Seeking Autonomy: Comparative Analysis of the Japanese & South Korean Defense Sectors

Master’s Thesis

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Abstract

The development of defense technologies has blended economic and national security policies in the postwar era. Many countries have invested heavily in defense industries as a means to stimulate economic gain and technological innovation. However, vibrant defense industries are rarely developed through autonomous production alone. They tread a slow path that often follows shortly behind economic and industrial development, and signals rising players in the international community. However, these developments are often nurtured and influenced by key allies that illuminate both partner’s international and domestic objectives. In this paper I seek to compare the overall historical development of the Japanese and South Korean defense sectors in the post-World War II era. In doing so, I will reveal their technological capabilities, methods for infusing technology into each nation’s defense sector, and finally how these transfers provided the technological foundation for developing defensive autonomy. My findings lead me to argue that the postwar development of both sectors has been path dependent upon the evolution of their diplomatic relationships with the United States. This path has been instrumental in both nations’ economic and technological ascent, but has also been determinant of their abilities and limitations to achieve capability in specific defense technologies. This has led both countries to pursue policy objectives that serve to increase their position within their US partnerships to pursue greater economic and diplomatic interests, even sometimes at the peril of their relationship with the United States.
Dedication

To my mother
Acknowledgements

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Introduction

When Republic of Korea (ROK) President Roh Moo-hyun introduced the Defense Reform Policy 2020 in 2005, he intended to bolster the South Korean defense industry and transform the sector to a more prominent role in the South Korean economy. By expanding defense exports, and reducing personnel levels in favor of heightened technological capability commensurate with its economic strength, the South Korean government sought to transform its defense industry into an “economic asset.” Since the policy’s introduction, South Korea has dramatically increased exports, reaching its peak in 2014 totaling over $3.5 billion (see figure 1). Ambitions to expand its role in the global arms market has long been an objective of the ROK government, but the policy’s pledge to greatly reduce troop totals signaled a commitment to increasing the technological divide between South Korea and its northern adversary. The policy called for the reduction of ROK forces from 680,000 in

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2005 to 500,000 by 2020. To compensate, the government pledged to increase investments in advanced weapons systems in an effort to streamline its defense sector.³

In contrast, Japan has historically not employed its defense industry as a direct instrument of economic gain. This is primarily due to the restrictions of many of its pacifist policies towards defense. Most notably, Japan renounced its right to wage war in its postwar constitution at the behest of the American occupation. Additionally, Japan has undertaken many commensurate policies to bolster the nation’s pacifist stance. For example, Japan enacted a self-imposed a ban on arms exports to all countries since 1970, and placed a 1%GDP cap on all defense expenditures. However, under the leadership of Prime Minister Shinzo Abe, Japan is at the cusp of a new era in national security. Through controversial changes to many of Japan’s aforementioned postwar policies, Abe has sought to propel Japan to a more prominent role in international affairs, and claim a more active role in its alliance with the United States. In light of these changes, Japan has also revealed its intentions to shift its defense industry to a more influential position in the nation’s economy and technological development.

The characteristics determining each nation’s technological capabilities are rooted in economic, diplomatic, and technological conditions that are indicative of their objectives and capabilities. Central to each nation’s postwar technological development is their alliance with the United States. Determining the path through which both Japan and South Korea have reached current levels of defense capability illuminates the characteristics that have shaped each nation’s objectives, as well as their abilities and limitations. These developments are the topic of this essay.

In this paper I seek to compare the overall historical development of the Japanese and South Korean defense sectors in the post-World War II era. In doing so, I will reveal their technological capabilities, methods for infusing technology into each nation’s defense sector, and finally how these transfers provided the technological foundation for developing defensive autonomy. My findings lead me to argue that the postwar development of both sectors has been path dependent upon the evolution of their diplomatic relationships with the United States. This path has been instrumental in both nations’ economic and technological ascent, but has also been determinant of their abilities and limitations to achieve capability in specific defense technologies. This has led both countries to pursue policy objectives that serve to increase their position within their US partnerships to pursue greater economic and diplomatic interests. However, the presence of moral hazard pervades both countries’ relationship with the United States. In the exchange of defense technologies, moral hazards arise when the recipient country lacks the incentive to honor the interests of the opposing state. This problem has manifested itself primarily in the unauthorized export of US technologies and in the development of autonomous defense technologies. These acts imperil US economic and diplomatic interest by threatening its global market share in a number of defense technologies, primarily aircraft, but also through the illicit exchange of US-designed defense technologies to third parties.

**Outline & Structure** – The defense sectors in Japan and South Korea share a series of developmental features that have enabled each to expand technological capabilities. In both cases the role of the United States is essential. The United States’ role in revitalizing
the Japanese and South Korean economies is a familiar notion in East Asian studies, however, it also served as the catalyst for technological advancement in both nations’ defense sectors. No other country has contributed more to the technological basis of both the Japanese and South Korean defense industries than the United States. Since 1950, the United States is responsible for 95% of arms transfers to Japan, and 84% to South Korea.\(^4\) Moreover, just as American conflicts in East Asia (namely the Korean and Vietnam Wars) ushered both countries’ high economic growth periods, they also helped bring about their postwar entry into modern weapons development.

The earliest weapons transfers from the United States reveal much about each nation’s technological foundations in the immediate postwar era. Despite its defeat in the Second World War, Japan maintained a range of technological know-how, as well as extensive experience in arms manufacturing during its imperial era (1868-1945). Conversely, South Korea had little experience in developing technology, serving primarily as an agrarian economy prior to the Korean War. This underlying distinction determined the initial capabilities of each defense sector, limiting the early technological transfers of weapon systems to their initial experience with weapons development.

The alliance with the United States enabled both countries to diffuse sophisticated technology across a variety of industries through the licensed production of American technologies. These licensing agreements extended critical information related to the design and production of US defense equipment that advanced the technological base in each country. By these means, both countries addressed crucial economic, diplomatic and military objectives. Given its prewar technological foundation, Japan was able to

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\(^4\) SIPRI Database for Japan and South Korea, 1950-2015.
integrate more advanced weapons systems into its technological base. By doing so, Japan sought to close the gap with the United States technologically, as well as economically.

Although South Korea began from a lower level of technological sophistication, it also utilized US licenses to initiate technological transfers to its fledgling defense sector. The gains from US technology transfers enabled South Korea to address specific disparities in its capability compared to North Korea. This has enabled the ROK to surpass the North in technological sophistication and defense capability. However, in addition to its fledgling technological base, South Korea’s ability to procure licenses was hampered by a series of disputes regarding its unauthorized transfer of US-designed arms to third parties. This moral hazard led to a decline in licensing agreements between the US and South Korea throughout the 1980s.

Despite the formative gains, relying solely on US technological transfers would be detrimental to the objectives of each nation’s economic and national security interests. Fears of abandonment and entrapment are a common notion in alliance politics. These trepidations stem from concerns that overreliance reduces the client state’s (South Korea or Japan) economic and security objectives by marginalizing its interests in the alliance. Therefore, these anxieties have led to movements to pursue greater autonomy in the defense sector, as well as efforts to reform policies related to defense production. However, in each nation’s attempt to achieve greater clout in its alliance with the United States, the history of each partnership has created obstacles to achieving many of their policy objectives.

This paper’s foundations lie in the scholarship established by Richard Samuels and Michael Green. Both have crafted studies regarding technological innovation,
industrial autonomy, and defense legislation that will serve as key components in this essay. Furthermore, I have used a variety of resources in compiling this study. Government documents, newspapers from the time, and annual reports from relevant defense firms serve as the material basis for my research. Finally, the data used in this study is primarily derived from the Stockholm International Peace Research Institute (SIPRI), an international institute dedicated to researching armaments transfers, expenditures, and weapons development. From here, this paper is divided in the four sections that delineate the following: 1) the postwar industrial and economic foundations in Japan (1945-1952) and South Korea (1954-1968); 2) early American technological transfers from conflicts in East Asia; 2) the use of co-production, licenses and offsets in each nations’ defense sector, and; 3) finally, each countries’ pursuit of autonomy and current reform efforts in the defense sector.
Chapter 1 – Technological Foundations in Japan & South Korea

Prior economic and technological foundations played a pivotal role in determining the degree of sophistication in each country’s ability to develop defense technologies. In this way the disparity of technological know-how in the South Korean and Japanese defense sectors was acutely distinct. The contrast in their initial technological endowments determined the disparate starting points in developing defensive items, and by extension their military capability. With a comparatively extensive history of technological development, Japan far exceeded the capability of South Korea in the postwar era. This initial edge enabled Japan to reap immediate technological gains from US assistance, while US aid nourished a slow postwar recovery in South Korea. These prewar technological endowments had longstanding implications on the level of sophistication each country achieved in developing defense technologies.

Postwar Industry and Economy in Japan – Japan’s concession to the 1945 Potsdam Declaration paralyzed its ability to wage war. The decree closed all former munitions sites and blocked indemnity payments to firms previously engaged in wartime production. The declaration intended to halt Japan’s ability to produce armaments, declaring “Japan shall be permitted to maintain such industries as will sustain her economy…but not those
which would enable her to re-arm for war.” The American occupation enacted these edicts by dismantling arms-related industries and liquidating facilities to be turned over to the government. By dismantling Japan’s wartime industry allied forces initiated a chain reaction whereby Japan’s defense-related firms and financial institutions became burdened with debt, and forced to use their remaining capital as payment. This led many prominent defense firms to either merge, suspend production, or begin new enterprises. Furthermore, the declaration order dramatically reduced all material supply used in defense manufacturing. All aircraft, light metals, and bearing factory facilities were closed, with shipbuilding equipment across Japan reduced to half of its wartime level, and steel production capacity reduced to 2.5 million tons—a level commensurate to its 1926-1930 level.

Despite the arms ban the prewar technological know-how in defense production remained intact. Many of the Japanese innovators responsible for Japan’s postwar technological achievements had their roots in developing Japan’s wartime defense technology. Japan’s wartime engineers were the product of a government effort to develop engineering programs in Japanese universities. These programs produced the men that bolstered Japan’s early aeronautics programs and created the technology Japan used to wage war throughout the 1930s and 1940s. In postwar society, former military engineers found transferrable niches in developing Japan’s railway technology. Many of the challenges faced in developing Japan’s modern railway system were similar to those

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5 “Potsdam Declaration,” accessed March 27, 2016, http://www.ndl.go.jp/constitution/e/etc/c06.html
encountered during the war. For instance, efforts to manufacture lighter railway cars were reminiscent to the challenges faced in designing aircraft during the war. Experts in aerodynamics were also indispensable in developing a design capable of traveling at the requisite speeds desired for the development of Japan’s high-speed train (shinkansen). Therefore, despite the elimination and restriction of defense production in Japan, a fertile base of technological know-how remained.

As the scars of the Second World War began to fade during the late 1940s, the Japanese government resumed defense planning. This effort was most notable in the aeronautics industry. Japanese officials were aware that the postwar hiatus in aircraft development had led to Japan falling behind western powers as jet technology began to pervade postwar defense. Consequently, Japan’s Ministry of International Trade and Industry (MITI) sought to resurrect the nation’s crippled aircraft industry. To do so, MITI sought to revive prewar subsidy programs and take the lead in providing financial and industrial direction to the nascent industry. Months after the American occupation lifted the ban on aircraft production in 1952 the Japanese government passed the Aircraft Manufacturing Law, which made MITI the authority over the entire industry. Removing the aircraft ban brought forward a mass of firms seeking to resume aircraft production. MITI soon began awarding US Air Force repair and maintenance contracts to notable defense firms such as Mitsubishi Heavy Industries (MHI) and Kawasaki Heavy Industries (KHI). These firms showed renewed vigor by investing in the construction of enormous

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facilities dedicated to research and development departments. Even with the interval in aircraft development, MITI’s revival of the aircraft industry showed a renewed vigor that underlay aircraft development in the postwar era.

Entering the postwar era, Japan showed signs of its potential. Endowed with the technological and industrial capacity to resume defense production, Japan was poised to begin incorporating advanced defense weapons systems into its technological base. This prior experience with weapons development would enable Japan to begin from an advanced level.

Postwar Industry and Economy in South Korea – Occupied by the Japanese since 1910, Korea served as a base for Japan’s imperial ambitions. Japan invested in establishing modern infrastructure (roads, bridges and dams) to facilitate the manufacturing of consumer goods for the Japanese market. However, much of Japan’s colonial development came at the expense of the Korean people, who served exclusively as a cheap labor source to Japanese industry. This subjugation offered little transfer of technological know-how to the Korean people. To make matters worse, much of the industrial infrastructure developed by the Japanese was situated in the northern part of the Korean Peninsula, leaving the south largely undeveloped. Consequently, South Korea emerged from the Korean War in 1953 with a primarily agrarian economic history and little experience in technological development. Moreover, subsequent economic policies focused mainly on meeting the demand for import-substitutable consumer goods, protecting domestic manufacturers from open market competition. Consequently, early

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economic policies did little to generate foreign exchange, further impeding the acquisition of foreign technologies and industrial capital.\textsuperscript{10}

However, a military coup in 1961 brought a South Korean army general to power that reversed the country’s economic trajectory. Through a series of incentive-based export policies, Park Chung-hee mobilized South Korean firms and helped build South Korea’s industrial infrastructure. To encourage exports, the South Korean government offered various incentives, such as tax reductions, tariff exemptions, and even financed imports of intermediate goods to firms that performed well.\textsuperscript{11} With state control of the banking system, and thus the flow of domestic investment, the South Korean government allocated funds to industries that showed the most promise.\textsuperscript{12} Park’s export policies proved successful in developing various industries, as firms were able to fill orders while developing their industrial capacity and corporate foundation in tandem. Between 1962 and 1972, South Korea achieved an average annual growth rate of 17.5 percent in manufacturing production, with exports rising from 5 to 20 percent as a share of GNP during the same period. Moreover, manufacturing exports rose from roughly 20 percent to over 80 percent by 1970.\textsuperscript{13} Park’s export-based economic philosophy set the framework for many South Korea’s industries in the subsequent decades, including the defense sector.

\textsuperscript{11} Ibid, 21.
\textsuperscript{13} Michael Brzoska and Thomas Ohlson, eds. \textit{Arms production in the Third World}, (Taylor & Francis Group, 1986) 218.
Despite Park’s economic success during the 1960s South Korea was slow to initiate policies that promoted technological development. Exporting primarily light industrial products, Park’s policies left little room for investment in technological development. More importantly, during this period the United States bore the entirety of South Korea’s defense burden with the share of US military aid to total defense expenditure at more than 100 percent.14 This financial reliance, as well as the security of 40,000 US troops stationed on the Korean Peninsula, created little incentive to begin developing advanced weapons systems.15

The lack of a sufficient technological foundation slowed South Korea’s initial development of its defense industry. Focused primarily on bolstering its economy, South Korea’s early policies sought to develop industry rather than promote technological innovation. Moreover, US aid slowed the development of technological know-how in South Korea, further delaying the formation of an advanced technology base.

14 Chung-in Moon and In-Taek Hyun, “Muddling through security, growth, and welfare: the political economy of defense spending in South Korea,” in Defense, Welfare and Growth, ed. Stave Chan and Alex Mintz, 146.

Chapter 2 – Conflict With a Cause – Early American Technological Transfers

The extensive military and diplomatic relationship with the United States is at the epicenter of both the South Korean and Japanese defense industries. In both cases, the beginnings of the Japanese defense revival and the rudimentary development of South Korea’s are rooted in American conflict. America’s containment strategy brought its armed forces to a number of foreign shores throughout the Cold War period, where it matched its most advanced weapons systems with communist adversaries. However, these US conflicts created a regional technological spillover into Japan and South Korea. These initial technological transfers served as the basis for promoting American interests in the East Asian region. By transferring weapons to South Korea and Japan the United States could create a bulwark against the developing communist bloc in East Asia. The commitment to combatting communism in the region established a commitment that initiated a lasting diplomatic alliance, bolstering a precedent of relying on the United States for assistance in the developing defense technologies.

Japan & the Korean War – On the morning of June 25, 1950, 75,000 soldiers of the Korean People’s Army poured across the 38th parallel driving South Korean forces down the Peninsula, capturing Seoul in less than a week. Two days later, US President Harry Truman deployed US forces on South Korea’s behalf. The US commitment created a
unique opportunity for the Japanese economy. Seeking to exploit Japan’s idle industrial capacity, low labor costs and proximity to the Korean theater, US officials sought to transform the Japanese mainland into a logistical launching point for operations on the Korean Peninsula. This created an immense aggregate demand effect where 70% of Japanese exports were designated for US “special procurement orders,” with Japanese companies meeting demand for everything from munitions to trucks, from cement to mittens.\(^\text{16}\)

Over the course of the Korean War, this demand effect would infuse over $2.5 billion into the Japanese economy.\(^\text{17}\) The economic boom supplemented many of Japan’s arms producers that just a few years before had anticipated their complete dissolution. However, Cold War conflicts on the Korean Peninsula and Asian mainland illuminated a new danger, for postwar Japan: its precarious democracy buffering a newly formed communist bloc. The revelation convinced the United States that a rearmed Japan could bolster its interests in the East Asian region, by serving as a bulwark against the spread of communism in East Asia. Consequently, the American occupation lifted the ban on arms


\(^{17}\) Ibid, 68.
manufacturing in 1952, returning many of the country’s development facilities to Japanese defense manufacturers. In addition to the boost from US procurement orders, weapons sales increased from ¥7 million in 1952 to ¥15 billion in 1954. Furthermore, over three-quarters of US munitions purchases during the Korean War came from 160 revitalized Japanese defense firms.\textsuperscript{18} Fueled by weapons sales to the US, Japanese manufacturers shifted their efforts to producing arms once more and even began expanding production. With the basis of technological know-how firmly established, the Korean War served as the catalyst that mobilized Japan’s underlying potential.

Aside from direct armament procurement, the United States’ subsequent technological transfer to Japan came from the military equipment stockpiled on islands across the Pacific leftover from World War II. Dubbed Operation Roll-up, American military officials saw a cost-effective opportunity in overhauling the multitudes of US military equipment that lay strewn across the South Pacific to supply its troops fighting in the Korean War. In salvage plants reconditioning facilities scattered throughout central Japan, fifty thousand Japanese technicians overhauled and refashioned “the mechanical casualties of war” to fuel the US war effort on the Korean Peninsula.\textsuperscript{19} Occupation forces summoned American engineers to transform former Japanese defense facilities into mammoth production sites. These facilities littered the landscape where cheap Japanese labor merged with American assembly line production to refurbish the equipment that would be used by Allied forces during the Korean War.\textsuperscript{20}

\textsuperscript{18} Samuels, Rich Nation, Strong Army, 139-140.
The project proved immensely effective. The success of Operation Roll-up made the American Occupation Army almost mechanically self-sufficient, and supplied the vast majority of Allied troops materiel during the conflict. According to government figures, about 60 percent of artillery in Korea came from Japanese assembly lines, with 41 percent of the tanks and 71 percent of the infantry weapons. Moreover, the initiative proved extremely cost-effective for the United States. Jeeps that would have cost more than $2,000 to procure from the United States were made from salvage for just $771, while refurbished shovel cranes could be procured for one-fifth the cost of a new one. While America fought the spread of communism in East Asia at a reduced cost, Japanese technicians received firsthand insight into contemporary American defense technology.

The Cold War sparked a competition of technological achievements between the eastern and western blocs being played out on the battlefields of Cold War conflicts. In the North Korean Army, the American military got its first exposure to the progression of the Soviet defense technology since the end of the Second World War. Despite the successes of Operation Roll-up, refurbished equipment could not combat some of the more formidable Soviet technologies. Without proper anti-tank weapons, as well as an adequate counterpart, allied forces lacked essential equipment for combating the North’s heavily armored T-34/85 Soviet tanks. Early in the conflict allied troops pleaded for more heavily armored tanks that could withstand combat with the T-34s. Operation Roll-up proved critical. In their stocks the Japanese had 65 unserviceable M4A3 Sherman tanks. Within three weeks of the initial call, Japanese engineers dispatched 17 refurbished

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21 Schumach “Arms From Salvage.”
22 Ibid.
Sherman tanks with reinforced armor and upgraded its mounted gun to a high velocity 76-mm gun. By the end of the conflict, Japanese technicians restored all 65 tanks, dispatching them to the Korean Peninsula each with requisite upgrades to combat North Korean armored divisions.

For Japan, the Korean War generated growth that pulled the country from economic doldrums of the Second World War. In manufacturing materiel for the American war effort, the conflict mobilized the population and initiated the boom that propelled Japan’s “economic miracle.” In the defense sector, the Korean War resuscitated Japanese defense manufacturing. For the first time since the prewar era, Japanese defense firms were exposed to American weapons systems, offering Japan immediate technological gains across a range of weapons technologies.

South Korea & the Vietnam War – As in Japan, South Korea’s period of high economic growth is partially attributable to US involvement in another Cold War conflict in East Asia. Amidst the success of Park Chung-hee’s economic policies, the South Korean government sought an expanded role in their US partnership by agreeing to deploy South Korean troops to the conflict in Vietnam. Beginning in 1964, the Republic of Korea (ROK) deployed approximately 300,000 troops to Vietnam until the 1973 cease-fire. Moreover, the effectiveness of South Korean troops in combat roles made ROK forces an invaluable element in the US war effort. Like Japan, the conflict created

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an aggregate demand effect that coincided with Park’s export policies. The decision injected over $2 billion into the South Korean economy during the duration of the conflict and yielded additional technological transfers to compensate the ROK’s involvement.25

However, some in the South Korean public opposed ROK involvement in the conflict citing that the Americans underpaid their troops and treated them poorly.26 In exchange for continued ROK military involvement, the South Korean government leveraged this public opposition to gain a number of concessions from the United States. In what later became known as the 1966 Brown Memorandum, US Ambassador Winthrop Brown delivered to the South Korean government a 14-point memorandum to modernize defensive technologies within the South Korean army. The memorandum assured continued ROK support in Vietnam, while extending to South Korea some of the formative elements of its defense industry. The memorandum called for the modernization of Korean armed forces with new weapons; supply of new and special equipment to counter North Korean infiltration; and the prompt availability of financial aid.27 Initially the provision led to only modest improvements in South Korea’s stock of defense technology, such as the supply of US model tanks and M-16 rifles to South Korean forces in Vietnam. However, following a string of North Korean provocations in the late 1960s the US agreed to escalate support to South Korea. Subsequently, in 1970 the US assured one hundred million dollars of military assistance, as well as loans to

26 Ibid, 133.
begin the constructing manufacturing facilities to produce M-16 rifles and 7.62-mm ammunition.\textsuperscript{28}

The decision to deploy troops gave South Korea greater significance in their relations with the United States, behooving the US to ensure the economic stability of its partner. Amid US pressure to normalize relations with Japan, South Korea agreed to do so in return for continued military and economic aid.\textsuperscript{29} Moreover, when South Korea signed the agreement, Japan promised $800 million in grants, government loans, and commercial credit over the subsequent decade as reparations for atrocities committed during its occupation of the region. Additionally, South Korea’s elevated role in the partnership assured many international investors that the United States would defend South Korea against a North Korean invasion.\textsuperscript{30} As a result, foreign investment and capital flooded the South Korean economy, with which to pursue economic and industrial objectives.

South Korea’s role in fighting the Vietnam War also generated technological transfers of second-hand US military equipment as compensation for its involvement. United States transfers included everything from surface-to-air missile systems to patrol vessels. Most importantly, however, was the transfer of F-4 and F-5 jet aircraft technology.\textsuperscript{31} These earliest technology transfers upgraded the technology and equipment within the ROK army for the first time since the Korean War. While these transfers did not generate the level of technological know-how that Operation Roll-up did in Japan the

\textsuperscript{30} Stiglitz, Joseph E., Rethinking the East Asian Miracle, 134.
\textsuperscript{31} SIPRI Trade Register for South Korea, 1950-2015.
early technological transfers significantly increased South Korea’s military capability and yielded the formative elements of Japan’s defense industry. Moreover, Park’s decision to deploy troops to Vietnam showed the US the potential South Korea had as an ally and deepened the bond between the two countries.
Technology transfers through offsets and licensing agreements are the primary means by which most counties incorporate foreign defense technologies into their technological base. These agreements offer a variety of budgetary and economic benefits. For example, these agreements offer the licensee advantages in disproportional R&D expenditures, employment opportunities, and means to control the trade balance by reducing imports. However, most importantly, licensing extends technological know-how, as well as insight into a variety of management and production processes. These advantages help to strengthen a nation’s industrial base, as well as the capability of its domestic industries. This enables licensees to reduce their reliance on foreign imports and direct purchases, enabling them to adapt licensed-based products to meet particular specifications unique to a nation’s defense needs. For Japan and South Korea, their alliances with the United States has allowed them to license a variety of quality defense technologies, and helped to deepen the bonds that each country shares with the United States.

Similarly, offset arrangements have played a key role in the formative development of both the South Korean and Japanese defense industries, either as an alternative or in tandem to licensing agreements. This has led to a variety in offset

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agreements based on different requirements in each country. For example, historically Japanese offsets came from procuring US defense items, which in return allowed Japanese firms to license the defense item. Whereas in South Korea offsets have entailed more industrial, financial, or countertrade compensations for the procurement of US weapons systems. In this way, offsets have played an increasingly prominent role in developing the South Korean defense industry, where currently a mandatory 30-percent of the cost is offset for all major purchases. Offset arrangements offer certain advantages over licensing agreements. By comparison, governments are often less willing to pay licensing premiums, agreeing instead to a higher total cost, dividing the production amongst the two countries. By doing so, each country increases procurement orders and is able to fuel upstart industries, which typically start out producing smaller mechanical components and supplies for larger systems. However, offset agreements for strictly compensatory production incentives often do not entail the same amount of technological transfers that come with licensed production. For example, many licensing agreements include drawings, designs and other data packages that help develop future projects.

Generally, these methods of burden sharing offer many incentives to both nations. Politically, they bind allies closer together to achieve mutually beneficial security and political objectives. Economically, these agreements allow nations better control over their trade balances, as well as helping to create employment opportunities. For example, licensing agreements reduce a countries dependence on imports, while also expanding their technological base. Additionally, the use of offsets creates trade between countries.

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in that they stimulate transactions that are otherwise politically unfeasible. In the case of this study they have deeply integrated US technologies in the Japanese and South Korean technological base. With the US as the progenitor of future Japanese and South Korean technologies, this transfer has also extended the United States a degree of authority over South Korean and Japanese economic and diplomatic pursuits.

**Japan’s Earliest Licensing Programs** – As Japanese politicians sought to bring the American occupation to a close in the early 1950s, American negotiators wanted reassurance that Japan would commit to rearmament in order to bolster the fight against communism. Dependent on American economic aid and security, Japan conceded to American insistence by agreeing to the 1951 San Francisco Peace Treaty. This commitment was incorporated into the treaty, stating, “the United States is presently willing to maintain certain of its armed forces in and about Japan, in the expectation, however, that Japan will itself increasingly assume responsibility for its own defense against direct or indirect aggression.”\(^{35}\) However, US insistence signaled to many Japanese defense firms that the United States represented the most suitable and willing partner in revitalizing defense production in Japan. Members of the US military even approached firms about beginning the production of US weapons systems under license in the early 1950s.\(^{36}\)

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The signing of the Mutual Defense Assistance Agreement (MSA) in 1954 brought Japanese defense firms even closer to American contractors. Although the agreement intended to continue pushing for increased size and capability in the Japanese Self-Defense Forces, the MSA also created the policy framework to begin the production of defense-related technology in Japan. The MSA extended America’s vast technological and financial resources to Japanese defense firms, stating:

“The United States will give every consideration…to procurement in Japan of supplies and equipment to be made available to Japan…and to providing information to and facilitating the training of technicians from Japan’s defense-production industries.”

The agreement set the initial framework that spurred the absorption of American technology in Japan over the next several decades. Under the MSA agreement, the Japanese firms acquired US licenses for the production or co-development of American weapons systems, such as jet aircraft, radar, and missile guidance systems. Between 1950-1983, it is estimated that Japan received over $10 billion worth advanced technology, ranking first globally in licensed production of major defense technologies from 1960-1988. During the same period, Japan received 38 American licenses, but more importantly received them free of license premiums. This meant that Japan obtained US technology at a lower price than directly procuring it from American manufacturers. By conceding to US interests, Japanese firms acquired US technology

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38 “US military co-production programs to assist japan in developing its civilian aircraft industry,” report to the chairman, Subcommittee on Trade, Committee on Ways and Means, Washington March 18, 1982.
through the precedent set forth in the mutual defense treaties of the 1950s. These agreements would establish the initial framework of the industry in the future by lending technological know-how to Japanese defense manufacturers.

There is perhaps no weapons system more representative of Japan’s defensive goals in technological development than in aircraft manufacturing. Since the end of the Second World War, Japan has licensed several US technologies in efforts to reach greater capability in aeronautics. Japan’s experience repairing and overhauling US aircraft during Operation Rollup showed the country’s engineers just how much Japan lagged behind western aerospace technology. As noted earlier, the Japanese government initiated efforts to rebuild the nation’s aircraft manufacturing capability to close this gap. To accomplish this goal the Japanese government enacted the Aircraft Manufacturing Law in 1952 to meet the initial demand for repairing US warplanes during the Korean War, but also to promote a greater understanding of sophisticated aircraft technology.40

Japan’s earliest licensing agreements were born out of MITI’s overhaul and maintenance programs during the Korean War. Through the their involvement in the these program, Japanese firms developed a familiarity with North American Aviation’s (NAA) F-86 fighter, making it a logical choice for Japan’s first licensed aircraft. Regarding the leading contractor, the Japanese government again referred to firms involved in the Korean War’s overhaul programs, choosing MHI as the lead contractor in 1954. Initially, the agreement transferred 28 American-built F-86s under the MSA for training and research purposes. Within a year of landing the agreement, Mitsubishi

produced its first domestically assembled F-86, delivering 300 F-86 aircraft to the Japanese Air Self-Defense Force by 1969.\(^{41}\) The agreement afforded MHI invaluable resources in aircraft development. At the outset of the program in 1956, NAA extended all design drawings, blueprints, and data packages to their Japanese counterpart. A group of MHI engineers also spent several months at NAA’s Los Angeles facilities learning their corporate operations and production practices.\(^{42}\) As one NAA executive stated, “we were paid to put them in business, and we gave them everything we had.”\(^{43}\) It is easy to see the extent that this initial experience in adaptation to American technology had in carrying over to future licensing programs. For example, Japanese firms had to translate all the original designs and drawings to Japanese, in addition to procuring the necessary tools to manufacture American aircraft. This formative experience in adapting to American designs, measurements, and policies established a basis that fostered familiarity in the industry that aided future projects.

Subsequent programs signaled advancement in Japan’s aircraft technology, whereby technology transfers spread to additional firms through licensing other components of the aircraft. In 1959, the Japanese government selected Lockheed Martin’s F-104 as its next licensed design, again choosing MHI as the lead contractor. In contrast to the F-86 program where NAA supplied many of the aircraft’s components for assembly, the F-104 program developed supporting industries. The F-104 agreement also


\(^{43}\) Hall and Johnson, “Transfers of United States aerospace technology to Japan,” 317.
entailed extending licensing contracts to 21 other firms throughout Japan to produce key components of the aircraft, such as the airframe, engine, and missile system.\textsuperscript{44} For example, General Electric and Lockheed Martin both extended licensing agreements along with technical assistance to Ishikawajima-Harima Heavy Industries and KHI for their production of the F-104’s J-79 engine and the aircraft’s airframe, respectively. Moreover, each US firm offered technical assistance programs that dispatched US technicians and engineers to aid in the application of American designs. These technical assistance groups helped adapt the aircraft to meet Japanese requests, for example, by helping Japanese designers create heavier airframe to support additional electrical components in the aircraft’s body.\textsuperscript{45}

These earliest licensing projects demonstrate the degree of technological progress that Japan achieved in a relatively short time. Moreover, the projects demonstrated that Japanese defense firms were enhancing these products. Over the course of the F-104 program in particular Japanese firms achieved a high rate of value added efficiency by using cheaper domestic materials. Additionally, Mitsubishi Electronics made improvements to the aircraft’s electric further lowering the cost of production.\textsuperscript{46} The success of these early programs showed that within twenty years of the Second World War’s end, Japan was closing its technological gap with the United States. Perhaps more encouraging was the United States willingness as an enthusiastic partner, by bearing 67%
of F-86’s total cost and 27% of the F-104’s.\textsuperscript{47} The commitment to developing Japanese technology remained a mutually beneficial undertaking for both the United States and Japan. For the United States, fostering Japan’s defensive capability meant the US could supplement its security interests in East Asia. While in Japan, these technological transfers enabled the country to expand its technological base and expand its defense sector to produce more sophisticated weapons systems.

\textbf{Licensed Production in South Korea} – Due to its lack of industrial foundation the South Korean defense industry began from a much different starting point than Japan. Where Japan’s prewar technological foundation was in capital-intensive weapons systems, South Korea lacked much of the requisite technological basis necessary to develop sophisticated weaponry. Therefore, when the US began issuing licenses to South Korea in the early 1970s, South Korea had little capability to develop much more than the smaller arms granted in the Brown Memorandum. However, as South Korea began licensing products in the 1970s much of its technological objectives were rooted in in shoring up deficiencies compared to the North Korean military. This effort has long influenced the majority of South Korea’s procurement and weapons development efforts.

Aside from the early munitions licenses, South Korea’s first major agreement came in 1976 with Korean Air’s (KAL) licensed production of the Hughes Model 500-MD helicopter. While not as striking as some of Japan’s earliest programs, the 500-MD helicopter marked South Korea’s introduction to domestic aviation and had immediate

spillover to civilian sector where it was produced in larger numbers. Moreover, the agreement supplemented the development of defense technologies outside of aviation. For example, through partnership with Hughes in 1982, KAL sought to upgrade the helicopter’s weapons systems by mounting four anti-tank missiles and upgrading the aircraft’s hydraulics system. However, despite the program’s technological gains it contributed primarily to the civilian sector, providing smaller technology transfers from its weapons upgrades to the defense sector.

Where the 500-MD produced minimal technological transfers, subsequent licenses to produce US military aircraft elevated South Korea’s technological base in aircraft production. By the late 1970s, North Korea’s defense capabilities surpassed those in the South, with greater numbers of tanks, infantry, artillery, and even aircraft. Through arms transfers from China and the Soviet Union, North Korea amassed more than twice the number of aircraft than the South with a wide range in variety. To address this concern, US President Jimmy Carter sought to close the gap by agreeing to license the Northrop F-5E/F to South Korea in 1978. Under the agreement, Samsung Precision Industries co-assembled the F-5E’s engine with assistance from General Electric, although South Korea eventually manufactured 75% of the aircraft’s components.

However, at the outset of the program South Korea lacked the facilities or technological foundation to manufacture more sophisticated components of the aircraft.

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50 Jameson, “F-5 Helps South Korea catch up.”
51 Ibid.
As a result, South Korea found it more practical to procure them directly from the US. Speaking to the lack of industrial infrastructure in the defense sector, KAL Vice President Cho Choong Kun stated, “we could manufacture even the engine on license from General Electric if the Korean government gave us several hundreds of millions of dollars to invest in production facilities…but it’s cheaper, faster and safer to buy engines from the US.” In this way, South Korea’s early aircraft licenses are related more or less to offset programs as a means to absorb technology. Addressing this deficiency, the South Korean government believed that greater involvement with US defense firms would increase the research and development capabilities of its own firms, as well as aiding the interoperability of its forces with the United States.

This notion of working closer with American firms has been a common theme in developing South Korean defense technologies. Given the frequent interoperability of US and ROK forces, South Korea has sought to co-produce technologies under US license. This initiative has matched a key element of US security interests in East Asia, where government officials are more likely to support the transfer of US defense technologies to areas where US troops are stationed. This initiative has led to an active form of collaboration between both South Korea throughout the Cold War era, yielding technological gains to address gaps in ROK military capability compared to the North. This initiative was particularly inherent in developing South Korea’s K-1 tank program. Facing perpetual provocations from North Korea in the late 1970s, ROK-US tank

52 Ibid
technology paled in comparison to the capability, armor, and size of the North’s Soviet-supplied T-54/55 models. With only stocks of Sherman tanks left over from the Second World War, and a depleted supply of its current model the, South Korea undertook the co-development a model based on the M-1 Abrams design with General Dynamics. For the tank’s engine South Korea secured license from the German engine manufacturer MTU Friedrichshafen. The result was the K-1, which forced the North to upgrade its T-62 model, but which was still technologically inferior to the South Korean model.

South Korea’s earliest agreements to manufacture US defense products gave the country its introduction into more advanced weapons systems. Technologies such as the 500-MD helicopter offered valuable research experiences, enabling South Korea to expand production capabilities. However, co-producing the F-5/E fighter and the K-1 tank allowed South Korea to address its most pressing security concern in North Korea. By working alongside the United States, South Korea has increased technology transfers to the ROK while also expanding the functionality of its forces with its greatest ally.

Moral Hazard & Licenses in South Korea – Despite its significance to US security interests in East Asia, South Korea saw a decline in the number of licenses throughout the 1980s. A number of issues stemming directly from a conflict of moral hazard strained US-ROK relations and inhibited South Korea’s ability to acquire US licenses.

55 “Hyundai Rotem K-1” http://www.pmulcahy.com/tanks/south_korean_tanks.html; SIPRI Database of Trade registries between Germany, South Korea, and the United States
56 Ibid.
First, South Korea faced a departure from nearly three decades of American foreign policy. In the past, American policy supported a number of countries simply because of their anti-communist stance. However, seeking to make global human rights a central issue of his foreign policy stance, US President Jimmy Carter sought a break from this policy stance. By 1976, Park Chung-hee had served as dictator of South Korea for nearly 15 years, and with enactment of the 1972 yushin constitution, awarded himself dictatorial powers and declared martial law. Park’s human rights abuses are well known during his presidency, and included such draconian cases as a 72-year-old man being tortured and serving three years in prison for criticizing Park on a public bus in 1974. Despite Park’s past economic successes, his human rights record made him an odd bedfellow for a US president seeking to improve global human rights. Therefore, US policy towards the Korean Peninsula under the Carter administration focused on maintaining a balance between North and South Korea to avoid greater conflicts. For this reason, the US government vetoed the South Korean government’s attempted purchase of McConnell Douglas’s F-16 just prior to the F-5E agreement in 1978. Apprehensive about arming an oppressive dictatorship in a politically volatile region, the US under

President Carter sought only to maintain the balance between the two Koreas rather than extending sophisticated defense technologies.  

However, the most significant limitation came from South Korea’s ambition to enter the international arms trade by selling weapons systems designed by the United States to third parties without US consent. Following the Second World War, the United States sought to take a leading role in monitoring the transfer and sale of arms, beginning with its role in establishing the Coordinating Committee for Multilateral Export Control in 1950. The committee sought to prevent the transfer of arms and dual-use technologies to communist countries in hopes to prevent technological transfers and slow their economies. Given that many East Asian nations lacked advanced industrial capacity at the time of the committee’s creation, let alone competent defense sectors, Japan was the only Asian country to join the committee in 1953 (of course Japan would adopt their own ban on arms exports in the subsequent decade). In contrast, South Korea entertained trade relationship with countries such as China and the Soviet Union, and was intermittently involved in reunification efforts with North Korea. The US perceived these relationships as undermining their anti-communist efforts.

South Korea’s earliest interest in the international arms trade stemmed from government overinvestment in the defense sector in the early 1970s. This led to overproduction in the industry, making overseas sales the primary way to maintain

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60 Ibid.
61 Specifically China, the Soviet Union, as well as many policy initiatives introduced in the 1970s and 1980s seeking to mend relations with North Korea.
workable operation levels. The country’s first arms export occurred in 1974 when the US State Department reportedly granted South Korea export licenses for the sale of co-produced weapons to Malaysia, Cameroon and Kuwait. As a policy objective, the country’s intention was pronounced in its 1980 Partnership Strategy. The policy listed South Korea’s objective in defense production, but specifically noted its intentions to increase arms exports. However, in the early 1980s many US government officials began noting that South Korea had violated existing licensing agreements. The first incident came when South Korea slightly modified fast patrol boats produced under license by Korea Tacoma Marine Industry and exported them to Indonesia without US authorization. However the most notable case is certainly the violation of the country’s agreement to produce M-16s under license originally awarded through the Brown Memorandum. Specifically, South Korea exceeded the agreed upon 600,000 rifles and began offering the excess supply to third parties. The concern came to fruition when Colt representatives saw Korean marketing efforts in Indonesia and protested that it was not receiving its $7-per-rifle royalty payment. The discovery coincided with the privatization of the M-16 deal, where the South Korean government transferred the M-16 production facility to Daewoo Precision Industries. The conflict infuriated US officials. During a 1988 session of the House Armed Services Committee’s Subcommittee on Investigations, 

Congressman Larry Hopkins lambasted the South Koreans: “This ally has not only ripped up and ignored the agreement allowing them to build this weapon, but is now beating us over the heads with it in the world marketplace.” The program would be discontinued in 1983 due to conflicts stemming from royalty payments of these sales to Colt Manufacturing.

Perceiving the ROK’s arms export initiative as a threat to American defense firm’s market share in the global arms trade, the US became increasingly reluctant to authorize licensing agreements to South Korea. The debate over arms exports slowed South Korea’s ability to license American technology from the late 1970s until 1987 when the two countries reached a mutual agreement that precluded the unauthorized transfer of arms and military-related equipment. However, fearing a continuation of ROK sales to third parties, US policy towards technology transfers to South Korea remained cautious throughout the 1980s. Licensing agreements provided the impetus for technological development in South Korea’s defense sector, but dropped dramatically during this period. The strained relationship over unauthorized transfers derailed South Korean technological development for nearly a decade, as licensing agreements fell to only five during the ten-year hiatus, with all but two coming as upgrades to the 500-MD helicopter already in production (see Table 1).

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67 Ibid, 23.
70 SIPRI Trade Register for South Korea, 1950-2015.
domestic aircraft production in 1989 that the South once again began landing licensing agreements from the United States.

<table>
<thead>
<tr>
<th>Weapon Designation</th>
<th>Weapon Description</th>
<th>License Year</th>
</tr>
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<tbody>
<tr>
<td>Hughes-500MD-TOW</td>
<td>Combat Helicopter</td>
<td>1980</td>
</tr>
<tr>
<td>(already under license)</td>
<td></td>
<td></td>
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<tr>
<td>K-1 ROKIT</td>
<td>Tank</td>
<td>1981</td>
</tr>
<tr>
<td>Hughes-500MD-TOW</td>
<td>Combat helicopter</td>
<td>1982</td>
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<tr>
<td>(already under license)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hughes-500D/MD</td>
<td>Light helicopter</td>
<td>1983</td>
</tr>
<tr>
<td>(already under license)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-109A1 155mm</td>
<td>Self-propelled gun</td>
<td>1983</td>
</tr>
</tbody>
</table>

Table 1 – US Licenses granted to South Korea 1978-1988. (Source: SIPRI Trade Registry South Korea, 1950-2015).
Chapter 4 – Autonomous Production & Reform Efforts

In addition to a number of economic and security benefits, the alliance with the United States has afforded South Korea and Japan tremendous technological advancement. However, elements of the partnership have also evoked both nations’ interest in autonomous defense. Both countries’ pursuits of autonomy reflect their reticence towards overreliance on the United States for security and technological development. The issues surrounding the fear of abandonment or entrapment are common in alliance politics with these anxieties evident in both Japan and South Korea’s defense production policy. As Michael Green theorized in *Arming Japan*, these fears develop when politically tenuous states are forced to rely on larger powers for military and economic protection. The fear of entrapment arises when the larger state dominates the economic interests of the smaller one in order to promote its own interests. On the other hand, abandonment results when the more dominant ally abrogates the alliance or withdraws, putting the weaker partner in danger.  

By achieving greater autonomy Japan and South Korea would be able to strengthen their position in the alliance with the United States, and promote a greater share of their interests. In this sense, domestic defense production has significant merits. By strengthening its national defense industries, smaller states are afforded greater freedom in security planning. Autonomy also empowers the smaller state in the alliance

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71 Green, *Arming Japan*, 3.
by extending greater clout in the alliance, and by extension their ability to promote their economic and security interests.\textsuperscript{72}

However, while autonomy offers many benefits to the weaker alliance partner, achieving self-reliance is costly. Oftentimes producing weapons indigenously costs several times more than licensed production or procuring them directly from larger states. Nonetheless, both the Japanese and South Korean governments have shown that they are willing to bear greater costs to achieve autonomy in defense production. Doing so bolsters both countries’ capabilities in relation to regional rivals, but more importantly increases their influence in their partnerships with the United States. These initiatives are best embodied in each nation’s effort to develop indigenous aircraft, which offer comparative insight into the capabilities and objectives of each nation.

\textbf{Japanese Autonomy (\textit{kokusanka})} – The debate over the value of a self-reliant defense sector has been such a frequent topic in Japanese studies that the term “\textit{kokusanka},” meaning “transition to domestic production,” is inevitably linked to the study of the Japanese defense industry. Despite extensive studies of its history, it is difficult to determine the specific moment when \textit{kokusanka}, as it has been an integral part of Japanese defense sector since the end of World War II. Efforts to develop an indigenous military industry were initiated in tandem with the resumption of defense production in the early 1950s. For example, MITI actively lobbied for the development of an indigenous fighter throughout the 1950s, leading to the passage of the Aircraft Promotion

\textsuperscript{72} Ibid, 3.
Law in 1958. As a distinct policy objective, however, the pursuit of autonomy began in 1975 when Japanese Defense Agency Director General, Yasuhiro Nakasone announced that in Japan “it is desirable…to be defended with equipment developed and produced by Japan alone.”

Nakasone reasoned that licensing bred dependence on the licensing country, which inhibited technological innovation. He also asserted that the US would be less willing to extend licensing agreements the more Japan grew economically and technologically. The subject of autonomy proved to be a galvanizing issue. With Japan’s economic and technological ascendancy during the 1960s and 1970s many of Japan’s industrialists and some politicians began to promote the development of indigenous weapons systems. However, many government officials endorsed maintaining the status quo by sacrificing defense autonomy for a closer alliance with United States. They maintained that domestic production prevented interoperability with the United States and create a political conflict between the two allies.

This debate surrounding autonomy pervaded the US-Japan alliance throughout the 1970s and 1980s, with both sides seeking to protect their interests. However, the debates peaked in the 1970s as Japan looked to replace the Mitsubishi F-1 with the country’s first entirely indigenous designed and developed fighter. After years of nurturing the Japanese aircraft industry concerns arose within the United States about losing one of its most

74 Green, *Arming Japan*, 57.
76 John Palmer, " *Nihon no bōei sangyō wa kongo ikanī arubeki ka?* Bōeikenkyūsho kiyō, 12, no. 2 (2010) 118.
loyal customers. Moreover, the United States feared that an economically powerful and technologically advanced Japan would threaten its global dominance in the aircraft industry. To address the concerns, the US often threatened Japan’s economic interests to protect its global market share. Often balking at the sight of a trade war with the United States, Japanese officials have always been quick to back down to US interests. For example, at the 1972 Hawaii Summit, boasting a $3.8 billion trade-imbalance with the United States, Japan agreed to purchase $320 million worth of US aircraft to transfer its dollar holdings back to the US.77 The deal cut into the budget of autonomous aircraft designs, providing a setback for some of the most important projects of the kokusanka initiative.

By the mid-1980s the US trade deficit totaled over $166 billion (three times Japan’s surplus), leading Japan’s Ministry of Finance to pressure the Japanese Defense Agency to import US aircraft to meet its needs.78 Moreover, the Ministry as well as US Congress argued that producing indigenous aircraft would cost three times more than importing similar designs. Conceding to reduce Japan’s dollar holdings, MITI formally requested defense agencies to increase imports from abroad to transfer dollars back to the United States.79 In the subsequent decade economic competition similarly led officials on both sides to link defense with the US-Japan trade relationship. Held under the thumb of the United States, Japan was forced to make critical decisions regarding its national security and economic policy at the behest of US interests.

79 Greene, Arming Japan, 63.
The FSX Program – Perhaps no moment better embodies Japan’s level of technological capability, or epitomizes its contemporary relationship with the United States better than the development of the FSX fighter throughout the 1980s. Closely resembling General Dynamics’ F-16 model, the F-2 (also known as the FSX) was the product of over 20 Japanese subcontractors collaborating to produce Japan’s first indigenously designed fighter aircraft since World War II. As noted earlier Japan had developed aircraft domestically in the mid-1970s with the Mitsubishi F1. However, the aircraft was still largely made up of American-licensed components, and restricted to only day flight due to safety and operational concerns ultimately cutting the program short.80 The F2 would be a wholly indigenous design, marking the ultimate achievement in Japan’s decades of pursuing autonomy.

Again, US government officials suggested that US planes were cheaper and technologically sound, however, they overlooked that the Japanese sought an aircraft designed uniquely for Japan’s defense purposes. First, producing the aircraft domestically afforded Japanese contractors more freedom to coordinate technological development with domestic firms, allowing for greater control over the costs and subcontracting. Moreover, the argument that the US offered an adequate aircraft that met Japanese needs is an oversight. According to US military officers at the time, Japanese officials wanted an aircraft with a larger wingspan than the F-16 capable of taking off and landing on short airstrips more common in Japan. Additionally, the Japanese were seeking an aircraft with a more protective canopy (50% stronger than the F-16 exactly) to handle the volume

80 King and Nowack, "The impact of government policy on technology transfer,” 310.
of large birds native to the northern airspace where the FSX would spend most of its time flying.\textsuperscript{81} Moreover, the reliance on US aircraft meant conforming to systems that required perpetual upgrades, which were otherwise inoperable due to discontinued support for outdated equipment. This reliance forced Japanese manufacturers to purchase the upgraded systems that were out of the control of Japanese firms or government agencies.\textsuperscript{82}

Ultimately US concerns won out and the Japanese agreed to co-develop the aircraft along with United States in 1986. Although Japan was able to incorporate many of its specifications into the design, the final aircraft would be made up of 60-percent Japanese components, and 40-percent US. However, the negotiation was highly contentious with many on both sides feeling that the other received a favorable arrangement. While the US agreed to transfer sensitive technologies from the F-16 to Japan, the agreement was contingent on releasing information on indigenously designed radar and avionics technology.\textsuperscript{83} Despite complications with the United States, the F2 showed that Japan was capable of producing its own aircraft. The achievement elevated Japan’s defense and technological capability to an elite status that few in the world have matched.

Since the completion of the FSX deal tensions regarding aircraft development have remained a tenuous issue between Japan and the United States. Despite a lengthy pursuit of autonomy in the postwar era, intervening US interests have hampered Japan’s

\textsuperscript{82} “Bōei-hi no danmen,” \textit{Asahi Shinbun}, December 19, 1985.
efforts to reach **kokusanka**. However, this obstruction extends back to Japan’s initial efforts to revitalize its defense industry. With the United States as the most instrumental force in reviving the Japanese defense industry, Japan has entrapped itself not only through its pacifist defense policies, but also by interweaving US technologies into its own technological designs. By doing so Japan itself has become a key component of the United States’ own economic and diplomatic interests.

**Reform Efforts in Japan** – Shaped by years of pacifistic limitations, the corporate landscape of the Japanese defense industry is starkly different from that of most advanced nations. Thousands of firms are involved in defense production in Japan, but with only a few substantial players. Although there are some 3,000 firms involved in defense production, only 134 currently hold government contracts according to a 2013 survey by the Japan Association of Defense Industry.\(^{84}\) However, Japan’s most substantial contracts have historically gone to affiliates of either the Mitsubishi Group or Kawasaki Heavy Industries. Since 2006, firms related to these conglomerates have captured between 43.1 and 52.1 percent of Japan’s Ministry of Defense total procurement obligations in each year.\(^{85}\)

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Despite their dominant share, Japanese pacifist defense policies have prevented Japan’s most prolific defense firms from making defense production a more prominent aspect of their business model. Due to the inability to export arms, many Japanese defense firms are solely reliant on the government procurements order for defense products. However, given Japan’s longstanding cap on defense spending at 1%GDP, these contracts are scarce. Procurement orders have long provided only a small portion of firms’ annual sales and revenue. Even Japan’s largest defense firm, MHI, received less than 8.5% of its annual revenue, and 10% of its total sales from government procurement orders between 2006 and 2012. This trend is pronounced amongst most of Japan’s defense firms, with Japan’s top ten contractors receiving 0.2 percent to 11.4 percent of its overall revenue from defense contracts since 2000. This is in great contrast to larger foreign defense firms, such as Lockheed Martin where 78% of its total sales come from defense procurement.

However, with growing global interoperability in developing defense technologies Japanese officials have expressed concern over Japan’s reclusive technological development plan. This concern served as a catalyst to revise the ban on arms exports in 2014. In particular, Japanese Defense Minister, Itsunori Onodera expressed concern that Japan’s exclusion from multilateral weapons development prohibits Japan from incorporating the returns from these undertakings into Japan’s technological base. Moreover, Onodera expressed concern that by preventing the flow of

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87 Archer, “A Contracts-Based Survey of Developments in Japan’s Defense Industry.”
new technology to Japan, Japan’s technological base would regress compared to the rest of the world, resulting in the “Galapagosation” (garapakosu-ka) of Japanese technology. This term refers to the phenomenon whereby technology developed in isolation has only domestic relevance, but is not globally transferrable. This concern provided part of the catalyst to revise Japan’s Principles on Arms Exports Law. As a result, by the lifting the ban on arms exports Abe intended to combine his goals of increasing Japan’s defense capability with his economic strategy. By granting firms the ability to export arms, the Japanese government sought to afford firms greater opportunity to expand their interests abroad, while also creating greater joint-development production. By doing so, the Japanese government hoped to increase Japan’s technological base within the defense industry while also eliciting economic growth. However, the Japanese government sought to implement a “private diversion” (minkan tenyō) strategy where firms would be granted the freedom to explore international markets and conduct research and development for prospective technologies. This meant that the responsibility to expand internationally would fall to individual firms rather than through the financial assistance of the government. As a result, despite the Japanese government’s active willingness to reform its postwar defense doctrine many defense firms have been less willing to cater to state objectives.

Even with the elimination of the arms ban, Japan’s longstanding pacifist procurement process has remained intact slowing firms’ efforts to conform to state objectives. As noted throughout this essay, despite Japan’s 1% ceiling on defense expenditures, Japan has been able to carry out the production of advanced defense technologies. However, this typically prolongs the process of weapons development leading to multiple deferred payments to the contractor. This allows the Japanese government to better control spending and initiate large development programs without making initial large financial commitments. Nevertheless, firms have historically been eager to land procurement orders because they often lead to research and development awards that can be carried over to commercial production. Therefore, by increasing research and development capabilities firms become more likely to land government contracts in the future. Despite revising the ban on arms exports, the government’s financial commitment to increase weapons development has been “sluggish.” Given the greater financial burden that firms must bear in the development of new technologies, Japanese companies have become a less willing participant in defense production. As a result, even with the ban on arms exports lifted, the longstanding 1% ceiling on defense spending has impeded the development of defense technologies.

A bevy of additional reasons have plagued the anticipated increase in Japanese defense development, such as firms’ inexperience with the global arms market and

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91 Chinworth, Inside Japan’s Defense, 57.
concern over public perception. However, the lingering effect of postwar policies influenced initially by the United States has created an environment that complicates such a dramatic shift in the production of defense technologies. The cooperation of Japanese firms is contingent on government support, but with the historical foundation tracing back to early postwar policies retooling the Japanese defense industry has been a challenge thus far.

South Korean Autonomy – By the late 1960s much of the American public had grown tired of taking leading roles in fighting Cold War battles in the name of democracy. As US involvement in the Vietnam War dragged into its tenth year in 1969, US President Richard Nixon introduced a shift in the country’s foreign policy that pushed US allies to bear more regional responsibility and military independence. This change in the United States’ international focus became known as the Nixon Doctrine. Shortly thereafter, the US government announced the National Security Decision Memorandum, which ordered the withdrawal of one full division (approximately 20,000 troops) from the Korean Peninsula.\textsuperscript{93} In order to compensate for the withdrawal of US forces, the United States promised a generous supply of weapons and technology in the ensuing years. However, economic challenges in the United States made large weapons transfers in military aid infeasible.\textsuperscript{94} The development sparked adjustments for many East Asian countries, but in


\textsuperscript{94} Michael Brzoska and Thomas Ohlson, eds., \textit{Arms production in the Third World}, Taylor, 217.
particular in Korea, where the announcement triggered arguably the greatest initiative to expand the country’s independence in military capability.

South Korea’s initial effort in developing indigenous defense sector began with the government funneling resources and investment in much the same way it had expanded other industries. Government assistance allowed defense firms to utilize funds to quickly begin producing defense equipment. Additionally, the Park Administration enacted a number of legal edicts intending to develop autonomous defense production. For example, in 1973 the establishment of the Special Law for the Promotion of Defense Production gave defense firms such incentives as military draft exemption for engineers and skilled workers, special cost accounting for defense contracts, and long-term low interest loans.95 The Park Administration also introduced a new tax to accrue requisite capital for domestic defense industrial development.96 The initial production process gave ample latitude to the Ministry of Defense to identify firms and projects that showed promise. Firms that showed promise were selected by the South Korean government to receive subsidies and other financial assistance.97 Between 1970 and 1979, South Korea showed a dramatic commitment to taking charge of its own defense, increasing defense spending from a modest $491 million to $3.09 billion.98

While both South Korea and Japan have sought to increase the percentage of indigenously manufactured defense products, South Korea’s commitment to autonomy

96 Martin, The Economics of Offsets, 249.
97 Brzoska, Michael, and Thomas Ohlson, eds. Arms production in the Third World, 219-220.
has lapsed at times. Despite the initial push of government assistance during the 1970s, the South Korean defense industry faced challenges in subsequent decades due to inconsistent funding patterns from the United States, but also domestically. For example, during North Korea’s famines of the 1980s and 1990s, the South Korean government chose to commit fewer resources to its defense industry. This led to an idle industry functioning at only 59.9 percent capacity from 1984-1988, according to South Korea’s Industrial Development Institute. Therefore, despite the government’s push towards autonomy throughout the 1970s and 1980s, low rates of production in the 1990s led to financial losses, causing a return to relying on foreign materials and technology. While South Korea’s Ministry of Defense claimed domestic production made up 79% of its weapons procurement in 1994, due to high financial losses in the previous decades, US government estimates claim that only around 20% of the ROK’s procurement is actually derived from domestic production.

The Korean Fighter Program – Much like Japan, South Korea’s pursuit of autonomous defense technology is best embodied in its indigenous aircraft program. Beginning in the early 1980s, the South Korean government began the Korea Fighter Program (KFP), an ambitious plan to create an autonomous aerospace industry through technological transfers by the millennium. Historically aimed at addressing the capability of North, the program was the embodiment of the South’s effort to upgrade its defense capability to a standard commensurate with its economic strength. Much like other advanced nations,

99 Martin, The Economics of Offsets, 250.
100 Martin, The Economics of Offsets, 251.
South Korea sought to pursue more sophisticated technologies with greater economies of force, most succinctly embodied in jet technology. The overall plan, known as the ROKAF 2000 Modernization Initiative, sought the production of several generations of aircraft through offset and licensing agreements with the United States that would lead to the creation of an indigenous fighter.

The initial phases of the program called for the direct procurement of US aircraft. In 1981, South Korea became the first foreign operator of the F-16, purchasing 36 F-16C/D Block 32 Fighting Falcons under the Peace Bridge Program Foreign Military Sales Program. The sale included support equipment, spare parts and training to use the product. The second phase would come in 1989 under the Peace Bridge-2 program when the South Korean government procured 120 General Dynamics’ F-16C Block 50/52. The deal had a considerable amount of controversy surrounding it as South Korea seemed poised to settle terms with McDonnell Douglas’ F/A-18, but instead chose the F-16C. The deal with General Dynamics offered incentives to help nurture the country’s fledgling aeronautics industry, with a significant amount of Korean-made parts used in each aircraft.\textsuperscript{101} Under the agreement, General Dynamics produced the first 12 aircraft, with Samsung assembling 36 from kits, and producing the final 72 under license in South Korea. The deal also gave a significant boost to domestic production with 51\% of the value of the aircraft produced in Korea.\textsuperscript{102}

The deal was groundbreaking for South Korea. Not only did the KFP upgrade the quality of South Korea’s air force, it expanded the technological base of its aircraft

\textsuperscript{102} SIPRI Trade Register for South Korea, 1950-2015.
industry and further antiquated the North Korean military. However, coming in the wake of the Japanese FSX program, the notion of transferring more US technologies to another East Asian ally and prospective economic competitor drew the ire of some American officials. Speaking to the senate floor in 1989, US Senator John Heinz protested the transfer of US aircraft technology to South Korea. The senator underscored South Korea’s trade surplus with the United States and portended future competition with the country’s nascent technological base. The senator contended, “South Korea may not yet be a ‘technically capable foreign competitor,’ but it is precisely this attitude that the US took towards VCRs, TVs, and semiconductors.”\(^{103}\) He warned that the aerospace industry was among the last industries of advanced technology that the US had a commanding lead; it must extend the means to formidable economic threat.\(^{104}\) Other US officials would be terser with their views of the KFP. For example, US senator Alan Dixon famously called the agreement to send South Korea F-16s a “sucker deal” likening it to the “M-16 fiasco.” Dixon would echo the remarks of Heinz, later stating that the transfer was another “step toward once again surrendering US technology and expertise to be used against us.”\(^{105}\)

The legacy of the KFP still pervades South Korea’s pursuit of developing indigenous fighter aircraft, as the US has been unwilling to transfer vital technologies requisite to developing modern fighter aircraft. Alternative procurement options from other countries are either too costly or of inferior quality, leaving South Korea reliant on

\(^{103}\) Floor Statement by US Senator John Heinz on US-Korean Fighter Program (KFP).
\(^{104}\) Ibid.
direct procurement from the United States. As with Japan, the US feared a transfer of its aircraft technology could threaten its economic interests in the future.
Conclusion

The historic path that South Korea and Japan have taken in creating their defense is a common theme in international politics. Specifically, autonomous defense production often follows shortly behind economic and industrial development, and signals rising players in the international community. These trends help to identify the rising powers in the world that will have implications on alliances, regional objectives, and the shift of geostrategic focal points throughout the world.

Through a comparative analysis of Japan and South Korea’s postwar defense sectors, this study has illuminated the impact that each country’s relationship with the United States has had on expanding their technological base and defense capability. In doing so, this study revealed that each country’s course of development has been dependent on its initial role in achieving US interests, with both country’s path influenced by their utility to achieving US objectives in the East Asian region.

While each country’s alliance has elicited significant economic and technological benefits, it has also sealed commitments to mutually sustaining their interests along with those of the United States. From the outset of each country’s US partnership, both Japan and South Korea have pursued policy objectives that have been in line with those of the United States in exchange for defense technologies. However, when these initiatives have strayed or endangered US interests, the United States has been quick to utilize its superior position in the alliance to protect its interests. This has been evident in moral hazard
issues, where either country’s pursuit of autonomy, or South Korea’s unauthorized transfer of US weapons designs has endangered US dominance of defense technologies, as well as its international and political initiatives. Even in current reform policies, the remnants of each country’s formative influence surface, such is the case in Japan’s struggle departing from postwar pacifist policies.

Of course, there are alternative alliance partnerships that each country could pursue. Both countries could ally themselves with China, for example. But no country would offer its most precious defense technologies, let alone defense technology of the quality developed by the United States. In this way, the United States has shown a commitment to these two countries that has influenced the course of each country’s economic wellbeing, technological foundation, and defense capability that will likely continue to bind them together.
References


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