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SOUTH KOREA'S DEFENSE INDUSTRY: INCREASING DOMESTIC CAPABILITIES AND GLOBAL OPPORTUNITIES

By Richard Weitz¹**Abstract**

Since the end of the Korean War, the United States has been the largest supplier of defense systems to the Republic of Korea (ROK). The imperative of maintaining military interoperability with the U.S. armed forces often proved a decisive factor for ROK decision makers. However, ROK officials have tried to increase the amount of military equipment, technology, and services that South Korea acquires from non-U.S. sources, with a priority given to domestic suppliers. ROK procurement officials have concluded that U.S. companies do not always provide the best deals in terms of cost, performance, and timeliness. In addition, they are frustrated with the restrictions and terms typically associated with U.S. defense imports, especially limitations on the transfer and re-sale of U.S. technologies as well as the problems entailed in meeting South Korean demands for substantial offsets. ROK governments have also sought as much as possible to draw on the country's own burgeoning defense industries. At first, ROK defense companies limited private R&D spending, overcapacity and other structural inefficiencies, small number of exportable products, limited competitiveness in foreign markets, and bans on the sale of items with U.S. technology to third countries constrained their actual and potential contributions. But over time ROK firms have overcome many of these obstacles. In addition, the same factors that have enabled South Korea's industry to substitute for previously imported defense items have made them better able to compete for foreign sales: the growing sophistication and size of South Korea's civilian economy, the companies' improving human capital and productivity, mandatory technology transfers and offsets, and extensive ROK government support for the industry.

Key words: *weapons, arms, technology transfer, defense, military*

Introduction

During the past decade, the ROK has become a global player with worldwide interests. ROK policy makers have raised their country's international profile by hosting high-level events, participating in international peacekeeping, and promoting South Korea as a model for combining democracy with rapid economic development. Seoul hosted the November 2010 G-20 Summit, the November 2011 High-Level Forum on Aid Effectiveness, and the March 2012 Nuclear Security Summit. South Korea has vigorously participated in the activities of various subsidiary and specialized UN agencies, as well as other international organizations. In October 2012, several years after a South Korean foreign minister was selected as UN Secretary General, the ROK was elected to hold a non-permanent seat on the U.N. Security Council for the 2013 and 2014 terms. South Korea is also a committed member of various international nonproliferation regimes, such as the Global Initiative to Combat Nuclear Terrorism, the Missile Technology Control Regime, and the Proliferation Security Initiative.

The United States and the rest of the international community have benefitted from South Korea's growing global leadership and engagement. The United States and South Korea are also coordinating more effectively and comprehensively on global diplomatic, development, and defense issues. South Korea has more development workers serving abroad than any other country after the United States. ROK and U.S. planners have discussed ways that their two militaries can support each other in humanitarian and disaster-relief missions, as well as other extra-Korean contingencies, by building on their existing Peninsula-based cooperation. Not only does the ROK accept the necessity for U.S. Forces Korea to contribute to its possible extra-peninsular

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missions, but also South Korea's own military modernization program, the Defense Reform Project 2020 adopted in 2005, has increased its capacity to participate in missions outside of Korea. South Korea now stations hundreds of its troops overseas, and has twice commanded multinational counter-piracy missions in the Gulf of Aden. The ROK has deployed a Provincial Reconstruction Team to Afghanistan and is helping train the Afghanistan National Security Forces as they prepare for the departure of most Western combat forces at the end of 2014.²

Despite its small size and limited population, the ROK's economy has become one of the world's largest. South Korea has joined the elite Group of Twenty (G-20) leading industrial countries and has negotiated free trade agreements with many foreign partners. ROK companies are expanding their presence in global markets as well. For example, South Korea has rapidly emerged as one of the world's leading suppliers of civil nuclear energy technologies and services. Many of these trends are also replicated in the defense sector. South Korea has built up one of the most impressive defense industrial bases among the newly industrialized states in the Asia-Pacific. The country's total military expenditure surpassed \$31 billion in 2012, making it the third largest defense spender in Asia and the 12th largest in the world.³ South Korea has become one of the largest markets for conventional weapons for its military, the world's eighth largest with some 680,000 soldiers, 2,500 tanks, 850 fighter jets, 100 helicopters, and about a dozen submarines and major surface warships.⁴ According to the Stockholm International Peace Research Institute, during the 2008-2012 period, South Korea accounted for five percent of all global imports of major conventional weapons; of these imports, 77 percent came from the United States, 15 percent from Germany, and 5 percent from France.⁵

Yet, over time, South Korea has reduced the percentage of these weapons that it has purchased from U.S. sources, while raising the share of arms imported from non-U.S. companies and the proportion of weapons manufactured in South Korea. Meanwhile, ROK companies have become major players in the global defense industry, which has for decades been dominated by Russian, European, and U.S. firms. South Korea's annual arms exports reached \$2.4 billion in 2011 and the government hopes to achieve \$3 billion in arms exports in 2013.⁶ The South Korean Defense Agency for Technology

and Quality expects this figure to double to \$4 billion by 2020.⁷ ROK defense exports compete internationally in the armored vehicle, shipbuilding, and aerospace sectors. Among other considerations, the ROK's changing role in international arms markets poses new challenges and opportunities for its foreign partners, including the United States.

Buying Beyond the United States

Since the end of the Korean War, the United States has been the largest supplier of defense systems to South Korea due to the two countries' strategic ties, joint military commands and exercises, South Koreans' long familiarity with U.S. weaponry, and interoperability considerations. Initially, South Korea lacked a major defense industrial sector, and buying weapons from the United States was seen as a natural means of reinforcing the bilateral alliance upon which the new state of South Korea depended. Beginning in the mid-1970s, South Korea initiated an aggressive and increasingly ambitious defense industrialization program, with the long-term goal of establishing "a basic foundation for a self-defense capability for the twenty-first century."⁸ The motives for this indigenous defense industrialization were not only military, but also economic and political. The ROK consciously pursued a parallel strategy of "security and development," that is, building up its heavy industry and high-technology sectors while striving for greater self-sufficiency in arms production.⁹ Moreover, South Korea pursued an advanced arms production capability to enhance its international status and influence.¹⁰

By the 1980s, the South Korean defense industry was producing a variety of unsophisticated combat equipment, including small arms like the K2 rifle, short-and medium-range missiles such as the Hyunmu, short-range field artillery like 155mm self-propelled howitzers, small-scale naval vessels like fast attack patrol boats, the Hughes 500MD helicopter, and the F-5E Tiger II fighter aircraft.¹¹ But the United States still had a dominant role in South Korea's developing defense industry due to these ROK firms' licensing and co-production agreements with major U.S. defense companies. In turn, U.S. corporations received large ROK defense contracts to co-produce these ROK weapons as well as supply more advanced systems that the ROK industry was unable to manufacture. U.S. firms also enjoyed the opportunity to import inexpensive defense components from South Korea's manufacturing plants, which typically had lower labor costs and



other production expenditures.¹² One reason why the United States and ROK governments favored this close cooperation was that their militaries benefited from using the same weapons, making it easier to share logistics, tactics, and other military elements. The imperative of maintaining military interoperability with the U.S. armed forces has often proved a decisive factor in Seoul's defense procurement decisions. In recent years, significant U.S. sales and co-production of defense equipment have included: the K-1 (Type 88) Tank, SAM-X surface-to-air missile, P-3 maritime patrol aircraft, F-16 C/D fighters, UH-60 Blackhawk helicopters, the T-50 "Golden Eagle" advanced trainer jet, F-15K jet fighters, and the KDX III Naval Destroyer. These systems continue to form the backbone of the ROK's military.

However, during the past two decades, ROK officials have tried to increase the military equipment, technology, and services that South Korea acquires from non-U.S. sources, with a priority given to domestic suppliers. The policy of diversifying beyond U.S. defense firms began in the 1980s, but was accelerated when the Roh Moo Hyun government sought to enhance South Korea's ability to pursue policies independent of Washington, manifested in part by Roh's decision to seek wartime operational control (OPCON) of South Korea's armed forces.¹³ More recently, commercial rather than economic considerations have been driving Seoul to buy more non-U.S. weapons. ROK officials have concluded that U.S. companies do not always provide the best deals in terms of cost, performance, and timeliness. In addition, the policy now reflects ROK officials' frustrations with the restrictions and terms typically associated with U.S. defense imports, especially limitations on the transfer and re-sale of U.S. technologies as well as the problems entailed in meeting South Korean demands for substantial local content and other offsets. Competing foreign governments and companies have often proven more forthcoming than their U.S. counterparts in agreeing to transfer sensitive military technology to South Korea to offset defense sales.

Over time, the ROK has increasingly acquired its weapons from other countries as well as manufactured its own weapons systems. At first, foreign defense firms complained about the difficulties of competing with long-established U.S. rivals in the ROK market. But in recent years, South Korean officials have resisted Washington's pressure to buy some expensive U.S.-made weapons systems, such as the PAC-3 air and missile defense system, the SM-3/Aegis ballistic missile defense system, and the Apache attack helicopter, while making major contracts

with other foreign competitors. In August 2011, the Ministry of National Defense's Defense Acquisition Program Administration (DAPA) announced it would procure antisubmarine helicopters. The British AgustaWestland AW-159 Wildcat helicopter and the U.S. Sikorsky SH-60 Seahawk helicopter were the main competitors. Given the advantage of interoperability and the traditional relationship between the United States and South Korea, it seemed likely that Sikorsky would win the contract. During the DAPA evaluation in September 2012, the SH-60 Seahawk helicopter had a higher rating. But the DAPA unexpectedly announced in January 2013 that AgustaWestland won the tender.¹⁴ Last year, the DAPA rejected the U.S. plan to sell four Global Hawk UAVs, worth \$1.2 billion, to South Korea. In June 2013, the DAPA announced that it would buy the Taurus KEPD-350, a joint venture between European groups MBDA and Saab, rather than Lockheed Martin's AGM-157, for its Joint Air to Surface Standoff missile project.¹⁵ A major reason for the decision was the U.S. government's reluctance to relax restrictions on the export of its most advanced missile technologies.¹⁶ Other notable European successes in the South Korean defense market include the SAM-X project, which purchased the German MIM-104C Patriot PAC-2; the K-2 Black Panther Tank; Korea Aerospace Industries (KAI)'s Surion (helicopter) research and development contract with Eurocopter; and the MBDA Missile System's Mistral missiles. Furthermore, on August 27, 1995, Israel and South Korea signed a Memorandum of Understanding on Cooperation in Logistics and the Defense Industry, which established a committee that meets regularly to exchange information about military technology. Between 2005 and 2010, Israel exported \$187 million worth of defense commodities to South Korea.¹⁷ In January 2011, the ROK awarded Israel's Elisra Electronic Systems a \$29 million contract to supply Airborne Electronic Warfare (AEW) Suites and missile warning systems for the ROK air force's CN-235 aircraft. In addition, the ROK purchased Israel Aerospace Industries' Harpy loitering anti radar UAV and its Green Pine phased array long radar.¹⁸

Import Substitution

While considering a wider range of foreign suppliers, the South Korean government has sought to purchase more defense items from the country's own burgeoning defense industries. More than a decade ago, the ROK's Defense White Paper 1999 affirmed a commitment to acquire "the ability to independently develop primary weapons systems for core force capability." The more



recent Defense Reform Plan 2020, enacted in 2005, emphasized a self-reliant defense posture through increasing indigenous capabilities and defense R&D. The Plan aimed to grow the defense budget 11.1 percent annually through 2015 and 7.1 through 2020.¹⁹ Although defense spending has not grown as rapidly as planned, private defense R&D investment increased from \$132.2 billion in 2005 to \$410.7 billion in 2008.²⁰ South Korea's defense R&D budget in 2010 was 1,795 billion *won*, or approximately US\$1.5 billion, comprising around 6 percent of total military spending.²¹

At first, ROK defense companies' limited private R&D spending, overcapacity and other structural inefficiencies, small number of exportable products, limited competitiveness in foreign markets, and bans on the sale of items with U.S. technology to third countries constrained their actual and potential contributions. For a while, most arms manufacturing centered on licensed production of foreign military systems, such as the U.S. F-5 and F-16 fighters and the German Type-209 submarine. Production gradually progressed to indigenously developed equipment, such as the T-50, the K1/K1A1 main battle tank, and the KDX-I, II, and III destroyers. In recent years the ROK has built a broad-based defense industry with particular strengths in the aerospace, land ordnance, and shipbuilding sectors. At present, 80 percent of South Korea's arms are procured domestically, including main battle tanks, armored vehicles, warships, submarines, and many missiles and combat aircraft.²² South Korea has recently developed its own anti-ship and land-attack cruise missiles, a new tank (the XK-2) and infantry fighting vehicle (the K21), and it plans to build its own class of attack submarines and a variety of advanced unmanned aerial vehicles (UAVs).²³

The South Korean government has used defense contracts and other means to develop the country's private defense industry. Like Japan, South Korea has relied heavily on the country's small number of large industrial conglomerates (*chaebol*), such as Samsung, Hyundai, and LG, rather than state-owned enterprises to carry out national arms production. Local arms manufacturing is heavily concentrated in just a few *chaebols*: Hyundai Rotem builds main battle tanks; Doosan Infracore, armored vehicles; LIG Nex 1 (formerly LG Precision), missile systems and electronics; Samsung Techwin, jet engines and artillery systems; and Hyundai Heavy Industries, surface combatants and submarines. In addition, Korea Aerospace Industries (KAI, jointly owned by Samsung, Doosan, and Hyundai) produces all of the country's

military aircraft, including the T-50, the KT-1 'Woong-Bee' intermediate trainer, helicopters, and some UAVs.

The South Korean government has been heavily involved in the arms production process by providing direct and indirect subsidies to manufacturers, underwriting defense research and development planning, and designating firms (such as KAI) as monopolistic suppliers of critical military equipment.²⁴ Defense research and development (R&D) in South Korea is managed by the Agency for Defense Development (ADD), which has a staff of several thousand people, mostly engineers, technicians, scientists, and other personnel engaged in research and development. ADD undertakes the R&D of weapons systems and core technologies, manages the development of dual-use and core technologies, and conducts operational testing and evaluation of developmental systems. It is responsible to the DAPA, which oversees armaments acquisition in South Korea, including determining requirements, approving R&D projects, and assessing testing and evaluation results. ADD works directly with the local defense industry on prototyping and production of ADD-development weapons systems, as well as with industry think tanks, universities, and research institutes on basic and applied research and on core technology development. ADD is comprised of seven R&D institutes (precision-guided munitions, command, control, communications and computing [C4], intelligence, surveillance and reconnaissance [ISR], 'neo-technologies,' ground systems, naval systems, and aircraft systems) and one test center. Each R&D institute operates its own network of research laboratories.²⁵

As in Japan, South Korea's increasingly advanced civilian dual-use industries have facilitated the growth of the country's defense sector. The ROK's improving civilian information technology, heavy machinery, shipbuilding, and aerospace sectors have made it easier to manufacture more advanced defense systems. In addition, the South Korean government has helped the defense industry by demanding that foreign partners transfer technology and provide other assistance to local firms. Under new procurement policies, foreign contractors are required to provide a guarantee in advance that the proposed technologies will be approved by the respective government or regulatory agencies for transfer to South Korea prior to the approval of the offset contract. So far, most U.S. defense contractors have acquiesced to ROK demands to maintain their strong foothold within the country, but their continued cooperation on technological



restrictions may prove difficult as ROK firms compete more directly with U.S. industries in third-party markets.

Seeking Global Markets

The same factors that have enabled South Korea's industry to substitute for previously imported defense items have made them better able to compete for foreign sales: the growing sophistication and size of South Korea's civilian economy, the companies' improving human capital and productivity, mandatory technology transfers and offsets, and extensive ROK government support for the industry in the form of billions of dollars for domestic military contract and R&D efforts. ROK governments have favored exports as another means to give other countries a stake in South Korea's security as well as an opportunity to create more high-tech jobs and lower unit costs for the ROK armed forces through larger production runs. For example, the Lee Myung-bak administration's goal was to make the defense industry an "engine of growth" that would make \$4 billion in yearly exports and employ 50,000 people by 2020.²⁶ From 2001-2008, military aircraft (especially F-16 fighters, K-1 trainers, and T-50 advanced trainers) accounted for the largest percentage (32.1 percent) of the ROK's total military exports, followed by ammunition (22.3 percent), off-set based exports (18.3 percent), and artillery and other ground force equipment (18 percent).²⁷

The United States has been the main purchaser of South Korean arms exports, especially ammunition and parts and services for older U.S. combat aircraft. Turkey has been the second largest buyer, procuring self-propelled howitzers, trainer jets, and technology for a new main battle tank.²⁸ South Korean firms have also contributed to meeting the surging demand for arms in Southeast Asia, where China's growing military power and assertive territorial stance has been alarming Beijing's neighbors. The sale of the KAI's KT-1 Woongbi and T-50 Golden Eagle supersonic trainer aircraft, jointly developed by KAI and Lockheed Martin, to Indonesia in 2011 made South Korea only the sixth country to export supersonic jets.²⁹ Indonesia has also purchased armored personnel carriers, infantry fighting vehicles, self-propelled howitzers, 16 T-50 trainers, and three Type 209 1,200-ton submarines made by Daewoo Shipbuilding & Marine Engineering, and also agreed to contribute one-fifth of the costs for developing South Korea's experimental next-generation fighter jet.³⁰ South Korean firm LIG Nex1 also plans to sell the latest antisubmarine technology to Indonesia, including

"The ROK's improving civilian information technology, heavy machinery, shipbuilding, and aerospace sectors have made it easier to manufacture more advanced defense systems."

the Blue Shark lightweight torpedo, which is a submarine torpedo that can be deployed by helicopters, ships, and aircraft.³¹ In recent years, Malaysia has spent from \$100 million to \$400 million annually on South Korean arms.³² Last year, South Korea held its first military talks with Vietnam to expand defense cooperation and has bolstered ties with the Philippines.³³ Thailand has also expressed interest in the Surion utility helicopter, developed jointly by KAI and Eurocopter, and the T-50 Jet.³⁴ In October 2013, India signed a contract to buy eight countermeasure ships from South Korea's Kangnam Corp to replace some aging vessels purchased from Russia.³⁵ Meeting Indian demands for technology transfer, under the offset agreements, two ships will be built in Kangnam's naval shipyard in Busan and India's Goa Shipyard will manufacture the remaining six.³⁶ Furthermore, President Park and Philippine President Benigno Aquino III signed a defense industry cooperation in October 2013 that calls for enhanced exchanges in military technology, defense information, and more visits between their military personnel and analysts.³⁷ The Philippines is also looking to spend \$650 million on South Korean frigates.³⁸ Earlier this year, South Korea signed a defense cooperation agreement with Saudi Arabia, perhaps portending an ROK breakthrough in the profitable Middle East arms market that would build on previous large sales to Iraq.³⁹

The FA-50 light combat aircraft is proving to be an especially popular export item in Southeast Asia, with Indonesia in 2011 and now the Philippines seeking an inexpensive plane for close-air support missions. The FA-50 is a light attack variant of the T-50. It can be armed with air-to-air and air-to-surface missiles, machine guns, and precision-guided bombs and its Israel Elta System EL/M-2032 PULSE Doppler radar has a range of 100 kilometers.⁴⁰ Earlier this year, the Philippines announced that it would purchase 12 FA-50s for \$443 million to make up for its lack of fighter aircraft since retiring its fleet of F-5s in 2005.⁴¹



To meet its goal of selling 1,000 FA-50 and T-50 Golden Eagle supersonic trainers during the next 30 years, KAI sees South America as an expanding market.⁴² The DAPA, along with ROK firms, have recognized the potential business opportunities in South America, as these governments seek to replace aging military equipment to enhance security capabilities to keep in pace with economic development.⁴³ Since 2006, South American countries have imported \$48.9 million worth of ROK defense gear including trucks, flak vests, ammunition, and communication devices.⁴⁴ In 2010, DAPA Commissioner Chang Sooman and Colombian Defense Minister Rodrigo Rivera signed a memorandum, which the ROK hopes will help them break into Colombia's emerging defense industry. Colombia is potentially interested in the ROK's tanks, armored vehicles, and guided missiles.⁴⁵ Last November, KAI signed its first aircraft sale in Latin America, when Peru agreed to purchase 20 KT-1 trainers worth \$200 million.⁴⁶ Another Korean firm, Daewoo Shipbuilding Marine Engineering Co. (DMSE) is seeking a bid to modernize a Peruvian naval ship.⁴⁷ Historically, Colombia has had close ties with the U.S. military in order to combat the illegal drug trade, but the ROK's willingness to transfer key technology has enabled Colombia to look for alternative suppliers instead of their traditional client.

In what the ROK administration hopes will be the first of several defense sales to Europe, Polish President Bronislaw Komorowski said he wanted to purchase the T-50 when South Korean President Park Geun-hye visited Poland this October. They also agreed to form a bilateral defense cooperation agreement that could see Poland considering ROK suppliers for planned upgrades to its arsenal of submarines, patrol aircraft, and helicopters.⁴⁸ KAI plans to compete directly with Lockheed Martin for the U.S. Air Force T-X program contract; the Pentagon could pay several billion dollars for the 300 aircraft.⁴⁹ One technique ROK defense firms may employ to further boost their exports is to partner with other developing countries seeking to develop their own defense industries. For example, South Korean firms have shared military technology with Indonesia and partly funded their joint development of jet fighters (KFX/IFX) and 1,400-ton submarines.

However, South Korea's defense industry experienced a significant setback in 2012 when Israel selected Italy's Alenia Aermacchi M-346 rather than the Korea Aerospace Industries' T-50 Golden Trainer for a \$1 billion contract for 30 new supersonic fighter training aircraft.⁵⁰ Another problem has been that China has

objected to some ROK defense sales to the Philippines and may continue to protest ROK defense exports to Vietnam or other countries that have territorial conflicts with Beijing.⁵¹ Furthermore, the ROK's defense industry remains heavily focused on meeting domestic demand. In contrast, other Western countries expend more of their defense production. Exports only account for 7 percent of defense-related trade in Korea. In 2011, South Korea exported \$2.3 billion worth of military equipment, but the defense industry trade deficit amounted to \$8 billion, second only to India.⁵² In addition to South Korea's heavy domestic consumption, ROK firms still lag behind global leaders in some core technologies, which they have to import; these include aviation electronics, flight/armament controls, stealth/composite materials, rotor design, and certification technology related to aviation.⁵³ Defense analysts also call on the ROK government to improve the cost system, exempt exports from royalties, and work with the defense industry to establish a one-stop support service, and take other initiatives to expand exports.⁵⁴

Policy Implications

It is important not to exaggerate the extent of these changes. The United States' grip on the international arms market is declining, while South Korean defense firms are experiencing growth, but the United States still remains the largest international arms dealer, with a 30 percent share of total arms exports in 2012, worth more than \$200 billion, while South Korea imported nearly 12 percent of U.S. arms exports.⁵⁵ Furthermore, the United States is the world's largest supplier of combat aircraft (62 percent of total exports), which happens to be South Korea's major military import.⁵⁶ South Korea is the world's fourth largest arms recipient (5 percent) and 55 percent of its total imports are military aircraft.⁵⁷ Almost 77 percent of the ROK's military aircraft comes from the United States.⁵⁸ The ROK also relies heavily on U.S. firms for surveillance and reconnaissance technology.⁵⁹

South Korea's unexpected decision earlier this year to annul its tender to purchase 60 advanced fighter planes highlights how U.S. companies will often remain the supplier of choice for the most advanced weapons systems. Boeing's F-15 Silent Eagle, an upgraded version of the F-15E, the dominant model in the ROK Air Force, seemed set to win the \$7.7 billion tender in the F-X fighter acquisition program. This is the most expensive defense contract ever offered in the ROK, derived from the need to replace its aging fleet of F-5 and F-6 fighters. Boeing's was the



only bid to fall under the proposed parliamentary budget ceiling, and would be cheaper to maintain thanks to the ROK's earlier Boeing purchases. Boeing also pledged \$2 billion in technology transfer and to buy \$1.5 billion in South Korean aircraft parts as well as build a sophisticated LVC simulator. But the South Korean military insisted on considering the more advanced Lockheed Martin F-35A (aka the Joint Strike Fighter), which is the only genuine fifth-generation fighter (fully stealthy) among those planes on offer. Lockheed Martin also pledged to engage in joint projects with South Korean companies worth more than \$5 billion, transfer considerable technology to ROK manufacturers, and launch a military communication satellite that would be under South Korean control.

The government will now develop a new budget and tender, which may require raising the spending ceiling, lowering the number of planes ordered below 60, or delaying the desired entry into the fleet of the first plane after 2017. Although the conventional combat aviation threat from North Korea is minimal, the ROK military might want the ability to attack North Korean nuclear weapons, mobile missiles, or long-range artillery with conventional manned aircraft as well as its arsenal of ballistic missiles and armed drones. In any case, the ROK Air Force's points of comparison are China and Japan—the latter country is buying the F-35 while China is developing its own stealth fighter. The other F-X competitor, EADS, offered a strong supplementary package along with its Typhoon plane, which included pledging to invest \$2 billion in the KFX (Korea's next jet fighter) project and produce only 7 Typhoons in Europe and the other 53 in South Korea, which would bring technology and jobs to ROK industries. The Typhoon—co-developed by three firms from the four partner countries of Britain, Germany, Italy, and Spain—can perform complicated maneuvers at supersonic speeds but lacks some stealth capabilities, now considered an essential attribute of any top-line air force despite the higher unit costs.⁶⁰ Since the collapse of the deal, Lockheed Martin has taken orders for the F-35 from the Netherlands, Britain, Turkey, Australia, Italy, Norway, and Japan. Given the increased production of the F-35, it is possible that Lockheed Martin will reduce the price of its tender bid.⁶¹ Boeing, for its part, insists that it has not given up and remains engaged with South Korea over the possible sale of F-15 fighters.⁶²

Furthermore, in late October 2013, the ROK announced its intention to purchase 112 Raytheon GEM-T Anti-Tactical Ballistic

Missiles from the United States as it develops the KAMD (Korean Air and Missile Defense) program.⁶³ The GEM-T is an updated version of the PAC-2 system currently in South Korean service.⁶⁴ Pushing forward with KAMD means committing to an independent ROK missile shield, although South Korean officials insist that it will operate in close concert with its American counterpart on the peninsula.⁶⁵

In any case, the recent fighter and missile defense contracts are misleading in that such high-end deals, where only a few Western firms can meet the strenuous demands, will be increasingly rare. To keep the U.S., a defense partner of choice in more competitive tenders, the U.S. treatment of South Korean defense companies could prove critical for the future bilateral defense industrial relationship. The Pentagon purchased more than \$1.1 billion worth of South Korean goods and services in fiscal year 2011, which marked a 12.6 percent increase from the \$991 million for FY2010. South Korea's share of U.S. military procurement rose from 3.5 percent to 4.7 percent during the same period, making the ROK the Pentagon's seventh largest foreign national vendor. However, the defense trade remains heavily balanced in favor of the United States, with South Korea's Defense Acquisition Program Administration continuing to buy major U.S. systems. ROK procurement officials may limit purchases of the U.S.-made F-35, or demand extensive offsets, due to this imbalance. Increased U.S. purchases of South Korean defense articles could lessen pressures on ROK officials to buy non-U.S. military products. Such purchases should also increase support for controversial U.S. defense industrial initiatives, such as its ballistic missile defense program, and help reduce tensions over ROK-U.S. negotiations regarding how much host-nation support South Korea should provide the U.S.

U.S.-ROK competition on third-party defense markets presents less of a problem in terms of alliance relations since their solution is to make U.S. defense exports more competitive in general rather than just against ROK corporations. Although unable to match the quality of some U.S. defense exports, South Korean companies can often win contracts based on their lower costs and greater ability to transfer military technology to potential buyers. Obviously, there are buyers, like the Arab monarchies, who can afford to pay the highest prices for the best quality weapons, and also hope their purchases generate influence in Washington. But many other countries will find South Korean weapons systems of sufficient quality for their needs, and also gain from the ROK's



less restrictive technology transfer policies. But in these respects, South Korean firms are joined by Russian and increasingly Chinese defense companies, which can capture defense markets where the buyer is seeking “good enough” weapons at substantially lower costs than their U.S. competitors and with more generous technology transfer provisions.⁶⁶ In addition to ensuring a level playing field by denying foreign competitors access to unfair subsidies, proprietary information, or proliferation loopholes, meeting this challenge will require U.S. defense corporations to lower their costs, increase their reliability, and support the Obama administration and Congress in their efforts to reform U.S. defense export laws and regulations to make it easier for U.S. firms to transfer widely available military technologies to foreign buyers while still protecting U.S. defense secrets.

Conclusion

Since the end of the Korean War, the United States has been the largest supplier of defense systems to South Korea due to the imperative of maintaining substantial military interoperability with the U.S. armed forces. However, ROK officials have increased the amount of defense equipment, technology, and services that South Korea acquires from non-U.S. sources, with a priority given to domestic suppliers, as part of a general effort to diversify South Korea’s international ties and strengthen the

country’s self-reliance. At first, ROK defense companies’ limited private R&D spending, structural inefficiencies, small number of exportable products, limited competitiveness in foreign markets, and bans on the sale of items with U.S. technology to third countries constrained their actual and potential contributions, but over time ROK firms have overcome many of these obstacles. In addition, the same factors that have enabled South Korea’s industry to substitute for previously imported defense items have made them better able to compete for foreign sales: the growing sophistication and size of South Korea’s civilian economy, the companies’ improving human capital and productivity, mandatory technology transfers and offsets, and extensive ROK government support for the industry. Ensuring that U.S. suppliers remain important partners of South Korea requires addressing ROK complaints that U.S. companies often fail to provide the best deals in terms of cost, performance, and timeliness, and limit South Korea’s access to technologies that are readily provided by alternative suppliers. Although South Korea’s rising arms exports present a challenge for U.S. arms exports, they also offer U.S. firms and the Pentagon opportunities to purchase high-quality ROK defense items and thereby reinforce the traditional U.S.-ROK military alliance as the alliance between the United States and South Korea continues to transform and strengthen.

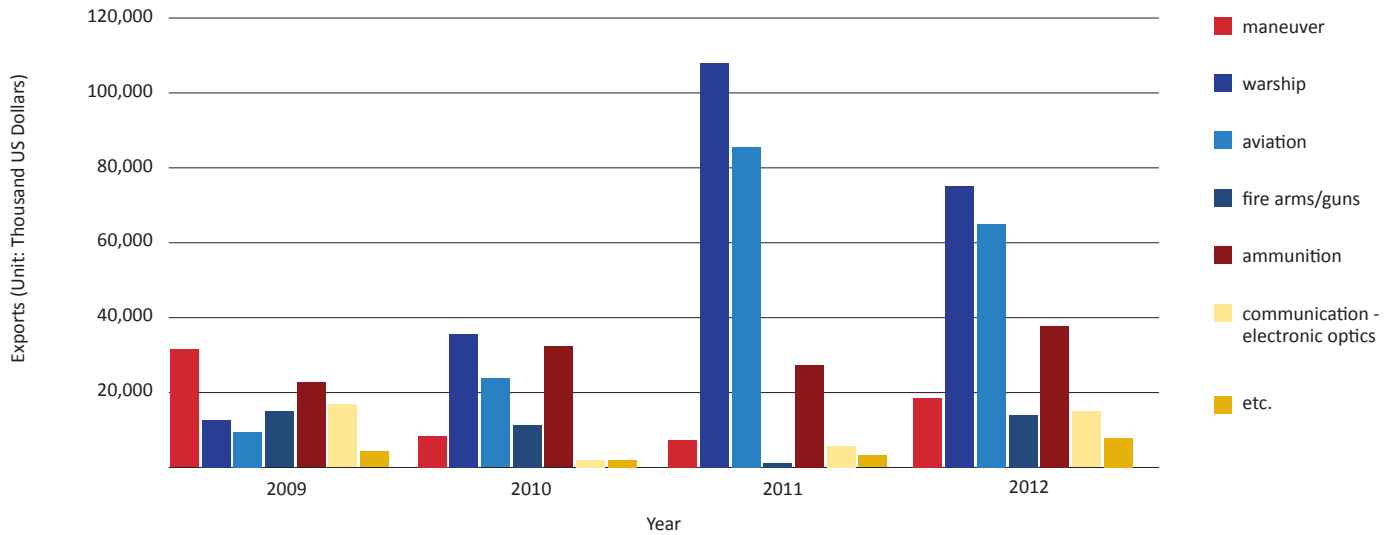
Table 1. Statistics: ROK’s Defense Articles Exports [unit: in US\$ thousands]

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Exports	24,061	41,782	26,234	25,323	84,493	103,144	116,592	118,797	238,195	235,284
Maneuver	2,428	5,406	2,362	1,849	3,783	36,066	32,458	8,490	7,174	19,144
Warship	7,506	14,997	358	0	2	92	13,698	36,548	108,223	75,162
Aviation	6,305	10,352	16,413	10,169	44,028	25,895	9,893	23,780	84,979	65,283
Fire Arms / Guns	3,971	89	2,482	6,581	2,672	10,190	15,907	11,490	1,203	14,582
Ammunition	2,712	8,114	2,611	5,017	28,805	25,796	23,142	33,376	27,295	38,592
Communication- Electronics Optics	25	1,754	76	434	1,125	4,022	17,192	2,591	6,338	14,821
Etc.	1,114	1,071	1,932	1,272	4,077	1,082	4,302	2,522	2,984	7,700

Source: Defense Acquisition Program Administration of ROK

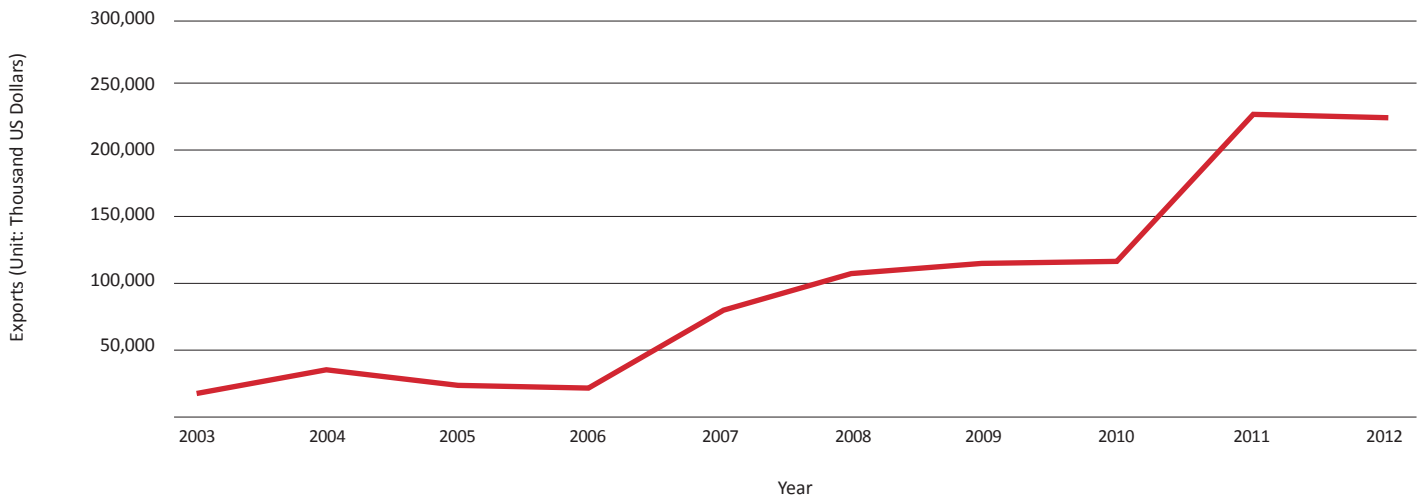


Figure 1: ROK's Defense Articles Exports



Source: Defense Acquisition Program Administration of ROK.

Figure 2: ROK's Defense Articles Exports



Source: Defense Acquisition Program Administration of ROK.



Endnotes

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