakistan and India.

A nation's ability to contribute to humanitarian efforts, peacemaking, and peacekeeping operations worldwide will increase the country's political prestige and future role in international society.[64] Also, peace operations are part of the effort to protect and advance national interests in the post-Cold War era. Those missions mean putting some forces on the ground at a distance from home. Therefore, maintaining a certain level of self-supporting, well-trained forces with highly mobile equipment will be needed in order to participate in peacekeeping operations and become an influential member of the international community.

The final question is whether the military, in the coming years, will be able to mobilize resources in an age of slow economic growth, as it did in past decades. Funding for defense planning will be another hurdle to overcome for the military. Relatively large amounts of military investment after the mid-1970s was possible in part because of sustained economic growth in Korea. The average economic growth rate was 9% during the 1970s and 8% during 1980s. After its peak in 1990, the economic growth rate has

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[64] Japan, for example, during Operation Desert Storm, did not send troops or any equipment. Japan paid out $13 billion to cover some of the war expenses of the multinational forces against Iraq. However, Japan gained no respect from the international community although it paid the largest amount of the war expenses (Maeda 1995, 286).

gradually declined, as has the ratio of military expenditure to GNP. It is economically and politically difficult to raise the level of military spending from the current level. For the defense planner, this means that funding for future defense postures will largely depend on the ability to reorganize the current level of resources more effectively, so as to build a future-oriented force structure, rather than securing additional funding for force improvement.

The term "future-oriented force" may imply that a different force structure with sophisticated equipment will be required. However, given the current financial and economic crises and the post-Cold War atmosphere, those restructuring efforts should be conducted without devoting additional funding to the military, which currently receives about 3.2 percent of the GNP annually. The defense planners will be forced to shape their policies based on the available resources unless a new critical security threat emerges, which is improbable in the current state.

Unification of the Korean peninsula, although it is risky to predict when and how it will come, will require a rethinking of Korea's military policies. The unification, no matter how it comes, will mean an end to the current clarity of Korea's national security scenario. The clear enemy, a heavily armed North Korea, that has been the major threat to national security since 1948, would no longer exist. The military threats that used to shape Korean security policy and provided the major focus for its military planning would disappear. However, unification will not mean the end of Korea's national security concerns. National security will be influenced by other factors, especially the relationships among the powerful neighboring countries that have economic and strategic interests in the Korean Peninsula: China, Japan, Russia, and the United States. Those

countries will play significant roles in reshaping the geopolitics of Northeast Asia in the process of the unification of the Korean peninsula. The alliance structure before unification may be at stake. It will be more difficult to decide what security needs will be in a unified-Korea. Before the unification, the public has tolerated a large allocation of resources to defense, based on the potential military threats posed by North Korea. Without a clear security threat, however, defense allocation no longer would be treated as a top policy priority.

Policy makers will have to strike a balance between public demands for a peace dividend and potential threats to national interests after unification. A unified-Korea could not afford 1.7 million military troops – the combined forces of the South and North Korean militaries – politically or economically. If a unified-Korean military provoked military insecurity among the neighboring countries, especially Japan, it would spur military competition in the region. After the unification, military planning will be one of the toughest decisions that leaders will have to make. To make sound military planning decisions, leaders will have to ask: What will be the security environment after unification and in what arenas will military needs arise? And what type of force structure will be needed to protect Korea's own interests but not threaten the other countries in the region? Drawing upon empirical research, the remainder of this chapter discusses future directions for defense policy in a unified-Korea.

This chapter examines the potential scenarios of the unification of the two Koreas. Defense planning issues in the United States after the Cold War and during the post-unification era in Germany are provided to offer a useful analogy for defense planning in the Korean peninsula in a post-unification era. External factors impacting regional

security issues after the unification also are examined. The relationships between a unified-Korea and Japan, China, and the United States are central concerns in this chapter. Based on the evaluation of those relationships, this chapter tries to identify the potential security environments of and salient defense planning issues in a post-unification era.

The Unification of the Two Koreas

The unification of the Korean peninsula can occur in three ways: 1) by forceful means, 2) by agreement (the gradual transformation of North Korea to a more democratic and capitalistic state and the absorption of South Korea under the agreement), or 3) by absorption (the collapse of North Korea and subsequent absorption by South Korea).[65]

First, unification can be achieved through force, although this seems unlikely as the relative power of North Korea diminishes. Considering recent problems in the training, logistics, and readiness of the North Korean forces, an all-out war like the

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[65] Although there are several scenarios for the unification process, it is widely accepted that North Korea cannot sustain its current system. Young C. Kim (1993, 1994) categorized three types of reunification: 1) reunification by war 2) reunification by mutual consent and 3) reunification by default. He cautiously assessed that unification by default is slightly more likely than either of the other types in the short-run. In the early 1990s, Byung-Joon Ahn put forward three scenarios for unification, each of which is linked to an alternative pattern of change in North Korea: (1) unification by conquest, as in Vietnam; (2) unification by absorption, as in Germany; and (3) unification by agreement, as in Yemen. Although he dismissed the Vietnamese or German models and concluded that unification should be an incremental process, the German model currently receives more attention as a probable scenario, given the economic crisis and food shortage in North Korea. Hwang, based on past experiences, also categorized three types of unification: controllable (i.e. Yemen), uncontrollable (i.e. Vietnam), and a mixture of the two (i.e. German). Yemen unification, driven by the political motivations of the leaders of both sides, however, turned out to be a devastating war between the North and the South and the North's victory did not produce the integration of the two societies.

previous Korean War is highly unlikely. However, North Korea's potential military capabilities and its desperate economic and food crises could cause a devastating military provocation involving missile attacks and the dispatching of Special Operation Forces for a limited purpose. This type of military provocation may indeed be less a deliberate attempt to unify the peninsula than a "last-ditch lashing out" (Travers 1997, 101). Unification also could occur when the use of force for limited objectives escalates into an all-out war leading to unification.

O'Hanlan (1998), after an in-depth analysis of the conventional military capabilities and possible assault scenarios of the North Korean military, concludes that U.S.-Korea combined forces could almost certainly immediately stop a North Korean attack. One possible unification scenario in this case is that the combined forces of South Korea and the U.S. counterattack a military invasion by the North, occupy its territory, and overthrow the current North Korean regime. North Korea would cease to exist, and unification would come through the use of force by South Korean and U.S. combined forces. In this scenario unification would be achieved only with huge damages on each side – a high number of casualties, the destruction of economic bases, and profound social and psychological aftereffects. A Korea unified through these means could not survive without a huge amount of aid from the outside world.

The second scenario – unification by agreement – is the most desirable option for South Korea as well as the neighboring countries because it minimizes both security risks to the region and economic cost. The so-called "gradualist" approach or "soft-landing"

approach[66] predicts that North Korean leadership will have no choice but to change its policies to admit the failure of a planned economic system and adopt a market-based, outward-looking economy. Economic growth averaged 3.6% in the early 1980s, then dipped to an average of 1.4% in the late 1980s. Since 1990 the North Korean economy has contracted. It becomes clear that North Korea's centrally planned system is no longer sustainable (Taylor and Kim 1997, 55). Gradualists argue that under the leadership of South Korea and the United States, international institutions could help or even enforce the transition process with various economic aid packages and investment. The unification should be delayed until North Korea could transform its system into a more democratic and market-based system to reduce the total cost of the unification.[67] It is a process in which "policies can dictate events rather than a rush of events dictating policy" (Cha 1997b, 73). In this case, a series of negotiations between the two Koreas as well as other international actors, including the U.S. and China would take place and the two Koreas would remain divided until a long-term negotiation process is completed. The South Korean government prefers the "soft-landing" option, realizing that absorbing the North would be far more costly to South Korea than absorbing East Germany was for West Germany. Suffering recent economic and financial crises, the new government of

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[66] Stanley Roth defined the soft landing as "a gradual process of peaceful reunification over an extended period of time" (Taylor and Kim 1997, 60).

[67] The following statement tells how burdensome economically is the case of German-style unification:
"The financial burden of German-style unification would probably be unaffordably large for South Koreans and certainly heavier at least in relative terms than it was to west Germans. The income and demographic differences between the South and the North would drive up the unification costs relative to GDP far more than those in Germany. Due to a small population gap and a large per-capita income difference between the South and the North, each South Korean would have to support twice as many persons in the other region than each west German did, and

the South has ruled out any form of absorption as its unification policy. A gradual approach could reduce the costs and difficulties of adjustment when unification comes.

Although this option is desirable and South Korea and its allies push their foreign policies in this direction, the plausibility of this option is challenged in every aspect.[68] Although a peaceful means of unification is the official policy of both Koreas, they rarely have negotiated the issues involved in the unification of the peninsula.[69] Negotiation and dialogue between the two Koreas were held occasionally, but turned out to be fruitless in most cases. For example, the "Agreement on Reconciliation, Non-aggression, and Exchanges and Cooperation between the North and South," signed on December 13, 1991, was appraised as a milestone in the relationship between the two Koreas but never was carried out seriously due to the suspicion and antagonism between the two parties.

The third scenario is the "collapse and absorption" scenario. The gradualist approach seems like "wishful thinking" to those who argue for "the absorption of the failed system into and by the successful one" (Foster-Carter 1993). Although several different conceptions of this scenario exist, the main pattern is that North Korea collapses due to internal economic or political problems and South Korea then takes over whether

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spend much more of his income if there is a need for a rapid reduction in the income gap" (Kwon 1997, 19)

[68] Taylor and Kim (1997) logically explained that peaceful unification is a low probability event because:
(1) peaceful unification requires a "soft landing," (2) a soft landing requires real economic reform, (3) real economic reform would quickly undermine the Juche system, (4) the Juche system is the fundamental basis of power for the present or foreseeable DPRK leadership, and (5) the present North Korean system will either implode or the DPRK leadership will order an attack on the south (or both simultaneously).

[69] The official blueprint for unification of the South Korean Government shows gradual, three step approach: first, open dialogue on as broad a basis as possible, leading to reconciliation and settlement of as many outstanding issues as feasible; second, peaceful coexistence in some kind of commonwealth arrangement; third, full unification. (Lee 1993)

South Koreans are ready to handle the chaotic process or not. The "Collapse-Absorption" scenario was discussed widely and accepted by North Korea specialists after the beginning of the food crisis in North Korea in 1994. This scenario is based largely on the East European experiences after the Cold War, when the communist system collapsed rapidly after the demise of the Soviet Union, whose economic and military assistance had played a key role in sustaining the sovereignty of the states. Since 1991, North Korea has suffered years of consecutive negative economic growth. According to the U.N. Food Program, devastating floods in 1995, 1996, and 1997 resulted in a grain shortage and caused structural damage to food-growing areas. To make matters worse, China and Russia no longer provided economic assistance, which used to subsidize the North Korean economy through barter trade on favorable terms. According to U.S. analysts, industry is operating at less than 20% of capacity (Manning 1997, 601). North Korea's trade volume has decreased from $5.2 billion in 1988 to $1.98 billion in 1996, and foreign debt was over $10 billion in 1993, which was half of its GNP (Park 1997, 631). The collapse of the communist bloc made North Korea and Cuba the only countries with an outmoded command economy system.

Of the three types of scenarios examined, unification by forceful means is the most unlikely considering North Korea's current economic incapability of sustaining war against a U.S.- Korea alliance. Analyses of the possibility of a major war between the two Koreas, based on the power parity perspective (Hwang and Kugler 1997) and on a military capability comparison based on the contingency scenario (O'Hanlon 1998) between the North Korean military and the Korea-U.S. combined forces, show the unlikelihood of a war between the two Koreas. Unification through a "soft-landing"

approach seems the easiest and cheapest to attain, but it is unlikely in the short run. The likelihood of a "collapse-absorption" scenario is also very low in the short run considering the political leadership of North Korea, which has maintained its authority even after the death of Kim Il-Sung and the food crisis. It seems that unification will be a combination of the "collapse-absorption" and "soft-landing" scenarios. In other words, unification might come in the transition process of the inevitable economic reforms of North Korea, which could lead to social and political changes that the current leadership would have little control over. It will occur perhaps in the medium-range span of between five and ten years. It would require the Koreans to shoulder huge social and economic burdens in order to finance a massive construction of infrastructure to develop the northern part of the peninsula and to pay for education and training programs to fit North Koreans for a new society. Paying the costs incurred by unification also would require international collaboration.

If unification comes, whether peacefully or through conflict, the security environments would be quite different from what they are today. Such environmental changes require defense policy makers to prepare defense policy both before and after unification. Korea will need a new defense policy and alternative planning methods to accommodate the new policy. The experiences of other countries (how they tried to cope with planning problems resulting from changes in the security environment after the Cold War) could provide valuable lessens for Koreans. In this regard, the next section discusses the downsizing efforts of the U.S. military after the collapse of the Soviet Union and Germany's struggle to reshape its military after unification.

Examinations of the German experience after unification and the U.S. experience after the collapse of the Soviet Union would be help to determine the future direction of defense policy in Korea. Several common trends in defense planning in Western countries after the Cold War affected military posture. Military spending levels and spending on military-related R&D were cut substantially. Military manpower levels also were reduced. On the other hand, the number of actual tasks to which the military must respond has risen since the end of the Cold War, and sometimes missions are not clearly-defined (Copley 1997).

U.S. Experience after the Cold-War

The character of the U.S. military forces has been influenced by two major concerns: the demands of threat, as specified in planning scenarios and other analytic devices, and the constraints of the budget. Since the end of the Cold War, there has been less consensus on what threats exist. Without a clear threat to the nation's survival, budget constraints are increasingly important in shaping military forces in United States (Strategic Assessment 1997, 28). U.S. military forces were gradually reduced by some 30 percent and corresponding reductions were made in the defense budget. Inflation-adjusted defense spending fell by 28 percent between 1990 and 1996 (Steinbruner & Kaufmann 1997).

The United States instituted a series of adjustments to its military forces and its underlying defense policy after the dissolution of the Soviet Union and its allies. The U.S. DoD faced serious challenges that demanded force reductions and budget shrinkage.

The military had to review new security threats as well as its role in the post-Cold War era. During the Cold War, the security policy was guided by the doctrine of containment. It required that the U.S. be prepared to contain the spread of the Soviet bloc on a global basis. Recognizing that Russia would not constitute the same threat that the Soviet Union once posed, the focus shifted to major regional conflicts (MRCs), which threaten U.S. interests but are not "vital for U.S. survival." An MRC, if it occurs, requires the deployment of about 500,000 personnel over a period of three or four months. The Quadrennial Defense Review (QDR) stated that the security environment between 1997 and 2015 would be marked by the absence of a "global peer competitor" able to challenge the U.S. military around the world, as the Soviet Union did during the Cold War.

The first effort by the U.S. military to adjust to the new security environment was the *Base Force* initiated by then-Secretary of Defense Dick Cheney and General Colin Powell, then-Chairman of the JCS. The *Base Force* worked as a "transitional device" (Strategic Assessment 1997), and, under increasing pressure to reduce military expenditure, cut down its force level. The Clinton administration's defense plan was based on the *Bottom-Up Review (BUR)* constructed by Secretary of Defense Les Aspin in 1993. Compared to Bush's *Base Force*, the BUR force emphasized fiscal savings. Aspin planned to cut modernization and procurement as well as the number of active-duty troops. Current national security policy is based on the principle of "Engagement and Enlargement," which has two important objectives: maintaining global leadership and widening the scope of democracy worldwide.

The current total active force is 1,445,000 personnel, down from 2,130,000 in 1989. During those ten years, the number of active army divisions declined from 18 to 10, active air force fighter wings from 24 to 13, and navy battle force ships from 567 to 346. The *Quadrennial Defense Review* (QDR), completed in 1997, was the latest comprehensive analysis of U.S. defense posture, strategy, policies, and programs. It examined the security threats, risks, and opportunities facing the U.S. – both today and out to the year 2015. The QDR proposed slight force reductions, as the following table shows.

Table 16: U.S. Department of Defense Personnel End Strength (end of fiscal year in thousands)

	Cold War (1987)	Current (1998)	QDR
Active Military	2,714	1,419	1,360
Selected Reserves	1,151	886	835
DoD Civilians	1,127	770	640

Source: Cohen, Senate Armed Services Committee (February 3, 1998)

The QDR has been criticized for not proposing any substantial reduction in or cancellation of forces or weapons. It canceled not one of the major, extraordinarily expensive new aircraft programs, nor cut the number of Army divisions or Navy aircraft carriers (Corbin 1997). As Khalilzad (1996) points out, the absence of a new paradigm or grand design to provide strategic direction and guide long-range planning in the military poses a problem for the U.S.

Snider and Kelly (1996) assessed the Bush and Clinton administrations' efforts to reform the U.S. military to meet post-Cold War demands. They determined that the Bush administration failed to provide fiscal savings whereas the Clinton administration lacked a "sound strategic focus," although it saved a great deal of money. Ullman and Getler

(1996) criticized the current force structure as a "muddle-through" option taken by policymakers trying to maintain the defense status quo to avoid political obstruction instead of trying to impose "major changes in strategy and force levels." They argued that the force reduction at the end of the Cold War was modest, although the nation had no military peer competitor. They proposed further reduction in the number of active forces, based on the current assumption that the existence of no alliance force in case of conflict is unrealistic, as the international participation in Operation Desert Storm demonstrated. They determined that 500,000 troops would be enough for two major regional contingencies (MRCs) instead of one million, given the likely contribution of allies.

The German experience after the unification

German unification dramatically signaled the end of the Cold War. This section analyzes several defense planning issues involved in the unification of East and West Germany to find out what lessons the German military (*Bundeswehr)* can provide as a historical precedent for the Korean military. It should be noted that the economic, social, and historical conditions of the two Koreas are far different from those of the two Germanys before unification in 1990. The population ratio was four-to-one in the two Germanys and is two-to-one in the Koreas. East Germany was the most industrialized of the Eastern European countries at that time. North Korea is one of the poorest countries in the world, with an estimated per capita GNP of less than 1,000 dollars. In terms of the military, the *Bundeswehr* maintained three times the troops of the National People's

Army (NPA), whereas South Korea has two-thirds the troops of North Korea. Above all, the two Germanys never went to war against each.

In spite of such differences between Germany and Korea, some similarities exist between the two countries. First, both were divided as a result of U.S. – Soviet competition after WWII. Second, the geopolitical locations of two countries are so strategically important that their neighboring countries are sensitive to their military build-ups or alliance structures.

The first question to ask is how did Germany determine its force level? 370,000 forces, the required peacetime strength of the German armed forces, is only 60 per cent of the Cold War peak-time strength of West Germany. Germany proposed less than a three-to-one ratio of Russian-to-German armed forces to convince Russian leadership that a unified-Germany would not be a military threat to the Russians (Mey 1993). Under the agreement of the "Two Plus Four Treaty," which brokered German unification and was signed by the foreign ministers of the USA, the Soviet Union, Great Britain, France, the GDR, and FRG, a peace-time manpower ceiling was set at 370,000 personnel, which included the former manpower of East Germany. In addition, no more than 345,000 personnel could belong to the ground and air forces. In 1993, Federal Chancellor Helmut Kohl announced a further reduction in *Bundeswehr* strength, dropping the number of troops below the level allowed by the Two Plus Four Treaty, due to budgetary constraints. Today, strength is at 340,000 personnel down from 495,000 in 1989. Up until 1989, the GDR's NPA had 175,000 servicemen. The NPA was disbanded on October 3, 1990, the day of the unification.

After the unification, debate about the conscription system as a policy issue occurred in the German military. In the Cold War period, conscription seemed necessary to raise a mass ground force to balance the number of Soviet forces in East German territory. However, with a peace time ceiling of 370,000 personnel, the *Budeswehr* concentrated on building up professional personnel. A smaller army needs a higher, not a lower, proportion of professionals (Denison 1996, 276). The existence of the current conscription system has been challenged in terms of its military efficiency and the fairness of the selection system. Now, only about 160,000 conscripts are needed for the *Bundeswehr* each year. Germany has reduced conscript time from 16 months in 1989 to 10 months. In other words, only about 130,000 more professionals are needed to fill the current positions occupied by the conscripts. Sometimes, ten months is not long enough to learn the skills necessary to operate modern weapon systems. If military effectiveness were increased, as it presumably would be in an all-volunteer force (AVF), the required number of professional soldiers could be lower than 130,000.

On August 31, 1994, the last of the Soviet troops, which once numbered 400,000, left the territory of Germany. Some Western troops remain; the number of Americans in all of Western Europe is to shrink to about 100,000, and probably will be even less – down from 330,000 at the height of the Cold War (Joffe 1996, 264). Since 1994, foreign troops and nuclear delivery systems have not existed in the former GDR - only German conventional troops. The East German area is now a neutral and nuclear-free zone (Merkl 1993, 357).

The *Bundeswehr* also has been facing financial pressure since shortly after the unification. The defense budget as a percentage of the GNP has decreased from 2.77% in

1981 to 1.61% in 1993. Defense expenditure rose continually from 42.6 billion DM in 1981 to 53.6 billion DM in 1991. It subsequently fell steadily to 49.85 billion DM in 1993. Over the same period, the percentage of federal spending allocated to defense fell from 18.3 to 10.9. Operating expenditure accounts for 78.2 percent and investments for 21.8 percent of the budget (Federal Ministry of Defence, 1994). The procurement budget fell rapidly to 5.9 billion DM in 1994, about 30% of the 1985 procurement budget in constant price. As Mey (1993) pointed out, under these conditions, the armed forces cannot buy the finest equipment. The 7:3 operating-to-investment cost ratio is regarded as a "healthy structure" or "necessary minimum" for defense planners.

There were also costs associated with unification. The costs incurred by the immediate need to clean up, upgrade, and close eastern military facilities, in addition to those required to dispose of the immense munitions holdings of the East German Army, have come out of the defense budget. At the time of German unification, most policy-makers underestimated the cost of integrating the two parts of the country. The defense budget is a prime target for reduction, given its size and the absence of a clear external military threat (Schlor 1993, 42).

One of the problems that Germany faced in the process of unification was the merging of two opposing armies. For example, the personnel structure of the two armies was extremely different. The ratio of rank-to-officers was 3 to 1 in the NPA whereas 12 to 1 in *Bundeswehr* (Scheven 1997). Under the Two Plus Four Treaty, substantial force reduction was required. Shortly after the unification, career soliders of the NPA were to be taken over into the *Bundeswehr* on a temporary basis. About 11,000 officers and NCOs from the former NPA have been integrated into the *Bundeswehr*. A large number

of *Bundeswehr* career soldiers had to accept a premature termination of their service term. All units and agencies of the NPA were to be disbanded. Some personnel, equipment, and brackets were to be used to build up new units and agencies of the *Bundeswehr* in the East. However, the major weapon systems of the NPA were removed and some materials, such as vehicles which can be used for civilian purposes, have been handed over to other nations and international organizations for humanitarian purposes. It is generally uneconomical to use former NPA materials in *Bundeswehr*. Also, these materials generally do not meet security and environmental protection requirements.

One of the most distinguishable changes in the *Budeswehr* after the unification is the widening of its role and mission beyond German territory. The Bundeswehr's mission reflects the changed security environment after the unification.[70] It has become more involved in UN peacekeeping missions in Yugoslavia, Iraq, and Somalia. Given its budgetary constraints, the *Bundeswehr's* investment priority lies in enhancing the capabilities of rapid reaction forces.

Examination of the German experience after unification and the U.S. experience after the collapse of the Soviet Union would help to determine the future direction of defense policy in Korea. Military manpower levels as well as military spending levels were cut substantially in both nations. The U.S. experience shows that with uncertain security environment, threat-based military planning in inadequate when uncertain about

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[70] Germany's Defense White Paper (1994) declares that the *Budeswehr*

- Protects Germany and its citizens against political blackmail and danger from without
- Advances military stability in Europe and European integration
- Defends Germany and its allies
- Serves world peace and international security in accordance with the Charter of the United Nations

the shape of possible conflicts. The German experience implies that a unified-Korean military should not be a security threat to neighboring countries to create and maintain a favorable security environment to achieve economic and social stability in a post-unification era.

The Security Environment in a Post-Unification Era

The question of what parameters will affect Korean defense planning in a post-unification era persists. In this section of the study, the potential importance of external parameters and the policy implications of those external parameters are examined. Some domestic challenges, including major political, economic, and social changes which will affect the nation's defense posture, are somewhat predictable and allow enough lead time to prepare a defense posture to cope with the changes. However, Koreans would have little control over the challenges that come from external (foreign) security environments. An examination of defense policy begins with some consideration of the security environment within which such policies are formulated. The first task might be an identification of potential security threats and an evaluation of the predicted security environment. The relationships among the major powers that have strategic interests in the Korean peninsula ultimately influence the future defense strategy of a unified-Korea. Since the end of the Cold War, considerable uncertainties about the international security environments in Northeast Asia that already exist and influence Korea's defense planning.

- Provides disaster relief, saves lives, and supports humanitarian activities

The Korean peninsula, where four great powers' interests intersect, is inevitably fragile with drastic security environmental changes result from changes in the relationships between those nations. After the unification, the relationship between Korea and the four great powers, as well as the six dyadic relations among China, Japan, the U.S., and Russia, would greatly influence future defense planning in Korea. Although Japan, China, and Russia, the countries that border Korea, will not pose an immediate security threat to a unified-Korea, the potential for conflict between Korea and those three nations will continue.

To analyze the future international security environment in a unified-Korea, this study discerns two possible alternative worlds among others after the Cold War, each representing a different perspective on international relations and their applicability to Northeast Asia. Idealist or liberal schools of thought emphasize a peaceful resolution of conflicts under the assumption that nations are better off when they cooperate with one another. Through the development of internationally acceptable norms, regulations, and organizations, a nation can become enlightened to certain collective interests for long-term benefits. On the other hand, realists believe that nations inevitably pursue their own national interests. When those interests are not in harmony with other nation's or nations' interests, political conflicts are inevitable. Security is achieved in terms of relative military advantage. A nation can feel secure when adversaries are overwhelmed by a superior military capability (Cha 1997a, 610-11). Idealism asserts that military power and war are rapidly becoming outmoded in the post-Cold War era. Security problems are becoming obsolete and replaced by economic problems. On the other hand,

realism notes that war remains one instrument of national policy even after the Cold War (Kugler 1995, 53).

For those who have an optimistic perspective on international relations, the interdependency of current economic systems prevents military provocation, which might result in economic isolation from the international community. Although securing one's economic interests in international society is becoming a more important factor in national security, capitalist dynamics make it possible for every nation to get the necessary resources. In that sense, the use of military force is the least desirable option for foreign policy makers in an economically interdependent international system. In Northeast Asia, the absence of global rivalry between capitalist and socialist super powers enables economic cooperation among the nations, which have different levels of development and economic competitiveness. The underlying assumption is that a post-Cold War international system is stable and cooperative on a global basis as well as a regional basis. Recent statistics show a rapidly increasing trade volume among the countries in Northeast Asia and those countries with United States.[71]

However, as economic capabilities have grown rapidly in Northeast Asia, so have military capabilities. China, Japan, and South Korea have launched efforts to build stronger military forces, as shown in Tables 17-20. Although increased military capabilities partly reflect growing economic capabilities, they also reflect regional

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[71] According to Direction of Trade Statistics Yearbook (IMF), between 1985 and 1994 the value of export from Asian countries grew 14 percent annually, outpacing Japan and the rest of the world's 9 percent growth rates. About half of developing Asia's exports are intra-Asian, with 13 percent going to Japan and 37 percent remaining within the developing Asian community nations. The fastest growing component is intraregional, with exports among developing Asian states increasing five-fold, from U.S. $59 billion in 1986 to $295 billion in 1994 (Cossa & Khanna 1997, 220).

uncertainties about the post-Cold War era. In fact, it is often difficult to separate economic and security issues. Almost all security decisions have some economic implications, and economic considerations are increasingly influencing political and security decisions (Cossa and Khanna 1997, 223).

With the unification of the Korean peninsula, those uncertainties might grow due to the mass of historic animosities among the nations, especially between Japan and China. Segal (1996) states that history tells us that when China remains weak, the neighboring countries, especially Japan and Korea, can be independent. However, it is also true that when China is weak, Japan provokes militarily its neighboring countries.

With one-fifth of the world's population and enormous territory, China has the potential to become a super power within a decade. The rising Chinese power might produce central security concerns not only for a unified-Korea but also for other nations. In terms of military capability, China has the largest standing force in the world. Although China still does not have enough power in terms of economic capability, rapid economic growth is expected. If China's recent growth rate continues, it will become the world's second-largest economy soon after the turn of the century (Nye 1995, 33). A RAND study (Wolf et al. 1995) even predicts that the size of China's economy will equal that of the United States by 2006. Its rapid economic growth could reconstruct China into a democratic and peaceful power, or transform it into a more potent security threat to its neighboring countries. How Chinese leadership determines the boundaries of its role as its power grows is one of the key elements shaping the security environment of the post-unification era in Northeast Asia. Liberals argue that the expected economic growth of China will make Beijing behave more peacefully, while realists claim that the

prosperity will only increase its political influence through the region and threaten the security of neighboring countries, including a unified-Korea. Roy (1996) asserted that China would be a potential aggressor in this region, threatening security by establishing a regional hegemony, and that Japan would respond using all means available, which would result in a bipolar conflict in the region.

Historically, Korea has had a close relationship with China. Frequently comparing the Korean peninsula to a "lip" protecting China's "teeth," the rulers of China have tended to regard any foreign influence in the peninsula as a security threat (Lee H.Y. 1994, 97). North Korea and China have maintained a good relationship since World War II. Even though China announced a formal relationship with South Korea in 1992 and became a big trading partner, its relationship with North Korea still has strategic and ideological implications. As its close neighbor, security and stability on the Korean peninsula is important for China's security and affects its security environment. Lee emphasizes the importance of China to Korean unification as follows:

> No unification of the peninsula will be possible without the cooperation of China, which has a higher stake in the Korean peninsula than does Japan, the United States, or Russia, particularly in light of the possibility that China will rapidly expand its economic and military power in the coming year (Lee H.Y. 1994,109).

Beijing may not want to change the status quo of the Korean peninsula. Given its close economic relations with Seoul and political ties with Pyongyang, the Chinese leadership enjoys a more favorable position in Korea than it did during the Cold War era. As long as Chinese leadership wants to maintain the current communist political system, it would oppose any fundamental change in the northern part of the Korean Peninsula.

China also is sensitive to how Korea-U.S. security relations evolve in the context of unification. Beijing will watch the relations closely and it may become an increasingly obstinate issue in South Korean-Chinese relations as some form of unification occurs (Kreisberg 1996, 87). China could enjoy a closer relationship with Korea once unification occurs, if Beijing sees that the security alliance between Korea and the U.S. contributes to the stability of the region and does not threat Chinese interests. The economies of the two countries are likely to be relatively complementary, as the rapid growth of Chinese trade with South Korea indicates. A combination of Chinese raw materials and unified Korea's modern manufacturing expertise and machine tools would enhance the economic relationship between the two countries.

If China pursues a hegemonic position in regional affairs in the next century, with increasing military power commensurate with its economic growth, the relationship between Beijing and Seoul would be strained. If the Chinese leadership sees the security alliance between a unified-Korea and the United States as a security threat, the U.S. military presence in the Peninsula would be at the center of the predicament, which could jeopardize stability in the region.

Japan also has the economic and technological capability to become a super-power with advanced military potential. Again, liberals and realists have different views on whether Japan will seek super power status in the international arena with the end of the Cold War. Liberals argue that Japan's security policy, as evinced in "Article 9 of the Constitution" and the "U.S.- Japan Security Treaty," clearly shows that the nation

renounces the possession of "war potential" and heavily relies on the United States for its security (Levin 1996, 147).

Realists think that it is highly likely that the Japanese would set out to become a military superpower. During the 1970s and 1980s, Japan already extended its military role in maintaining regional security although it was largely constrained by the U.S.-Japan security treaty. In the early 1980s, the U.S. and Japan agreed that the Japanese military would extend its mission to include the defense of the sea and air space surrounding Japan. Japan is trying to gain a permanent seat on the U.N. Security Council despite strong objections by some Asian countries which experienced Japanese imperialism. The end of the Cold War provided Japan with incentives to explore ways to expand its "international contributions" (Levin 1996, 153). Japan participated in U.N. peacekeeping operations in Cambodia and Mozambique. Japan is trying to assume a role in international affairs that corresponds to the economic strength of the nation. Japanese involvement in regional security affairs seems inevitable as Japan seeks to be a more normal state, although the neighboring countries question the intentions of such involvement.

For historical reasons, suspicion and mistrust among Koreans of Japan have been and will be factors influencing the relationship between the two countries, especially on the way to unification. In Korea, many people are suspicious of Japan's ambition for regional hegemony because of their past experiences. At the bottom of the Koreans' doubt of Japanese is their vivid memory of Japanese harsh colonial rule.

Japan may not want to have a unified-Korea in her backyard because it means less influence on Korean issues. In security terms, a unified-Korea with substantial military power would not be a comfortable scenario for the Japanese. In the immediate post-unification period, Japan might be very sensitive to the pace at which Korea's military forces were being reduced and to the manner in which they were being restructured (Schulsky 1996, 183). However, it is difficult for the Japanese to oppose any movement toward unification because of the potential future impact it might have on the relationship between Korea and Japan.

The current military build-up in Northeast Asia indicates potential political instability. In spite of a downward trend in world military spending after 1988, East Asia showed a 2.5% growth rate in 1990-1994. Estimates of military spending in China make it the third largest spender in the world (following the United States and Russia): Japan is fourth (WMEAT 1996). According to the SIPRI Yearbook, Northeast Asia has recorded the sharpest increases in conventional arms imports in recent years. In 1996 three of the largest recipients of major conventional weapons were Taiwan, China, and Korea. Tables 17-20 show recent trends in military preparation in East Asia.

Table 17: Recent Defense Budget Trends: Great Powers and the Two Koreas (1995 price, M$)

	1991	1992	1993	1994	1995	% change 1991-1995
U.S.A.	309,700	328,200	312,000	295,300	277,800	-10.3
Russia[1]		171,200	131,000	95,330	76,000	-55.6
Japan	48,430	49,510	50,070	50,540	50,240	3.7
China[1]	53,270	55,390	56,390	58,470	63,510	19.2
S. Korea	11,950	12,740	13,050	14,280	14,410	20.6
N. Korea[1]	5,525	5,916	5,556	5,638	6,000	8.6

Source: WMEAT 1996
1. Estimation

Table 18: Imports of Major Conventional Weapons, 1992-1996 (1990 price, MS)

Recipients	1992	1993	1994	1995	1996	1992-96	World Rank
South Korea	387	483	611	1,909	1,727	5,117	8
North Korea							
China	1,172	1,277	529	935	1,957	5,870	6
Japan	2,016	1,992	621	925	679	6,233	5

Table 19: Selected Comparisons of Military Forces in East Asia, 1996

	Active Armed Forces	Main Battle Tanks	Combat Aircraft	Principal Surface Combatants	Submarines
U.S.A.[1]	106,200	230	430	64	10
Russia	1,270,000	16,800	1,775	166	133
Japan	235,550	1,130	379	63	17
China	2,935,000	8,500	4,970	54	100
S. Korea	660,000	2,050	461	40	4
N. Korea	1,054,000	3,400	611	3	25

Source: IISS, Military Balance 1996-1997

1. US Forces in Japan, Korea, Guam and the Seventh Fleet

Table 20: Relative Levels of Military Effort: Military Expenditure as Percentage of GNP

	1970	1975	1980	1985	1990	1994
U.S.A.	7.0	5.9	5.5	6.4	5.5	4.3
Russia	14.4	14.4	14.6			12.4
Japan	0.8	0.9	0.9	1.0	1.0	1.0
China	13.5	11.6	8.5	5.1	3.5	2.4
S. Korea	4.3	4.8	6.2	5.0	4.2	3.7
N. Korea	18.0	22.2	22.6	20.0	20.0	26.3

Source: WMEAT 1995

China has invested considerable resources in military modernization programs since the late 1970s.[72] Besides its nuclear capabilities, China maintains the largest standing army in the world. China has a manpower strength of 2.2 million regulars and provincial reserve forces numbering 1.2 million in the Army and 265,000 and 470,000 in the Navy and Air Force, respectively (IISS 1997, 179). After observing the

[72] For an overview of East Asian military modernization programs, see Eric Arnett (1995), Susan Willett (1997), Wattanayagorn & Ball (1995), and John Caldwell (1994).

demonstration of advanced military technologies by U.S. forces during the Gulf War in 1991, Chinese military leaders have accelerated the nation's military modernization program. China's military expenditure has increased for five consecutive years, from 53.3 billion dollars in 1991 to 63.5 billion dollars in 1995 (in constant 1995 price). Chinese military leaders want to establish a professional military force equipped with sophisticated weapon systems.

In recent years, improvement in China-Russia relations has resulted in the transfer of sophisticated military weapons systems, including the Su-27 fighter. China is making a broad push toward modernizing its forces, including its strategic nuclear forces. China will possess a modern strategic and theatre nuclear capability within 10 to 20 years (Cambone 1997; Willett 1997; Robb 1997, 118; Goldstein 1997/98; Schulz 1998; Aubin 1998).[73] Its military capability will increase with its rapid economic expansion. Without a further increase in its military share (as a percentage of GNP), the absolute amount of military expenditure will rapidly rise with a fast-growing economy. Aubin (1998) summarizes four recent trends in the development of the Chinese People's Liberation Army as follows:

> 1) A dramatic shift in Chinese military leadership and the growing professionalization of the PLA; 2) Changes in operational doctrine that emphasize high technology and asymmetric warfare; 3) A focused research and development effort, combined with purchase of foreign military technology, that reflects new doctrinal approaches; 4) Improved access to commercial technologies that have military applications.

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[73] In addition to 48 Su-27 aircraft, Russia exported two *Kilo-class* submarines, and SA-10c surface-to-air missiles (SAM). China is expected to produce licensed Su-27 fighter aircraft in 1999 (Willett 1997, 109-110).

Japan, although it allocates only one percent of its GNP to the military, is the world's fourth-largest military spender in absolute terms, with manpower costs consuming about 40 percent of the total defense budget. Japan's military expenditure escalated since the 1980s and peaked at 50.5 billion dollars (in constant 1995 price) in 1994 – a figure more than the total U.S. military expenditures in the Pacific, and more than half of the entire Russian defense budget. Such expenditure, however, is still less than half of the share of GNP that the United States devotes to its own military. Strong nationalist elements exist in Japan and their future impact on military spending is difficult to predict. Japan's defense industry has been growing twice as fast as the rest of its manufacturing sector (Choucri et al. 1992, 300). Japan has the most substantial and modern naval force in the region, with 179 F-15 fighters, 63 principal surface combatants, and 18 attack submarines. Japan extended its maritime operations out to 1,000 nautical miles, taking them almost as far south as the Philippines (Wattanayagorn & Ball 1995, 163). It is acquiring four Boeing 767 Airbone Warning and Control Systems (AWACS), aircraft to monitor its airspace; and will procure at least four *Aegis*-equipped ships of the *Kongo* class, which are comparable to U.S. *Aegis* cruisers. By the end of the decade it plans to have a new FSX attack fighter aircraft, a theatre missile defense (TMD) system, and a new array of tactical missiles (Arase 1995, 88-89). It is certain that Japan will, over the next decade, continue to accumulate sophisticated military weaponry, including satellite launch vehicles that presumably could be converted into missiles and significant reserves of plutonium (Kreisberg 1996, 103). Considering Japanese technological competence, Japan could have strategic capability if it so desires.

Khalilzad (1997) assessed that Japan could build long range missiles and carrier task forces, militarize space, and develop a significant information warfare capability.

The possibility of military competition in this region is justified given the traditional rivalry between China and Japan. A deep mutual mistrust still exists between China and Japan. Japan expressed concerns about China's military modernization program, as the Chinese worried about Japanese rearmament (Caldwell 1994, 17). Since the end of World War II, the Chinese have been sensitive to hikes in Japan's defense spending, the deployment of Japanese peacekeeping troops overseas, and other indications of increased Japanese military activity (Roy 1996, 127). It is likely that after the unification of the Korean peninsula, China and Japan will compete with each other over who plays the leading role in the region and who has a military edge in Northeast Asia, just as they did in the late nineteenth century. China may want to exert political and military influence on a unified Korea to accommodate China's interests. Japan, however, may not want China to become a "hegemonic" state in regards to Korea, due to Japan's interdependence on Korea's economic system as well as the nation's security concerns. The two great powers may try to engage the various issues to maintain their interests in the peninsula.

Although the unified-Korean leaders might not want either China or Japan to become a potential enemy, the competition between these two great powers could force a unified-Korea into a military build-up. The army of a unified Korea would shrink while its navy and air force would be bolstered. Military competition in this region would be the worst possible scenario for a unified-Korea.

The possible decline of U.S. influence in Northeast Asia after the unification also increases concern about the intentions of Beijing and Tokyo. During the Cold War era, the relationship between Korea and the United States was based on the need to deter communist aggression in South Korea. The political and economic interests of the United States in South Korea have increased even after the collapse of the Soviet Union (Williams 1994, Betts 1993/94, Cossa 1995, Nye 1995) and force deployment in South Korea ensures U.S. interests in Northeast Asia. Joseph Nye, former Assistant Secretary of Defense for International Security Affairs, asserted the importance of East Asia when he was in office:

> The United States is committed to lead in the Asia-Pacific region. Our national interests demand our deep engagement. For most countries in the region, the United States is the critical variable in the East Asia security equation. The United States is not the world's policeman, but our forward-deployed forces in Asia ensure broad regional stability, help deter aggression against our allies, and contribute to the tremendous political and economic advances made by the nations of the region (Nye 1995, 38).

The central objectives of the U.S. security strategy in the region include fostering political stability, maintaining access to regional markets, ensuring freedom of navigation, and preventing the rise of any hostile hegemony (Binnendijk 1996). In other words, the U.S. does not want either China or Japan's economic capability translated into military power hostile to the United States.

After the collapse of the Soviet Union and its Communist ideology, it is said that the main strategic focus of the U.S. shifted to regional threats and economic interests. The removal of the threat posed by the Soviet Union is expected to result in fewer U.S. forces in Asia. Although the planned partial U.S. troop withdrawals are currently on hold because of the North Korean nuclear crisis and Washington's desire to keep its forces

stationed in Korea, partial withdrawal seems inevitable. The role U.S. forces play in defending Korea will shrink and the defense of Korea will depend more and more on its own capabilities.

After unification, U.S. force deployment in Northeast Asia would be challenged and become a keen security policy issue among the neighboring countries. A new intellectual framework and a solid base of public support will be required in order to maintain the security ties of the two countries (Binnendijk 1996). The key issue would be how to define the alliance relationship between the U.S. and Korea in the post-unification era. The U.S. wants its forces in Korea to reflect a regional orientation, emphasizing quick-reaction forces with the lift and mobility to project power over long distances and relying more on air and maritime forces and less on ground forces (1997 Strategic Assessment). The main role of U.S. forces in a unified-Korea would be to function as a "regional security manager through power projection" (Kugler 1997, 252). The major mission of U.S. forces in Korea would be to maintain the security environment in the region and prepare for security operations in Asia if necessary. RAND and KIDA (Korea Institute for Defense Analysis) conducted a joint research project studying the future security cooperation of the U.S and Korea. In this study, a "regional security alliance," which emphasizes new strategic concepts that widen the alliance's roles and responsibilities beyond the peninsula, became the most favorable option for both countries in the post-unification era (Pollack and Cha 1995). In a regional security alliance, the mission of U.S. forces stationed in Korea would be to maintain Northeast regional security rather than to maintain security on the peninsula itself. A central feature of this type of alliance would be a possible U.S.-Korea joint operation "beyond the

peninsula" when necessary. In this case, the role and mission of the Korean military, as outlined in new security alliance, would greatly influence the structure of the military and consequently, its planning and methodology. The overseas deployment of Korean forces may become a reality.

Although it seems rational for Korea to maintain a security link with the United States, considering its historical displeasure with neighboring countries, it is possible that strong nationalist sentiment might require the removal of any foreign forces in the peninsula after unification. In addition, China might be sensitive to a U.S. military presence in the peninsula once the buffer zone provided by the North no longer exists.

Based on the mentioned regional factors above and Kugler's (1994) future global system[74], this study outlined five different worlds that could exist after unification. Among the five conceptual security environments, the third scenario, the enhanced regional tension without global rivalry, is the most likely scenario until China becomes a super power competing with the U.S. for global leadership, which would probably not happen for two or three decades.

A World of Global and Regional Harmony (I): This scenario is characterized by the disappearance of most forms of major conflict and war. Relations among the major powers would be cooperative. In this international system, the major political-military tensions that undergrid the current strategy are eliminated. Relations among the

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[74] First, Kugler defined the current system as "a world of non-adversarial relations among the major powers but continuing regional tensions that could require commitment of U.S. military forces." Two peaceful worlds are "a system of reduced but still serious regional tensions," and "a truly harmonious world in which regional tensions have vanished and the major powers have achieved cooperation." Three turbulent worlds are: (1) a system of increased regional tensions, (2) a system in which these regional tensions are accompanied by adversarial relations with

major powers have reached a stage of enduring cooperation. In Northeast Asia, China, Russia, Japan, and a unified-Korea would enjoy cooperative relations. The U.S. would withdraw its military forces from the region. In this system, a unified-Korea also would enjoy regional harmony with neighboring countries such as China and Japan. There would be no conflicts concerning the vital or major interests[75] among the nations on regional issues. An international treaty would be settled among the major powers to ensure the peaceful existence of the unified-Korea.

Reduced Tension Globally and Reduced Regional Tension in Northeast Asia (II): The international security environment would be more stressful than (I), but would provide a major reduction in the political tensions in key regions such as Northeast Asia. This international system falls between the current situation and a harmonious world in terms of security concerns. Globally, U.S. influence prevails in international politics, and neither China nor Russia competes with U.S. leadership. Although the traditional political rivalry still exists between China and Japan, the two countries cooperate with each other economically. China would be militarily and economically stronger than it is currently, but would not pose an immediate military threat to a unified-Korea or Japan.

Russia, and (3) a highly multipolar world in which problems with Russia and China are magnified by the collapse of the Western security alliances in Europe and Asia (Kugler 111-2).

[75] Kugler (1994) defined interest as "an asset or state of affairs to which considerable importance is attached," and ordered national interests into four categories based on their relative importance and the implications they posed for employing military forces on their behalf: 1. National Security: the fundamental national interest. Survival mandates the use of all necessary forms of military power to ensure its protection; 2. Vital Interest: interests essential to long-term national survival and prosperity; 3. Major Interest: interests important to the nation, but which fall short of being vital. Their loss would cause serious damage and they are important enough to justify the use of force on their behalf. The likelihood of using military force might be 50 percent, as compared to 100 percent for vital interests; 4. Peripheral Interest: interests of lesser importance than major interests. Unlikely to employ military force on their behalf.

Strategically, a unified-Korea would act as a buffer between the two nations, along with U.S. forces in Korea. Although diplomatic disputes on the Spratly Islands, the Senkaku (Diaoyu) Islands, and Tokdo (Takesima) Island continue, stability prevails throughout the region.

Enhanced Regional Tension without Global Rivalry (III): In this world, relations among the major powers would remain stable, but regional tensions would be high. Instability prevails in Northeast Asia, where the traditional rivalry between Japan and China spurs military build-up in order to claim hegemonic power in the region. Competition for local sea control and littoral power projection between the two powers makes the region highly unstable. The military strategy of a unified-Korea would be to maintain stable relations with China and Japan so as not to provoke a military confrontation between the two countries. In these circumstances, unified-Korea would also expand its military capability to secure its vital interests.

New Rivalry Between the U.S. and China (or Russia) (IV): In this international system, chronic rivalry among the super powers has reappeared to supplement the enhanced regional tension in Northeast Asia. Russia (or China) reemerges (emerges) as a super power seeking imperialistic expansion with a strong military back up. The unified-Korea would, once again, be the frontline to deter expansion of the continental powers. In these circumstances, the current alliance structure with the U.S. would be strengthened as a revision of the containment policy of the Cold War.

Unstable Multipolar Rivalry (V): In this system, Japan, Russia, and China would emerge as economic and military powers pursuing expansionist foreign policies

and the Western alliance system would collapse after the withdrawal of U.S. forces from Europe. The major European countries would pursue their independent security policies without collaboration. In Northeast Asia, China and Japan would confront each other amidst tense economic and military rivalries. China would emerge as an economic and military power with a diplomatic agenda aimed at asserting influence at the expense of its neighbors. The security partnership between Japan and the U.S. would collapse due to economic competition. Japan would have embarked on a path of military armament. The militarization of Japan would exacerbated tension across the region and produce a troubled political climate. Both Japan and China would have power projection capability and actively pursue their own interests. Multipolar rivalry and instability would prevail on a global scale.

Defense Planning in the Post-Unification Era

Unification might result in drastic changes in the political, social, and economic structure of Korean society. The degree of those changes may differ according to the process of unification, as would the price tag for unification. Researchers estimate the cost of unification at between $200 billion to $2 trillion as estimated by various researchers. The financial demands during the transition period would be so high that internationally organized aid packages would be required to make the transition possible.

If unification comes through gradual, peaceful, and collaborative means, as many Koreans and international society desire, Korean society could systematically prepare for

foreseeable problems step-by-step through negotiation between the two Koreas and consultation with international society. One of the critical aspects of the negotiation process would be how to integrate peacefully two military forces, which have been antagonistic for five decades, into one unified forces pursuing common goals and objectives. Decisions on defense would also be impacted by international actors who seek political and economic influences on the Peninsula after the unification.

Unification is more likely to come during the reform of the North Korean autarkic economic system into a market-oriented economic system. It is questionable whether the North Korean regime has the capability to absorb the shocks generated by economic reform, as the Chinese or Vietnamese governments have. Unification might be a combination of the "Collapse-Absorption" scenario and the "Consensual Unification" scenario, two scenarios that have been widely debated since the end of the Cold War.

In this case, the integration of two military forces might actually take the form of the absorption of an obsolete force by a relatively modernized one. All units and agencies of the North Korean military would be disbanded. The major weapon systems of the North Korean military would be removed, except for several highly modernized ones. The Soviet-style defense industry in North Korea, which once produced tanks and aircraft in the 1950s and 1960s, would not survive in a unified-Korea. As the German experience indicated, it would be uneconomical to use North Korean materials in a unified-Korean military. A huge number of personnel, more than one million, in the North Korean military also would be discharged. However, the pace of relocation of the military personnel should be well-organized and gradual, to minimize the risks of social instability. North Korean forces are well-trained, received privileges in the communist

distribution system of goods, and enjoyed high social status. If those forces become anti-unification, and resist the formation of a unified-Korea under the South's control, the tension and threat posed by those groups would be enormous. The possibility of guerrilla warfare could not be ruled out.

In terms of long-term personnel management, the current conscript system would be challenged. Whether to maintain the conscript military system or have an AVF would be one of the basic policy issues that the Koreans would have to decide. If the military of a unified-Korea needs to maintain 500,000 personnel with conscript in its military, about half of them should be professional personnel, considering the skills required to operate modern weapon systems. If a unified-Korea needs 250,000 to 300,000 enlisted forces, a rough estimation of the required conscript time would be twelve months for the eligible male population, considering the current eligible population-to-enlisted men ratio in South Korea. If a unified-Korea wants to have an AVF, the number of personnel required would be less than 500,000. Economic questions, such as "which system will be costly to a society as a whole?" "Can a unified-Korea afford an AVF?" and "which system is more effective?" must also be answered. Precise answers to those questions require additional research and the results would vary according to the assumptions behind the research.

If we also focus on the social aspects of the military system, the military draft issue becomes more complicated. If the socialization function of military education could facilitate the integration of the two different societies by fostering mutual understanding of the other side by members of the young generation, the conscript system

would have a positive by-product. The unity of the troops could promote the unity of the Koreans.[76]

The relevance of the current planning method would also be questioned after unification. The current method, "threat-based planning," is based on the military threat posed by the North Korean military. However, after unification, an adversary or group of adversaries which would threaten the security of Korea on a large scale may not exist. Without a clear security threat, threat-based planning would not result in an appropriate defense posture. An inappropriate defense posture would result in serious strategic shortcomings when an unexpected security threat emerges.

Although the competition between China and Japan could be a potential security threat for a unified-Korea, defense planning based on the potential security threat posed by China and/or Japan would not only be unrealistic but undesirable. It is unrealistic in the sense that a unified-Korea would require enormous resources for its nation building and those resources would inevitably be financed largely by an international consortium of advanced countries in which Japan, the U.S., and possibly China would take leading roles. It is undesirable in the sense that a unified-Korea will need to create and maintain a favorable military and security environment to achieve internal economic and social stability in a post-unification era.

Kugler (1994) showed the inadequacy of threat-based contingency analysis as a methodology for military planning in an era of uncertain security threats. A threat-based methodology determines military requirements on the basis of an examination of

[76] In April 1991, the President of the Federal Republic of Germany addressed that "the unity of the troops promotes the unity of the Germans," praising the *Bundeswehr's* efforts to integrate the

postulated war scenarios. The strength of this methodology lies in the quantitative analysis of force requirement with an examination of the many factors involved in the planning process. It has been suitable for the Korean contingency when the assessment of potential military threats is possible. However, as he indicated, this method is inadequate when uncertain about "what wars are likely to be fought." A unified-Korea would not want to have either China or Japan as an adversary until either one of them shows a clear and actual military threat. In this sense, threat-based planning would be inadequate for a unified-Korea. Resource-based planning or mission-based planning could be an alternative methodology for a unified-Korea.

Mission-based capability analysis tries to determine military posture by analyzing the general military tasks to be performed in the future. It does not have a specific nation or contingency as its basis for military build-up. It is asks the question, "what kind of military missions do we want to perform in peace, crisis, and war?" (Kugler 1994, 194). This methodology determines defense posture in response to those missions. Mission-based analysis is suitable when uncertainty and ambiguity concerning international politics prevails and no clear security threat exists.

In contrast, resource-based capability analysis asks "Do we have a good team?" instead of "Can we beat the opponent?"(Kugler 1994, 193). In this planning method, as opposed to threat-based planning, the balance between economic capability and military strength could be achieved by giving less consideration to potential adversaries and more consideration to the economic capability of the nation.

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two forces into one.

As observed in the U.S. and German cases, the defense budget would be a target for reduction in the post-unification era once the imminent security threat no longer exists. The best that the military could hope for is to maintain its current level of expenditure (around 3% of the GNP). The most probable result of unification is that the military will have far less than the current level (maybe around 2% of the GNP). A relative improvement in the budget situation would only be possible once the economic and social burdens of unification were funded. This will be one of the greatest challenges the military will have to face after the unification. It could lead to a situation in which the military will regress in terms of modernization and readiness. The size of the defense budget will largely depend on how the Koreans understand the role of the military, as a general instrument of national security policy, in the new security environment.

The benchmark of defense planning for a unified Korean military would be the current military structure of South Korea, which presumably has to take the initiative in the unification process. The South Korean military, as mentioned in Chapter 2, currently has about 690,000 personnel in its active duty force and is equipped with K1-MBT, the Korean version of the US M1 Abram tank, and KF-16, the Korean version of the US F-16. The South Korean military emphasizes ground power and does not have any strategic capability or weapons of mass-destruction. The following section outlines the defense postures required by the five possible scenarios mentioned above.

(1) A World of Global and Regional Harmony: In this favorable environment, security and military concerns are minimal. The central goal of the unified-Korean military strategy would be to preserve this favorable environment and to handle the trivial problems that arise. A unified-Korea military would need a small but competent force.

Participation in international peacekeeping or peacemaking processes would also require a small number of highly mobilized forces. The force posture might be less than 50 percent as large as anticipated by the current force level of South Korea.

(2) Reduced Tension Globally and Reduced Tension in Northeast Asia: In this stage, the goal of Korea's post-unification military strategy would be to protect major interests in the region and reduce tensions among the nations in the region. Military emphasis could be placed on naval power and marine corps to protect the coastal line and islands in case of disputes with neighboring countries. Enhanced air combat capability would be required, as would strengthened air surveillance capability to establish a self-reliant system for air surveillance and early warning. In addition to peacekeeping and peacemaking missions, contributions to the multilateral engagement in the conflict area would be requested if necessary. To cope with these challenges more than 50 percent of the current force posture might be required.

(3) Enhanced Regional Tension without Global Rivalry: Whereas the previous two international systems presented a more tranquil environment than currently exists, a world of enhanced regional tensions entails more turbulence. The unified-Korea would have to work with the United States to reinforce its joint forces in order to maintain its role as a balancer of the region. In this stage, Korea would have to enhance its overall military capability. Greater emphasis could be placed on air defense systems and local sea control. Air defense includes air attack capability with accompanying reconnaissance and electronic warfare capability. The navy should have medium-range operational capability to control sea lanes around the peninsula.

(4) New Rivalry between the U.S. and China: In this scenario, the traditional alliance structure with the U.S. would be enhanced and involve a possible collaboration with the Self-Defense Force (SDF) of Japan. Emphasis could be placed on ground power as a deterrent force against the continental power from the enhanced military capability in stage (III). Enhanced offensive mobile capability would be required in this stage. A large number of military forces with modern combat equipment would be required.

(5) Unstable Multipolar Rivalry: The strategic goal of a unified-Korea in these turbulent circumstances would be the survival of the nation. In this worst case scenario, the unified-Korea would have to increase its military capability to ensure its national security. Emphasis could be placed on air power against conventional and unconventional military provocation from China and Japan. Large ground forces would be required to deter the Chinese PLA on the northern border of the nation.

The following table displays the military planning issues for a unified-Korea given the five potential security environments:

Table 21: Military Planning and Estimated Military Expenditure

Security Environment	**I**	**II**	**III**	**IV**	**V**
Personnel System	AVF			Conscript	
Military Emphasis	Air Power		Naval Power	Ground Force	Security Alliance
Planning Method	Mission based planning	Capability based planning		Threat based planning	
Force Level	200,000	300,000	400,000	500,000	500,000
Estimated ME/GNP (%)					
(1) AVF 1997	3.38	5.07	6.76	8.44	
2006	2.59	3.88	5.18	6.47	
(2) Conscript 1997	2.05	2.24	2.43	2.62	
2006	1.35	1.10	1.60	1.72	

This study tries to estimate, for the 5 scenarios outlined above, required defense expenditure as a percentage of GNP for the 10 years after unification. It is estimated that if unified-Korea needs 300,000 AVFs, 4 to 5% of the GNP would be spent on the military. If unified-Korea wants to maintain 500,000 conscript forces and the current military personnel structure of South Korea, it would require about 2 to 3% of the total GNP of the nation.

One assumption underlying the estimation involves the economic capability of a unified-Korea. This study assumes that North Korea's current GNP level is 10 percent of that of South Korea (see Calder 1997, 130). Thus, a united Korea would have 10 percent more total economic capacity than South Korea's currently possesses. The total GNP of South Korea in 1997 was 436,870 billion won (local currency). The estimation begins with 480,557 billion won as an estimated GNP, assuming the Koreans unified in 1997. The real economic growth rate is assumed to be 5% and 3% for next 10 years, to get a form of sensitivity analysis.

The personnel costs of the military consist of wages, pensions, medical insurance, and various other allowances. The Defense White Paper 1997-1998 shows that the personnel maintenance budget of the military was 6,337 billion won (local currency) in 1997. This includes wages, pensions, and medical insurance, as well as food and shelter for the enlisted men. Kim's study (J.M. Kim 1994) shows that wages, allowances, and other personnel costs (pensions and medical insurance) comprise 80 percent of total military personnel costs.

Total military personnel cost = personnel maintenance cost x 0.8

Estimated military personnel cost reached 4,928 billion won in 1997. In 1993, 97.2 percent of military personnel cost was spent on officers and NCOs (J.M. Kim 1994, 77) and the remainder on enlisted men. The analysis uses this ratio (97.2 : 2.8). To compute the average amount spent on officers and NCOs, which comprise 22 percent of the total military personnel. The estimated average per personnel cost reached 32,461 thousand won for officers and NCOs and 264 thousand won for enlisted men in 1997.

Based on the current personnel structure (22 percent officers and NCOs and 78 percent enlisted men), and wage structure, the following section includes estimates of required defense expenditure as a percentage of GNP after unification in 1997 prices. The ratio used for this analysis of personnel cost to total military expenditure is 1:2.5. In other words, 40 percent of military expenditure is spent on personnel.[77] This analysis examines on how much a unified-Korea should spend on the military in relation to total GNP in order to maintain its military personnel costs at about 40 percent of total military expenditure for next ten years.

Table 21 shows the ratio of personnel cost to total military expenditure if a unified Korea maintains 200,000, 300,000, 400,000, or 500,000 personnel. To maintain 200,000 personnel as an AVF, 3% of the total GNP should be used as military expenditure with 5% real economic growth. More than 5% of the total GNP would be required to get a

[77] In an AVF, costs for investment in equipment could be higher than in a conscript system for efficient management (substitution capital for labor). However, this study uses the 1:2.5 ratio because of using current wages as a proxy for personnel cost for an AVF. The current personnel cost is mainly for the professional soldiers (officers and NCOs). So, the real per personnel cost under the AVF could be lower than the estimated per personnel cost, which is based on current per personnel cost for professional soldiers.

400,000-personnel AVF with 5% economic growth, as the table shows. If the economic growth rate is maintained at 3%, it would be possible to maintain 300,000 personnel with 5% of the GNP devoted to military expenditure. With the current rate of military expenditure (about 3% of the total GNP), unified-Korea could maintain only a 200,000-personnel AVF. If a unified-Korea maintains its current force structure (22% voluntary and 78% conscripts), 2% of total GNP as a military expenditure could support a 500,000-personnel military. If a unified-Korea wants to have a half-voluntary and half-conscript military structure while maintaining the current wage structure, it can afford a 400,000-personnel military with 3.7% of the total GNP devoted to military expenditure. If it needs to keep 500,000 personnel, the cost will be 4.7% of the total GNP.

A large reduction in military expenditure as a proportion of GNP could hardly be achieved, considering the likely future security environments. The defense budget of a unified-Korea would depend largely on how the Koreans understand the role of the military in the new security environment as a general instrument of national security policy.

Chapter Six: Summary and Conclusion

This dissertation first examines Korea's pattern of defense planning over the past several decades, especially in terms of how the nation shaped its defense policy in relation to the military threat posed by North Korea. As discussed, Korea's defense planning is influenced greatly by the socio-economic conditions of the nation as well as the perceived threats posed by the North Korean military. South Korea's military expenditure is the tenth largest in the world, and the nation maintains the seventh largest armed forces in the world. The security relationship between Korea and the United States has played a significant role in shaping Korea's defense posture since the Korean War. The amount of conventional weapons imported by Korea totaled 1,677 million dollars in 1996, making South Korea second only to China in terms of weapon importation.

Unification of the Korean peninsula, although it is risky to predict when and how it will come, will require a refocusing of Korea's military strategies and policies. As discussed in the previous chapter, uncertainty will reign in the post-unification era and flexibility will be required to cope with the challenges that arise from external security environments.

The absolute amount of defense spending in Korea has increased continuously during the last three decades, whereas military expenditure as a percentage of GNP or as a percentage of the central government expenditure has decreased gradually, after its peak in the early 1980s. These figures currently reach 3.27 percent and 21.1 percent, respectively. Considering the degree of conflict and tension between the two Koreas, and South Korea's geopolitical position, its allocation for defense is neither excessive nor beyond the nation's economic capability. The conscription military system and the presence of U.S. forces have allowed South Korea to maintain a high level of military preparation without excessive investment in the military.

Regression analysis on the determinants of military expenditure show the significance of budgetary incrementalism, perceived threats and regime characteristics to the defense planning process. Incrementalism also shapes military procurement expenditures. Although incrementalism is a common phenomenon in budgeting, due to bureaucratic politics and the complexity of real world problems, budgeting techniques have been developed to minimize its role as much as possible. The adaptation of program budgeting in the defense planning process could hypothetically eradicate incremental budgeting. However, as the statistical evidence demonstrates, Korea's defense budget has been formulated by making marginal adjustments to the previous years' budget.

As the economic capability of Korea increases, the relative importance of allocation for defense decreases. Since the elasticity of the military on economic growth is less than one, the military has the attribute of a necessity good in Korea. There is no statistical evidence that a trade-off exists between welfare and military expenditure. As

Hewitt (1992) explained, this relationship results from an autonomous increase in military expenditure in government spending when budget constraint is not tight. However, given the current economic crisis in Korea, it is likely that the government may accommodate the high demand for social welfare by decreasing military expenditure, at least in the short-term.

A part of the quantitative evaluation included a "threat" variable, and as expected by the action-reaction model, this has a positive influence which suggests that decision-making on security issues in Korea has been sensitive to the behavior of a military adversary. The threat variable's positive magnitude also implies that without a clear security threat after unification, pressure for reducing military expenditure will grow.

Military spending tends to stimulate economic output. Military expenditure contributes directly to the expansion of Korea's GNP. However, the externality effects of military spending on the growth of the Korean economy have been negative. The negative externality effects imply that military expenditure diverts to the defense sector resources that might have been invested for more productive purposes.

One of the distinguishable aspects of this study is that it assumed military spending does not have a homogeneous effect on the economy. The results of the statistical study show that the externality effect of procurement spending on the growth of the Korean economy has been negative.

The statistical results also suggest that the eradication of the military threat currently posed by North Korea would not result in the financial rewards Koreans expect. Although the peaceful settlement of the North-South tensions would generate positive externalities, neither an immediate reduction in military expenditure nor a so-called

"peace dividend" would occur, given the determinants of defense spending and the economic impact of those expenditures. The direct economic impact of a shift in the relationship between the two Koreas would be positive only if the resources devoted to the military were invested more productively. More specifically, the resources used for arms importation should be invested in a more productive industry to obtain a "peace dividend." Given the lack of any substantial changes in the relationship between the two Koreas, Cold War era models for analyzing the determinant factors of the defense posture in South Korea and the economic effects of military preparation for the last several decades still provide useful information, even after the passing of the post-Cold War era.

Examination of the German experience after unification and the U.S. experience after the collapse of the Soviet Union help, at least in part, to determine the future direction of defense policy in Korea. Military manpower levels as well as military spending levels were cut substantially in both nations. The U.S. experience shows that with uncertain security environment, threat-based military planning in inadequate when uncertain about the shape of possible conflicts. The German experience implies that a possible unified-Korean military should be planned not to be a security threat to neighboring countries. Limiting the size of the armed force is likely to create and maintain a favorable security environment to achieve economic and social stability in a post-unification era.

However, the current military build-up in Northeast Asia indicates potential security instability in the region. In spite of a downward trend in world military spending after 1988, the region showed increased military expenditure in the 1990s. The possibility of military competition in this region is justified given the traditional rivalry

between China and Japan. It is likely that after the unification of the Korean peninsula, to ensure their interests in the area, China and Japan will compete with each other over who plays the leading role in the region and who has the military edge, just as they did in the late nineteenth century. Although the leaders of a unified-Korea might not want either China or Japan as a potential enemy, competition between the two powers could force a unified-Korea into a military build-up.

A preliminary estimation of military expenditure shows that a 200,000-personnel military force could be maintained in AVF at the current level of military expenditure in South Korea, which consumes 3.26 percent of the total GNP. Given a possible unified-Korea with 300,000 All Volunteer Forces, more than four percent of the total GNP should be allocated to the military for the next ten years. If the current conscript system is maintained, a unified-Korea could support a 500,000-personnel military force, consuming on average two percent of the total GNP for the next ten years. The defense budget of a unified-Korea would largely depend on how the Koreans understand the role of the military as a general instrument of national security policy in a new security environment. New planning method such as capability-based planning and/or mission-based planning which used for flexible military planning instead of threat-based planning would require in an era of uncertain security threats after the unification. A large reduction in military expenditure as a portion of GNP could hardly be achieved considering unified-Korea's future security environment. Given stated assumptions about a unified Korea, it appears that the needs for the armed forces, while not huge, will not permit the possibility for a significant peace dividend.

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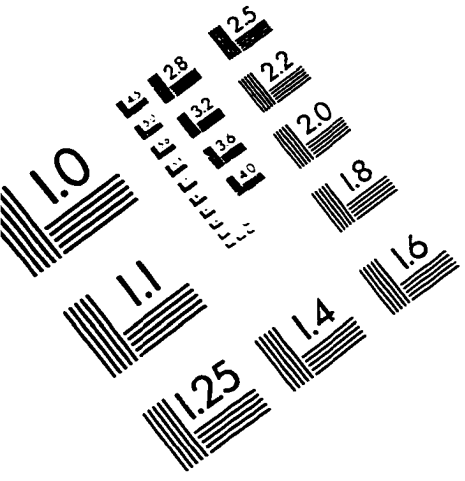
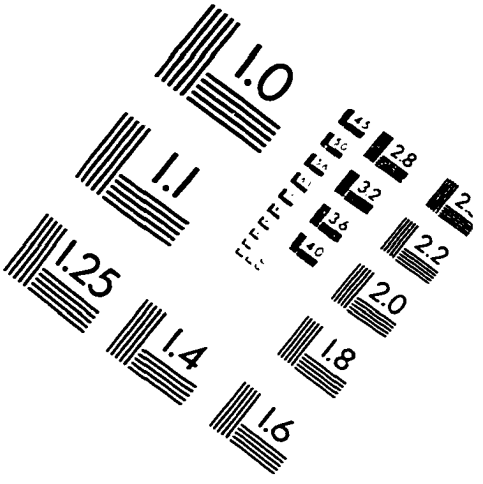
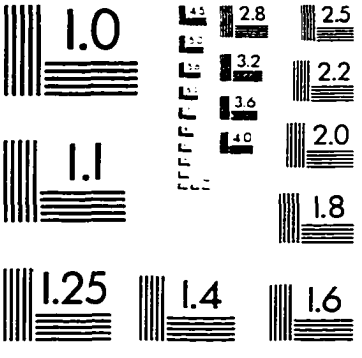
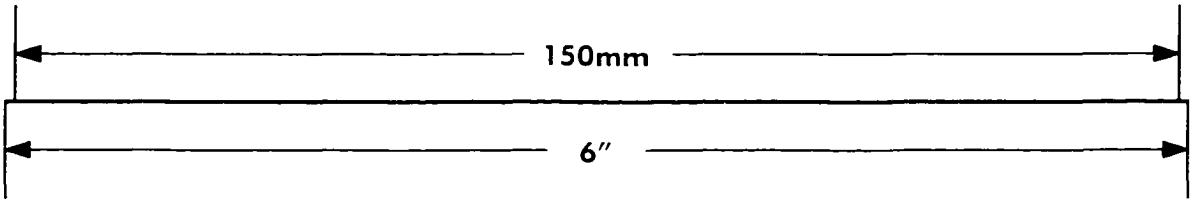
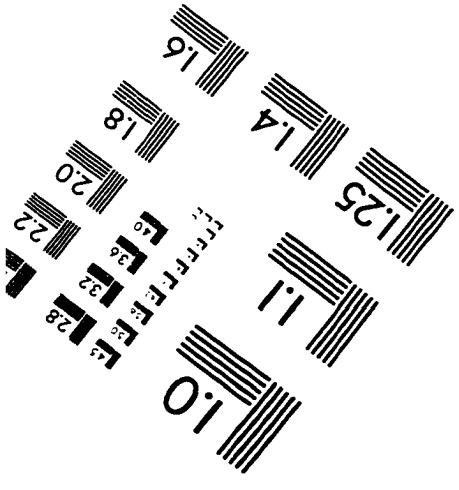
IMAGE EVALUATION TEST TARGET (QA-3)

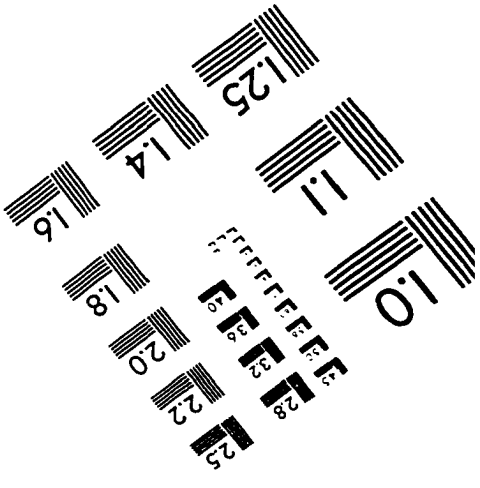












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