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Master's Thesis of Nam Seung Hyun

Normalizing the Arms Industry
– Analyzing Japan's Arms Export
After the Three Principles on Arms Export Reform –

防衛産業の正常化
– 武器輸出三原則改革後の分析 –

August 2023

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Normalizing the Arms Industry

- Analyzing Japan's Arms Export After the Three Principles on Arms Export Reform -

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Abstract

As Japan's security policies have shifted towards realism, acquiring strategic weapons has become increasingly necessary for Japan's survival in the context of changing global power dynamics and the rise of new regional actors such as the PRC (Peoples Republic of China). Despite these security concerns, Japan's 1% rule and sluggish economic growth have raised concerns about its ability to develop a stable arsenal. The Japanese government under the Abe administration regime implemented several reforms to enable the practical rearmament of the Japan Self-Defense Forces (JSDF): upgrade of the Ministry of Defense (JMOD) in 2003, the Three Principles on Arms Export (TPAE) reform between 2011 and 2014, and the establishment of the Acquisition, Technology, and Logistics Agency (ATLA) in 2015.

Among the list, a notable change was the revision of the Three Principles on Arms Exports (TPAE) to the Three Principles on Transfer of Defense Equipment and Technology (TPDET) in 2014. This reform allowed Japan to export military goods beyond its borders, which was expected from scholars (1) to revitalize the economy and (2) to strengthen the domestic arms industry to support the rearmament of the JSDF.

While this study aims to directly examine the changes that have occurred in the industry and the JSDF since the reform in 2014 until today and is guided by two sub-questions: (1) What are the actual outcomes of recent military reforms to revitalize the domestic arms industry? (2) Did these reforms result in significant practical rearmament of the JSDF? The research suggests two significant changes to the Japanese arms industry to enhance the country's military capabilities and ensure its security in the evolving security landscape of Northeast Asia. Firstly, it proposes the normalization of terminology to establish a common language among industry players and avoid confusion and misunderstandings. Secondly, the study suggests an increase in joint development projects to leverage the strengths of Japanese companies and enhance their competitiveness in the global market.

Keywords: Three Principles on Arms Export (TPAE), Three Principles on Transfer of Defense Equipment and Technology (TPDET), Kokusanka (localization), Joint Development Projects, Mitsubishi Heavy Industries (MHI), SIPRI

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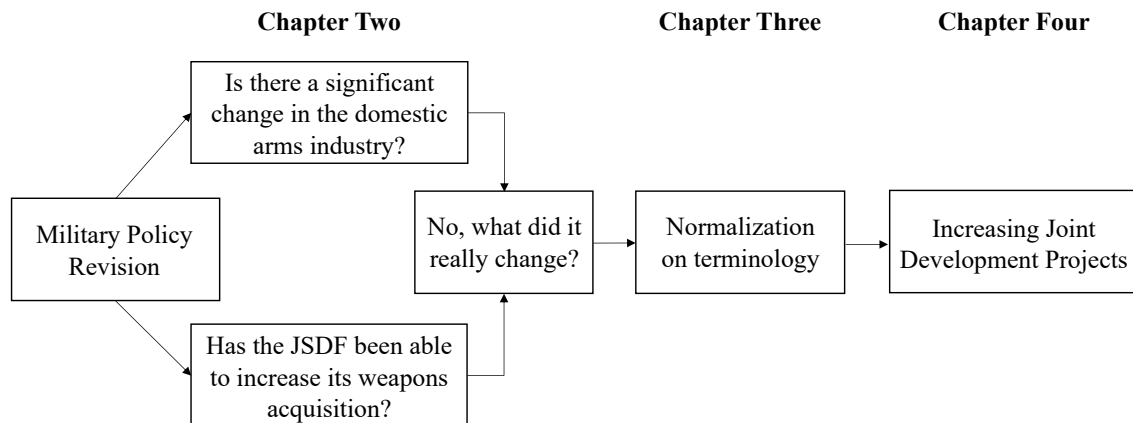
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Chapter 1. Introduction

Figure 1. Stream of dissertation



Reference: Authors' description

The introductory chapter of this research will furnish an exegesis of the study's design, outlining the research questions, hypothesis, and methodology. This chapter will detail how the study has been structured to address the research questions and test the hypothesis, providing a rationale for the chosen approach. By the conclusion of this chapter, readers are designated to have gained a comprehensive understanding of the scope and objectives of the research, as well as the methods employed for data collection and analysis.

Chapter two of this paper delves into (1) The literature review on a complex legacy of the implementation of a self-constraining policy on arms export: Three Principles of Arms Exports (TPAE), (2) the current existing perspectives on the arms export reforms, and (3) an analysis on the status quo after the arms export reform in 2014. By examining historical evidence of the evolution of these policies and the eventual reform of the TPAE. Through an in-depth analysis of this development, the chapter provides the readers with a comprehensive understanding of the background and context of the reforms that followed. Alongside, the focus

shifts to the results of the reform, which was conducted eight years ago until today. This chapter presents a detailed comparison of diverse data sets to demonstrate that the reforms were both assertive and hasty, with limited impact on the Japanese arms industry ecosystem. In the end, this section provides a critical evaluation of the effectiveness of the reforms and identifies the areas where prior scholars have neglected or stopped researching.

Chapters three and four constitute the core of this research, which aims to shed focus on the impact of the 2014 arms export reform on the Japanese arms industry. Specifically, these chapters seek to answer the question of what has changed in the industry since the reform. While Chapter three focuses on the "Normalization of Vocabulary" in the arms industry and Japan's Self-Defense Forces (JSDF), Chapter four investigates the recent trend of joint development projects with foreign arms industries. Together, these chapters provide a nuanced analysis of the changes that have occurred in the industry and present a compelling argument for the significance of the 2014 arms export reform. By presenting concrete examples and empirical evidence, the following two chapters will demonstrate the actual transformations that have taken place in the Japanese arms industry, thus contributing to a more comprehensive understanding of the implications of the reform.

Lastly, chapter five delivers an opinion towards the added discourse from a holistic view.

1-1. Research Background and Research Question

The Japanese government's decision to reform its arms export policy through the 2014 Three Principles on Transfer of Defense Equipment and Technology was met with intense scrutiny from both domestic arms industries and international relations scholars. While the reasons behind this policy change are multifaceted, including the desire to expand arms exports and bolster domestic defense capabilities, it is crucial to examine the implications of the reform for the main actors involved, namely the Japan Self-Defense Forces (JSDF) and the domestic arms industry. Thus, this research seeks to answer the question: "What changes have occurred in the domestic arms industry and JSDF following the 2014 TPAE reform?" In order to fully analyze both actors, the research is guided by two sub-questions: (1) "What are the actual outcomes of the recent military reforms undertaken by the Japanese government to revitalize the domestic arms industry?¹" and (2) "Did these reforms result in practical rearmament of the JSDF in significant numbers?"

After the 2014 TPAE reforms, this decision faced scrutiny from both domestic arms industries and international relations scholars. The reasons for the policy change were multifaceted, including the desire to expand arms exports and bolster domestic defense capabilities. However, it is crucial to examine the implications of this reform for the main actors involved, namely the JSDF and the domestic arms industry. Therefore, this research seeks to answer the question of what changes have occurred in the domestic arms industry and JSDF following the 2014 TPAE reform. In order to fully analyze both actors, the research is guided by two sub-questions: (1) what are the actual outcomes of the recent military reforms undertaken by the Japanese government to revitalize the domestic arms industry, and (2) did these reforms result in practical rearmament of the JSDF in significant numbers?

¹ Mainly focalizes on the reforms on the Three Principles on Arms Export (TPAE) amongst the other military revisions conducted within the 21st century.

This study moves beyond a purely political analysis of the normalization of the JSDF, instead providing a critical examination of whether the reforms have achieved the practical outcomes suggested by previous scholarship. Based on statistical data, it is evident that the military reforms have had limited impact on economic revitalization or foreign sales, and the Japanese arms industry remains largely unchanged. Moreover, foreign arms industries, particularly those involved in strategic weapons development such as fighter aircraft, have retained their logistical reliability. From the results of these findings, this research presents a comprehensive analysis and proposes two significant changes to the Japanese arms industry: the normalization of terminology and a significant increase in joint development projects. Through these measures, the Japanese government can foster greater international cooperation and enhance the country's military capabilities, ensuring its security in the evolving security landscape of Northeast Asia. Normalization of terminology refers to standardizing the use of technical terms and jargon in the domestic arms industry. This would make it easier for domestic companies to communicate with foreign partners and increase the likelihood of successful joint development projects. Additionally, standardization would simplify the process of integrating foreign-made weapons into the JSDF's arsenal. On the other hand, Joint development projects involve collaboration between domestic and foreign arms industries to develop new weapons systems. By pooling resources, expertise, and technologies, joint development projects can produce cutting-edge weapons that neither party could create alone. This approach would not only enhance the JSDF's military capabilities but also promote international cooperation, which is essential in today's complex security environment.

1-2. Methodology and Limitations

The topic of Japan's military reforms and its impact on the country's economy and the international market is a complex and multifaceted issue that requires a thorough and nuanced analysis. This paper aims to contribute to the ongoing discussion on this topic by providing empirical evidence based on secondary data from various reputable sources. The sources used in this research, including the JDA, JMOD, Defense White Paper, and JMOFA, offer valuable insights into Japan's military reforms, their goals, and their outcomes. The SIPRI, JSDF, World Bank Open Database, and Annual Corporation Reports from Mitsubishi Heavy Industries (MHI) also provide valuable statistical data that can help shed light on the impact of these reforms on the economy and the arms industry. By utilizing these sources, this research seeks to demonstrate that Japan's military reforms have not achieved the expected economic revitalization and that the international market participants remain unchanged. Moreover, this paper aims to determine whether the rearmament of the JSDF was a hasty or assertive move by comparing the fighter aircraft in the Northeast Asian region. The timeline of 2000 to 2023² is carefully chosen to offer a comprehensive and up-to-date analysis of the status quo of Japan's military reforms and the development of its arms industry. This research identifies significant changes resulting from the military reforms and proposes a fresh perspective on acquiring arms from the JSDF.

In the modern era, Japan has developed into a major player in the global arms trade, with a focus on producing high-quality, cutting-edge technology in areas such as electronics, aerospace, and robotics. Japan's arms industry has been critical to the country's defense policy, given its status as an island nation with a history of being surrounded by hostile powers. However,

² The reasons for having such time span are due to the limitation of data in existence. (1) JMOD Defense whitepaper: 2000 to 2022 (2) MHI annual reports: 2006 to 2022; (3) SIPRI's survey on 'Top 100 arms industries': 2002-2022, etc.

Especially, as the TPAE have been gradually reforming itself, the first critical wave of change has happened in 2002 after the BMD

understanding the Japanese arms industry can be challenging, given the two main limitations of available research.

The first limitation is that the research focuses primarily on a handful of industries dominating the Japanese arms market, while a vast majority of the approximately 4,000 arms producers in the country are left out. This means that while the research provides insights into some aspects of the industry, it may not offer a comprehensive overview of the industry as a whole. Policymakers and analysts need to keep this limitation in mind while assessing Japan's capabilities and role in international security.

The second limitation is that the credibility of the data remains questionable due to the discrete nature of arms exports. While the data comes from reliable institutions such as JMOD, JMOFA, JMETI, SIPRI, and the World Bank, there is always a possibility that countries may not report their exports accurately, leading to discrepancies in the data. This is a common issue in the arms trade, where countries may under-report or misreport their exports for various reasons, such as avoiding scrutiny from human rights organizations or circumventing export restrictions. As a result, the data used in the research may not accurately reflect the true state of the Japanese arms industry.

To further elaborate on the limitations, this paper adopts a mixed-methods to understand the industry's current state and future trajectory. Through the qualitative component of the research, the researchers can gain a deeper understanding of the actors involved in the industry and their decision-making processes. They can also explore the perceptions and attitudes of key stakeholders towards the industry, including the general public, government officials, and arms manufacturers. Meanwhile, the quantitative component of the research enables the researchers to analyze the industry's statistical data and objectively measure its size, growth, and trends. This information can help identify the strengths, weaknesses, opportunities, and threats of the industry, which can inform policy decisions and business strategies. Furthermore, by analyzing the international arms market, the researchers can gain insights into Japan's position in the global arms trade and how it compares to other countries. Ultimately, the mixed-methods approach

allows for a more comprehensive and nuanced understanding of the Japanese arms industry. By combining qualitative and quantitative data, the researchers can triangulate their findings and draw more robust conclusions. This approach can also help overcome the limitations of using only one method and enhance the credibility and validity of the research.

Additionally, in support of the credibility of the data selection, prior scholars such as Andwre Oros (2017), Sheila A. Smith (2019), Alexandra Sakaki & Sebastian Maslow (2020), Samuel Bergenwall, Kaan Korkmaz, and John Rydqvist (2016) have also utilized data from the same institutions mentioned in the paper. Despite the lack of usage in the international relations sector, Flight International, which is frequently cited in aerospace and aviation studies³, was a well-fit source to display the current status quo of military strength as the research focalizes on the air force.

³ Harrison, M. J. (2015). The Impact of Open Skies Agreements on Airline Competition: An Event Study Analysis. *Journal of Air Transport Management*, 48, 1-10.

Boon, W. P., & Lei, Z. (2019). Comparative analysis of airline strategic alliances: Evidence from the US and China. *Journal of Air Transport Management*, 74, 58-68.

Hanlon, P. (2015). The airline industry and the impacts of deregulation. *Journal of Transport Economics and Policy*, 49(2), 262-281.

1-3. Puzzle

The announcement of the TPAE reform by the Japanese government stirred a response that was anything but welcoming from neighboring countries. The growing capacity of the JSDF immediately raised concerns about Japan's historical imperialist actions, prompting post-colonial states such as the PRC, ROK, and DPRK to express profound apprehension about the potential implications of this reform. Media outlets extensively covered the reform, emphasizing its significance as a milestone in Japan's ongoing process of normalization and speculating on whether it could ultimately lead to a revision of the peace constitution. Despite the apprehensions voiced by external parties, it is worth noting that the actual impact of the TPAE revision has been relatively limited over the past nine years. Notably, there have been no indications or reports of arms exports through mass media channels. In addition, the academical discourse has mostly halted near 2014. Instead, what has been consistently highlighted by the domestic mass media is a critical assessment of the competitiveness of the domestic arms industry in blaming the failure of arms export. This suggests that while the TPAE revision did create a more favorable environment for arms exports, tangible changes resulting from this reform have yet to materialize. However, what has reignited the discourse surrounding the TPAE revision is an altogether different catalyst: the technological effusion witnessed during the Ukrainian war. Recent reports from Japanese mass media outlets have shed light on the insufficiency of the newly implemented TPDET in effectively controlling exports that could potentially be utilized for controversial purposes. This revelation has raised concerns about the necessity for further measures and tighter regulations to ensure responsible and ethical arms trade practices. By exploring the evolving dynamics of the TPAE reform and its reception, it becomes clear that while external skepticism and concerns were initially dominant, the actual impact on arms exports has been relatively subdued. However, a fresh trigger in the form of technological advancements witnessed in conflicts abroad has brought attention back to the revision and raised important questions about the effectiveness of current export control mechanisms.

This paper aims to unravel the current state of the TPAE revision, tracing its developments from 2014 to the present day. In doing so, it not only builds upon the existing academic discourse surrounding this topic but also delves into a practical analysis of the tangible factors that have shaped Japan's bold movement towards rearmament. By examining the evolution of the TPAE revision, this paper seeks to shed light on its current status and provide a comprehensive understanding of the various influences at play. It goes beyond theoretical discussions by exploring the practical implications and real-world consequences of Japan's decision to pursue rearmament. Furthermore, this paper seeks to amplify the existing discourse surrounding the TPAE revision. While previous scholarly works have laid the groundwork for understanding this complex phenomenon, this paper takes a step further by offering a more detailed and nuanced analysis. It seeks to fill the gaps in existing knowledge by providing fresh insights into the factors that have influenced and continue to influence Japan's bold approach to rearmament. By combining theoretical perspectives with practical analysis, this paper offers a comprehensive and up-to-date assessment of the TPAE revision. It aims to contribute to the ongoing scholarly conversation while providing a deeper understanding of the complex dynamics that have shaped Japan's rearmament efforts.

Chapter 2. Evolution and Results of a Self-binding Arms Export Policy

Taking an ahistorical approach, the end of the Pacific theater in 1945 marked a monumental turning point for Japan. In an effort to create a peaceful nation, Japan's constitution and legislation underwent significant reinvention. Article 9 of the peace constitution included a ban on the use of force as a tool for national interest and prohibited Japan from possessing a military in the form of land, sea, and air. Simultaneously, the General Headquarters (GHQ) dismantled the Zaibatsu⁴ economy and its military productions to prevent the possibility of another war and gather intelligence. While there were mixed reactions domestically (Park, 2014⁵), the GHQ conducted numerous democratic reforms⁶, and new leadership emerged to govern Japan. The first Prime Minister, Yoshida Shigeru⁷, was elected despite his controversial background as a bureaucrat rather than a politician. PM Yoshida Shigeru's foreign background has led to the implementation of the infamous Yoshida Doctrine as one of Japan's main diplomatic agendas. The Yoshida Doctrine aligned with the peace constitution and guided mainstream policies towards adopting pacifist values by relying on military protection from the United States and extorting economic prosperity domestically. With the protection of the United States(U.S.), Japan's economic revitalization was successful, and its international role was solidified in the global economy.

⁴ Family-owned conglomerates in Japan. Mitsubishi, Sumitomo, and Mitsui are representative examples.

⁵ Page 46-47

⁶ Dower, J. W. (1999). *Embracing defeat: Japan in the wake of World War II*. New York, W.W. Norton & Co. Chapter 2. Gifts from heaven

⁷ Served as the foreign minister in Sweden, Norway, Denmark and the U.K until the surrender of Imperial Japan. (Britannica, 2022)

As a reaction to the Yoshida Doctrine, the Japanese government has adopted the TPAE as a symbolic yet constraining arms export policy in achieving its national interest. While arms export has a long history, it is essential to understand and observe how it has been evolving over the past sixty years of change. This chapter will be divided into three sections to fully grasp the status quo of the TPAE reform of 2014. Section 2-1 will provide an ahistorical explanation of the 2014 TPAE reform and prior existing scholars' opinions on the reform. Section 2-2 and 2-3 analyzes the status quo of the domestic arms industry and JASDF to rather confirm whether the prior existing prospects were right or wrong. Lastly, from a holistic view, section 2-4 intends to provide a summary of this chapter and a transition toward the next chapter.

2-1. Three Principles on Arms Exports (TPAE)

In the aftermath of World War II, Japan found itself in a unique position as a defeated country, occupied by the Allied Powers, and with a new constitution that emphasized pacifism and democratic principles. Despite these challenges, Japan rapidly rebuilt its economy and became a key ally of the United States during the early stages of the Cold War. However, this alliance with the U.S. also meant that Japan was called upon to contribute to the defense of the free world. This created a dilemma for Japanese leadership, who were wary of becoming involved in military conflicts and instead focused on economic growth and development. The Yoshida doctrine mentioned above emphasized the importance of economic development and neutrality in international affairs, and advocated for a restrained military posture. This policy was largely successful, and Japan was able to maintain its neutrality during the Korean War and other international conflicts. However, as the Cold War intensified and the threat of communist expansion grew, Japan was increasingly pressured by the U.S. to play a more active role in defense. This led to the introduction of a series of self-binding strategies that restricted Japan's ability to develop a military or export arms internationally. One of these strategies was the TPAE, which was introduced by Prime Minister Eisaku Satō. This policy aimed to restrict Japan's arms exports to foreign countries and has been seen by some as a pacifist policy aligned with Japan's national interest. On the mark, scholars argue that it removed the obligation to aid and export military goods to foreign countries allowing the Yoshida Doctrine to 'Entrench' (Chai, 1997)⁸. Despite the ongoing debate over the effectiveness and purpose of these policies, Japan has continued to prioritize economic development and pacifism in its foreign policy and is constrained from responsibility in the global security.

⁸ Page 400

2-1-1. COCOM, TPAE, and the Three Principles on Defense Equipment and Technology

The issue of arms exports is a complex and multifaceted one, and the TPAE is just one piece of the puzzle. It is important to understand the historical and geopolitical context in which the TPAE was developed and how it fits into the larger picture of arms control and export restrictions. As mentioned, COCOM played a significant role in shaping the TPAE and Japan's overall approach to arms exports. COCOM was established in the aftermath of World War II when the United States and its Western allies sought to limit the flow of sensitive technology and military equipment to the Soviet Union and its allies. The organization operated on the basis of consensus among its members, who agreed to coordinate their export control policies and share information about sensitive technologies. COCOM's membership included many of the world's leading industrial powers, such as the United States, the United Kingdom, France, and West Germany. Japan's participation in COCOM was driven largely by external pressures. As a defeated power in World War II, Japan was subject to the occupation and control of the Allied forces, who were keen to prevent the country from rearming or becoming a threat to regional security. Joining COCOM was seen as a way for Japan to demonstrate its willingness to cooperate with the Western powers and avoid further sanctions or restrictions. However, Japan's participation in COCOM also had significant domestic implications (Andrew Oros, 2008; Keiichiro Tomita, 2011; Sato Heigo. 2014). As a major exporter of high-tech goods and machinery, Japan's inclusion in the organization meant that it had to comply with strict export controls on a wide range of goods. This had an impact on Japan's domestic economy and industrial policy, as companies and policymakers had to navigate a complex web of regulations and restrictions. Against this backdrop, the TPAE can be seen as a response to both external and internal pressures. The Japanese government was under pressure from the United States and other Western powers to tighten its export controls and prevent the proliferation of sensitive technology and weapons. At the same time, there were concerns within Japan about the potential risks and

costs of exporting arms and other military equipment. The TPAE was developed as a way to balance these competing interests and establish a framework for responsible arms exports.

Table 1. Three Principles on Arms Export (1967)

#	TPAE (1967)	COCOM (1949) ⁹
1	Communist bloc countries	All exports under the ‘COCOM list’ is banned to the USSR and other Communist countries.
2	Countries subject to "arms" exports embargo under the United Nations Security Council's resolutions	
3	Countries involved in or are likely to be involved in international conflicts.	The COCOM list includes (1) General products and (2) Munition products. The general list includes items of both civil and military technology. On the other hand, the munition list includes military-specific items.

Reference: Authors’ description from Keiichiro Tomita. (2011), Sato Heigo. (2014), JMOD. (2014), JMOFA. (2015)

The TPAE was a set of guidelines established by the Japanese government in 1967 to regulate its arms exports. By dissecting the principles individually, the first principle stated that Japan would not export weapons to communist bloc countries or countries subject to UN arms embargoes. The second principle stipulated that Japan would not export weapons to any country that could potentially use them for aggression. The third principle placed strict limitations on the transfer of military products both within and outside Japan's borders, specifically targeting countries at risk of conflict. During the Cold War, the first two principals were fully aligned with the interests of

⁹ Japan was a participating country from the year of 1952

the United States and its allies. As one of the four permanent members¹⁰ of the UN Security Council, were aligned actors to the interests of the U.S. in post-war international politics. Article 27 of the UN Charter gave the five permanent members veto power over UN resolutions, making it impossible for any resolution to pass without their approval. The first two principles of the Three Principles on Arms Exports served to limit the spread of arms to potential adversaries of the U.S. and its allies, aligning with their strategic objectives. The third principle, however, was unique in that it was driven by Japan's own security concerns. As a pacifist country, Japan was wary of being dragged into conflicts and wanted to maintain a low profile in international affairs. The third principle placed strict limitations on the transfer of military products both within and outside Japan's borders, serving as a seawall to protect Japan from unwanted attention and preventing Japan from becoming involved in conflicts. By balancing its interests with its alliance with the U.S. and its desire for economic growth, Japan was able to maintain its pacifist status while enhancing its military capabilities and developing its economy (Chai, 1997). Japan's strict adherence to the Three Principles on Arms Exports allowed it to become a leading producer of civilian technology while preventing the proliferation of weapons to countries at risk of conflict.

In 1976, Japan further tightened its restrictions on arms exports under the leadership of PM Miki Takeo. The government added substantive clauses to completely block any channels for exporting military products (Tomita, 2011; Sato, 2014). The new restrictions were put in place to protect Japan's high-end domestic technology¹¹ from potential competitors in the international market. This move further solidified Japan's commitment to the principles of pacifism and non-aggression, which are ingrained in its post-World War II constitution and political environment (Dower, 1999; Park, 2014). The Three Principles on Arms Exports and the subsequent

¹⁰ U.K., France, U.S., Republic of China (Taiwan), and the Russian Federation. Republic of China was removed from status after the 2758 resolution in the year of 1971.

¹¹ This includes nuclear-related technologies, equipment in creating military weapons, and sensitive technology.

strengthening of Japan's arms export policy demonstrate the country's continued commitment to peace and stability, both domestically and internationally.

Table 2. Comparison of the TPAE and renewed TPAE

#	TPAE (1967)	Renewed TPAE (1976)
1	Communist bloc countries	Inherits the previous three principles implemented by Eisaku Satō's cabinet
2	Countries subject to "arms" exports embargo under the United Nations Security Council's resolutions	Restricts exports to foreign locations without government approval
3	Countries involved in or are likely to be involved in international conflicts	Under the monitoring of the JMETI, Japan's arms exports are under the jurisdiction of the Foreign Exchange and Foreign Trade Law ¹² . This is to clarify the classification of the products itself

Reference: Authors' description from Keiichiro Tomita. (2011), Sato Heigo. (2014), JMOD. (2014), JMOFA. (2015)

The renewed TPAE in 1976 was a significant moment in Japan's post-war history that has had lasting impacts on the country's economic and political trajectory. The law, which was initially established in 1967, came in response to widespread protests against Japan's involvement in the Vietnam War. The law aimed to regulate the export of arms and related goods to prevent the country from being drawn into future conflicts. The renewed TPAE built on the principles of the original law and further restricted arms exports to foreign locations without government approval. One of the key outcomes of the renewed TPAE was its role in fortifying the Yoshida doctrine, which prioritized Japan's economic growth over military expansion. This doctrine was named after former Prime Minister Shigeru Yoshida, who led Japan's post-war reconstruction efforts.

¹² Refer to Appendix 1 for detailed categorization on arms products.

The clarified bans and restrictions on arms exports allowed the Japanese government to focus on developing its economic capacity without risking military entanglements. The TPAE also played a significant role in solidifying Japan's commitment to pacifism and non-aggression. By restricting the export of arms and military technology, Japan demonstrated its commitment to promoting global stability and preventing conflicts. This commitment to pacifism has been a defining feature of Japan's post-war foreign policy and has helped the country to build strong relationships with other nations around the world. The renewed TPAE was also notable for its clear classification of products and the placement of Japan's arms exports under the jurisdiction of the Foreign Exchange and Foreign Trade Law. This helped to ensure that the export of arms and military technology was carefully monitored and controlled, reducing the risk of these products falling into the wrong hands.

After the implementation of the TPAE was a landmark decision in Japan's post-war history. It reflected the country's pacifist ideals and commitment to non-aggression, as well as its desire to focus on economic development and recovery. Under the TPAE, Japan imposed strict restrictions on the export of arms and related technologies, allowing only for the transfer of non-lethal equipment and materials in support of peacekeeping operations or other humanitarian efforts. For decades, the TPAE served as a cornerstone of Japan's foreign policy, shaping its relationships with other nations and influencing its strategic priorities. However, in recent years, the global security landscape has undergone significant changes, prompting Japan to re-evaluate its stance on arms exports. With the rise of new threats, including the proliferation of nuclear weapons, cyber-attacks, and terrorism, Japan's security interests have become increasingly complex and multifaceted. Furthermore, the country's regional environment has become more volatile, with neighboring nations rapidly increasing their military capabilities and engaging in territorial disputes. As Japan's closest allies also face their own security challenges, Japan's role in regional and global security has become more significant. In this context, the need for a robust arms industry has become apparent. Developing such an industry would not only serve Japan's long-term self-help strategies but also stimulate growth in the heavy industry sector, which has

been experiencing sluggish growth. A strong domestic arms industry would also enable Japan to reduce its reliance on foreign suppliers and better control the quality and cost of its defense equipment. Given these circumstances, the Japanese government has introduced the TPDET to replace the TPAE. The TPDET represents a significant departure from the TPAE, as it permits exports on a case-by-case basis and accommodates peace initiatives. The new principles also distinguish between dual-use technologies, which can be used for both civilian and military purposes, and strictly military equipment. The TPDET's more flexible and adaptable framework reflects Japan's recognition of the evolving security landscape and the need for a more dynamic approach to arms exports. By allowing for situational interpretations, the TPDET acknowledges that security threats can vary depending on the circumstances and requires a more nuanced response. At the same time, the TPDET maintains Japan's commitment to peace and stability, ensuring that exports are subject to rigorous scrutiny and adhere to international norms.

Table 3. Comparison of the TPAE and TPDET

#	TPAE (1967)	TPDET (2014)
1	Communist bloc countries	Cases where transfers are prohibited (clarification of standards) ¹³
2	Countries subject to "arms" exports embargo under the United Nations Security Council's resolutions	Limitation to cases where transfers may be permitted (securing transparency and conducting strict examination) ¹⁴
3	Countries involved in or are likely to be involved in international conflicts.	Limitation to cases where appropriate control regarding extra-purpose use and transfer to third parties is permitted

Reference: Authors' description from JMOFA (2022)

Based on the information provided, it is evident that the revision of the TPAE occurred abruptly without proper transition. However, recent research has shed light on the fact that exceptions were added to the TPAE beginning in 1983, amounting to a total of 21 exceptions¹⁵ (Jang et al., 2018). The addition of these exceptions has blurred the original intentions of the TPAE to ban arms exports, raising questions about its effectiveness. Eventually, the replacement of the TPAE with the TPDET was inevitable, given the changes in the international environment and the collapse of the USSR. With the fall of the USSR, the Coordinating Committee for Multilateral Export Controls (COCOM) lost its purpose and identity, forcing it to reform itself with new charters to adapt to the changing environment. Consequently, the Wassenaar Arrangement on Exports for Conventional Arms and Dual-Use Goods and Technologies replaced the COCOM in 1996

¹³ (1) Export/transfer of arms are prohibited when it violates any participating international agreements: Chemical Weapons Convention, Convention on Cluster Munitions, the Anti-Personnel Mines Ban Treaty (Ottawa Treaty), and the Arms Trade Treaty, etc.

(2) Export/transfer of arms are prohibited which violates the UN Security Council resolution

(3) Export/transfer of arms are prohibited to a conflict related country

¹⁴ (A) Export/transfer of arms are permitted if the country is contributing towards peace

(B) Export/transfer of arms are permitted to countries which contributes to Japan's security

¹⁵ Refer to Appendix 1 for details on the exceptions

(Wassenaar Arrangement, 2023). From a narrow point of view, the first principle of the TPAE, which involved export bans on communist bloc countries, lost its relevance as the communist bloc crumbled, rendering the policy partially ineffective. The 21 exceptions added to the TPAE further complicated the matter and raised questions about the effectiveness of the policy.

Whilst the TPAE reform has numerous changes towards the export policies of Japan, this paper intends to focus on to four categories of export: ‘Weapons made by Japan’, Weapons made by multiple countries including Japan, Weapon transfer to allies, Weapon Joint Development projects. After the 2014 reform, the newly implemented TPDET has provided the Japanese arms industries to enhance its exporting opportunities under the four situations mentioned above.

Table 4. Changes made after the TPAE reform to TPDET

	Weapons made by Japan	Weapons made by multiple countries including Japan	Weapon transfer to Allies	Weapon Joint Development
TPAE	Domestic usage only	Domestic usage only / Cannot be exported with an exception of the U.S	Impossible	Only allowed with the U.S.
TPDET	Can be exported with the censorship of TPDET	Can be exported to all countries with the censorship of TPDET	Possible with the permit of the NSC and monitoring standards of the TPDET	Can be expanded to all allied states

Reference: Author’s Description

The table presented above offers a comprehensive and illuminating overview of the various changes that were implemented following the TPAE reform. This revision primarily aimed to enhance Japan's arms exports, shifting the focus from physical arms exports to a broader emphasis on the transfer of weapons through the introduction of the TPDET. This fundamental change in approach underscores the reform's dual objective of bolstering arms exports while simultaneously

strengthening strategic capabilities for joint operations. Upon closer examination of the four key changes, it becomes evident that the TPAE reform brought about significant advancements in Japan's arms export capabilities. Firstly, the reform bestowed greater legitimacy upon weapons exclusively produced within Japan, allowing them to be marketed and sold as fully-fledged weapons rather than being labeled with more cautious terms reserved solely for governmental use. This shift in terminology not only facilitated the exit of domestic products from Japan but also enabled their entry into international markets, promoting their recognition and desirability. Secondly, the revised policy facilitated the export of jointly developed weapons, addressing previous barriers that impeded the transfer of such arms. Under the former TPAE regulations, exporting weapons developed in collaboration with other countries was met with obstacles. However, the reform eliminated these hindrances, creating a more favorable environment for external nations to purchase and import jointly developed Japanese arms, fostering international partnerships and expanding export opportunities. Thirdly, the TPDET introduced provisions that authorized the transfer of weapons to allied nations, marking a significant departure from the contentious stance of the earlier TPAE. This revision alleviated the challenges Japan faced in transferring its arms products to its allies, including the United States. The establishment of clear frameworks within the TPDET now permits the controlled transfer of weapons to trusted partners, aligning with strategic objectives and enhancing collaboration within defined parameters. Lastly, the TPAE reform opened doors for the expansion of joint development projects beyond bilateral relationships, paving the way for multilateral collaborations. Prior to the reform, Japan's involvement in joint development projects was predominantly limited to the United States due to self-imposed restrictions imposed by the TPAE. Notably, the rejection of Japan's participation in the Lockheed Martin F-35 Lightning Fighter Aircraft project served as a catalyst for reevaluating these policies, highlighting the need for broader multilateral engagement. The reform acknowledges the value of diversified partnerships, enabling Japan to participate in joint development endeavors with a wider range of international stakeholders.

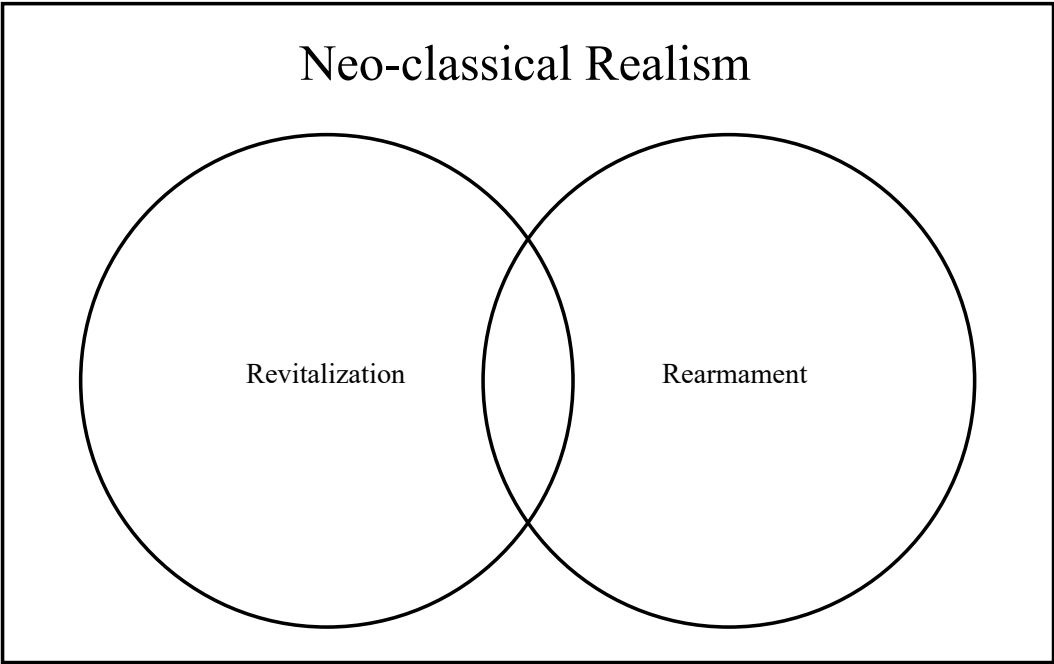
2-1-2. Existing Perspectives on Arms Export Reforms

From the ahistorical approach from the previous section, scholars understand the recent reform from in total of two perspectives: (1) Rearmament and (2) Revitalization. First of all, the ‘Revitalization’ perspective, scholars such as Sugio (2008), Tago & Schneider (2012), and Sato (2014) have argued that Japan's military buildup has had a positive impact on its arms industry and domestic economy. They point to the removal of self-imposed restrictions on arms exports as a significant driver of Japan's military hardware acquisition and the growth of the arms industry. This has allowed Japan to export weapons to other countries and increase the rate of replenishment of weapon acquisition. The expansion of Japan's arms industry and its ability to export weapons to other countries is expected to lead to increased revenue and job creation in the sector. Furthermore, the growth of the arms industry is seen as a driver of innovation and technological development in Japan's broader economy. Thus, the Revitalization perspective provides a more localized view of Japan's military buildup, emphasizing its economic implications and the role of the arms industry in driving growth and innovation in Japan. It is important to note that while the Domestic Industrial Revitalization perspective emphasizes the positive economic implications of Japan's military-related reforms, it does not ignore the potential negative consequences of arms exports, such as contributing to regional instability or fueling conflicts. Nonetheless, this perspective offers a unique perspective on Japan's military buildup that focuses on its domestic economic implications and the role of the arms industry in driving growth and innovation in Japan.

On the other hand, centered by scholars of Michael Green (1995), Christopher Hughes (2006), Andrew Oros (2008), and Sheila A. Smith (2015; 2019), have focused their analysis on the geopolitical implications of Japan's military buildup, particularly in the context of changing power dynamics in the Asia-Pacific region. One of the key arguments made by these scholars is that Japan's rearmament is a response to the increasing assertiveness of neighboring countries and rising security threats. This perspective emphasizes the need for Japan to bolster its military

capabilities to counter potential adversaries and maintain its national security. It also highlights the complex relationship between Japan and the United States, as the latter is both a strategic partner and a dominant military force in the region. Another important aspect of the discussion around Japan's rearmament is the origins it may have stood on the balance of power in the region and the broader global security environment. Some scholars argue that Japan's military buildup could lead to a more aggressive posture, potentially exacerbating tensions with neighboring countries and contributing to a broader arms race. Others suggest that Japan's rearmament may serve as a deterrent to potential adversaries, reducing the likelihood of conflict in the region.

Figure X. Existing perspective on the TPAA reform



Reference: Authors description

As this paper aims to provide further analysis of Japan's recent military reforms from a realist perspective while staying on the existing discourse. While both Rearmament and Revitalization perspectives recognize Japan's efforts to protect its national interests and enhance its military capabilities, they offer different views on the implications of Japan's military buildup.

The Rearmament perspective sees it as a response to rising security threats, while the Revitalization perspective highlights its impact on Japan's domestic industries. However, both perspectives reflect Japan's rational response to the changing security environment in Northeast Asia. As Japan moves towards a more neo-classical realist state, it views the development of a robust arms industry as a critical factor in achieving stability and security. Therefore, Japan's recent military reforms aim to establish deterrence against potential adversaries and ensure self-reliance in protecting its national interests, and promoting stability in the region. The next two sections will be directly answering to the sub-questions mentioned in the previous chapter by analyzing the domestic arms industry and the JASDF to see rather the existing discourse has been proven right.

2-2 Insignificant Revitalization of Japan's Arms Industry:

MHI Case Study

Among the recent changes to the TPAE, it is crucial to conduct a comprehensive evaluation of the prior scholars' implications. This sub-chapter aims to provide a detailed analysis of the effects of the arms export reform on two critical domains: the domestic arms industry and the JSDF. The relaxation of limitations on arms exports is expected to result in a significant increase in revenue for the domestic arms industry, potentially stimulating economic growth. However, with the possibility of an increase in arms exports, it is vital to assess the implications of this reform from both economic and military perspectives. To gain a comprehensive understanding of the influence of these reforms, it is essential to examine the potential benefits and drawbacks for both the domestic arms industry and the JSDF. Additionally, it is necessary to consider the implications for national security and international relations. By examining these factors, informed decisions can be made going forward. Therefore, it is of utmost importance to conduct a thorough evaluation of the impact of the arms export reform on the domestic arms industry and the JSDF, as well as national security and international relations.

This section delves into the intricate workings of the Japanese defense environment and uncovers a truth that has long been cloaked from public view. It asserts that the Japanese government has been unable to successfully address two critical issues that have plagued the country's defense strategy for decades: (1) the development of domestic arms industries and (2) the rearmament of the JSDF. One of the most significant challenges faced by Japan's domestic arms industry is its inability to compete with foreign markets in terms of cost-effectiveness. This has resulted in a heavy reliance on imported products, which are relatively more expensive than domestically produced ones. The cost of weapons is a crucial factor in the acquisition of a sufficient amount of equipment to maintain a robust replenishment rate. The high cost of imported weapons has put significant pressure on the government to find viable domestic alternatives to reduce costs and increase the replenishment of the JSDF's arsenals. Moreover, the correlation

between the export of weapons and the rearmament of the JSDF has been brought into question. While it may seem logical that the export of weapons could provide the Japanese government with a financial boost, the reality is that the cost per unit of weapons is critical in determining the number of weapons that can be acquired for a robust replenishment rate. As a result, the cost of weapons has become the primary factor that influences the acquisition of new weapons for the JSDF, regardless of whether they are domestically produced or imported. This issue, the domestic arms industries, and the rearmament of the JSDF is a complex and multifaceted one that requires careful consideration and nuanced approaches to address effectively.

The Japanese government's domestic military reforms were initially expected to revitalize the arms industry and boost economic growth. However, recent statistical evidence suggests that these reforms have not resulted in significant growth in the industry. This paper explores three key pieces of evidence that illustrate the lack of significant revitalization: (1) changes in the structural income of arms sales, (2) fluctuations in the reliability of the domestic arms market, and (3) the international competitiveness of the industry.

Firstly, changes in the structural income of arms sales suggest that the reforms have not had the desired effect. The structural income of arms sales refers to the distribution of income generated by the arms industry, including domestic and international sales. According to data from SIPRI, the Japanese arms industry's structural income has not significantly increased despite the reforms. While domestic sales have increased, international sales have not experienced significant growth, indicating that the reforms have not made the industry more competitive in the global market.

Secondly, fluctuations in the reliability of the domestic arms market suggest that the reforms have not created a stable market for the industry. The domestic arms market is dependent on demand from the JSDF, and fluctuations in demand have led to inconsistent sales for the industry. The reforms were expected to create a more stable market for the industry, but the data indicates that this has not been the case. The industry continues to face challenges in predicting and responding to changes in demand, resulting in a lack of consistent growth.

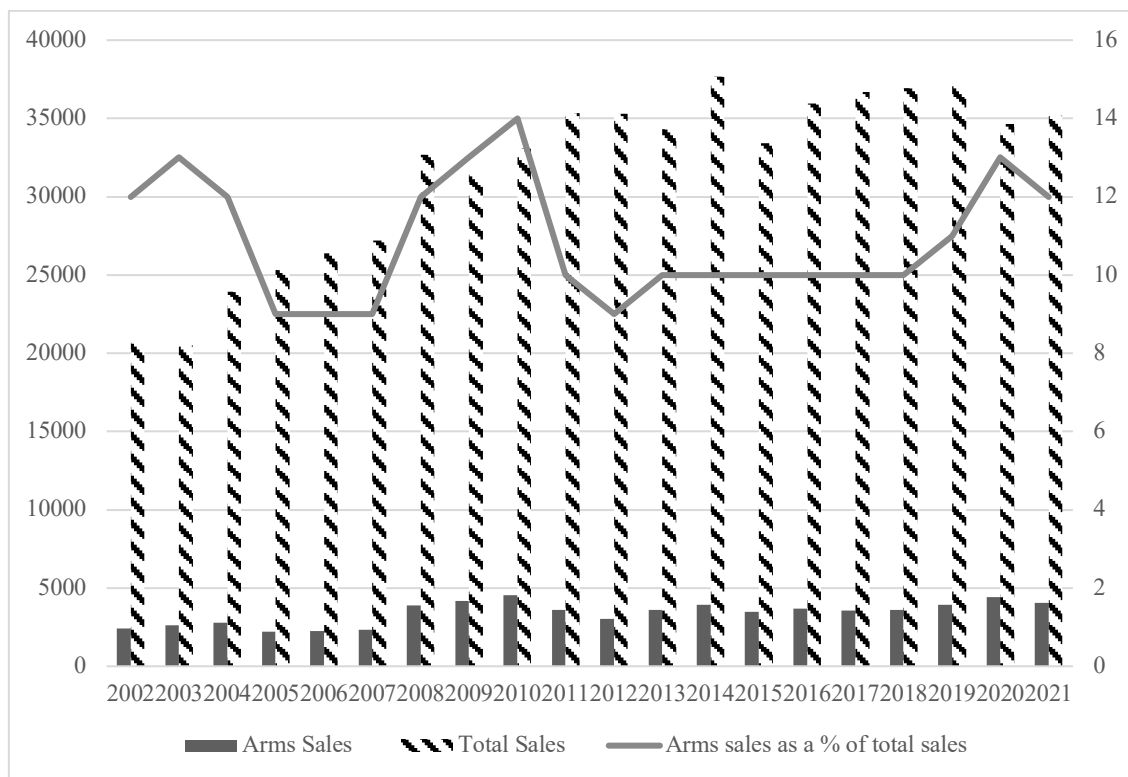
Thirdly, the international competitiveness of the Japanese arms industry has not significantly improved despite the reforms. The reforms were expected to make the industry more competitive in the global market by relaxing restrictions on arms exports and promoting international cooperation. However, the data from SIPRI indicates that the industry's international competitiveness has not significantly improved since the reforms. The industry continues to face competition from established arms industries in other countries, limiting its growth potential in the global market.

The primary aim of this sub-chapter is to answer a crucial research question: to what extent have the reforms succeeded in revitalizing Japan's arms industry? To address this question, the paper employs data from two sources: SIPRI and MHI. The paper showcases the positive impact of the reforms on the arms industry, such as the increase in domestic sales and the relaxation of arms export restrictions. However, despite these positive impacts, the revitalization of the industry was not significant enough. MHI, the largest Japanese arms industry, was chosen as a representative case and remains a leading manufacturer for the JSDF. The analysis uses data retrieved from SIPRI to provide insight into how the military reforms have influenced the participation of Japanese arms industries in the international arms market. The data suggests that while the reforms have brought about some improvements, they were insufficient to revive the Japanese arms industry completely.

2-2-1. An Analysis of the Financial Sector of MHI Arms Sales

First of all, if the TPAE reform were implemented hastily and assertively, it would be reasonable to expect significant changes to the fundamental structure of the arms industry, particularly in terms of total arms sales. The TPAE reform was introduced in 2014 and relaxed the longstanding ban on arms exports by Japan, allowing Japanese arms industries to export more freely to the international market for at least the past eight years. However, financial data suggests that Japanese arms industries have not experienced a significant increase in sales since the reform was implemented. One example of this is the sales data from MHI's financial reports showing that while arms sales may have increased gradually in line with total sales, the proportion of arms sales to total sales has remained relatively constant. This suggests that the increase in arms sales may have been driven by overall economic growth rather than the TPAE reform. There are several possible explanations for the lack of a significant increase in arms sales. One factor could be the limited demand for Japanese arms in the global market, particularly in comparison to countries like the United States and Russia, which have historically dominated the arms trade. Another factor could be the difficulty of navigating the complex regulations and licensing requirements involved in arms exports, which could deter potential buyers and make it challenging for Japanese arms manufacturers to expand their markets. As shown in the graph below, while arms sales may have increased gradually in line with the total sales of MHI, the proportion of arms sales to total sales has remained relatively constant.

Graph 1. Arms Net Sales, Total Net Sales, and (Arms Net Sales / Total Net Sales) of Mitsubishi Heavy Industries 2002 to 2021



Reference: Authors reorganization from SIPRI Open data (2022), ‘The SIPRI Top 100 arms-producing and military services companies in the world’

The graph depicting the percentage of revenue generated from arms sales by the Japanese company MHI provides valuable insights into the effectiveness of recent military reforms in Japan. MHI is a leading defense contractor in Japan, with a long history of supplying advanced military technologies to the Japanese Self-Defense Forces (SDF) and other allied countries. The graph shows that the proportion of revenue generated from arms sales by MHI has remained relatively constant, not exceeding 14% of the company's total sales (SIPRI, 2022) ¹⁶. This discovery is particularly noteworthy, as it suggests that recent military reforms in Japan,

¹⁶ Refer to Appendix 4. for detailed numbers from IHI, KHI, Fujitsu (Subaru Corporation), Mitsubishi Electric Corporation, Toshiba and NEC Corporations.

which aimed to increase the country's military capabilities and self-reliance, have had a limited impact on the growth and effectiveness of its arms industry. It is possible that the reforms have not led to the expected increase in arms sales due to factors such as stricter export controls, reduced defense spending, or increased competition from other global defense contractors. However, it is important to note that the growth of firms like MHI cannot be solely attributed to the success of the arms sector. The spillover effects of military technologies have often been found to enhance the competitiveness of firms in non-military industries. For example, technologies developed for military applications, such as advanced sensors, communications systems, and materials, can be adapted and applied to civilian industries such as transportation, health care, and manufacturing, thereby contributing to the increase of net sales as well.

2-2-2. An Analysis of MHI's Domestic Reliance

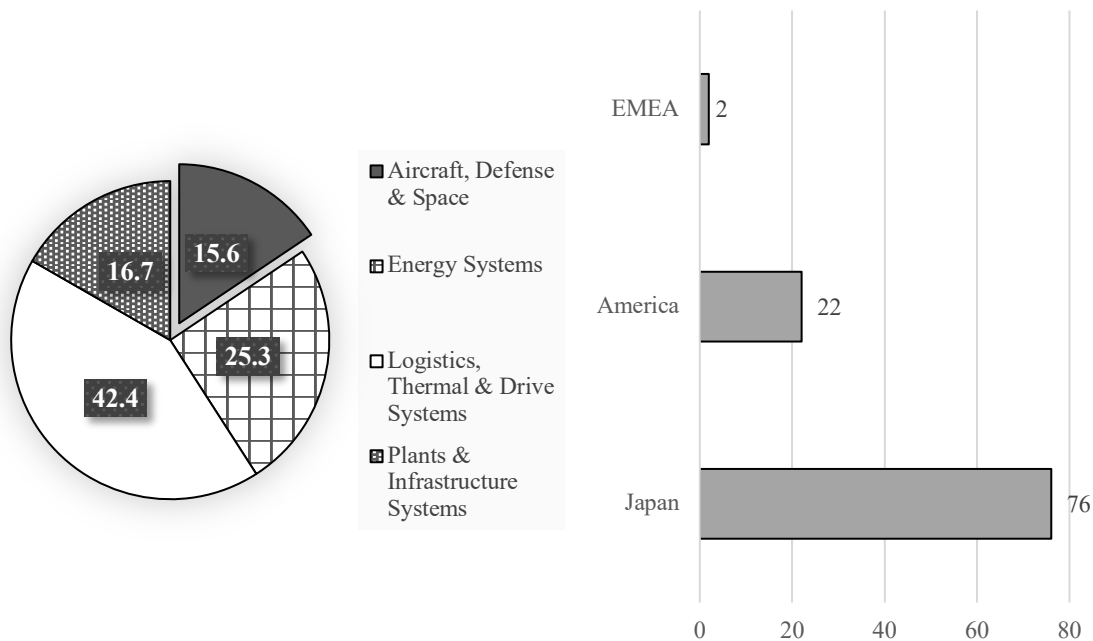
Secondly, it is critical that the Japanese arms industry's reform aimed to diversify the country's defense sector by entering international markets for growth. The industry's competitiveness was expected to improve, and there were high hopes for Japan to increase its influence in the global arms trade. However, the reality turned out to be quite different, as Japanese arms products were found to have mediocre technology and unsatisfactory price ranges. Furthermore, the demand for arms in the Japanese domestic market was relatively low, which led to an increase in production costs over time. According to the Swedish Defense Research Agency (2016), the limited competition in the Japanese domestic market, combined with a focus on quality over quantity, made Japanese military acquisition costly. Additionally, diversifying the manufacturing line to produce a broad range of products for export was not easy, particularly when the best technology could not be exported. Competing with previous international competitors in the arms market was also challenging. For example, according to the Japanese national defense budget for 2022, the JGSDF purchased six units of Type-10 (10 Shiki) MBTs, which cost 63 million USD¹⁷. In contrast, when Poland purchased 250 units of M1A1 MBTs, the cost was 1.14 billion USD (General Dynamics, 2022). Therefore, an M1A1 Abram MBT per unit costs about 4.56 million USD, while the Type-10 costing 10.5 million USD¹⁸. Obviously, this has a limitation to observe the cost for arms, yet among the transfers that have happened, the numbers indicate that U.S MBTs are much more cost-efficient for considering a purchase.

¹⁷ Equivalent to 8.3 billion Japanese Yen

¹⁸ The limitation to the comparison of cost on military equipment may differ from numerous reasons. Yet the following numbers are to show how much MBTs are costed on a statistical comparison.

Graph 2. MHI Composition of Revenue by Segment 2021

Graph 3. Customer Quota by region in ‘Aircraft, Defense & Space’ 2021 net sales



Reference: MHI Annual report of 2022 (A3 Version), pg.7

Over the last few decades, Mitsubishi Heavy Industries (MHI) has increasingly relied on domestically produced military hardware. Despite being the largest arms producer in Japan, MHI has struggled to expand into new markets, heavily relying on the domestic arms market. Japan's self-defense policy, which allows for limited defense spending and restricts arms exports to countries that are not close allies, has contributed to MHI's limited growth prospects. However, with the changing geopolitical landscape, including the rise of China and North Korea's nuclear ambitions, Japan has been relaxing its defense export policies, enabling companies such as MHI to expand their markets. MHI's 2021 annual report reveals that military hardware sales accounted for a significant 15.7% of the company's revenue, with Japan being the primary client responsible for 76% of MHI's total sales. The U.S. followed with 22%, while Europe, the Middle East, and

Africa (EMEA) accounted for 2% of MHI's sales. It is worth noting that MHI's "Aircraft, Defense & Space" business segment includes both military hardware and commercial products, such as commercial aircraft, aero engines, and civil space equipment. Therefore, MHI's military hardware sales also include commercial sales embedded within the final figures. For instance, Schuurman (2022) points out that MHI's net sales in commercial aviation amounted to 31.6 billion JPY out of the total net sales of 130.8 billion JPY. This translates to commercial sales accounting for 24.2% of the net sales in this sector. Despite this, MHI's primary focus remains on the defense sector, as indicated by the company's strategic plans and priorities. MHI has been actively seeking to expand its defense business, including the development of next-generation fighter jets and unmanned aerial vehicles. On the mark it is evident from MHI's 2015 and 2017 annual reports that the company identified the TPDET implementation as an opportunity in its SWOT analysis, indicating its plan to expand its arms exports. This suggests that MHI has been conscious of the changing arms export guidelines and has been adjusting its business agendas over the years. However, despite the expected revision of the TPAE to allow for more expanded target customers, statistical data suggests that the company has not been successful in diversifying its client base. From this perspective, the Japanese mass media has criticized not only MHI but the arms industry as a whole. According to a recent article in Asahi Shinbun (有料記事, 2023), they used the following phrase to criticize the current situation of the Japanese arms industry: "The only buyer is the government."¹⁹ This is a strong statement suggesting the sluggish growth of the Japanese arms industry, which has been largely dependent on the government's defense spending. It would be obvious and decisive to consider that the Japanese arms industries have not been able experience growth.

¹⁹ Translated from 「買い手が政府だけ」

2-2-3. An Analysis of International Competitiveness in Arms Industries

When evaluating the impact of military reforms on Japan's arms industry and its economic revitalization, it is essential to consider the industry's international competitiveness. In particular, one needs to examine whether the reforms have expanded the industry's global market share. Despite the Japanese government's efforts to bring about change, the final results have been underwhelming. To better understand Japan's position in the global arms industry, it is crucial to look at key indicators such as SIPRI's 'Top 100 arms industries from 2002 to 2021.' This data provides valuable insights into any significant changes in global competition and allows for a more precise evaluation of Japan's impact. Therefore, a detailed analysis of Japan's position in the global arms market is necessary to accurately assess the impact of military reforms on Japan's arms industry and economic revitalization. By doing so, it can identify areas of strength and weakness and develop a more comprehensive understanding of Japan's competitiveness in the international arms industry.

Looking at the Japanese arms industry from a broader perspective, it is clear that the sector is vast in terms of quantity and quality. A government report from John (2010) revealed that there was a total of 4000 corporations registered to manufacture and sell arms within the country. However, when narrowing down the focus to an international level, we see that only seven corporations have made it to the top 100 arms industries over the past two decades (SIPRI, 2023). This points to the fact that the arms industry's competitiveness is heavily reliant on the domestic market. As mentioned earlier, this presents a significant challenge for the industry to find growth unless it can secure international contracts. Therefore, to achieve sustainable growth, the Japanese arms industry needs to increase its international competitiveness, which would lead to an increase in sales to international customers. Doing so, it would reduce the sector's over-reliance on the Japanese government and allow the industry to expand its reach beyond domestic borders.

Table 5. SIPRI Top 100 arms industries from 2002 to 2021²⁰

Year	MHI	Kawasaki Heavy Industries	Fujitsu	IHI ²¹	Mitsubishi Electric Corp.	Toshiba	NEC Corp.
2002	15	45	N/A	57	49	89	83
2003	18	36	N/A	66	56	95	80
2004	20	37	N/A	37	59	N/A	74
2005	22	41	N/A	41	55	N/A	62
2006	24	51	N/A	68	N/A	N/A	63
2007	31	89	N/A	95	N/A	N/A	71
2008	20	56	N/A	N/A	61	N/A	74
2009	19	64	N/A	127	57	N/A	78
2010	15	49	121	61	56	N/A	75
2011	23	49	67	60	58	N/A	70
2012	32	44	70	56	63	N/A	56
2013	25	50	87	63	68	N/A	65
2014	25	52	93	72	78	N/A	85
2015	21	55	98	69	100	N/A	N/A
2016	26	48	83	71	100	N/A	N/A
2017	30	55	86	71	N/A	N/A	N/A
2018	30	55	79	73	N/A	N/A	N/A
2019	33	50	92	84	103	N/A	N/A
2020	28	53	77	81	97	N/A	N/A
2021	35	54	77	89	N/A	N/A	N/A

Reference: SIPRI Database (2023)

²⁰ (1) Only Japanese Arms Industries were included in the list, and (2) N/A indicates that the company in the following year did not have net sales equivalent to the be included as a top hundred arms producer.

²¹ Ishikawajima-Harima Heavy Industries officially changed its name to IHI in the year of 2007

The table shows that the rankings of Japanese corporations within the international arms industry have experienced only minor fluctuations. However, the removal of three major corporations, namely Mitsubishi Electric Corporation, Toshiba, and NEC Corporation, from the list, and the addition of only Fujitsu, can be viewed as a decline for the industry as a whole.

As evident from the data, military-related reforms made to create internationalized arms industries did not have the expected impact. Despite efforts to expand the industry and promote international competitiveness through the release of TPAE or the installment of the ATLA, the effects were relatively insignificant. It's clear that if the arms industries were targeted to be able to export their arms products, it would have had a direct impact on their international competitiveness. However, the current state of affairs suggests that the reforms have not been successful in this regard. Therefore, it is crucial to re-evaluate the strategy and consider new approaches that could help boost the international competitiveness of the Japanese arms industry. A fresh perspective and innovative solutions could go a long way in promoting the industry's growth and revitalization, both domestically and internationally.

This sub-chapter has argued that the Japanese domestic arms industry has not undergone significant changes in the international arms market. The focus has been on (1) the structural changes in the net sales of Mitsubishi Heavy Industries (MHI), which attempted to reorganize its investment in arms production and export. However, (2) statistical evidence on MHI's reliance on Japan's arms market indicates that arms exports have not increased despite changes to export policies. Moreover, (3) a comparison of international market dominance shows no significant fluctuations in international competitiveness. Therefore, the prospects for revitalizing the domestic arms industry remain uncertain or even considered a failed attempt. Instead, recent military reforms may have altered Japan's arsenals. Thus, an analysis on the rearmament perspective will be reviewed.

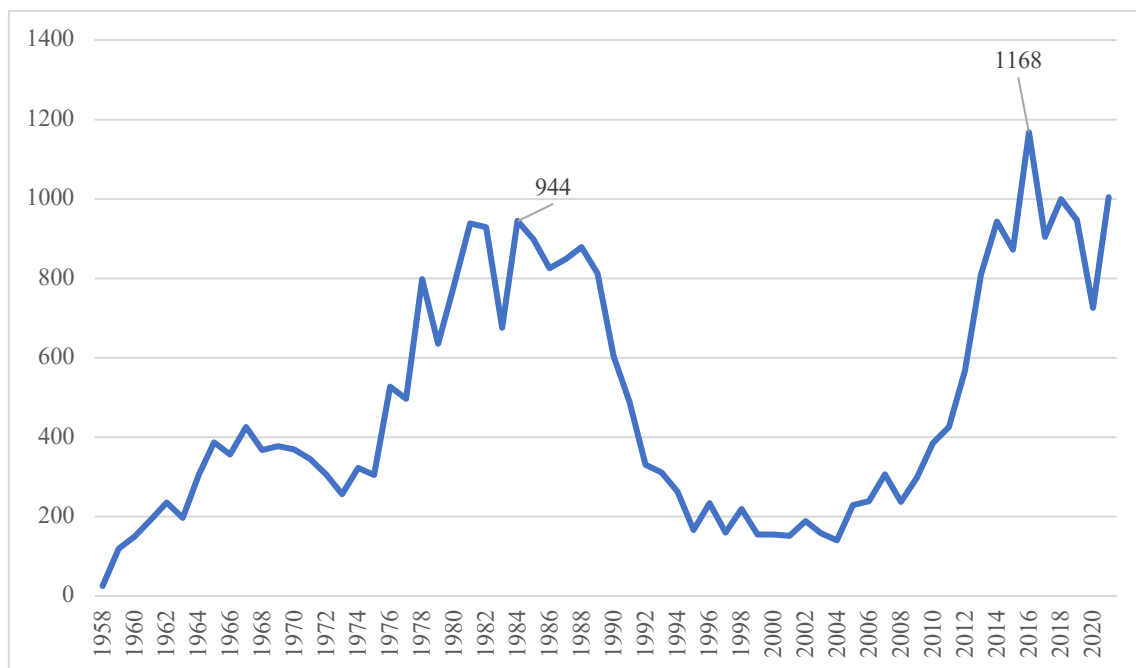
2-3. International Dynamics and Pressured Japan: Is it actually rearming?

The lifting of export restrictions has been a critical move in Japan's efforts toward achieving greater self-sufficiency in the JSDF's equipment and promoting economic revitalization. By easing restrictions on exporting military equipment and technology, Japan has capitalized on its advanced technological capabilities, reducing dependence on foreign suppliers and creating new opportunities for the domestic arms industry. Although the process has been gradual and faced some hurdles, lifting these restrictions has undoubtedly been a significant step towards achieving Japan's goal of self-reliance and economic development. This move has stimulated innovation and growth in the domestic arms industry and facilitated collaborations with other countries in the defense and technology sectors. Additional to the factors above, if the Japanese arms industries could have expanded their manufacturing lines for arms production, it was to lower the costs of weapon acquisition from the JSDF.

Japan's rearmament is a complex issue with various dimensions. One of the primary arguments put forward by rearmament-aligned scholars is the external threats facing Japan. It is no secret that Japan is located in a region characterized by geopolitical tensions, with countries like China and North Korea flexing their military muscles. Therefore, these scholars argue that it is necessary for Japan to increase its military capabilities to protect itself from external threats. However, it is important to note that Japan has been steadily modernizing its military capabilities over the past few decades, long before the current external threats became more pronounced. This modernization has been spearheaded by former Prime Minister Abe, who implemented policies that updated self-binding defense policies and transitioned the Japanese military to a more normalized status. Despite this modernization, there is a debate about whether Japan has truly increased its capacity over time. To provide some insight into Japan's acquisition of strategic weapons, this chapter focuses on the fighter aircraft in the Japanese Air Self-Defense Force (JASDF). The JASDF (2019) release of statistical data on the number of emergency scrambles

that have taken place underscores the contested nature of the Japanese Air Defense Identification Zone (JADIZ) with neighboring countries. The number of military show-of-force incidents from China and Russia has increased significantly in recent years, indicating that the threats faced by Japan today are more severe than those of the Cold War era.

Graph 4. Number of emergency scrambles from the JASDF from 1958 to 2020



Reference: JASDF (2019), ‘我が国周辺の空の状況’ Retrieved from:

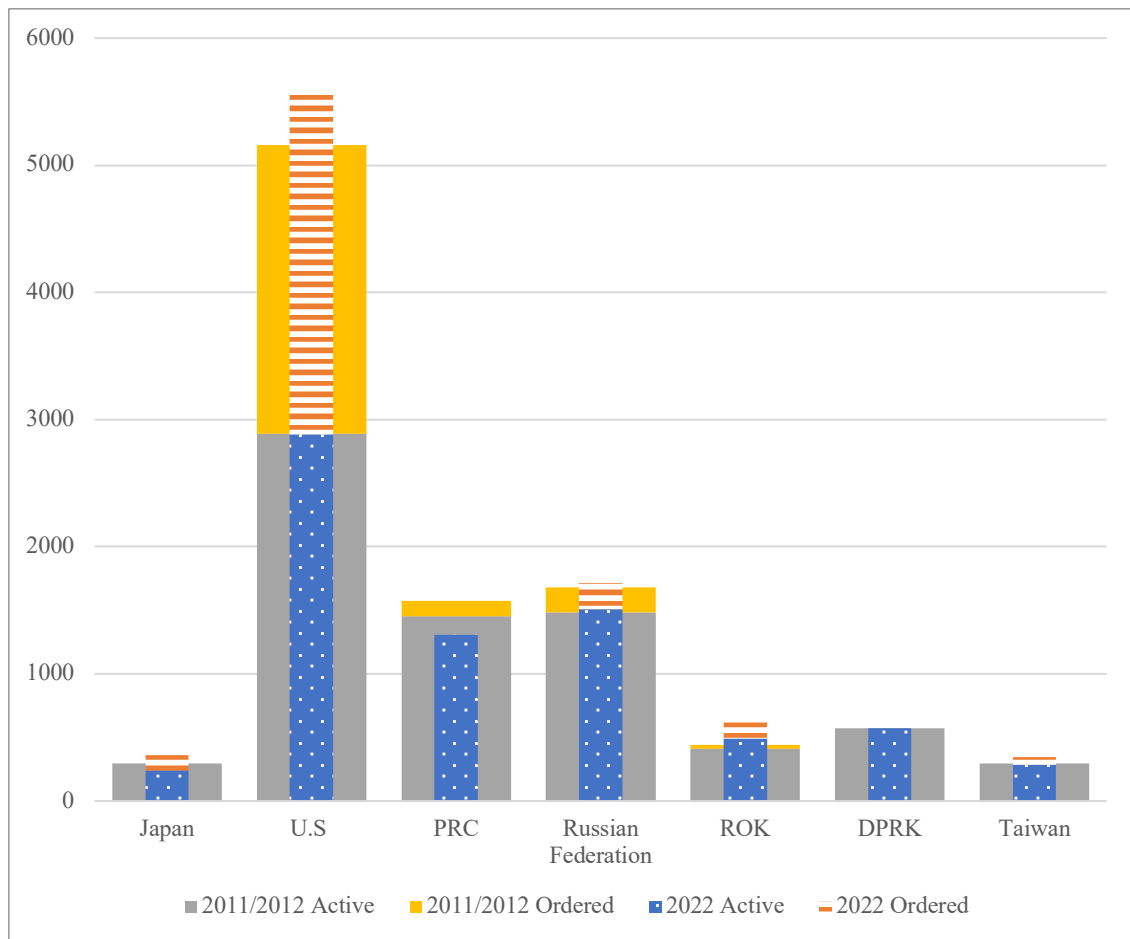
<https://www.mod.go.jp/asdf/about/role/role03/index.html>;

松尾芳郎 (2017), ‘平成 28 年度(2016)の緊急発進は過去最多’. Tokyo Express, Retrieved from: <http://tokyoexpress.info/2017/04/14/平成28年度2016の緊急発進は過去最多/>

The graph above highlights the necessity for a more detailed analysis of JSDF’s rearmament. When rearmament has been discussed overly in the political sector, diminutive attention has been paid to the specifics of the practicality of the rearmament itself. Confined by the arms race in the Northeast Asian region, the number of emergency scrambles indicates that the JASDF has been facing issues on two elements: quantity and quality of military capabilities. It provides a glimpse of the factors that have pressured Japan to rearm, such as increasing tensions in the region, changing power dynamics from the Russian Federation, the PRC, and concerns

about North Korea's nuclear capabilities. Clearly stating, Japan's rearmament is not just driven by domestic political factors but also by a changing security landscape in Northeast Asia. On the mark, according to the Defense White Paper (2005), the number of Chinese fighters increased from 37 to 158 between the years 1996 to 2003, and Russian fighters rose from 125 to 222. Such statistics were enlisted in the Defense White Paper with worrisome perspectives because of the stagnation of the acquisition of fighter aircraft. Although Japan possessed approximately 200 fighters at the time, the number of fighters in the region was rapidly expanding. Hence by the millennial dawn initiated, the arms race was rushed to acquire the most fighter aircraft. Yet colliding statistical data was shown, according to Flight International (2012; 2022), insignificant fluctuations from the time compared between 2012 and 2022 occurred in quantity. Unlike the expectations that the arms race has led to an increase in quantity, the statistical data suggest that it has been more focalized on the quality of the countries' arsenals. As indicated below, the number of fighter aircraft within the Northeast Asian region has somewhat moderately decreased or remained constant.

Graph 5. Fighter aircraft in Northeast Asia, a comparison between Japan, ROK, Taiwan, PRC, Russian Federation, and U.S.A stationed/ordered in the years between 2012 and 2022



Reference: Flight International. (2012; 2022). 2011/12 World Air Forces & 2022 World Air Forces²²

The graph above presents an analysis of the arms race in the Asia-Pacific region over the past two decade²³, specifically in terms of fighter aircraft. It notes that the total number of fighter aircraft has remained relatively stable over the past twenty years and questions whether the Japanese government has exaggeratedly reacted to the arms race. The passage suggests that the U.S. and its allies²⁴ have been winning the race from a quantitative

²² For detailed numbers refer to Appendix 2 and 3

²³ Residing the United States.

²⁴ ROK, Japan, Taiwan

perspective, but that an objective evaluation of the issue requires consideration of the quality of the aircraft. To further develop this argument, it would be useful to consider the broader geopolitical context in which the arms race is taking place. This might involve analyzing the strategic goals of the countries involved and the role that military technology plays in achieving those goals. According to research conducted by Flight International (2012; 2022), it was possible to compare the strength capabilities of the major actors within the Northeast Asian region.

Table 6. 1st to 3rd generation fighter aircraft Increase/Decrease in percentage between the year 2011/2012 and 2022²⁵

	Japan	U.S	PRC	Russian Federation	ROK	DPRK	Taiwan
2011/2012	82	505	713	643	243	459	29
2022	0	382	373	491	225	457	27
Change in Percentage	-100%	-24%	-48%	-24%	-7%	0%	-7%

Reference: Flight International. (2012; 2022). 2011/12 World Air Forces & 2022 World Air Forces

²⁵ Refer to Appendix 2 and 3 for detailed information on fighter aircraft types and classification.

Table 7. 4th and above generation fighter aircraft increase / decrease in percentage between the year 2011/2012 and 2022

	Japan	U.S	PRC	Russian Federation	ROK	DPRK	Taiwan
2011/2012	216	2220	498	615	170	35	265
2022	240	2367	741	897	267	35	261
Change in Percentage	11%	7%	49%	46%	57%	0%	-2%

Reference: Flight International. (2012; 2022). 2011/12 World Air Forces & 2022 World Air Forces

On the provided data above, Northeast Asia has witnessed significant changes in the quality of fighter aircraft in recent years, as indicated by the data from Flight International 2011/2012 and 2022. While all countries residing in DPRK and Taiwan have been upgrading their airforces by acquiring high-end fighter aircraft, there have been notable variations in the degree of improvement. According to the data, the PRC and the Russian Federation have demonstrated remarkable progress in modernizing their airforces. Between 2011/2012 and 2022, the PRC replenished its fighter aircraft arsenal by 49%, while the Russian Federation increased its arsenal by 46%. These upgrades have enabled both countries to significantly enhance the quality and capacity of their airforces, and have raised concerns among neighboring countries about the balance of power in the region. In contrast, Japan has only increased its air force by 11% during the same period. Moreover, the country has experienced a 100% retirement rate of 3rd and under-generation fighter aircraft, leading to a decrease in the total number of Japanese fighter aircraft over the past decade. This decline in quantity, coupled with the growing capabilities of the PRC and the Russian Federation, has placed significant pressure on the JASDF to improve both the quality and quantity of its fighter aircraft. In response, the JASDF has been investing in the procurement of advanced fighter aircraft, such as the F-35 stealth fighter, to enhance its capabilities and improve its capacity to defend the country. The JASDF has also been developing

new strategies to ensure the effectiveness of its airforce, including increasing its training and coordination with other branches of the military and enhancing its surveillance and early warning capabilities. However, these efforts face significant challenges, including the rising costs of advanced fighter aircraft and the increasing complexity of the regional security environment.

In conclusion, the quality of fighter aircraft in the East Asia region has fluctuated significantly in recent years, with some countries making notable progress in modernizing their airforces while others have struggled to keep up. Japan, in particular, has faced significant pressure to improve the quality and quantity of its fighter aircraft, as it seeks to maintain its position as a key player in the region's security landscape. Despite the challenges, Japan's ongoing efforts to enhance its airforce capabilities are still in the process of achieving regional stability and safeguarding its national security interests. The following to sections below will analyze the reasons why the recent reforms could have not led to a rearmament despite its reform and attempts.

2-3-1. Japan's Waning Fiscal Strength

The Japanese government's response to the growing bilateral threats in the region has become a cause for concern, especially when it comes to the logistical acquisition of fighter aircraft. Despite the increasing threat, it is perplexing that the number of fighter aircraft in the JASDF has not increased over the past two decades. This paper proposes that the Japanese government has been facing two major challenges that have prevented the JASDF from sufficiently arming itself. The first challenge is the sluggish economic growth that the country has been experiencing, which has limited the government's ability to allocate funds towards the purchase of fighter aircraft. The Japanese economy has been struggling to recover from the bubble economy burst in the 1980s, leading to a prolonged period of economic stagnation. The second challenge is the increasing cost of U.S fighter aircraft, which are the primary fighter aircraft in the JASDF. As a result of the increasing cost, the Japanese government has been unable to acquire sufficient fighter aircraft to match the growing threat in the region. Although these two issues are interrelated, this paper contends that the primary reason for the JASDF's inability to acquire weapons in quantity is the lack of purchasing power. The Japanese government has been hesitant to increase its defense spending due to the country's pacifist constitution, which limits its military capabilities. As a result, the JASDF has been forced to rely on a smaller fleet of fighter aircraft, making it relatively difficult to defend against potential attacks from neighboring countries.

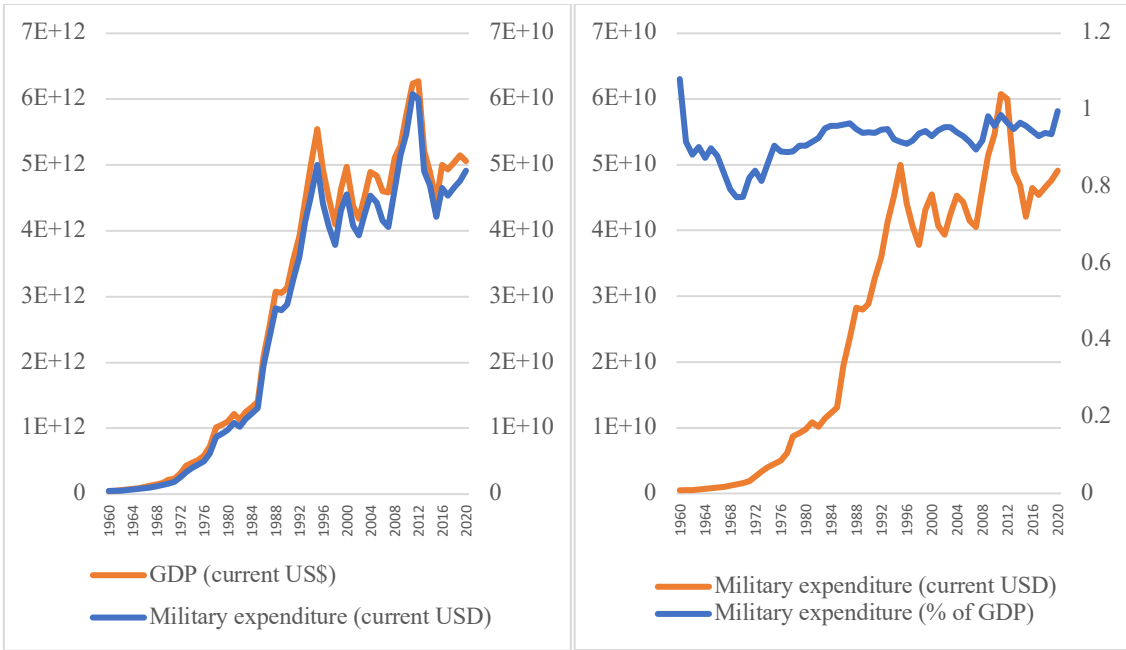
First of all, the JSDF are significant consumers in the arms market, with Japan ranking 9th in the world for military expenditure in 2020 according to the SIPRI²⁶. However, the Japanese government has limited military expenditure to 1% of the country's GDP. While this approach restricts flexible defense budget allocation, it is a necessary measure to balance economic growth and national security. In a deeper analysis, the 1% rule displays that Japan's military spending is relatively low compared to other countries with similar economies, which has led to a contrast

²⁶ Estimated 51.7 billion USD (Constant USD)

between the country's strength and its economic might. While economic growth could lead to an increase in the 1% of GDP allocated for defense, Japan's bubble economy has caused stagnation in the national defense budget for the past two to three decades. This has made it challenging for the country to acquire new military hardware due to a lack of available funds. The Japanese government has identified rising threats from the arms race within the region and the rapid increase in the defense budget of the PRC as major concerns (JMOD, 2022). While increasing the defense budget may be tempting, Japan's commitment to the 1% rule remains firm today. As such, Japan needs to consider alternative solutions, such as prioritizing investments in research and development to enhance military capabilities, expanding defense industry partnerships with allied nations, and increasing efficiency in procurement and logistics management.

Graph 6. Japan's GDP (Current USD) and Military expenditure (% of GDP) from 1960 to 2020

Graph 7. Japan's Military expenditure (Current USD, % of GDP) from 1960 to 2020

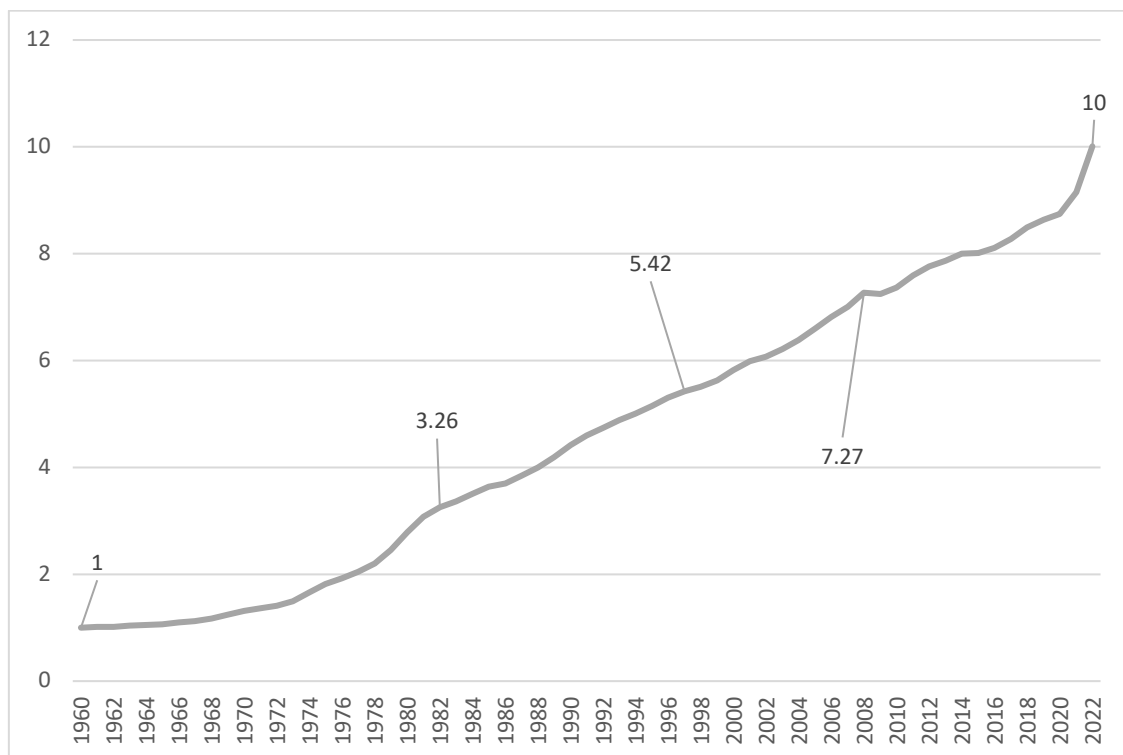


Reference: SIPRI Database (2023), World Bank Open Database (2023)

The analysis of the 1% rule and its limitations to the JSDF has been a topic of extensive discussion in previous scholarship and among government officials. While this budgetary constraint was implemented in the 1970s to promote Japan's post-World War II pacifist stance, it has also posed

significant challenges for the JSDF in terms of acquiring modern military equipment to fulfill its mission of national defense. However, when analyzing the 1% rule and its impact on the JSDF's budget, it is crucial that the statistical data used in previous studies may not present an accurate picture of the current situation. This is due to the significant inflation of U.S. dollars over the past century, which has a significant effect on the purchasing power of currency and ultimately impacts the cost of products, including arms import. As a result, it is necessary to review the buying power of the USD over time to gain a more comprehensive understanding of the budget pressures faced by the JSDF.

Graph 8. Buying power of 1 USD overtime 1960-2022



Reference: Official Data Foundation (2022), organized data from the U.S Bureau of Labor Statistics

The impact of inflation on the purchasing power of the USD in the 1960s cannot be ignored when analyzing the challenges faced by the JSDF in acquiring modern military equipment. This inflation has created a cascading effect on product prices, including military hardware, further burdening the JSDF's efforts to acquire advanced military technology from the U.S. However, the

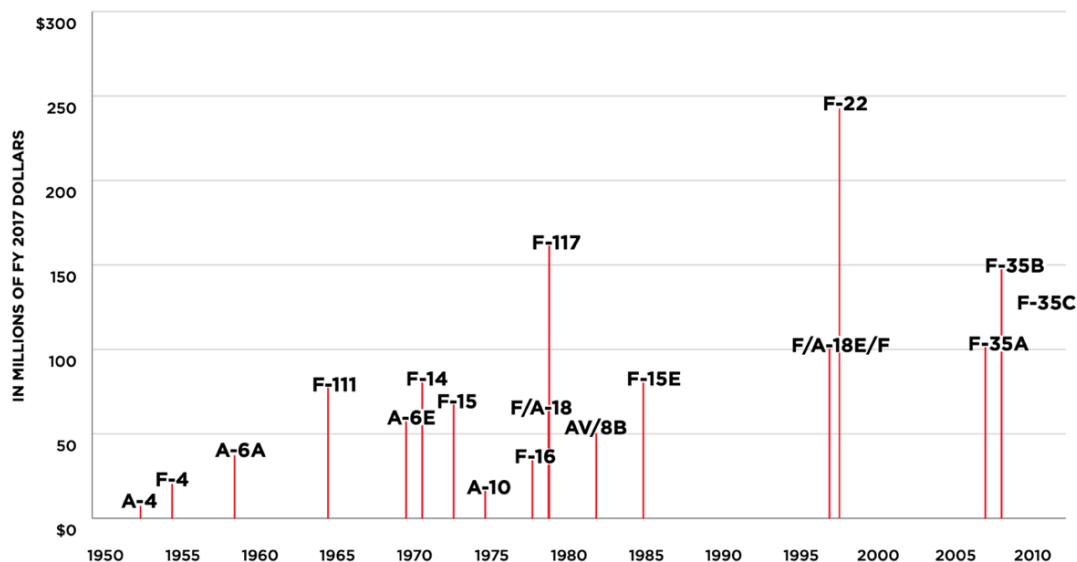
issue of rising costs for military equipment is not unique to Japan, as it is affecting other countries, including the United States. In fact, recent research indicates that the average cost per unit of major weapons systems in the United States has increased by 241% when adjusted for inflation over the past two decades (CSIS, 2020). The increased complexity and sophistication of technology in the defense industry have led to rising costs in research and development, production, and maintenance of advanced weapons systems, making it difficult for Japan to keep pace with global developments.

Additionally, the growing competition among global powers for military technology and arms exports has led to increased prices and limited availability of high-tech military equipment, further adding to Japan's budget pressures. Despite these challenges, the JSDF has implemented various strategies to maximize its limited budget, such as prioritizing procurement needs, exploring alternative sources of military technology and equipment, and investing in domestic research and development capabilities (JMOD, 2022). However, with only around 1% of its GDP allocated to defense spending, Japan's defense budget remains limited. This constraint makes it even more challenging for Japan to acquire the advanced military equipment needed to maintain its defense capabilities against rising external threats.

2-3-2. Rising Cost of Importing U.S. Weapons

Through the statistical analysis, Kosiak (2017) demonstrated a clear trend of rising costs associated with importing arms from the U.S. In particular, Kosiak found that the average unit cost of fighter aircraft increased by approximately 600% from the 1960s to the 2000s, after adjusting for inflation (2017). This increase in costs can be attributed to a variety of factors, including inflation, the complexity of modern military technology, and the high cost of research and development. Furthermore, the U.S. defense industry has a dominant position in the global arms market, which allows them to charge higher prices for its products. The findings of Kosiak's study have significant implications for nations that rely heavily on importing arms from the U.S. It highlights the need for countries to carefully consider the long-term costs associated with maintaining a military that relies on imported weaponry. Additionally, it underscores the importance of investing in domestic defense industries and reducing reliance on imports.

Figure 3. Rising costs of U.S produced fighter aircraft from 1950 to 2010



Reference: Kosiak, S. M. (2017). *IS THE U.S. MILITARY GETTING SMALLER AND OLDER?: And How Much Should We Care?* Center for a New American Security. Pg.7

Starting from the beginning of the F series, the F-4's cost and the F-35's cost has dramatically increased over the past half-century. Indeed, the focus on arms might have been shifting from quantity to quality, though military equipment usually adopts the utmost advanced technology that could be spared for superiority over foreign powers. In this case, the cost of F-4s and F-35s has shown a dramatic increase. As the rising costs of military equipment are a global challenge, and it is not unique to Japan. SIPRI shows that global military expenditure increased by 4.0% in 2020, reaching a total of \$1981 billion (SIPRI, 2021). This increase in military expenditure indicates the challenges in the rising costs of modernizing military equipment and especially has stroke harder on the U.S. allies. On the mark, from the neoclassical perspective, the Japanese government can be viewed as rational actors seeking to maximize security stability. This makes the Japanese government find itself facing a difficult dilemma between prioritizing economic growth and maintaining military strength. This challenge is not simply a matter of failing to revitalize the economy; it also risks compromising national security as a weak economy leaves the military unable to update its equipment. In other words, the two issues are closely intertwined and cannot be separated. On the mark, the Japanese government would have suggested a possible solution to this dilemma by reforming the country's arms export policies. By doing so, Japan could open up new channels of clients and business opportunities, thereby stimulating economic growth and strengthening the JSDF's capabilities. Though as the number of fighter aircraft, the JASDF has failed to keep up with the international arms race. In the end of the day, the reasons may be indirect the arms export reforms have botched to lead rearmament.

2-4 An Illusory Change: A Toothless Tiger

The Japanese government's efforts to reform the TPAE have been a subject of debate among scholars and analysts. The two perspectives that emerged from this analysis are rearmament and revitalization, both of which were examined through a case study of MHI and the JASDF. Despite the government's expressed intentions to implement reforms, the practical results have been slow to materialize due to numerous reasons, leading some to argue that the changes have been illusory rather than substantive. In fact, as Declan Hayes notes in his 2014 article, the JSDF remains a "toothless tiger," lacking the capabilities necessary to respond to security threats effectively. The government's challenge in balancing economic growth and military strength is a complex one, particularly in the current global environment. Domestic stability and national security are crucial priorities, but at the same time, the government must be mindful of international relations and trade agreements. While the current discourse on revitalization and rearmament of the JSDF may not have led to immediate results, it is still relevant and significant. One positive indication of growth in the Japanese arms industry is the recent successful export of air surveillance radar systems by Mitsubishi Electric to the Philippines, as reported by Mike Yeo in 2020. The success of this export could pave the way for further sales in the international market, indicating a potential shift towards revitalization and rearmament. However, it remains to be seen whether this will be sustained over the long term.

In conclusion to this chapter, the Japanese government's efforts to reform the TPAE have been the subject of much debate and scrutiny. While the practical results have been slow to emerge, the discourse on revitalization and rearmament remains relevant and significant. The successful export of air surveillance radar systems to the Philippines could be an indicator of growth in the Japanese arms industry, but it is important to continue monitoring the situation to determine whether this is a sustained trend or a one-time occurrence. The government's challenge in balancing economic growth and military strength is complex but ultimately essential for ensuring both domestic stability and national security in the face of emerging security threats.

Chapters three and four of this paper examine the outcomes of the TPAE reform and the changes that have occurred in the security environment over the past eight years. While the outcomes have not met expectations, the morphing vocabulary used in the arms industry and JSDF from "pacifist" to "normalization," as discussed in chapter three, suggests a shift in attitudes towards security. Chapter four explores the recent increase in joint development projects between domestic and foreign arms industries, indicating a growing interest in international cooperation. Both chapters provide evidence to support the argument that the TPAE reform has brought about changes in the security environment.

Chapter 3. Normalizing the Domestic Arms Industry

Rather than the military reforms of Japan, the outcomes have not been able to experience a change in the following: (1) Revitalization of Japan's arms industry, (2) Rearm the JSDF with weapons systems in both quality and quantity. On the mark, it is possible to say that the recent military reforms have not been hasty and assertive. Instead, the international dynamics pressuring has made Japan attempt rearmament only under the political sector leaving out the practical outcomes. In a sense, the political reforms may have been seen to be assertive, yet at the end of the day, the JSDF itself has remained rather constant or relatively weakened in consideration of the regional competitors. To analyze the reasons for the failure of the Japanese government, scholars have been stating the limitations and disadvantages the Japanese arms industry possesses. While scholars including Tago, Atsushi; Schneider, Gerald (2012), Sato (2014), Park (2015), Sakaki, Alexandra; Maslow, and Sebastian (2020) have commonly stated that the Japanese arms industries have been facing difficulties in export due to the controversial backlashes from export, a lack of experience in arms export and an uncompetitive price range. As a solution to all of these issues in one, this paper claims that the military reforms have conclusively tackled the difficulties by targeting of two changes: (1) the normalization of military terminology and (2) the increasing joint development projects among foreign arms industries. As a technologically advanced country, Japan's arms industry possesses some of the most cutting-edge technologies in the world. As a result, the challenge for the arms industry lies not in developing high-quality arms but rather in increasing production in order to meet demand. While this is already a desirable situation for the Japanese arms industry, it is important to examine the actual changes resulting from the government's reforms. The TPAE and the subsequent strengthening of Japan's arms export policy have led to changes in the country's defense industry. These changes include the establishment of

a new regulatory agency: JMOD, the NSC, and ATLA, which is responsible for overseeing the export of defense equipment and technology. Additionally, the government has taken steps to streamline the approval process for defense exports, making it easier for companies to export their products.

Conversely, despite these reforms, Japan's arms industry still faces significant challenges in increasing production. One of the main obstacles facing Japan's arms industry is the limited number of potential clients due to the country's strict arms export policies. Japan's commitment to peace and stability means that it only exports defense equipment and technology to countries that meet its rigorous criteria for arms exports, which limits the pool of potential customers for the industry (Sato, 2014). In Addition, Japan's arms exports have faced criticism in the past, particularly in relation to the country's pacifist constitution. Some argue that Japan's arms exports are inconsistent with its commitment to peace and stability, and that the country should not be involved in the international arms trade. This criticism has weakened the legitimacy of Japan's arms exports, making it more difficult for the industry to establish new relationships and expand its customer base (Midford, 2015). Despite these challenges, Japan's arms industry continues to innovate and produce high-quality defense equipment and technology domestically. With the reforms introduced by the government, the industry has a clearer framework for arms exports and an easier approval process, which could help to increase exports in the future. However, the industry must still find ways to overcome the challenges of limited customers and criticisms of legitimacy in order to expand its production capacity and establish itself as a major player in the global arms market (Midford, 2018).

The next two section aims to examine how the TPAE reform has addressed the two major issues faced by Japan's arms industry, namely limited customers and criticism of the legitimacy of arms exports. By exploring the changes introduced by the government to streamline arms exports and promote Japan's defense industry, this chapter seeks to shed light on the potential opportunities and challenges facing Japan's arms industry in the global market.

3-1. International Perspective on ‘Made in Japan’ Weapons

Japan has been at the forefront of technological advancements for decades, and this has led to the widespread recognition of its prowess in various industries, including the military sector. As Choi (2021) notes in his research, many sub-parts of US military products contain Japanese technology. This fact highlights Japan's ability to provide crucial components for military equipment, despite not necessarily being able to market fully 'Made in Japan' products. However, this reliance on Japanese technology in the military sector has also raised concerns within the Japanese government. There has been a constant dilemma about consumer goods being converted for military purposes, and the government has been cautious in ensuring that its advanced technology is not misused. To mitigate these risks, Japan has implemented several safety measures over the years, including the TPAE, Catch All Control (CAC), JMETI, COCOM, and later the Wassenaar Agreement. While many scholars and mass media have been opposing the TPAE reform, they have been neglecting the fact that the TPDET was instead a reinforcement to clarifying export restrictions. After the TPAE reform was conducted, the role of other safety procedures was solidified on the side. The CAC was implemented as a rubric for choosing which countries should be trusted or not²⁷ and selecting items to be reviewed before export. In preventing sensitive technologies from being transferred to countries with potential security risks, the CAC and TPDET became cooperative measures in tackling technology leaks. This mechanism was monitored by the JMETI, which evaluated the reliability of exporting countries in terms of security (Fukuda, 2013). The reasons for implementing such protocols originate from the blurred boundaries between civil and military technology: Dual-used technologies. Clearly, the advancement of technologies enriches the civil sector in various ways, and military technologies are often the origins to derive from. It is obvious that military equipment requires one of the finest technologies a country could produce; yet when updates occur, relatively old technologies become

²⁷ Refer to Appendix 5. for detailed lists

available for the civil sector to utilize in various sectors of society. However, the dilemma within dual-use technologies exists when civil purposed products are converted to military equipment.

Such cases of blurred boundaries between civil and military use can be often spotted in history. For example, in 2000, the JMETI banned exports of the Playstation 2 gaming platform due to concerns over its potential use for missile guidance or other digital weaponry (Kwon, 2000). Another example of the conversion of civil technologies for military use is the use of non-standard tactical vehicles, or "technicals," which are civil vehicles mounted with heavy arms and often used by low-budget militaries. Toyota Motors is known to have produced such vehicles, which have been used by terrorist groups and national militaries (Klingner, 2018). From a much more recent security breach, Japan's camera company was pointed out in the mass media during the Russian-Ukraine war. According to the "The Royal United Services Institute for Defence and Security Studies," U.K. (2022) they released a report on the use of Japanese optical technology in a Russian patrol UAV, Орлан-10 (Orlan-10), which collected location and movement data for Russian troops. This incident underscores the need for greater scrutiny of exports and stricter regulations to prevent sensitive technologies from falling into the wrong hands.

The term "Made in Japan" carries a double-edged meaning in the current global landscape. On the one hand, it represents Japan's advanced technological capabilities, while on the other, it comes with the responsibility to ensure that this technology is used in a pacifist direction. Therefore, the normalization of military-related terminology is crucial, particularly in the arms industry and JSDF. It is vital to use appropriate language to shape public perception and avoid misunderstandings that can lead to severe consequences. Historical events such as the Toshiba-Kongsberg Scandal, the JSDF-ROKA Ammunition Incident, and the SM-IIA underscore the need for clear and precise language when dealing with military equipment. By utilizing accurate and standardized terminology, countries can promote mutual trust and clarity, which are essential for maintaining peace and stability in the international community.

As this section is divided into two, the first half will be discussing the gravity of the responsibility implied by "Made in Japan" products, and the following section will demonstrate how the terminologies have practically shifted since the TPAE reform.

3-1-1. Case Study on the Toshiba-Kongsberg Scandal

The Toshiba-Kongsberg incident in 1987 had significant implications for the international arms trade and highlighted the need for tighter regulations. While the incident occurred over three decades ago, its lessons remain relevant today as Japan continues to engage in the arms trade. The incident also highlighted the economic consequences of arms sales, particularly when combined with the sale of commercial goods. In the case of Toshiba, the company suffered significant losses financially and in terms of reputation. The sanctions imposed on the company by the US Congress and the arrest of the responsible executives by the Japanese government resulted in a loss equivalent to 100 million USD for Toshiba, and the incident had a lasting impact on the company's image (King's College University, 2014). Furthermore, the incident highlighted the risks associated with the export of advanced technology to countries with a questionable record on international security. The sale of the propeller milling machines enabled the USSR to enhance its submarine technology, which posed a significant security risk to the US and its allies. The incident also underscored the importance of transparency in arms sales and the need for clear categorization of arms products to prevent unintended consequences. In response to the Toshiba-Kongsberg incident, Japan implemented stricter export controls on sensitive technologies, including those related to arms. The incident also served as a wake-up call to other domestic arms industries to re-evaluate their own export controls and the risks associated with arms sales (Farnsworth, 1987; Wrubel, 1989). The international community has since adopted various measures to promote transparency in arms sales and prevent the diversion of weapons to unauthorized users. These measures include the UN Register of Conventional Arms and the Arms Trade Treaty, which aim to increase transparency and accountability in the international arms trade (Wrubel, 1989).

The international arms trade is a complex and controversial topic that raises concerns about ethics, human rights, and international security. Japan, in particular, has been expanding its arms industries in recent years, with a focus on developing advanced technologies and increasing

its international exports. However, this expansion has also brought attention to the risks associated with the arms trade, including the potential for weapons to end up in the wrong hands. Since then, Japan has implemented stricter regulations and oversight of its arms industries to prevent similar incidents from occurring. However, the risks associated with the arms trade are still present, and it is crucial that all countries and companies involved prioritize transparency, accountability, and security. This includes ensuring that weapons are not sold to countries or groups with a history of human rights abuses or aggression, as well as preventing the diversion of weapons to unauthorized parties. Additionally, it is essential for the arms industries to consider the long-term effects of the arms trade on international peace and stability. While it can provide a source of revenue for countries and companies, the proliferation of weapons can also fuel conflicts and exacerbate tensions between nations. Therefore, it is crucial to prioritize diplomatic solutions and disarmament efforts to promote international cooperation and reduce the reliance on the arms trade.

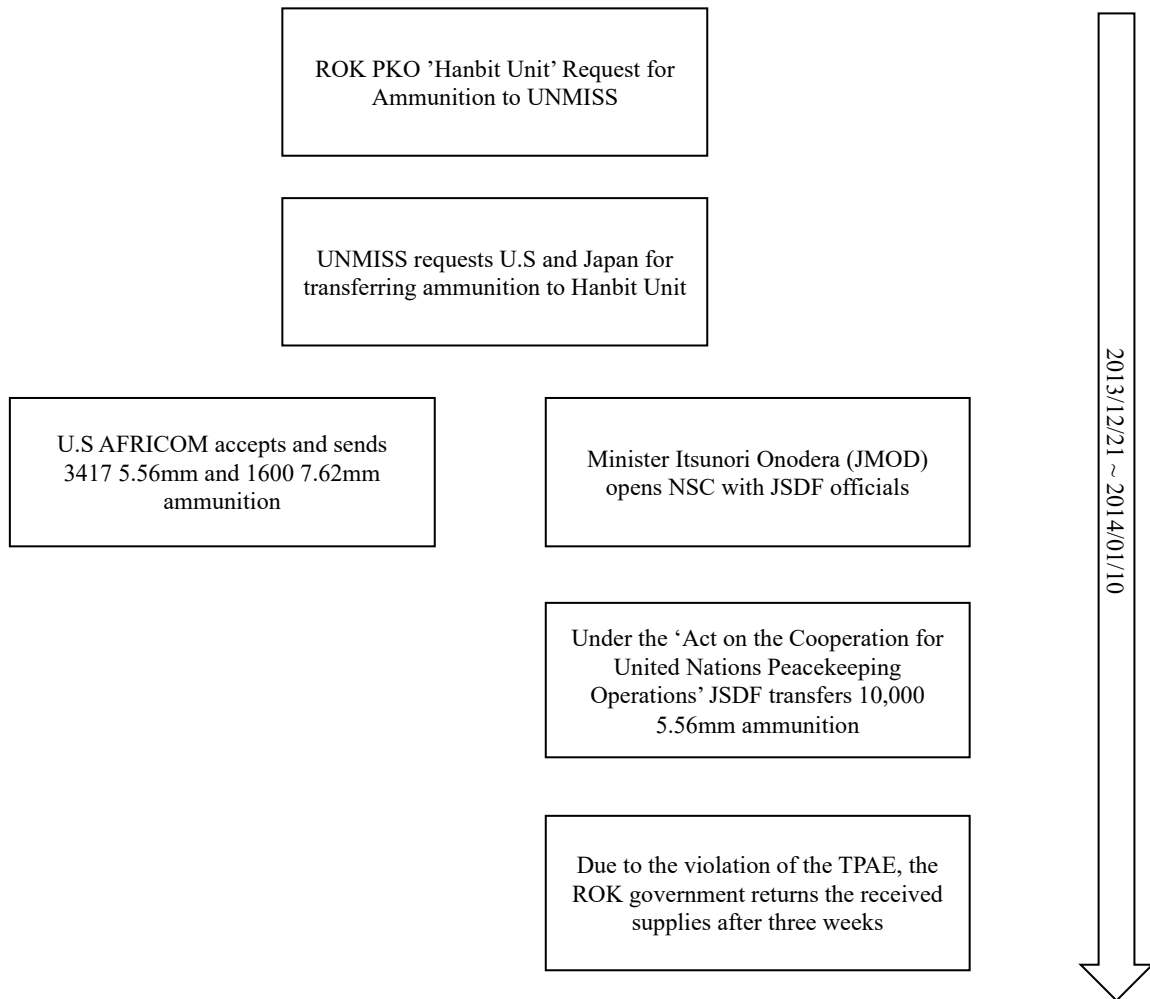
3-1-2. Case Study on JSDF-ROKA Ammunition Incident and the SM-IIA

JSDF-ROKA Ammunition Incident

During the civil war in South Sudan, the Japanese Self-Defense Forces (JSDF) dispatched ten thousand 5.56mm bullets to the ROK UN Peacekeeping Operations (UNPKO): 'Hanbit Unit'. However, this move was not without controversy. The Korean government initially agreed to receive the supplies but later reversed its decision, returning the bullets to the JSDF within three weeks. This move by the JSDF was the first time that Japan had provided ammunition to a foreign military since the Korean War, and it raised concerns among the international society about the country's pacifist stance. The controversy also touched on the delicate relationship between Japan and South Korea, which has been strained by historical issues related to Japan's colonization of Korea from 1910 to 1945. The Korean mass media criticized the decision to accept the ammunition, arguing that it was insensitive to the violation of the TPAE. In response to the controversy, the Japanese government defended its decision to provide the ammunition, stating that it was necessary to support the UNPKO's efforts to maintain peace and security in South Sudan. The government emphasized that the provision of ammunition was in compliance with Japan's civil controlled regulations, namely the NSC, which added legitimacy to its own decisions (JMOD, 2014)²⁸.

²⁸ Page 329

Figure 4. Reorganization of timeline on the JSDF-ROKA PKO Ammunition Incident



Reference: Reorganization from two articles from Korean media (Yeonhap News, 2013; ROK MOD, 2014)

The recent incident involving the transfer of weapon-related products has brought to the fore the existing restraints imposed by the TPAE. Although the item in question was conventional and not intentionally flawed, the response of the ROK has prompted the Japanese government to reassess its current export policies. On the mark, the Toshiba-Kongsberg incident has underscored the potential for the controversy surrounding the arms industry, which can attract unwanted attention from international players. The implications of such attention can be severe and far-reaching, leading to a negative impact on the economy and national security. The incident has highlighted the importance of taking a more nuanced and balanced approach to the regulation of weapon-related exports and transfers. Mainly from these developments, it is evident that a

comprehensive and well-informed approach is necessary to ensure the safe and responsible transfer of weapon-related products. A balanced approach must consider both the economic benefits of exports and transfers and the potential risks and ethical considerations associated with such activities. Striking a balance between economic growth and national security interests while taking into account the broader implications of these policies was crucial. Therefore, it is imperative that policymakers work collaboratively to develop a comprehensive framework that addresses these complex issues. This framework should include clear guidelines on the production, transfer, and export of weapons-related products, as well as measures to mitigate risks and ensure transparency in the process. By doing so, the arms industries can ensure that the transfer of weapon-related products is conducted in a responsible and ethical manner that is in the best interest of all parties involved.

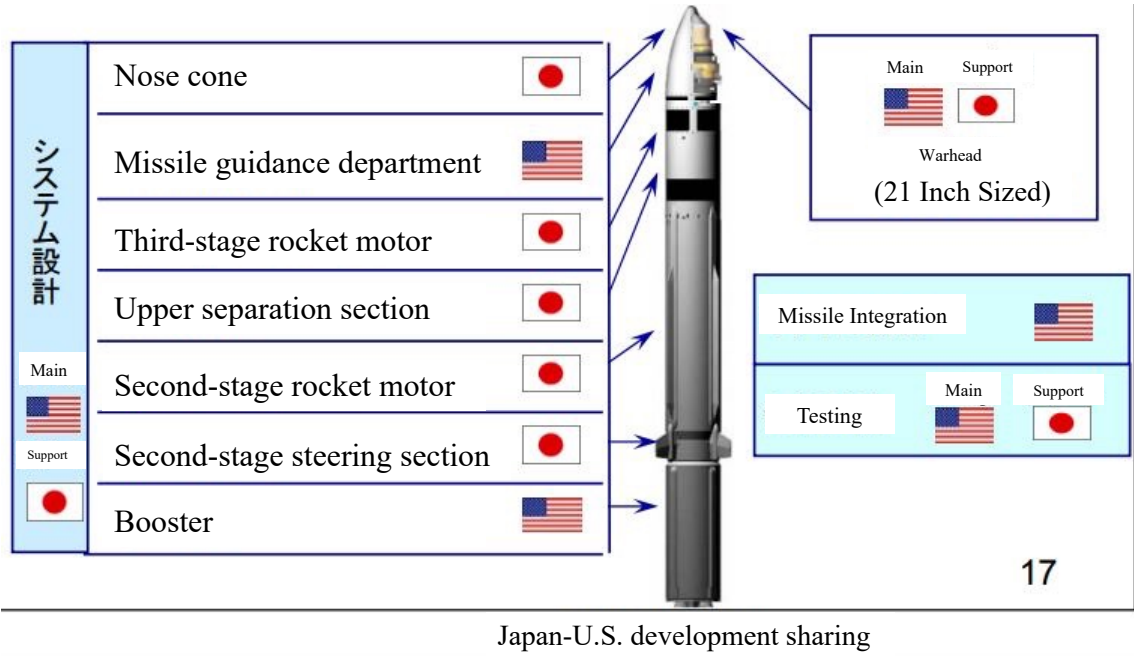
SM-3 IIA Missile

The cooperation between Japan and the U.S. on the BMD project has resulted in the development of advanced technology, including the SM-3 IIA missile. This missile is designed to intercept missile threats from countries such as DPRK, PRC, and the Russian Federation and has been touted for its technological performance. The case of the SM-3 IIA missile is a clear example of the benefits of joint development cooperation. The division of labor between Japan and the U.S. has allowed for the creation of a highly advanced missile system that is capable of intercepting missile threats from various nations. It is a testament to the power of collaboration between nations and the importance of technological advancements in modern defense strategies. On the mark, the cooperation between Japan and the U.S. on the BMD project has yielded significant technological advancements in missile defense, with the SM-3 IIA missile being a prime example of this. (Naval News, 2022; Donovan, K., 2022).

The SM-3 IIA missile has gained a significant reputation in the international market due to its advanced technology. In 2013, the Korean Navy was considering adopting this missile for its newly assembled AEGIS destroyer, Sejong the Great, given its promising technological

performance. However, the joint development of the SM-3 IIA missile by Japan and the U.S. presented a potential ethical concern. The issue of violating the TPAE arose, leading to questions about the potential political implications of purchasing the SM-3 IIA. If the Korean government were to choose to purchase these missiles, it would have been a direct violation of the TPAE (Nam Hyun, Choi., 2011). This highlights the challenges that arise when engaging in joint development projects, as the legal and ethical implications of transferring technology between countries must be carefully considered. Moreover, the violation of the TPAE would have had significant consequences for the relationships between the countries involved. It could have led to strained diplomatic relations, sanctions, or other forms of retaliation, potentially impacting regional stability followed by the case introduced in the previous passage.

Figure 5. SM-3 IIA Surface-to-Air Anti-Missile Joint-Development²⁹



Reference: Ministry of Defense (2017) ‘Defense White Paper’
 Retrieved from: http://www.clearing.mod.go.jp/hakusho_data/2017/html/nc027000.html

²⁹ For the original figure, find Appendix 7.

The JMOD (Japan Ministry of Defense) figure from 2017 reveals that several Japanese companies were involved in the production of various parts of the missile, indicating that the missile's nationality could be considered somewhat mixed. However, it is important to note that Japan played a significant role in the development of the missile. In fact, Japan's involvement in missile technology dates back several decades, and the country has a well-established defense industry that has been working in collaboration with other nations on various defense projects. Japan's contribution to this particular missile project likely went beyond just the production of individual components. Japan's expertise in electronics, materials science, and other fields from the civil sector may have also played a crucial role in the design and development of the missile as a whole. It is worth noting that the exact nature of Japan's involvement in the missile project is not publicly known, and details may be classified due to security reasons. Nonetheless, it is clear that Japan's contribution was significant and cannot be dismissed.

As this section has focused discussing on the existing risk of arms exports from Japan, specifically hindering the industry's ability to export military hardware. This sub-chapter presented three examples of incidents that illustrate the consequences of Japan's strict adherence to the TPAE. The first incident mentioned is the Toshiba-Kongsberg scandal, which highlights the seriousness of exporting military hardware without considering the potential backlash. The scandal involved the illegal transfer of submarine technology by Toshiba to a Norwegian company called Kongsberg. The Japanese government's investigation found that Toshiba had violated the TPAE by exporting technology that could be used for military purposes. This incident emphasizes the need for Japan's arms industry to be cautious and responsible when exporting military hardware. The second incident mentioned is the case of the Hanbit unit, which shows the limitations of the strategic transferring of weapons: bullets. However, Japan was unable to transfer supplies and aid due to the limitation from TPAE, creating a political spaz between ROK. This case demonstrates the difficulties faced by Japan's arms industry in exporting military hardware while complying with the TPAE. The third incident discussed is the SM-3 IIA incident, which was a turning point that raised questions about Japan's intentions and the possibilities of joint

development projects. The SM-3 IIA is a missile defense system that Japan developed in collaboration with the United States. However, when Japan attempted to export the system to the United States, there were concerns about whether Japan was using the joint development project as a means to bypass the TPAE restrictions. This incident shows that Japan's arms industry must navigate complex political and diplomatic considerations when exporting military hardware, especially in joint development projects. To end, this section highlights how the TPAE has had significant consequences for Japan's arms industry, particularly when it comes to exporting military hardware. The examples presented illustrate the difficulties and limitations that the industry faces in complying with the TPAE but also suggest that there may be ways to address these restraints through joint development projects successfully.

3-2. Normalizing the Terminology

Following the events described in the previous section, the Japanese government became acutely aware of the constant risk posed by its arms industries. While not a pleasant realization, the potential backlash from such a revelation was simply too great to ignore. Consequently, when the TPAE reform was undertaken, it was designed with the goal of changing the perception of weapon-related terminology. As the Japanese government is constitutionally prohibited from possessing a military, the weapons owned and operated by the JSDF were classified as "defense equipment" from that point onwards. However, due to the complex and convoluted language that had been used to describe them, there existed an invisible barrier in communication. This made it difficult for legitimate sales and support to take place. To address this issue, the TPDET underwent a restructuring process that simplified and clarified the relevant terminology. This allowed for greater transparency and legitimacy in the sale and support of JSDF defense equipment, removing the obstacles that had previously impeded these activities.

As a result of this hypothesis, the Japanese government used such passive terminologies that have led the arms industries to develop a rigid stance in sales. Firstly, by addressing the passive language used by the government, it is possible to understand in why the Japanese arms industries have hesitated to make sales actively. Secondly, after the TPAE reform, the business segments of MHI have fluctuated over the past two decades in response to changes in the government's export policies. These changes are significant as they demonstrate how the hypothesis has influenced both the language used by the Japanese government and the actions of MHI. By adopting more commonly used terminologies, the arms industry has signaled a shift towards greater transparency and communication with the international community. Meanwhile, the fluctuations in MHI's business segments highlight the impact of government policies on the arms industry and the need for businesses to adapt accordingly.

3-2-1. Passive Term from JMOD

From a traditional view, the Japanese government has been the main and precisely the only client served by its domestic arms industries. In this sense, the Japanese government has been selling weapons to a country that may not possess a military. Underlined, one of the main obstacles faced by the industry has been the use of controversial terminologies on military hardware. For instance, the JSDF is not officially recognized as a "military," which has led to the use of euphemistic terms such as "Special Car" (特車: Tokusya) instead of "Main Battle Tank" (MBT) to avoid controversy and negative perception. In a sense, the arms industries could not make sales to the government because it would conflict with the existing peace constitution³⁰. In response, the TPAE reform was aimed at clarifying the government's positions on the use of civil technology for military purposes and to provide a clearer framework for arms exports. This could potentially help the industry to overcome some of its challenges and increase its competitiveness in the global market. Moreover, the TPAE reform must also navigate complex issues surrounding international arms trade regulations, ethical concerns, and the potential impact of weapons exports on regional security and stability. As such, it will be essential for the Japanese government to tread carefully and strike a balance between promoting the interests of its arms industry and upholding its commitments to peace and security.

³⁰ Tanks in Japanese are translated as ‘戦車’ which is a terminology of combined with two characters: 戦 meaning war and 車 meaning car. From a pacifist view, Japan cannot possess anything that could be considered as a method of using force and war. In theory this would also apply to fighter aircrafts.

Table 8. Vocabulary used in military terms comparison between the JSDF and U.S Military

U.S Term	JSDF version
Infantry	普通科 Normal Department
Armored Forces	機甲科 Armored Department
Airforce	航空科 Airborne Department
Destroyer (AEGIS)	護衛艦 Frigate
Naval Fighter Squadron	航空団 Flight Group
Fighter Squadron	飛行群 Aircraft Group

Reference: Military Dictionary (2022), <http://www.military-dictionary.org/>,
 JGSDF (2022), <https://www.mod.go.jp/gsdf/about/recruit/branches/kikou.html>,
 JMSDF (2022), <https://www.mod.go.jp/msdf/equipment/ships/list/>

The debate around the JSDF classification and its arms industry has been ongoing for decades. Since the end of WWII, Japan has maintained a pacifist stance, enshrining this commitment to peace in its constitution. However, as previously discussed, Japan's regional and global security environment has changed significantly in recent years, raising questions about the adequacy of the JSDF's capabilities and classification: DPRK's nuclear weapons program, PRC's assertiveness in the East and South China Seas, and the changing balance of power in the Asia-Pacific region, all contributing to a growing sense of insecurity in Japan. Additionally, Japan's close alliance with the U.S., which provides for Japan's defense, has come under strain due to the unpredictable foreign policy of the current U.S. administration. This has altered the key directions of the JSDF to rearm itself in a holistic way. From this point of view, the use of relatively soft language in the JSDF's classification has been a source of controversy. Critics argue that such language is symbolic and does not accurately reflect the JSDF's actual capabilities, which include offensive weapons such as fighter jets and destroyers. This ambiguity has led some to question the legitimacy of Japan's commitment to pacifism and its compliance with international norms on arms exports. To address this issue, some have suggested amending the peace constitution to allow for a fully armed military. However, such a change would be radical and difficult to achieve,

requiring a two-thirds majority in both houses of the Japanese Diet and a national referendum. Others have proposed more modest changes, such as revising the interpretation of the constitution to allow for collective self-defense or amending the existing Act on the TPAE to allow for greater information sharing and cooperation between the JSDF and other countries. Despite these criticisms, the amendment was seen as a small step towards normalizing the JSDF as a fully functioning military. It remains to be seen how this change will impact Japan's role in regional and global security and whether it will pave the way for more significant changes in the future.

3-2-2. Changing MHI Business Segments

With the TPAE reform, Japanese companies are now able to export arms to countries that meet certain conditions, such as being allies of Japan and promoting peace and stability in the international community. This has opened up a significant market for Japanese companies, allowing them to expand their businesses globally. The reform has also led to an increase in Japan's military presence overseas, particularly in areas such as peacekeeping operations, disaster relief, and anti-piracy measures. In response to the TPAE reform, MHI has made several changes to its corporate policies and agendas. The company has updated its categorization of arms production to reflect the new guidelines, and it has also established an internal committee to ensure compliance with ethical standards (MHI, 2014). These changes demonstrate MHI's commitment to responsible and sustainable practices in the arms industry. One of the key drivers of these changes has been a growing recognition among businesses and governments alike that traditional approaches to arms production are no longer sustainable or responsible. The arms industry has long been associated with diverse forms of negative externalities, and there is growing pressure on companies to adopt more transparent and responsible practices in their business. MHI and other domestic companies are well-positioned to lead this transformation, given their expertise in advanced technologies and their longstanding commitment to innovation. To illustrate the extent of these changes, the table below shows how MHI has evolved its categorization of arms production from 2010 to 2020. This highlights the company's commitment to adopting more transparent and socially responsible practices while also reflecting the broader changes happening within the industry.

Table 9. Fluctuating names in the categorization of arms sales in MHI from 2000 to 2022

Year	Type	~2011 ³¹	~2012	2013~ ³²	2016~	2018~
Sector Name	Air	Aerospace	Aerospace systems	Integrated Defense & Space Systems	Aircraft, Defense and Space Domain	Aircraft, Defense & Space
	Land	Machinery and Steel Structures	General Machinery and Special Vehicles	Machinery, Equipment and Infrastructure		
	Sea	Ship Building and Ocean Development	Ship Building and Ocean Development	Commercial Aviation and Transportation Systems		

Reference: MHI annual report from 2000 to 2022

The incorporation of the TPAE reforms into its SWOT analysis was a strategic move by MHI, demonstrating its ability to adapt to changing government policies and its commitment to leveraging new opportunities for growth and development (MHI, 2014; MHI, 2015). The loosening of restrictions on international arms exports allowed MHI to explore new markets and establish partnerships with international industrial allies, opening up new avenues for growth and expansion. At the same time, the potential for diversification in its production capabilities provided MHI with the opportunity to expand beyond its traditional focus on cloaking what is being produced and engage openly in joint development projects, further enhancing its global reach and influence. The modification in the business segment shifted from a blended approach

³¹ After the first wave of reform on the TPAE in the year of 2008 and 2009, MHI has included the reform into its SWOT analysis in the annual reports. Its strengths indicated the (1) Opportunities to export arms internationally and (2) diversifying its productions.

³² MHI has attempted to distinguish aviation products from military-civil use. Eventually, civil aviation was reorganized to the 'Commercial Aviation and Transportation Systems' which included ship, trains and commercial airplanes.

to one that clear separation between arms production and commercial goods. This reflects the evolution of the arms industry: MHI in Japan and its increasing efforts to adopt a more transparent and internationally recognized language. As MHI and other domestic defense contractors continue to navigate the complex and rapidly changing arms export landscape, this commitment to transparency and inclusivity is essential to their long-term success and sustainability. At the end of the day, under the increasing pressures to reform its policies on weapons exports, Japan has taken steps to clarify the terminology and controversies surrounding the production and export of military hardware from its domestic arms industry. One example of this can be seen in the evolution of terminology related to the word "defense," as seen in the MHI case. Through this contextual analysis, it is possible to see that the domestic arms industry is gaining greater autonomy in arms production both domestically and internationally. As well it directly tackles the potential controversies in exporting arms, the TPDET now serves as a new guideline for corporations to adapt to the new changing world. However, it is important to note that the normalization of the state cannot be achieved within a short amount of time and that significant challenges remain in achieving this goal. The challenges are considered to be not being able to make exports despite the proliferating export ban and still struggling in creating a stable arms market both domestically and internationally.

Nevertheless, in the final evaluation, the Japanese government's efforts to clarify the language and policies related to the arms industry represent a significant step towards greater transparency and accountability in this sector. By clarifying the terminology and regulations around weapons exports, Japan is better positioned to engage in partnerships and joint development projects with strategic allies, contributing to greater stability and security in the region and beyond. As the country continues to develop its domestic defense industry and expand its influence in the global defense market, it is important to maintain this focus on transparency and accountability in order to ensure the long-term sustainability and success of these efforts. However, despite the positive impact of the TPAE reform, there are still challenges that Japanese companies must overcome. One of the biggest challenges is navigating the complex global arms

market, which is highly competitive and heavily regulated. Japanese companies must also ensure that their exports meet ethical standards and do not contribute to conflicts or human rights violations in other countries. Moreover, Japanese companies must be cautious not to contribute to conflicts or human rights violations in other countries. The ethical implications of selling weapons and military equipment to other nations have been widely debated, and companies like MHI have a responsibility to ensure that their exports do not contribute to instability or suffering. This requires extensive research and scrutiny of potential buyers and end-users, as well as ongoing monitoring and evaluation of how their products are being used. In response to these challenges, companies like MHI have implemented various policies and procedures to ensure compliance with ethical standards and regulations. For example, MHI has established an internal committee to oversee its arms production and exports, as well as regularly review and update its policies and procedures. Such measures demonstrate a commitment to responsible and sustainable practices in the arms industry.

In conclusion, this chapter has demonstrated the effectiveness of the TPAE in improving the transparency of military terminologies. By clarifying the previously blurred boundaries between civil and military technologies, the TPAE has provided a much-needed framework for defining these concepts. This reform has resulted in an updated rubric that arms industries and government administrations can use to ensure greater transparency in their communication. Overall creating a more transparent and accessible language for all stakeholders involved. Chapter four will now address the current escalating trend in joint development projects.

Chapter 4. Changing Strategic Partners

In recent years, Japan has been facing a rapidly changing security environment. The rise of China as a global superpower and the increasing assertiveness of North Korea has led to a growing sense of insecurity in the region. At the same time, the role of the United States as a security provider has been called into question, with the Trump administration demanding more participation from its allies and the Biden administration announcing its withdrawal from Afghanistan. In response to these challenges, the Abe administration implemented a number of measures aimed at maintaining stability and security in the region. One of the key initiatives is the Free and Open Indo-Pacific (FOIP) strategy, which seeks to promote a rules-based order and strengthen economic and security ties among like-minded countries in the region. This strategy is seen as a way to counter China's growing influence in the region and protect Japan's interests (Hosoya, 2019; Frattolillo, 2022). Another important initiative is Japan's participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), a free trade agreement that includes 11 countries in the Asia-Pacific region. The CPTPP aims to promote economic integration and liberalization and is seen as a way to counterbalance China's economic influence in the region (석민규, & 박창건, 2022). In addition to these initiatives, Japan has also taken steps to enhance its own military capabilities. Over the past twenty years, centered by the LDP, several laws were newly implemented, allowing Japan to exercise the right to collective self-defense, which means that Japan can now come to the aid of its allies in the event of an attack (박철희, 2004; Aoi, C., 2011; Aoi, C., & Heng, Y., 2021; Aoi, C., 2021). Japan has also increased its defense spending and has been working to strengthen its defense ties with other countries in the region. Despite these measures, Japan's security environment remains uncertain. The Biden administration has signaled a renewed commitment to the region, but questions remain about the extent to which the US will be willing and able to maintain its role as a security provider

(Madhani, A., & Megerian, C., 2022). At the same time, China's military modernization and assertiveness continue to pose a significant challenge to Japan's security. In this context, it is likely that Japan will continue to pursue a range of initiatives aimed at maintaining stability and security in the region.

The changing policies of the Abe administration have been a topic of much discussion among scholars, particularly as they relate to the shift away from the longstanding Yoshida Doctrine and toward a more neoclassical realist policy agenda, which has come to be known as the Abe Doctrine. This new doctrine represents a significant departure from the more liberalist policies of the past, particularly in terms of the security partnership between Japan and the United States. Under the Yoshida Doctrine, Japan had largely relied on the U.S. for its security needs, but under the Abe Doctrine, the government is now seeking to take a more proactive role in ensuring its own security. This shift toward a "self-help" approach has led the government to seek out new allies and to distinguish between friend and foe in the international arena more carefully. While much of the focus on the Abe Doctrine has been on its implications for Japan's security policies, there have also been significant changes in the area of international joint development projects between arms industries. This is an area where the TPAE reform of 2014 has had a particularly profound impact. Since the reform, there has been a noticeable increase in the number of joint development projects between Japanese and foreign arms industries, particularly those in the United States. These projects are seen as a way for Japan to build up its own military capabilities while also contributing to the broader security alliance between the two countries.

Alongside these shifting policies, this chapter probes how the TPAE reform was designed to reconstruct the arms industries ecosystem and a possible strategy to achieve competitiveness in the international market. In the end of the day, the TPAE reform has led the Japanese government to adopt a more diverse security partnership in the international society.

4-1. Increasing Overseas Joint Development Projects

In chapter two, it was proven that the Japanese arms industries have failed to see revitalization. Though after an interesting discovery from the JMOD, the evaluation might be seen from a different perspective. As the TPAE has been an obstacle for not only exporting ‘Made in Japan’ weapons, it was also constraining joint-developed products from being exported as well. This was a considerable downfall for the arms industries to actively participate in joint development projects due to the limited pool of clients. The TPAE reform has brought significant changes to the Japanese arms industries, particularly in joint development projects. The reform has provided more opportunities for Japanese arms manufacturers to participate in joint development projects with other countries, which in turn can help them expand their client base and increase their revenue. One of the main reasons for the limited participation of Japanese arms industries in joint development projects was the TPAE, which imposed strict regulations on the export of weapons and technology. This hindered the ability of Japanese arms manufacturers to collaborate with other countries in the development of weapons and limited their potential market. However, with the reform of the TPAE, Japanese arms industries are now able to participate in more joint development projects, which has led to a significant increase in the number of such projects initiated by the JMOD (2022). It is important to note that joint development projects are not only beneficial for Japanese arms industries but also for the participating countries. These projects allow for the exchange of knowledge and technology, which can lead to the development of more advanced weapons systems. Additionally, joint development projects can help build stronger relationships between participating countries, which can be beneficial in terms of diplomatic relations.

Table 10. Increasing numbers of joint development projects from Japanese arms industries after the introduction of TPTDET in 2014³³

Country	Year	Project name
USA	~1992	United States and Japan have conducted 25 joint research projects and one joint development project.
	~2021	Six joint studies have been conducted (comparison of exposure to jet fuel and noise in unit operations, chemical coloring reaction identification devices, high heat resistance case technology, next-generation amphibious technology, inter-network interfaces, and modular hybrid electric vehicle systems)
	2012	Transfer of licensed parts for Patriot PAC-2 to U.S. licensee
	2014	The U.S. government announces Japan and Australia as the regional depot for F-35 fighter jets
	2015	(1) Transfer of Aegis System Software and Parts to the United States (2) In order to acquire F-35A fighter jets, domestic companies will participate in the final assembly and inspection (FACO), engine parts, radar parts, and infrared detector parts based on coordination with the U.S. government.
	2016	"Memorandum of Understanding on Defense Procurement between Japan and the United States (RDP MOU)"
	2017	Fuji Heavy Industries Co., Ltd. (currently SUBARU Co., Ltd.) was selected as the maintenance company serving the U.S. Navy's Futenma Air Station.
	2018	Acquired 105 F-15 fighter replacement by upgrading
U.K	2020	Mitsubishi Heavy Industries started operation at Komaki Minami plant and started maintenance of the F-35A
	2013	(1) Japan and Britain signed the Japan-British Agreement on the Transfer of Defense Equipment and Technology (2) Joint Research on chemical and biological protection technology
	2014	(1) First assembly of the Japan-British Committee on 'Defense Equipment and Technical Cooperation' (2) Joint Research on Developing New Air-to-Air Missiles (Finished 2018)
	2016	Joint Research on Personnel Vulnerability Assessment

³³ Refer to Appendix 6, for the Japanese version (Was translated by the author)

	2018	(1) Joint Research on the Authentication Process of Jet Engines (Finished 2020) (2) Joint Research on the Feasibility of Next Generation RF Sensor Systems (Finished 2020)
	2022	Japan and Britain are exchanging information on the next fighter jet and Future Combat Air System (FCAS)
France	2014	Established Committee on Defense Equipment Cooperation and Export Control Measures
	2015	Japan-France Agreement on Defense Equipment and Technology Transfer
	2017	Attended 'Paris Air Show 2017' displaying JMSDF P-1 patrol aircraft
	2018	4th Japan-France "2+2" Joint research on next-generation mine detection technology
	2019	Attended 'Paris Air Show 2019' displaying JMSDF P-1 patrol aircraft and JASDF C-2 transport aircraft.
Germany	2017	Japan-German Agreement on the Transfer of Defense Equipment and Technology
	2018	Attended 'Berlin Air Show 2017' displaying JMSDF P-1 patrol aircraft
Italy	2017	Japan-Italy Agreement on Defense Equipment and Technology Transfer
	2019	Japan-Italy Public-Private Defense Industry Forum
Australia	2014	Japan-Australia Agreement on Defense Equipment and Technology Transfer
	2015	Joint research on the hydrodynamics field of ships
	2019	(1) Agreement on the Science and Technology Exchange Plan (2) Joint Management Committee for Defense Equipment and Technical Cooperation (3) ASDF C-2 transport aircraft participated in the Avalon International Air Show (4) Second Japan-Australia Joint Steering Committee on Defense Equipment and Technical Cooperation
	2021	(1) Joint research on the fluid acoustic performance of ships (2) Joint research on the autonomous technology of multiple unmanned vehicles
India	2015	Japan-India Agreement on the Transfer of Defense Equipment and Technology
	2018	Joint Research on Location Estimation Technology with Images for UGV/Robotics
	2019	Japan-India Defense Industry Forum

ASEAN	2016	‘Vientiane Vision’ ³⁴
	PH	(1) 2018, five TC-90s were transferred to the Philippine Navy, and personnel from maintenance companies were dispatched to support maintenance and maintenance. (2) 2019, Free transfer of helicopter UH-1H parts to Philippine Air Force (3) 2020, the Philippine Ministry of Defense and Mitsubishi Electric Co., Ltd. signed a contract to deliver four of the company's warning and control radars for about \$100 million.
	VN	(1) 2016 "Implementation Guidelines for Periodic Consultations on Defense Equipment and Technical Cooperation (TOR: Terms of Reference)" (2) 2020 Japan-Vietnam Summit "Defense Equipment and Technology Transfer Agreement"
	MY	Japan-MY Defense Equipment and Technology Transfer Agreement
	ID	2021 "2+2, Agreement on the Transfer of Defense Equipment and Technology"
Middle East	UAE	JASDF C-2 transport aircraft participated in Dubai Air Show 2019
	JOR	Lended a retired JGSDF Type 61 tank to the Jordan government free of charge
	IL	"Memorandum of Understanding on the Protection of Confidential Information on Defense Equipment and Technology"

Reference: ATLA (2021), “Regarding defense equipment and technical cooperation”³⁵
<https://www.mod.go.jp/atla/soubiseisakugijutu.html>

The global arms industry is a highly competitive and lucrative market, with billions of dollars being spent annually on military equipment and technology. Japan has traditionally been one of the largest arms importers in the world, with a significant portion of its military equipment being sourced from the United States. However, in recent years, the Japanese arms industry has been

³⁴ The Vientiane Vision was issued during the ASEAN-Japan Commemorative Summit held in Vientiane, Laos, in December 2004. It aimed to enhance the ASEAN-Japan partnership in various areas, including political and security issues, economic cooperation, people-to-people exchanges, and environmental protection. The Vientiane Vision emphasized the importance of building a "partnership for peace and prosperity" between ASEAN and Japan and called for joint efforts to achieve sustainable development in the region. It also recognized the potential for greater cooperation in addressing transnational challenges, such as terrorism, natural disasters, and infectious diseases. (JMOD, n. d.)

³⁵ Translated from 「防衛装備・技術協力について」

making a concerted effort to increase its presence in the international arms market, through partnerships with foreign companies and the development of new technologies. One of the key ways in which the Japanese arms industry has been expanding its reach is through joint development projects with partner countries. As the table above shows, the number of these projects has increased significantly in recent years, particularly as the number of partner countries has grown. This trend is significant not only for the Japanese arms industry but for the arms market as a whole, as it represents a shift towards greater international collaboration and cooperation in the development of military technologies. By participating in joint development projects with foreign companies and countries, the Japanese arms industry is able to leverage the expertise and resources of its partners to develop new technologies and products that it may not be able to achieve on its own. This, in turn, helps to expand the industry's client pool and increase its competitiveness in the international market over the long term. Additionally, joint development projects often lead to the transfer of knowledge and technology between partners, which can have broader economic benefits beyond the immediate project itself. Another potential benefit of joint development projects is the increase in weapon capabilities that can be achieved through collaboration. By pooling resources and expertise, partner countries are able to develop more advanced and sophisticated military technologies than they would be able to do individually. This, in turn, can lead to improvements in national security and military readiness, which is a key consideration for many countries around the world.

To fully comprehend the nuances of joint development projects, it's crucial to examine both past and present initiatives. While previous and ongoing collaborations can provide valuable insights, practical case studies offer a more detailed and realistic understanding of the benefits and limitations of joint development. Two such case studies are the FSC and GCAP, which provide insights into the Japanese government's decision to shift its joint development partnerships from homogenous to heterogenous.

4-1-1. Case Study: FSX and the GCAP

Joint development projects have been a longstanding practice in Japan, with Michael Green's book "Rearming Japan" providing insight into the fighter acquisition program that contributed to the rearmament of the JASDF. Over the past two decades, the Japanese arms industry has faced numerous challenges but has managed to stay afloat, and the JSDF has successfully rearmed itself. The FSX project launched in the 1980s was a pivotal moment for the arms industry, with high expectations for the development of a next-generation fighter aircraft comparable to the F-22 Raptors. The outcome of the project resulted in the creation of the F-2 fighter aircraft, which was considered a successful collaboration between the top-tier arms industries of the world, namely MHI and Lockheed Martin (MHI, 2023; Lockheed Martin, 2023). However, while the F-2 was a significant achievement, in theory, it had several limitations when deployed. For instance, the production cost of F-2s was exorbitant, leading to a halt in procurement for cost-effectiveness. The high production cost of the F-2 was attributed to its complexity, requiring specialized manufacturing processes that contributed to high unit costs. This made the F-2 prohibitively expensive for the Japanese government, and as a result, the procurement of F-2s was stopped to focus on more cost-effective alternatives. Another limitation of the F-2 was its interoperability with allied forces, which was called into question due to its specialization. The F-2 was designed to meet Japan's unique defense needs, and as such, it was not a widely adopted platform by other nations. This meant that the F-2 had limited interoperability with allied forces, which could have been problematic in joint operations. The lack of interoperability with allied forces was a major concern for the Japanese government, which relied heavily on its alliances with the US and other countries for security (Military Watch Magazine, 2018).

The F-2 fighter aircraft was developed as a versatile aircraft, capable of excelling in both air-to-air and air-to-ground missions. It was designed as an evolution of the F-16 and F-1 models, with the aim of enhancing the operational capabilities of the Japan Air Self-Defense Force

(JASDF). However, the project faced political challenges both within and outside Japan. The country's strong alignment with pacifist values meant that the F-2's designs were primarily oriented toward defending borders, and its weapon capabilities were limited accordingly. Additionally, there was a longstanding debate within the U.S. government over whether to transfer core technologies to Japan. Despite these challenges, the F-2 project moved forward, but the final product was somewhat disappointing compared to the initial expectations. The road to completion was bumpy, and the political discourse surrounding the project created obstacles (Mann, 1989; Pine, 1989). Nevertheless, the F-2 remains an important fighter in the JASDF's fleet, and its versatility continues to play a role in defending Japan's borders. Today, the JASDF is the sole operator of the 98 F-2 fighter aircraft produced since the early 2000s. However, the limitations of the F-2's deployment became apparent in March 2011 when a massive earthquake with a magnitude of 9.0 on the Richter scale struck the northeastern region of Japan, causing a devastating tsunami. The Matsushima military airport in Miyagi Prefecture was severely damaged, affecting not only the airport's infrastructure but also the operational capabilities of the JASDF. Of the F-2 fighter aircraft stationed at Matsushima airport, 18 F-2Bs and several other aircraft were damaged. The cost of repairing and replacing the damaged F-2 fighter aircraft was significant and had a substantial impact on the JASDF's operational capability. Repair costs varied depending on the extent of the damage, with more severe damage requiring greater resources and time to fix (鈴木健児, 2017). The availability of spare parts and the time required to manufacture new aircraft also influenced replacement costs. Eventually, the JASDF decided to scrap the available parts and reassemble only 6 units out of the damaged 18, taking into consideration the cost of repair and replacement (최영진, 2011). This decision was made after taking into account the loss of newly purchased units that were shot down. Critics have pointed out that the cost-effectiveness of the F-2 fighter aircraft must be considered from a broader perspective, including the lack of demand for the aircraft on the global market.

As the retirement year for the F-2s approached, the Japanese government recognized the need to find a suitable replacement for the aging fighter jets. To address the challenges posed by the limited weapon capabilities and high maintenance costs of the F-2s, Japan sought to partner with other countries with strong arms industries for the development of the next generation of fighter jets. In recent years, Japan has been exploring partnerships beyond the United States, which has traditionally been its primary partner in defense cooperation. To this end, a significant breakthrough was made with the signing of the Global Combat Air Programme (GCAP) treaty between Japan, the United Kingdom, and Italy. Under this program, each country's best arms industries will collaborate to develop the next-generation fighter aircraft to replace the F-2s. The treaty also calls for active deployment of the final product until 2035 (JMOD, 2021). One notable aspect of the GCAP project is Japan's decision to shift its development partners away from the U.S. The move was significant because historically, the JASDF has operated seven different types of fighter aircraft, and six of them were jointly developed or imported from the United States. However, for the first time, the Japanese government is collaborating with a third partner country in the development of a fighter aircraft. Lockheed Martin, the manufacturer of the F-2s, was removed from the list of candidates for the GCAP project. This decision is a clear indication of Japan's commitment to developing fighter aircraft with new partners while diversifying its options for sourcing advanced technologies. The GCAP project is expected to create a significant impact on Japan's defense industry and strengthen its international partnerships in defense cooperation. As the world continues to change rapidly, Japan's shift in its approach to defense cooperation highlights the importance of collaboration and partnerships in ensuring security in the modern world.

Table 11. Approximate comparison between the FSX and GCAP project

	F-2 (FSX)	F-3 (GCAP)
Deployed (Projected)	JASDF 98 Units	JASDF, RAF, AM ³⁶ Prearranged for 300 Units
Year for Deployment	2000	Estimated for 2035
Participating Countries	Japan, U.S	Japan, U.K., Italy
Participation Ratio	Japan 60 : U.S. 40	Japan 40 : U.K 40 : Italy 20
Participating Companies	MHI, Lockheed Martin	MHI, IHI, BAE Systems, Rolls-Royce, Leonardo, Avio
Estimated Cost per Unit	12 billion JPY	18 billion JPY ~ 15 billion JPY ³⁷
R&D Cost	21 billion USD	Not determined

Reference: MHI, Lockheed Martine, JMOD, ATLA, JMOFA, and Mass media documents reviewed.

The FSX project is an important initiative aimed at the development and deployment of new fighter aircraft, and the previous table provides insights into how the project has evolved over time. One key observation is that the United States was the only participating country in the initial stages of the project. However, the participation of other countries has gradually increased, resulting in a more multilateral condition. As more countries joined the project, the pool of companies involved in the research and design of the new fighters became more diverse. This diversification brought with it a range of strengths and expertise that has contributed to the success of the project. By having a more varied group of companies involved, there has been a more even distribution of responsibilities and costs, ultimately leading to a more effective and efficient project.

³⁶ Japanese Air Self Defense Force, Royal Air Force and Aeronautica Militare.

³⁷ Depending on the total exports after the completion of the project. In theory, if all three countries keep the promise to acquire the planned 300 units and extra units exported, the cost will be reduced dramatically. While the F-2s are considered to be 4th generation fighters, followed by the F-16s and, F-3s are estimated to be 6th generation fighters which exceed the capabilities of F-35s.

To begin with, the JASDF's participation in joint operations with foreign countries has greatly enhanced its interoperability with a broader spectrum of fighter aircraft. This heightened interoperability is indispensable for the success of joint operations, as it facilitates seamless communication and coordination among fighter aircraft from different nations, resulting in more efficient and effective outcomes. This marks a significant improvement over Japan's previous limitations as the sole operator of the F-2s. For instance, when the F-2s suffered damage from the earthquake, the Japanese government faced a power vacuum since it was impossible to replace them from storage. However, with foreign countries operating the same products, instant refurbishment through strategic communications is now a viable option. This not only strengthens Japan's military capabilities but also enhances its resilience in times of crisis. Secondly, expanding the number of participating countries in the project is anticipated to enhance the cost-effectiveness of the new fighters. With more nations investing in the project and procuring the new fighters, the demand for the aircraft is expected to escalate, leading to economies of scale and a reduction in the overall production cost. This will ultimately make the new fighter more affordable for all participating countries and possibly even entice new customers to purchase the aircraft. Additionally, the increased demand for the new fighter will create a more competitive market, driving innovation and technological advancements that could benefit the aviation industry as a whole. Overall, this expansion of the project's reach not only increases its potential for success but also has the potential to yield significant benefits for the participating nations and beyond.

Inclusively, the extension of participating countries in the project has been a significant step forward for the JASDF. It has allowed them to improve their interoperability with foreign countries while also achieving greater cost-effectiveness. This expansion of the project's scope bodes well for the future success of joint military operations and the affordability of the new fighter aircraft. The contrast between the two projects is evident in the evolution of their designs, which have become more intricate and self-referential. This suggests that the Japanese government is seeking to restructure its arms industries in pursuit of both rearmament and revitalization.

4-1-2. Case Study: Lockheed Martin F-35 Lightning II

In the early 2000s, the Japanese government faced a critical decision regarding the future of its fighter jet program. With the production of the F-2 coming to an end, the government had to choose between participating in a joint development program or continuing to invest in an indigenous program. This decision was complicated by the fact that there was a lull in decision-making for the Japanese government regarding the next generation of fighter jets. During this period of uncertainty, the United States was in the process of developing the Lockheed Martin F-35 Lightning II program. The F-35 program was designed to produce a fifth-generation stealth fighter that could be used by multiple countries. Its advanced capabilities and versatility promise to enable the aircraft to perform a wide range of missions. The F-35 program quickly gained the attention of several countries, including Denmark, Norway, Italy, Australia, Canada, Turkey, the Netherlands, and the United Kingdom. The program's potential to deliver a highly adaptable and versatile fighter jet with advanced capabilities was seen as an attractive option for these countries. Today, the F-35 program is one of the most significant collaborative efforts in military aviation history, as the F-35 continues to evolve and become a more integral part of the world's military capabilities.

The Japanese government had expressed interest in purchasing advanced stealth fighter jets, the F-35s, and also in participating as a contributor in the project. However, the TPAE posed a significant challenge for Japan. The TPAE prohibited Japan from exporting weapons to countries involved in conflicts or likely to use them for offensive purposes. This restriction limited Japan's ability to participate in international defense projects and could harm its domestic defense industry. To overcome this obstacle, the Japanese government started considering revising the TPAE to allow for weapon exports under certain conditions. However, this decision was controversial, as some people within Japan were worried that exporting weapons could lead to the country getting involved in overseas conflicts or becoming complicit in the use of force. In 2014, the Japanese government announced the TPDET, which relaxed restrictions on the sale of

military equipment, subject to certain conditions. This allowed Japan to participate in international defense projects, including the potential export of next-generation fighter aircraft. These aircraft would be designed for both domestic and international customers. In 2019, the JMOD requested the U.S. to join as an official participant in the project, now known as the GCAP. However, the Pentagon refused the request, citing the issue of fairness and stating that "2002 was the final call" (Mehta et al., 2019). Undeterred, the Japanese government continued to pursue the GCAP the following year.

The case underscores the significance of the TPAE reform for the Japanese arms industry to take part in collaborative development projects. Given the regulations, the Japanese government would have faced challenges in selling F-35s as the official participant. Consequently, the TPAE reform was essential to validate Japan's involvement in such projects. Interestingly, the decision not to participate in the F-35 program may have presented an opportunity for the Japanese arms industries to attain autonomy in the development of next-generation fighters while maintaining a positive relationship with the U.S. On the contrary, the aforementioned cases highlight the utmost significance of standardizing terminologies. By refraining from labeling weapons according to their intended use, the collaborative development of such armaments would have posed a considerable challenge for Japanese arms industries due to the prevailing restrictions imposed by the TPAE. In other words, the TPAE reformation and normalization of terminologies have opened new windows for exports and cooperation with its strategic allies.

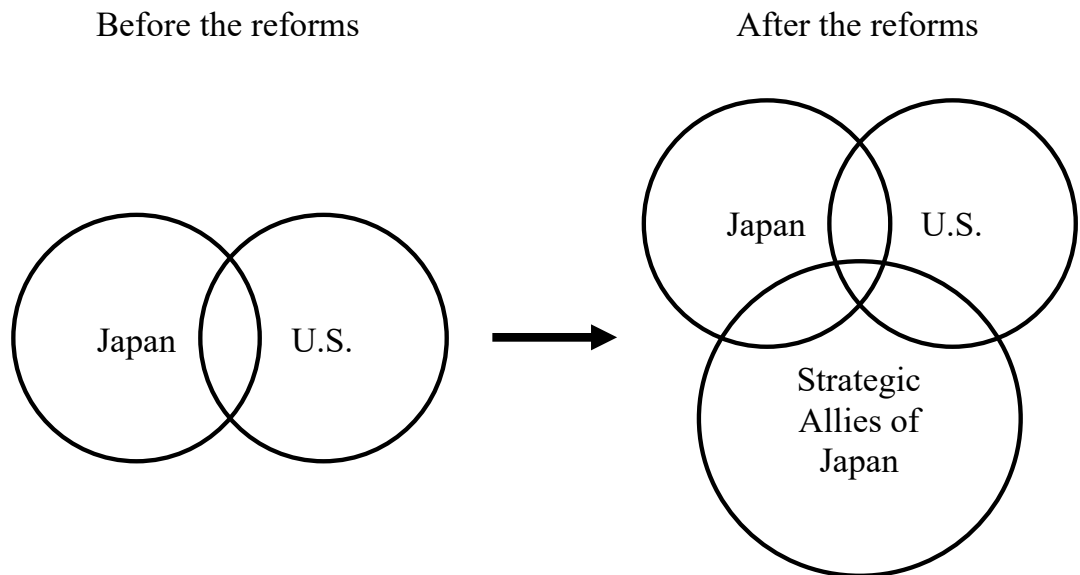
4-2. Expanding the Security Partnership

Before the TPAB reform, joint development projects were primarily limited to the U.S. and the U.K. However, with the reinstatement of the TPDET, the strategic alliance has expanded to include new U.S. allies and relatively neutral states. This represents a significant shift in Japanese national focus from being under the U.S. sphere of influence to a more autonomous position. Some possible reasons for this shift could be explored further. For example, Japan may be seeking to diversify its strategic partnerships and reduce its dependence on the U.S. in light of geopolitical tensions in the region. Additionally, the TPDET may be seen as a way to promote Japan's own technical expertise and expand its international influence.

The trend towards multilateralism in Japanese foreign policy is an intriguing development that has been gaining momentum in recent years. As a traditionally insular nation that has been known to prioritize bilateral relationships with its neighbors, this shift towards multilateralism is a notable departure from the norm. There are many possible explanations for this phenomenon, but perhaps the most convincing one is the changing geopolitical landscape in East Asia. With the rise of PRC as a regional superpower and the increasing unpredictability of the North Korean regime, Japan has been forced to reevaluate its security posture and explore new partnerships in order to ensure its long-term stability. One important aspect of this shift towards multilateralism is the fact that Japan has been willing to engage with non-democratic countries as strategic partners (Yuichi Hosoya, 2019; Oliviero Frattolillo, 2022). This is a departure from its previous emphasis on working exclusively with like-minded democratic nations in the region. While some critics have raised concerns about this approach, arguing that it could compromise Japan's commitment to human rights and democratic values, others argue that it is a pragmatic response to the realities of the region. Regardless of one's position on the matter, it is clear that the Japanese government is keeping in alliance with the U.S. while also focusing on the national interest of Japan for sustainable security measures. This balancing act requires a delicate touch, as Japan must navigate a complex web of relationships with both its

allies and potential adversaries in the region. In addition to its security concerns, Japan's shift towards multilateralism can also be seen as a reflection of its growing economic influence in the region. With the signing of the CPTPP, Japan has become a key player in shaping the future of trade in the Asia-Pacific region. By forging new partnerships with countries like Australia, Canada, and Vietnam, Japan is positioning itself as a leader in regional economic integration (석민규, & 박창건, 2022).

Figure 6. Japan Arms Industries Joint Development Project Partnership Shift



Reference: Authors description of Japan's focus on military-related joint development projects

In recent years, the Japanese government has undergone significant changes in its approach to the arms industry, particularly in the area of joint development projects. This shift has led to a new form of diplomacy that prioritizes strategic alliances with countries beyond the traditional scope of the U.S. and its allies. While the TPAE and other restrictions on arms acquisition have limited Japan's options in the past, recent policy changes have opened up new opportunities for bilateral and multilateral cooperation. As a result, Japan is now able to engage in defense partnerships with a wider range of countries, contributing to greater stability and security in the region and beyond.

From a neoclassical realist perspective, the recent phenomenon mentioned above in Northeast Asia could be seen as a rational response to the changing security environment in the region. As the international system becomes more multipolar and the United States shifts its attention away from Asia, countries in the region, including Japan, must adapt to new realities and pursue their interests accordingly. The Japanese government has felt the gravity of these issues more acutely than most, given its location in a volatile part of the world. Japan's traditional reliance on the United States for security has been increasingly challenged by regional developments, including the rise of China and North Korea's nuclear program. In this context, Japan has sought to strengthen its own security capabilities and forge new partnerships with other regional powers, such as India and Australia. At the same time, Japan's response to these challenges can also be interpreted as a sign of its growing self-confidence and desire to assert its interests in the region. For decades, Japan has been seen as a loyal ally of the United States, often described as the "American Poodle" due to its perceived subservience to Washington. However, in recent years, Japan has pursued a more assertive foreign policy, seeking to take a greater role in regional affairs and establish itself as a leader in the Indo-Pacific. This shift has been driven by a number of factors, including changes in the global balance of power, Japan's own economic and technological strengths, and a desire to defend its sovereignty and national interests. From a neoclassical realist perspective, this is a rational response to the changing security environment in the region, as Japan seeks to ensure its own survival and protect its interests in an increasingly uncertain world.

In conclusion, the recent phenomenon in Northeast Asia can be seen through the lens of neoclassical realism as a rational response to changing regional dynamics. Japan's growing assertiveness and pursuit of its own interests can be understood as a reflection of the changing balance of power in the region and its desire to adapt to new realities. While this may represent a departure from Japan's traditional role as a loyal ally of the United States, it is a necessary response to the challenges of a rapidly evolving international system.

Chapter 5. Conclusion: Japan's Quest for Robust Arms Industry

This research study investigates the impact of the TPAE reform that was implemented in 2014 from two distinct perspectives: revitalization and rearmament. The revitalization perspective argued that the reform would reinvigorate the delivery of public services and increase efficiency within the public sector. Conversely, the rearmament perspective contended that the reform would enhance institutional capacity and improve public service quality. However, the findings of the study demonstrate that neither perspective entirely aligns with the outcomes of the TPAE reform. Instead, the research identified two significant changes that arose as a result of the reform. Firstly, the study revealed a normalization of terminology that standardized key concepts and definitions across different areas of the public sector. This shift has improved clarity and consistency in the language used in public sector communications, policies, and practices. Secondly, the research found an increase in joint development projects as another key change following the TPAE reform. By promoting inter-agency collaboration and partnerships with external stakeholders, the reform has facilitated more effective delivery of export opportunities. Moreover, the study highlights that these joint development projects have led to greater efficiency in arms industry sector operations and more streamlined decision-making processes for the government. In summary, the study sheds light on the two significant changes that emerged as a result of the TPAE reform, which is the normalization of terminology and the increase in joint development projects. These findings provide valuable insights into the impact of the TPAE reform on the domestic

arms industry and highlight the need for further research to explore the reform's broader implications.

Alongside the findings above, the concluding remarks, today, Northeast Asia has become the new iron curtain for the next cold war; with the PRC standing in opposition to the U.S., it has become increasingly important for Japan to establish a cost-effective supply route to ensure self-sufficiency. This becomes especially pertinent given the current trend towards realism in international relations, which accentuates the need for military reform as a top priority for Japan. However, the issue of Japan's TPAE reform has sparked debate among scholars, with some arguing that reversing the peace constitution is not a valid justification for rearming, while others view it as a necessary step in achieving a regional balance of power. Regardless of the legitimacy of the reasons behind rearming, recent war simulations conducted by the Center for Strategic and International Studies (CSIS) in 2023 have demonstrated the importance of Japan's JSDF in deterring the rising threat from China. The role of Japan as a U.S. ally is becoming more critical in the new Cold War, and rearming Japan should not be seen as a negative outcome or retreat to nationalism. Instead, it can benefit the U.S. and its allies by creating a regional balance of power and deterring any one country from becoming a threat to regional peace and stability. Japan's potential to become a more significant player in international affairs can only be achieved if it has a robust JSDF and inclusive security agenda. Japan's rearmament is also crucial in helping to maintain the stability of the international system and counterbalancing China's rise as a global superpower, which has caused concerns among countries in the Asia-Pacific. As Japan continues to strengthen its military and security agenda, it can become a more significant player in international affairs and help maintain stability in the international system. However, it is crucial for

Japan to balance its rearmament efforts with diplomacy and cooperation with its neighbors, particularly China and South Korea. The historical legacy of Japan's militarism during World War II still looms large in the region, and Japan must take steps to build trust and address historical grievances. Furthermore, Japan's rearmament must be guided by a clear strategic vision that prioritizes defense over offense and emphasizes cooperation and mutual security with its allies in the region. Japan must also take steps to modernize its JSDF and invest in new technologies and capabilities that can support its security objectives. By doing so, Japan can not only enhance its own security but also contribute to the stability and prosperity of the Asia-Pacific region. Nevertheless, Japan's rearmament is crucial in creating a regional balance of power and maintaining stability in the Asia-Pacific region. It is important for Japan to balance its rearmament efforts with diplomacy and cooperation with its neighbors and to prioritize defense over offense in its strategic vision. By doing so, Japan can become a more significant player in international affairs and help maintain stability in the international system under the pacifist legacy.

References

- Aoi, C. (2021). The significance of strategic communications: implications for the free and open Indo-Pacific initiative, European University Institute. Retrieved from <https://data.europa.eu/doi/10.2870/264978>
- Aoi, C., & Heng, Y. (2021). Regional Communicative Dynamics and International Relations in the Asia-Pacific. *Asian Perspective*, 45(3), 479-501.
- Britannica, T. Editors of Encyclopaedia (2022, October 16). Yoshida Shigeru. Encyclopedia Britannica. <https://www.britannica.com/biography/Yoshida-Shigeru>
- Chai, S.-K. (1997). "Entrenching the Yoshida Defense Doctrine: Three Techniques for Institutionalization."
- Fukuda, K. (2013). The Three Principles on Arms Exports and Japan's Defense Industry. *Journal of Northeast Asian Studies*, 12(2), 53-72.
- GIBBONS, J. H. (1979). "Multilateral Export Control Policy: The Coordinating Committee (CoCom)." *Technology and East-West Trade*: 153-172.
- Green, M. (2003). *Rearming Japan: Defense policy and aspects of the Japanese political system*. Columbia University Press.
- Hacker, B. C. (1977). "The Weapons of the West: Military Technology and Modernization in 19th-Century China and Japan." *The Johns Hopkins University Press and the Society for the History of Technology* 18(1): 43-55.
- Hughes, C. W. (2016). "Japan's 'Resentful Realism' and Balancing China's Rise." *The Chinese Journal of International Politics* 9(2): 109-150.
- Hayes, D. (2014). *Japan: The Toothless Tiger*. Palgrave Macmillan.
- Klingner, B. (2018). Non-Standard Tactical Vehicles (NSTVs) in the North Korean People's Army (NKPA). *The Journal of East Asian Affairs*, 32(2), 41-57.
- Lockheed Martin. (2023). F-2 Support Fighter. Retrieved from <https://www.lockheedmartin.com/en-us/products/f-2.html>
- MHI. (2023). F-2 Fighter Plane. Retrieved from https://www.mhi.com/products/defense/f_2_close_support_fighter.html

- Oliviero Frattolillo (2022) Questioning the Future of the EU-Japan Partnership Within the FOIP: Enhancing and Endangering Factors, *Asia-Pacific Review*, 29:2, 102-130, DOI: 10.1080/13439006.2022.2110255
- Oros, A. (2008). *Japan's Security Renaissance: New Policies and Politics for the Twenty-First Century*. New York, NY: Columbia University Press.
- Park, C. H. (2015). "The Three-layered Structure of Japan's Conservative Political Shift." *Seoul Journal of Japanese Studies* 1(1): 1-28.
- Smith, S. A. (2015). *Intimate Rivals Japanese Domestic Politics and a Rising China*, Columbia University Press.
- Smith, S. A. (2019). *JAPAN REARMED: The Politics of Military Power*. Harvard University Press.
- Tago, A. and G. Schneider (2012). "The Political Economy of Arms Export Restrictions: The Case of Japan." *Japanese Journal of Political Science* 13(3): 419-439.
- Tago, A., & Vucetic, S. (2012). The "only choice": Canadian and Japanese F-35 decisions compared. *International Journal*, 68(1), 131–149.
<http://www.jstor.org/stable/42704964>
- Takahashi, S. (2008). "Transformation of Japan's Defence Industry? Assessing the Impact of the Revolution in Military Affairs." *Security Challenges*, Summer 2008 4(4): 101-115.
- Takenaka, H. (2019). "Expansion of the Prime Minister's Power in the Japanese Parliamentary System." *Asian Survey* 59(5): 844-869.
- Wrubel, W. A. (1989). *COCOM: Controlling Technology Exports*. Congressional Research Service Report for Congress, 1-27.
- Wrubel, W. A. (1989). "THE TOSHIBA-KONGSBERG INCIDENT: SHORTCOMINGS OF COCOM, AND RECOMMENDATIONS FOR INCREASED EFFECTIVENESS OF EXPORT CONTROLS TO THE EAST BLOC." 4(241).
- Yasuhara, Y. (1991). "The Myth of Free Trade: The Origins of COCOM 1945-1950." *The Japanese Journal of American Studies* 4: 127-148.
- Yuichi Hosoya (2019) FOIP 2.0: The Evolution of Japan's Free and Open Indo-Pacific Strategy, *Asia-Pacific Review*, 26:1, 18-28, DOI: 10.1080/13439006.2019.1622868

<Government Institutions>

ATLA (2021), “Regarding defense equipment and technical cooperation”. Retrieved from:
<https://www.mod.go.jp/atla/soubiseisakugijutu.html>

Farnsworth, C. H. (1987). Toshiba, Norway Unit Assailed in Soviet Sale. CIA Freedom of Information Act. <https://www.cia.gov/readingroom/docs/CIA-RDP90B00017R000300550003-9.pdf>

The Wassenaar Arrangement. (2022). “About us section.” Retrieved from:
<https://www.wassenaar.org/about-us/>

JMETI. (2020). Trade Control Order. Retrieved from
https://www.meti.go.jp/policy/export_control/system/index.html

JMOFA. (2014) “The Three Principles on Transfer of Defense Equipment and Technology.” Ministry of Foreign Affairs of Japan, 2014, Retrieved from:
https://www.mofa.go.jp/fp/nsp/page1we_000083.html.

JMOD. (2000 - 2022). Defense of Japan 2001 ~ Defense of Japan 2022. JAPAN MINISTRY OF DEFENSE. Retrieved from:
http://www.clearing.mod.go.jp/hakusho_web/

JMOD. (2022). National Defense budget 2022. JAPAN MINISTRY OF DEFENSE.

JMOD. (2004). Overview of Japan’s Defense Policy.

JMOD. (2015). "Defense of Japan: Japan’s Security and Defense Policy and the Japan-U.S. Alliance." 139-147.

JMOD. (2015). "Three Principles on Transfer of Defense Equipment and Technology."

U.S White House. 1971. “Meeting with Eisaku Sato, Japanese Prime Minister, on Thursday, January 6, 1972 at 1:30 p.m. at San Clemente”

<News Articles>

- Bronk, J. (2023). The Global Combat Air Programme is Writing Cheques that Defence Can't Cash. Retrieved from <https://www.rusi.org/explore-our-research/publications/commentary/global-combat-air-programme-writing-cheques-defence-cant-cash>
- Choi, Nam Hyun (2011), 'Weapons-export ban threatened'. The Korean Herald. Retrieved from: <https://www.koreaherald.com/view.php?ud=20110617000693>
- Donovan, K. (2022). Missile Defense Agency awards Raytheon Missiles & Defense \$867 million for SM-3 Block IIA. Retrieved from <https://www.raytheonmissilesanddefense.com/news/2022/06/14/mda-awards-rmd-867-million-for-sm-3-block-ii-a>
- King's College London. (2014). The Toshiba-Kongsberg case. King's College London. Retrieved February 28, 2023, from <https://www.kcl.ac.uk/news/the-toshiba-kongsberg-case>
- Madhani, A., & Megerian, C. (2022). Biden's China "pivot" complicated by Russia's war in Ukraine. AP NEWS. <https://apnews.com/article/russia-ukraine-putin-biden-business-china-d47d4b2215de708b55a12bc4b648818d>
- Naval News. (2022). Raytheon Missiles & Defense gets \$867 million contract for SM-3 Block IIA. *Naval News*. Retrieved from <https://www.navalnews.com/naval-news/2022/06/raytheon-missiles-defense-gets-867-million-contract-for-sm-3-block-ii-a/>
- Schuurman, R. (2022, August 9). Mitsubishi's deliveries to Boeing slowly go up again. AirInsight. Retrieved from <https://airinsight.com/mitsubishis-deliveries-to-boeing-slowly-go-up-again/>
- Sakamaki, S. (2010, August 13). Japan Arms Ban Hurts Security as Firms Quit Industry, Group Says. Bloomberg. Retrieved from <https://www.bloomberg.com/news/articles/2010-08-13/japan-arms-export-ban-hurting-security-as-firms-quit-industry-group-says#xj4y7vzkg>
- Yeo, M. (2022, August 19). Japan secures first-ever major defense export with Philippine radar order. Defense News. <https://www.defensenews.com/global/asia-pacific/2020/08/28/japan-secures-first-ever-defense-export-with-philippine-radar-order/>
- _____. (2018). Japan's Elite F-16 Derivative; How Capable is the Mitsubishi F-2. *Military Watch Magazine*. Retrieved from <https://militarywatchmagazine.com/article/japan-s-elite-f-16-derivative-how-capable-is-the-mitsubishi-f-2>

<Japanese Reference>

外為法違反事例 | 安全保障貿易情報センター (CISTEC) (2021). Retrieved September 25, 2022, from <https://www.cistec.or.jp/export/ihanjirei/index.html>

谷澤. (2019). 輸出貿易管理令の一部を改正する政令が閣議決定されました (METI/経済産業省) . www.meti.go.jp. Retrived from: <https://www.meti.go.jp/press/2019/08/20190802001/20190802001.html>

松尾 芳郎. (2017). 平成 28 年度(2016)の緊急発進は過去最多. [Tokyexpress.info](http://tokyexpress.info). Retrieved from: <http://tokyexpress.info/2017/04/14/>

鈴木健児. (2017). 東日本大震災から 6 年 修復され帰還した F 2 戦闘機 航空自衛隊松島基地. Retrieved from <https://www.sankei.com/photo/story/news/170226/sty1702260002-n1.html>

JASDF. (2019). わが国周辺の「空」の状況 | 航空自衛隊の役割 | 航空自衛隊について | 防衛省 [JASDF] 航空自衛隊. www.mod.go.jp. Retrieved from: <https://www.mod.go.jp/asdf/about/role/role03/index.html>

John Palmer. (2010) ‘日本の防衛産業は今後如何にあるべきか?’ 防衛研究所紀要 第 12 巻第 2・3 合併号 pg.115-145

JMOD. (2021). 日英伊三か国首脳による次期戦闘機共同開発の公表. Retrieved from https://www.mofa.go.jp/mofaj/fp/nsp/page6_000789.html

Keiichiro, T. (2011). "武器輸出三原則: その現況と見直し論議." 国立国会図書館 726.

NHK News. (2021). 日本製部品、27 種類のロシア兵器に…「輸出管理法 見直し急げ」. Retrieved from <https://www3.nhk.or.jp/news/html/20210210/k10012803871000.html>

<Korean Reference>

- 권대열. (2000, April 17). “게임기 ‘PS2’ 무기전용 우려” 일당국 수출규제 조치
“미사일부품에 사용가능.” NKchosun. Retrieved from:
<http://nk.chosun.com/news/articleView.html?idxno=489>
- 박수찬. (2022). “한반도가 위험하다”, F-35 보다 강한 ‘유령
전투기’ 만드는 일본 [박수찬의 軍]. 세계일보. Retrieved from
<https://m.segye.com/view/20220218514827>
- 박철희. (2004). 전수방위에서 적극방위로. 국제정치논총, 44(1), 169-190.
- 석민규, & 박창건. (2022). 일본의 아태지역 통상정책: 지역레짐으로서
TPP/CPTPP. 한국과 국제정치, 38(3), 37-71.
- 장원준, 송재필, 베제만, 시., 플뢰랑, 오., & 김미정 (2018). *한·일 방위산업
비교분석과 시사점*. Pg 76-77
- 최영진. (2011). 수몰됐던 日 F-2B 전투기, “1/3 만 재생 가능.” Retrieved
from <https://v.daum.net/v/20110520160609646>
- 최운도 (2013). "일본의 집단적 자위권 개념, 해석 그리고 헌법개정.". 국방연구
56(4): 25-49.
- 최현호. (2020). “美 첨단무기 열어보니...그 속에 든 기술은 '메이드 인
재팬'.” 중앙일보, Chungahn Daily, 19 Dec. 2020, Retrieved from:
<https://www.joongang.co.kr/article/23949875#home>.
- ROK MOD. (2020). 일본정부 첨단기술 해외유출 방지강화.
- ROK MOD. (2014). 한빛부대, 일본 자위대 실탄 ‘모두 반환.’ 대한민국
정책브리핑. <https://www.korea.kr/news/policyNewsView.do?newsId=148772456>
- _____. (2013). 한국군, 日자위대서 탄약지원 받긴 창군후 처음(종합). (2013, December 23).
Yeonhap News. Retrieved from: <https://www.yna.co.kr/view/AKR20131223163552043>

<Reports>

- Belasco, A. (2021). Defense Acquisition Trends, 2021: The End of the COVID-19 Boost. Congressional Research Service.
- Cancian, M. F., Cancian, M., & Heginbotham, E. (2023). (rep.). The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan (p. 4). Center For Strategic & International Studies.
- Flight International. (2012). 2011/12 World Air Forces. Associated with RUAG. Retrieved from: <https://www.flightglobal.com/reports/world-air-forces-directory-2022/146695.article>
- Flight International. (2022). 2022 World Air Forces. Associated with EMBRAER. Retrieved from: <https://www.flightglobal.com/reports/world-air-forces-directory-2022/146695.article>
- Germar, S., Haroon, S., Serdar, T., & André, K. (2020). Joint ventures to build national defense industries. Strategy&. Retrieved from: www.strategyand.pwc.com/me
- Kosiak, S. M. (2017). Defense Spending at a Crossroads. Center for Strategic and International Studies.
- Mitsubishi Heavy Industries. (2000 ~ 2022). Annual Report 2000 ~ 2022. MITSUBISHI HEAVY INDUSTRIES, LTD. Retrieved from. <https://www.mhi.com/finance/library/annual>
- Rhys McCormick. (2021). Defense Acquisition Trends, 2020. CSIS Brief. Congressional Research Service. Retrieved from: <https://www.csis.org/analysis/defense-acquisition-trends-2020-topline-dod-trends>
- United Nations. (n.d.). UN Charter full text. Retrieved March 11, 2023, from <https://www.un.org/en/sections/un-charter/un-charter-full-text/>
- The Royal United Services Institute for Defence and Security Studies, U.K. (2022). Japan's Strategic Challenges from China and Russia. Retrieved from <https://rusi.org/sites/default/files/2022-01/Japans-Strategic-Challenges-from-China-and-Russia-Web.pdf>

<Open Database>

Stockholm International Peace Research Institute. (2023). 'SIPRI Military Expenditure Database. SIPRI Arms Industry Database. Retrieved from: <https://milex.sipri.org/sipri>

Stockholm International Peace Research Institute. (2023). 'The SIPRI Top 100 arms-producing and military services companies in the world'. SIPRI Arms Industry Database. Retrieved from: <https://www.sipri.org/databases/armsindustry>

The World Bank, World Development Indicators (2023). GDP Total (Current USD). Retrieved from <http://data.worldbank.org/indicator/NY.GNP.PCAP.CD>

Japanese Terminologies

Japanese (漢字)	Abbreviation	Meaning(意味)
武器湧出三原則	TPAE	Three Principles on Arms Exports
防衛装備移転三原則	TPTDET	Three Principles on Transfer of Defense Equipment and Technology
非核三原則	TNP	Three Non-Nuclear Principles
自衛隊	JSDF	Japanese Self Defense Force
陸上自衛隊	JGSDF	Japanese Ground Self Defense Force
海上自衛隊	JMSDF	Japanese Maritime Self Defense Force
航空自衛隊	JASDF	Japanese Air Self Defense Force
外務省	JMOFA	Japan Ministry of Foreign Affairs
防衛省	JMOD	Japan Ministry of Defense
防衛装備庁	ATLA	Acquisition, Technology & Logistics Agency
国家安全保障会議	NSC	National Security Council
国産化	Kokusanka	Localization of products
自由で開かれた インド太平洋	FOIP	Free and Open Indo-Pacific
防空識別圏	JADIZ	Japan Air Defense Identification Zone
道ミサイル防衛	BMD	Ballistic Missile Defense
ストックホルム国際平和 研究所	SIPRI	Stockholm International Peace Research Institute
共同開発プロジェクト	Kyodoukaiatsu	Joint Development Projects

Appendix 1. List of classification of arms from the Foreign Exchange and Foreign Trade Law

#	Description
1	Firearms and cartridges to be used therefor (including those to be used for emitting light or smoke), and accessories thereof, as well as parts thereof.
2	Ammunition (excluding cartridges), and equipment for its dropping or launching, and accessories thereof, as well as parts thereof.
3	Explosives (excluding ammunition) and military fuel.
4	Explosive stabilizers.
5	Directed energy weapons and parts thereof.
6	Kinetic energy weapons (excluding firearms) and equipment for their launching, as well as parts thereof.
7	Military vehicles, and accessories and bridges specially designed for military use thereof, as well as parts thereof.
8	Military vessels, and hulls and accessories thereof, as well as parts thereof.
9	Military aircraft and accessories thereof, as well as parts thereof.
10	Anti-submarine nets and anti-torpedo nets as well as buoyant electric cable for sweeping magnetic mines.
11	Armor plates and military helmets, as well as bullet-proof jackets and parts thereof.
12	Military searchlights and control equipment thereof.
13-1	Bacterial, chemical and radio-active agents for military use, as well as equipment and parts thereof for dissemination, protection, purification, detection, or identification thereof.
13-2	Chemical mixtures specially formulated for the decontamination of objects contaminated with biological agents and radioactive materials adapted for use in war and chemical warfare agents.
14	Biopolymers for detection and identification of chemical agents for military use and cultures of cells for production thereof, as well as biocatalysts for decontamination and degradation of chemical agents for military use and expression vectors, viruses or cultures of cells containing the genetic information necessary for production thereof.
15	Equipment and parts thereof for the production or testing of military explosives.
16	Equipment for the production or testing of arms, as well as parts and accessories thereof.

Reference: JMOFA (n.d.), Japan's Policies on the Control of Arms Exports, Retrieved from: https://www.mofa.go.jp/fp/nsp/page1we_000083.html.

Appendix 2. Airforce capability comparison between Japan, PRC, U.S, Russian Federation, ROK and DPRK in the year of 2012

Japan			
Generation	Type	Active	Ordered
3	F/EF/RF-4EJ	82	
4~4.5	F-15J	153	
	F-2A	63	
Total		298	0

United States of America			
Generation	Type	Active	Ordered
1~2	A-10A/C/OA-10	352	
2	AV-8B/+	128	
3	AC-130H/U	25	
4~4.5	F/A-18A/C/D/E/F	676	
	F15C/E/EX	439	142
	F-16C	857	
5	F-22	170	9
	F-35A/B/C	61	2123
	AC-130J	17	
B	B-1B	66	
	B-2	19	
	B-52H	77	
Total		2887	2274

Republic of Korea			
Generation	Type	Active	Ordered
3	F-4E/RF-4C	85	
	F-5E	158	
4~4.5	TA-50		22
	F-15K	52	8
	F16C	118	
Total		413	30

Taiwan			
Generation	Type	Active	Ordered
3	F/RF-5E	29	
4~4.5	F-16A/V	117	
	F-CK-1C	101	
	Mirage 2000-5EI	47	
Total		294	0

PRC			
Generation	Type	Active	Ordered
1	Q-5	150	
2	J-7	419	
3	J-8	144	
4~4.5	J-10	202	
	J-11/Su-27/30/33	296	121
B	H-6	134	
B	JH-7	107	
Total		1452	121

Russian Federation			
Generation	Type	Active	Ordered
2	Su-25	235	
3	Su-24	408	
4~4.5	MiG-25/29	229	
	MiG-31	146	31
	Su-27/30/33/35	231	58
	Su-34	9	54
B	Tu-22	151	
B	Tu-95	45	
B	Tu-142	15	
B	Tu-160	16	50
Total		1485	193

DPRK			
Generation	Type	Active	Ordered
1	F-5 (Shenyang)	107	
2	F-6	98	
	Su-7	18	
	Su-25	34	
3	F-7	120	
	MiG-21	26	
	MiG-23	56	
4	MiG-29	35	
B	H-5	80	
Total		574	0

Reference: International Flight (2012)

Appendix 3. Airforce capability comparison between Japan, PRC, U.S, Russian Federation, ROK and DPRK in the year of 2022

Japan			
Generation	Type	Active	Ordered
4~4.5	F-15J	155	
	F-2A	62	
5	F-35A/B	23	123
Total		240	123

United States of America			
Generation	Type	Active	Ordered
1	A-10C	284	
2	AV-8B/+	87	
3	AC-130U/W	11	
4~4.5	F/A-18A/C/D/E/F	571	435
	F15C/E/EX	570	142
	F-16C	780	
5	F-22	178	
	F-35A/B/C	251	2024
	AC-130J	17	
B	B-1B	43	
	B-2	18	
	B-21		100
	B-52H	72	
Total		2882	2701

Republic of Korea			
Generation	Type	Active	Ordered
3	F-4E	69	
	F-5E	156	
4~4.5	FA-50	60	
	KF-21		120
	F-15K	59	
	F16C	118	
5	F-35A	30	8
Total		492	128

Taiwan			
Generation	Type	Active	Ordered
3	F/RF-5E	27	
4~4.5	F-16A/V	112	56
	F-CK-1C	103	
	Mirage 2000-5EI	46	
Total		288	56

PRC			
Generation	Type	Active	Ordered
1	Q-5	118	
2	J-7	185	
3	J-8	70	
4~4.5	J-10	372	
	J-11/16/Su-27/30/33/35	350	
5	J-20	19	
B	H-6	92	
B	JH-7	103	
Total		1309	N/A

Russian Federation			
Generation	Type	Active	Ordered
2	Su-25	196	
3	Su-24	295	
4~4.5	MiG-31	131	
	MiG-29/35	258	31
	Su-27/30/35	382	27
	Su-34	125	20
5	Su-57	1	75
B	Tu-22M	66	
B	Tu-95	42	
B	Tu-160	15	50
Total		1511	203

DPRK			
Generation	Type	Active	Ordered
1	F-5 (Shenyang)	106	
2	F-6	97	
	Su-7	18	
	Su-25	34	
3	F-7	120	
	MiG-23	26	
	MiG-25	56	
4	MiG-29	35	
B	H-5	80	
Total		572	N/A

Reference: International Flight (2022)

Appendix 4. Japanese Arms Industries (SIPRI Top 100) Arms Sales, Total Sales and Arms Sales as a % of Total Sales in the year of 2002 to 2021

Company	MHI			KHI			IHI (Ishikawajima-Harima Heavy Industries)			Fujitsu			Mitsubishi Electric Corp.			Toshiba			NEC Corp		
Category	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales	Arms Sales	Total Sales	Arms sales as a % of total sales
2002	2400	20687	12	880	9886	9	640	8127	8	N/A			780	37444	1	370	43019	1	410	37444	1
2003	2600	20472	13	1200	10008	12	620	9035	7	N/A			770	28548	3	380	48127	1	470	42325	1
2004	2770	23945	12	1350	11476	12	760	10066	8	N/A			840	31524	3	N/A			600	43395	1
2005	2220	25333	9	1380	11999	12	690	10226	7	N/A			950	32701	3	N/A			770	43776	2
2006	2260	26385	9	1160	12370	9	720	10618	7	N/A			1040	33154	3	N/A			810	42391	2
2007	2320	27202	9	580	12748	5	550	11469	5	N/A			N/A			N/A			740	39210	2
2008	3870	32660	12	1480	12951	11	N/A			N/A			1190	35460	3	N/A			820	40786	2
2009	4170	31430	13	1110	12541	9	N/A			N/A			1550	35837	4	N/A			860	38294	2
2010	4560	33080	14	2080	13978	15	1410	13526	10	N/A			1670	41528	4	N/A			980	335491	3
2011	3620	35347	10	2250	16337	14	1610	15310	11	55980			1670	45603	4	N/A			1140	38052	3
2012	3010	35315	9	2430	16153	15	1880	15742	12	54915			1420	44707	3	N/A			1520	38496	4
2013	3590	34320	10	2030	14196	14	1340	13362	10	48798			1170	41542	3	N/A			1220	31181	4
2014	3920	37681	10	2080	14027	15	1180	13742	9	44865			1040	40805	3	N/A			1220	31181	4
2015	3470	33433	10	1880	12731	15	1270	12717	10	39153			820	36303	2	N/A			N/A		
2016	3670	35947	10	2170	13949	16	1370	13651	10	41417			830	38928	2	N/A			N/A		
2017	3570	36673	10	2140	14044	15	1420	14187	10	36562			N/A			N/A			N/A		
2018	3620	36947	10	2260	14456	16	1340	13439	10	35806			N/A			N/A			N/A		
2019	3910	37070	11	2360	15056	16	1160	11587	10	35387			N/A			N/A			N/A		
2020	4420	34657	13	2180	13943	16	1040	10425	10	33625			920	39261	2.3	N/A			N/A		

Appendix 5. White Country List Guidelines 2022

Group	Overview	Applicable country examples
A	Countries subject to preferential export control (Appended Table 3 of the Export Trade Control Order)	26 Countries including U.S, U.K, Canada, etc.
B	Countries and regions that participate in the International Export Control Regime and meet certain requirements.	Turkey, Republic of Korea ³⁸ , etc.
C	Countries that do not fall under A, B, or D	
D	Appended Table 3-2 of the Export Trade Control Order (United Nations arms embargo)	Afghanistan, Iraq, DPRK, etc.

Reference: Worldship Search (2020), METI (2019)

(Original Text)

グループ	概要	該当国例
A	輸出管理優遇措置対象国 (輸出貿易管理令別表第3)	アメリカ、イギリスなど全26力国
B	国際輸出管理レジームに参加し、一定要件を満たす国や地域。	韓国、南アフリカ、トルコなど
C	A,B,D に該当しない国	
D	輸出貿易管理令別表第3の2(国連武器禁輸国)	イラク、アフガニスタン、北朝鮮など

³⁸ Japan restored ROK to Group A in 2023 March

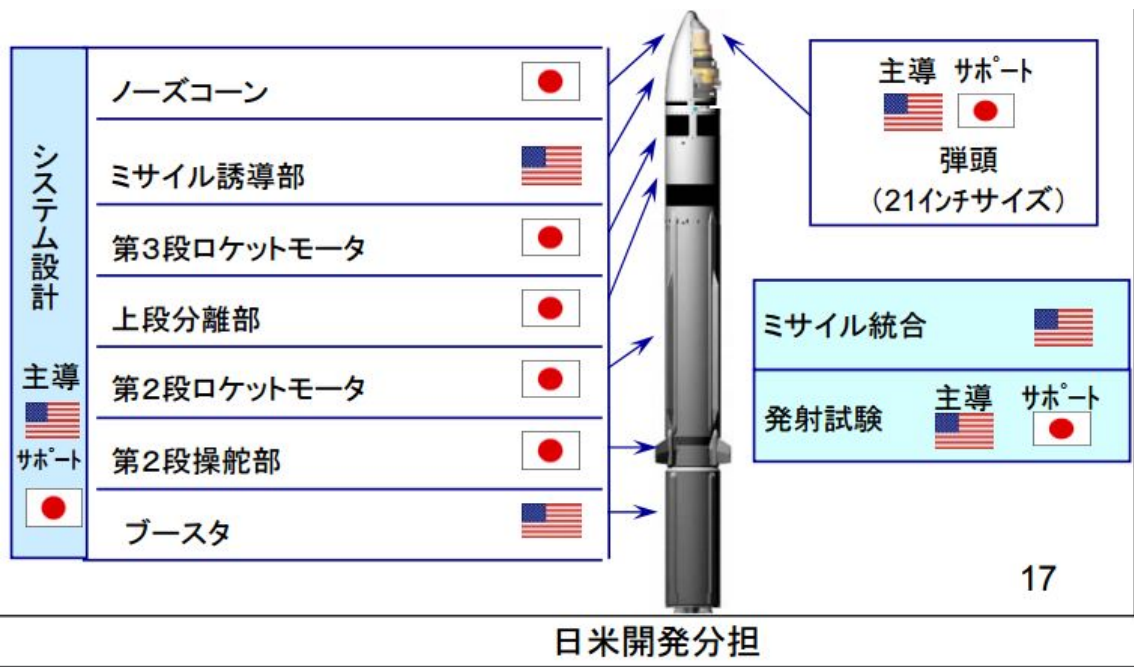
Appendix 6. 「防衛装備・技術協力について」

Country	Year	Project name
USA	～1992	2 5 件の共同研究及び 1 件の共同開発を実施
	～2021	6 件の共同研究（部隊運用におけるジェット燃料及び騒音への曝露の比較、化学剤呈色（ていしょく）反応識別装置、高耐熱性ケース技術、次世代水陸両用技術、日米間のネットワーク間インターフェース、モジュール型ハイブリッド電気駆動車両システムに係る共同研究）を実施
	2012	F－3 5 A 戦闘機を F－4 戦闘機の後継機とし、平成 2 4 年度以降、4 2 機取得する
	2014	ライセンス生産を行っているペトリオット P A C－2 の部品の米国ライセンス元への移転 米国政府はアジア太平洋地域における F－3 5 戦闘機の整備拠点（リージョナル・デポ）を日本及びオーストラリアに設置
	2015	(1) イージスシステムに係るソフトウェア及び部品等の米国への移転 (2) F－3 5 A 戦闘機取得に際して国内企業の製造参画を図っており、米国政府などとの調整を踏まえて、機体及びエンジンの最終組立・検査（F A C O）や、エンジン部品、レーダー部品及び赤外線探知装置部品の製造参画を決定
	2016	「日米相互の防衛調達に係る覚書（R D P M O U）」
	2017	米海軍普天間飛行場の整備会社に富士重工業（現・SUBARUCo.,Ltd.）が選定
	2018	F－1 5 戦闘機の代替機として 1 0 5 機を取得
	2020	三菱重工業小牧南工場での運用を開始、F－3 5 A の整備を開始
U.K	2013	(1) 日英防衛装備品・技術移転協定 (2) 「化学・生物防護技術にかかる共同研究」
	2014	(1) 日英防衛装備・技術協力運営委員会 (2) 「共同による新たな空対空ミサイルに係る日英共同研究」
	2016	「人員脆弱性評価に係る共同研究」
	2018	「ジェットエンジンの認証プロセスに係る共同研究」 「次世代 RF センサシステムの実現可能性に係る共同研究」
	2022	次期戦闘機及び将来戦闘航空システム（FCAS：Future Combat Air System）に関する情報交換
France	2014	防衛装備品協力及び輸出管理措置の委員会
	2015	日仏防衛装備品・技術移転協定
	2017	パリ・エアショー 2 0 1 7 で海自 P－1 哨戒機のブースを出展
	2018	第 4 回日仏「2 + 2」、次世代機雷探知技術に係る共同研究」
	2019	パリ・エアショー 2 0 1 9 で海自 P－1 哨戒機と空自 C－2 輸送機のブースを出展
Germany	2017	日独防衛装備品・技術移転協定
	2018	ベルリン・エアショー 2 0 1 8 に海自 P－1 哨戒機が参加
Italy	2017	日伊防衛装備品・技術移転協定

	2019	「日伊・官民防衛産業フォーラム」
Australia	2014	日豪防衛装備品・技術移転協定
	2015	「船舶の流体力学分野に係る共同研究」
		「科学技術者交流計画」
	2019	アバロン国際航空ショーに空自C-2輸送機を参加 第2日豪防衛装備・技術協力共同運営委員会
	2021	(1) 「船舶の流体性能及び流体音響性能に係る共同研究」 (2) 「複数無人車両の自律化技術に係る共同研究を」
India	2015	日印防衛装備品・技術移転協定
	2018	「UGV / ロボティクスのための画像による位置推定技術に係る共同研究」
	2019	日印・官民防衛産業フォーラム
ASEAN	2016	「ビエンチャン・ビジョン」
	フィリピン	(1) 2018年、5機のTC-90をフィリピン海軍へ引き渡し、整備企業の要員を派遣し、維持整備の支援を実施 (2) 2019年、ヘリコプターUH-1Hの部品などをフィリピン空軍に無償譲渡 (3) 2020年、フィリピン国防省と三菱電機㈱の間で同社製警戒管制レーダー4基を約1億ドルで納入する契約が成立
	ベトナム	(1) 2016年、「防衛装備・技術協力に関する定期協議の実施要領 (TOR : Terms of Reference) 」 (2) 2020年、日越首脳会談「防衛装備品・技術移転協定」
	マレーシア	2018年、日馬防衛装備品・技術移転協定
	インドネシア	2021年、「2+2、防衛装備品・技術移転協定」
Middle East	UAE	ドバイ・エアショー2019に空自C-2輸送機を参加
	ヨルダン	陸自の退役済み61式戦車1両をヨルダン側に無償で貸し付けた
	イスラエル	「防衛装備・技術に関する秘密情報保護の覚書」

Reference: ATLA (2021), “Regarding defense equipment and technical cooperation”. Retrieved from: <https://www.mod.go.jp/atla/soubiseisakugijutu.html>

Appendix 7. Original figure on SM-3 IIA Joint Development Project



Reference: Ministry of Defense (2017) ‘Defense White Paper’
Retrieved from: http://www.clearing.mod.go.jp/hakusho_data/2017/html/nc027000.html

국문 초록

일본 방위산업의 정상화: 무기수출삼원칙 개혁 후 일본 무기

수출의 변화 분석

중국의 부상과 지역 해계모니의 변화로 일본 안보 정책을 현실주의자적 관점으로 분석하는 선행연구가 존재한다. 동아시아 안보 다이나믹에 따라, 일본에게 국가생존을 위한 자위대의 재무장과 전략무기 증강은 필수가 되었다. 하지만 안보 우려에도 불구하고 일본 방위산업의 정상화 과정에서 일본의 GDP 대비 국방비 1% 규칙과 부진한 경제성장은 재무장에 제동을 걸고 있다. 이에 따라 일본 정부는 2003 년에 방위청을 성으로 개편하였으며, 2013 년에는 국가안보회의를, 2014 년에는 무기수출삼원칙의 개혁을, 그리고 2015 년에는 방위장비청의 설치를 시도하였다.

이러한 맥락에서 다수의 선행연구들은 일본 안보개혁 중 2014 년 무기수출삼원칙의 방위장비이전삼원칙 개정이 자위대 재무장과 무기 취득에 많은 변화를 일으킬 것으로 판단하였다. 본 개혁으로 일본은 군수품 수출이 가능하게 되었으며, 이에 학자들은, (1) 수출을 통한 일본 경제 활성화, 그리고 (2) 방위산업의 강화로 자위대 무기 확보 라는 두 가지 변화를 기대했다. 따라서 본 연구는 2014 년 개혁 이후, 2014 년부터 2022 년까지 산업계와 자위대에서 확인 할 수 있는 변화들을 검토하며, (1) 개혁 이후 경제적인 효과가 있었는가?, (2) 자위대는 실질적으로 재무장에 성공했는가? 라는 두 질문을 답하고자 한다.

본 논문은 2000 년대 이후 SIPRI 데이터베이스와 일본 정부 공식문서, 미즈비시중공업이 제공하는 연감을 주요 자료로, 무기수출삼원칙의 개정 이후 기존 학자들이 주장했던 위의 두 변화에는 도달하지 못하였음을 주장한다. 그러나 무기수출삼원칙 개혁은 (1) 용어의 정상화를 통하여 산업 주체 간의 혼란과 오해 최소화와 (2) 무기공동개발 프로젝트 건수의 증가로 방위 산업의 해외 경쟁력 확보라는 두 가지 실질적인 변화가 있었음을 제시한다.

Keywords: 무기수출삼원칙, 방위장비이전삼원칙, 국산화, 공동개발, 방위산업, 미즈비시

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日本防衛産業の正常化:武器輸出三原則改革後の武器輸出の変化分析

中国の浮上と地域覇権の変化により、日本の安保政策を現実主義者の観点から分析する先行研究が存在する。東アジア安全保障ダイナミックにより、日本にとって国家生存のための自衛隊の再武装と戦略兵器増強は必須となった。しかし、安保憂慮にもかかわらず、日本防衛産業の正常化過程で、日本の GDP 対比国防費 1%規則と不振な経済成長は再武装にブレーキをかけている。これに伴い、日本政府は 2003 年に防衛庁を省に改編し、2013 年には国家安保会議を、2014 年には武器輸出三原則の改革を、そして 2015 年には防衛装備庁の設置を試みた。

このような脈絡で多数の先行研究は、日本の安保改革のうち 2014 年武器輸出三原則の防衛装備移転三原則改正が自衛隊再武装と武器取得に多くの変化を起こすと判断した。本改革により日本は軍需品輸出が可能となり、これに対し学者たちは、(1) 輸出を通じた日本経済の活性化、そして (2) 防衛産業の強化で自衛隊兵器確保という二つの変化を期待した。したがって、本研究では 2014 年の改革以降、2014 年から 2022 年にかけて産業界と自衛隊で確認できる変化を検討し、(1)改革以降経済的な効果があったのか？(2) 自衛隊は実質的に再武装に成功したのか？という二つの質問に答えようと思う。

本論文は 2000 年代以後、SIPRI データベースと日本政府文書、三菱重工の年鑑を主要資料に、武器輸出三原則の改正以後、既存学者たちが主張した上記二つの変化には到達できなかったことを主張する。しかし、武器輸出三原則改革は (1) 用語の正常化を通じて産業主体間の混乱と誤解最小化と (2) 武器共同開発プロジェクト件数の増加により防衛産業の海外競争力確保という二つの実質的な変化があったことを提示する。

Keywords: 武器輸出三原則、防衛装備移転三原則、国産化、共同開発、防衛産業、三菱重工業, SIPRI

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