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Power Under the Shadow: The Dual Impact of the U.S. Military-Industrial Complex

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Abstract: Since the end of the Cold War, the U.S. military-industrial complex has undergone significant adjustments, profoundly impacting U.S. defense capabilities and foreign policy. Employing the principal-agent theory, rent-seeking theory, and military-industrial relations theory, this paper constructs a multi-level, multi-dimensional analytical framework to systematically examine the mechanisms through which the military-industrial complex influences U.S. defense capabilities and foreign policy. The research finds that the high concentration and long cycle of the defense market, the rent-seeking behavior of military enterprises, and the symbiotic alliance of the military-industrial complex have jointly led to inefficiency and misallocation of resources in the U.S. defense sector, weakening U.S. military innovation and strategic adaptability, while promoting the militarization tendency of U.S. foreign policy and intensifying China-U.S. strategic competition. This study enriches the theoretical connotation of the military-industrial complex and provides a new analytical perspective for accurately grasping the direction of U.S. foreign policy and properly addressing the challenges in China-U.S. relations.

Keywords: U.S. Military-Industrial Complex; Foreign Policy; Sino-U.S. Relations

1. Introduction

Since the end of the Cold War, the U.S. military-industrial complex has undergone significant adjustments, profoundly impacting U.S. defense capabilities and foreign policy. In 2022, U.S. military spending reached \$811 billion, surpassing the combined military expenditures of the next ten countries. However, U.S. military competitiveness faces severe challenges, with a declining trend in the innovation and efficiency of the defense industry. This paradox has drawn scholarly attention and prompted reflection on the operational mechanisms of the U.S. defense system. Additionally, in recent years, the military-industrial complex's involvement in cognitive warfare has deepened. For instance, operations like 'Operation Warp Speed' and activities in the South China Sea illustrate how the complex has leveraged social media and big data technologies to manipulate information globally. These actions not

only influence public opinion but also directly interfere with international relations and the geopolitical landscape.

As a coalition of interests linking the defense industry, military, and political spheres, the military-industrial complex plays a crucial role in the U.S. defense system. Some scholars argue that it has driven technological innovation and military modernization, underpinning the U.S.'s global military dominance. However, others contend that the complex distorts resource allocation and skews the decision-making process, undermining U.S. strategic adaptability and economic competitiveness. Nonetheless, existing research has several limitations: First, it primarily focuses on the macro-level impact of the military-industrial complex, lacking in-depth analysis of the micro-level mechanisms through which it affects defense capabilities. Second, while much attention has been given to its technological and economic impacts, discussions on its political influence, particularly on foreign policy, are insufficient. Third, there is a lack of examination of the military-industrial complex within the current international security context, especially regarding its impact on U.S.-China relations.

In response, this paper seeks to explore the influence of the military-industrial complex on U.S. defense capabilities from three perspectives: First, it analyzes the characteristics of the U.S. defense market, particularly the effects of high concentration and long cycles on the behavior of defense firms. Second, it examines the interaction patterns between the U.S. government and defense firms, uncovering the complex games played in defense procurement and decision-making processes. Third, it discusses the impact of the military-industrial complex on U.S. foreign policy, particularly through the expanded concept of the 'military-industrial-academic-media complex.' This expanded concept not only includes traditional military and industrial sectors but also integrates academia and media participation. This complex plays an increasingly vital role in contemporary U.S. cognitive warfare and information manipulation. Through these analyses, this paper aims to reveal the complex mechanisms through which the military-industrial complex influences U.S. defense capabilities and foreign behavior, providing strategic insights for China in navigating the increasingly intricate U.S.-China relationship.

2. The Impact of the U.S. Military-Industrial Complex

There are divergent views within the academic community regarding the impact of the military-industrial complex on U.S. defense capabilities. Proponents argue that the complex has driven military technological innovation and modernization, particularly playing a pivotal role in the early development of semiconductors and integrated circuits. The close collaboration between defense firms, universities, and research institutions has spurred the advancement of many sophisticated weapon systems and military technologies, such as stealth fighters and drones. The application of these technologies has significantly enhanced the operational efficiency and capabilities of the U.S. military, while also ensuring rapid development in regions where military bases and munitions factories are located. Additionally, technological innovations in the military sector often permeate into civilian domains. The demand for cutting-edge technology by the defense sector stimulates private sector innovation, leading to the emergence of dual-use technologies. The development of the Internet, GPS, and aerospace

technologies can all be traced back to military funding and research initiatives. These technologies have given rise to numerous industries and applications, making substantial contributions to economic growth and innovation.

However, more scholars focus on the negative impacts of the military-industrial complex, arguing that its expansive nature has eroded democratic institutions and the national economy. Rune Ottosen points out that as the influence of the military-industrial complex grows, U.S. military decision-making increasingly escapes public scrutiny, significantly raising the risk of the military sector overriding democratic mechanisms. Defense firms have the capability to influence public discourse and policy priorities, placing military considerations above civilian needs, thereby further weakening the implementation of democratic oversight. Simultaneously, the dominance of the defense sector may produce a crowding-out effect, where public investment in military capabilities diverts resources from critical civilian sectors such as education, healthcare, and infrastructure. The vested interests of military contractors, defense agencies, and their political allies shape national priorities, complicating the U.S. government's efforts to allocate resources and address domestic challenges. Furthermore, the militaristic preferences and vested interests of the military-industrial complex have had significant repercussions on U.S. foreign policy and international relations. In addressing international issues, the complex generally prioritizes military solutions over diplomatic avenues, leading to ever-increasing defense expenditures even in the absence of direct military threats, which are often misaligned with national security interests and strategic objectives. The military-industrial complex has become the 'fourth branch' of American democratic decision-making, with its profit-driven behavior steadily eroding the foundations of U.S. democracy and rational foreign policy.

In examining the micro-mechanisms of the military-industrial complex's influence, scholars have explored various perspectives. Peter Caven, for instance, employed principal-agent theory to analyze information asymmetry in defense procurement, while Stefan Sękowski utilized rent-seeking theory to investigate the political influence activities of defense firms. Geoffrey Wallace, on the other hand, dissected the interest alliances of the military-industrial complex from an institutional perspective. However, existing research still has certain limitations. First, most studies focus on one aspect of the military-industrial complex's impact, lacking a systematic and comprehensive analysis. Second, there has been little examination of the military-industrial complex within the context of the international security environment, particularly in the current landscape of great power competition. Finally, few studies analyze U.S.-China relations from the perspective of the military-industrial complex, exploring its influence mechanisms on the interactions between the two countries.

Building on a critical inheritance of existing research, this paper seeks to construct a multi-level, multi-dimensional analytical framework, systematically examining the influence mechanisms of the military-industrial complex by integrating principal-agent theory, rent-seeking theory, and military-industrial relations theory. Specifically, at the micro level, this paper deepens the application of principal-agent theory, revealing how the characteristics of the defense market—such as high monopoly

and long project cycles—exacerbate opportunistic behavior by defense firms, leading to rising costs and inefficiencies. At the meso level, the paper expands the explanatory scope of rent-seeking theory, analyzing how defense firms influence the allocation of defense budgets and policy formulation through lobbying and political contributions, distorting the allocation of defense resources. At the macro level, the paper introduces military-industrial relations theory, dissecting the symbiotic logic between the military, defense industry, and political elites, uncovering the institutional roots of the military-industrial complex's influence. This paper also selects the F-35 Joint Strike Fighter program as a typical case study, providing an in-depth analysis of the operational mechanisms and impacts of the military-industrial complex in large defense procurement projects.

3. Theoretical Framework

This study integrates principal-agent theory, rent-seeking theory, and military-industrial relations theory to construct a multi-level, multi-dimensional analytical framework that systematically examines the impact of the military-industrial complex on U.S. defense capabilities and foreign policy. These three theories are not isolated but rather complementary and interactive, collectively revealing the deeper logic underlying the operations of the military-industrial complex. By exploring the interactions among these theories, we aim to provide a more comprehensive analytical perspective.

First, principal-agent theory offers a critical micro-level perspective for analyzing the internal dynamics of the military-industrial complex, particularly the issues of information asymmetry and moral hazard in defense procurement. Originating from economics, this theory analyzes the contractual relationship between a principal and an agent. Due to information asymmetry and misaligned interests, the agent may engage in opportunistic behavior that contradicts the principal's interests. In the military-industrial sector, such asymmetry and conflict of interests create fertile ground for opportunistic behavior by defense firms (agents). Defense procurement involves highly specialized technical knowledge, making it challenging for the government to effectively monitor the production activities of defense firms. As rational actors seeking to maximize profits, defense firms may exploit this information advantage to inflate weapon prices, reduce product quality, or even pursue unnecessary technological upgrades, ultimately undermining national defense interests. This behavior also creates opportunities for rent-seeking activities by defense firms. For instance, while striving for profit maximization, the information advantage may not only lead to decreased efficiency and quality in defense procurement but also drive these firms to leverage their political influence to shape policy in ways that secure additional benefits.

Second, rent-seeking theory, at the meso level, unveils the influence of the military-industrial complex on the external environment, particularly how military interest groups shape defense decisions and democratic processes. Initially proposed by Anne O. Krueger, this theory examines how economic agents engage in non-productive activities (such as lobbying) to secure monopoly profits or policy favors. James M. Buchanan further highlighted the significant negative impact of rent-seeking behavior on resource allocation and social welfare. In the defense sector, well-capitalized defense firms actively

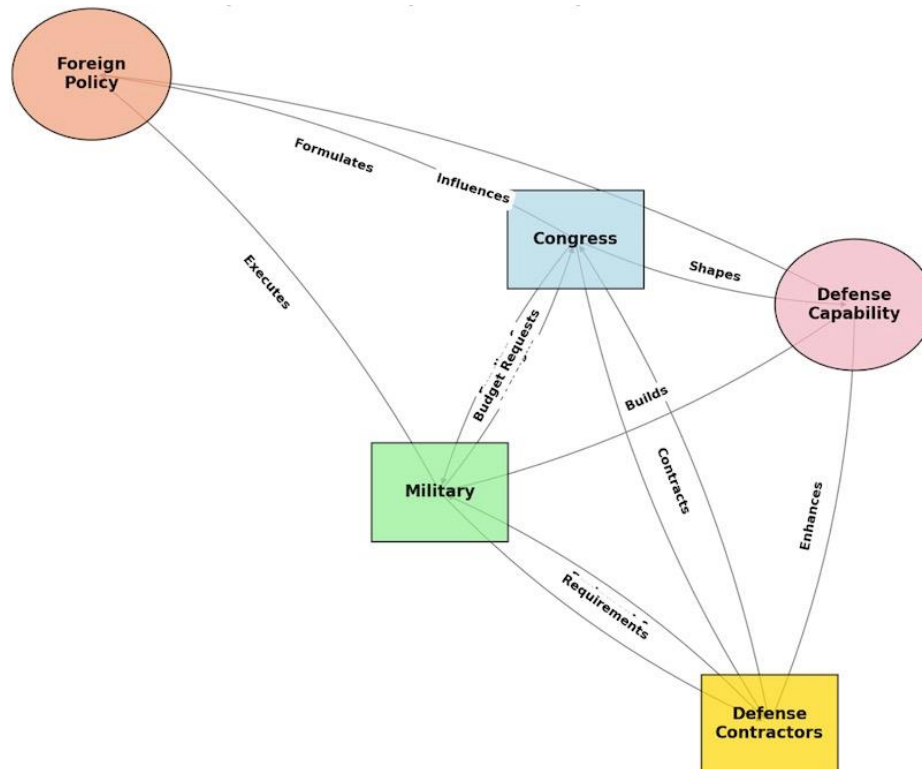
participate in political lobbying and campaign contributions to influence defense policy formulation, seeking increased military spending and favorable project allocations. For example, they might lobby Congress to increase the procurement of specific weapon systems, even if these systems are not urgently needed for defense or may have technical flaws. Such rent-seeking expenditures not only divert resources from other critical public sectors but may also lead to the irrational expansion of military capabilities, ultimately harming national interests. It is important to note that rent-seeking behavior by defense firms is not independent but intertwined with principal-agent issues, mutually reinforcing each other. Rent-seeking can be seen as an expression of agents (defense firms) exploiting information asymmetry and political influence, further exacerbating the conflict of interest between principals (the government) and agents.

Lastly, military-industrial relations theory provides a macro-level explanation for the operations of the military-industrial complex, revealing the symbiotic logic and institutional connections among the military, defense industry, and political elites. This theory was first introduced by C. Wright Mills, who pointed out that these three entities form a stable alliance based on shared interests, mutually supporting and reinforcing each other, thereby establishing a unique power structure in political and economic spheres. For instance, the military requires advanced weaponry to maintain national security, the defense industry depends on military orders to sustain its operations, and political elites need the political backing of defense firms to consolidate their power. Jeffrey A. Engel further elucidated the operational mechanisms of military-industrial relations, noting that the military-industrial complex essentially represents an institutionalized form of rent-seeking. Its main characteristics include the blurring of lines between government and business in defense decision-making, the normalization of interest transfers, and the expanding influence of the military sector. This institutionalized "iron triangle" relationship facilitates the flow of resources and information, advancing defense technology on one hand, while also providing institutional safeguards for rent-seeking activities by defense firms, exacerbating information asymmetry and conflicts of interest. As a result, it has a broader impact on U.S. defense capabilities and foreign policy. In addition to traditional military-industrial complex theories, this study also introduces cognitive warfare theory as a supplementary analytical framework, focusing on how information manipulation and psychological influence can alter the cognition and behavior of target groups.

In summary, there is a close internal connection among principal-agent theory, rent-seeking theory, and military-industrial relations theory. Principal-agent theory reveals the fundamental logic of the internal operations of the military-industrial complex, rent-seeking theory explains how the complex influences the external environment, and military-industrial relations theory uncovers the institutional foundations behind this influence. These three theories build upon one another, forming a comprehensive analytical framework that enhances our understanding of the complex impact of the military-industrial complex on U.S. defense capabilities and foreign policy (see Figure 1). By applying this framework, we can more clearly observe how information asymmetry fosters rent-seeking behavior,

how rent-seeking behavior strengthens military-industrial relations, and how these relations, in turn, exacerbate information asymmetry and rent-seeking, ultimately creating a self-reinforcing cycle. Through systematic examination of this influence mechanism, we can gain deeper insights into its operational dynamics and more accurately assess its dual impact on U.S. defense capabilities and foreign policy.

Figure 1: The operational mechanisms of the U.S. Military-Industrial Complex



4. High Concentration and Long Cycles in the Defense Market

The U.S. defense market is characterized by high monopolization and long product cycles, which create fertile ground for opportunistic behavior by military-industrial companies. According to principal-agent theory, under conditions of information asymmetry and conflicting interests, agents (military-industrial companies) may exploit their information advantage to engage in actions that run counter to the interests of the principal (the government).

Firstly, the high concentration of the U.S. defense market exacerbates the information advantage of military-industrial companies. After World War II, the United States did not dismantle its defense industrial base but rather preserved and strengthened it. During the Cold War, with large-scale investments by military contractors in factories, facilities, and other assets, defense production capacity expanded significantly, leading to severe overcapacity after the Cold War ended. To mitigate the cost burden of excess capacity and reduce defense spending, the U.S. Department of Defense began encouraging contractors to merge. With substantial government support, major enterprises like Lockheed and Martin Marietta, Northrop and Grumman, Boeing and McDonnell Douglas merged to

form new industry giants. Notably, Lockheed Martin was formed through the merger and acquisition of more than 20 companies. Furthermore, the low-interest-rate environment at the time facilitated easy acquisitions through cheap financing, exacerbating the wave of consolidations in the defense industry. Between 1990 and 2000, the number of large military contractors in the United States decreased from over 50 to fewer than 10, and this number has continued to decline, as illustrated in Table 1. By 2020, the top five U.S. military-industrial companies accounted for more than one-third of all Pentagon contracts. This level of market concentration far exceeds that of other industries, forming a typical oligopolistic structure. In such a market, a few large military-industrial companies control crucial technological information and cost data, making it difficult for the government to effectively supervise them. Information asymmetry in defense procurement creates opportunities for opportunistic behavior by military-industrial companies, leading to rising costs and declining quality. For instance, in the U.S. Navy's Ford-class aircraft carrier project, the contractor Newport News Shipbuilding held crucial technical and cost information, making it difficult for the Navy to assess the reasonableness of their bids. Ultimately, the project's cost ballooned from the initial \$10.8 billion to \$13 billion, far exceeding the budget.

Table 1: Number of contractors exist for major weapons categories

Weapons category	Total U.S. contractors			Current U.S.-based prime contractors
	1990	1998	2020	
Tactical missiles	13	3	3	Boeing; Raytheon Technologies; Lockheed Martin
Fixed-wing aircraft	8	3	3	Boeing; Northrup Grumman; Lockheed Martin
Expendable launch vehicles	6	2	2	Boeing; Lockheed Martin
Satellites	8	5	4	Boeing; Northrup Grumman; Lockheed Martin; Hughes
Surface ships	8	5	2	General Dynamics; Huntington Ingalls
Tactical wheeled vehicles	6	4	3	AM General; Oshkosh; General Motors
Tracked combat vehicles	3	2	1	General Dynamics

Strategic missiles	3	2	2	Boeing; Lockheed Martin Lockheed Martin;
Torpedoes	3	2	2	Raytheon Technologies Bell Textron;
Rotary wing aircraft	4	3	3	Lockheed Martin; Boeing

Source: Office of Commercial and Economic Analysis (OCEA) U.S. Aerospace & Defense Industry Consolidation Assessment, November 2021.

Secondly, the long cycles of defense projects weaken government oversight. From research and development to deployment, a military project often spans several decades. From the early 1970s to the late 1990s, the product cycle for U.S. Air Force projects doubled. For example, the F-22 fighter jet project took nearly 30 years from concept design to final deployment. During such a lengthy project cycle, initial procurement contracts and budget arrangements are likely to change, creating opportunities for contractors to seek additional budgets and extend timelines. Moreover, the extension of project cycles significantly increases government oversight costs. The longer the principal-agent relationship persists, the more severe information asymmetry issues may become. A 2021 report by the U.S. Department of Defense noted that due to a lack of effective oversight, 90% of the Pentagon's major weapons projects experienced delays and cost overruns.

Under the combined influence of these factors, military-industrial companies have more opportunities to maximize their own interests rather than focus on improving the cost-effectiveness of weapons and equipment. The U.S. Army's Future Combat Systems (FCS) project, which aimed to develop a new generation of ground weapons platforms, had an initial budget of \$92 billion. However, during the project's implementation, contractors Boeing and SAIC frequently proposed design changes and additional budgets, ultimately causing project costs to exceed \$200 billion, nearly doubling the original estimate. More puzzlingly, despite the enormous expenditure, the equipment developed under this project repeatedly failed in tests, leading to its eventual cancellation by the Pentagon. This case vividly illustrates the severity of principal-agent issues in defense procurement.

In summary, the high monopolization and long cycles of the defense market exacerbate information asymmetry and conflicts of interest between the government and military-industrial companies, creating conditions for companies to pursue their own interests. In the absence of effective oversight, military-industrial companies may raise weapon prices, extend R&D cycles, and reduce product quality, ultimately weakening U.S. defense capabilities and military advantage. In the defense sector, market mechanisms often fail, replaced by bureaucratic mechanisms and political processes, leading to inefficiency, resource waste, and even corruption. It is evident that principal-agent issues have become a significant factor limiting U.S. defense efficiency.

5. Market Participation of the U.S. Government and Military-Industrial Companies

The relationship between the U.S. government and military-industrial companies is not simply one of principal and agent; rather, it has evolved into a complex network of interest exchanges. Military-industrial companies leverage their political influence through lobbying, political donations, and other means to shape defense policy in their favor. Meanwhile, politicians and officials use their power to secure projects and funding for military-industrial companies, thereby gaining political benefits. This intertwined rent-seeking behavior severely distorts U.S. defense decision-making, including strategies and investments in cognitive warfare.

Military-industrial companies are among the most active lobbying forces in the United States. In 2022, the top five U.S. military-industrial companies (Lockheed Martin, Raytheon Technologies, Northrop Grumman, Boeing, and General Dynamics) spent a total of \$64.1 million on lobbying activities, a 120% increase from 2002. Among the top-spending companies on lobbying in the U.S., four are military contractors. Through lobbying, military-industrial companies influence members of Congress, pushing for budget proposals and policy bills that benefit them. For instance, the 2022 defense budget, which totaled \$858 billion, contained over 100 provisions believed to have been directly written or influenced by military lobbying groups. These provisions included not only traditional weapons systems but also investments in information warfare and cognitive warfare. Military-industrial companies, through lobbying, have driven investments in technologies related to cognitive warfare, such as social media monitoring, big data analysis, and artificial intelligence—investments that often exceed actual military needs and even contradict explicit opposition from the military but open new profit avenues for these companies. It is evident that driven by interests, military-industrial companies have become an "invisible force" in shaping U.S. defense policy.

Besides lobbying, military-industrial companies also influence elections and appointments through political donations. During the 2020 election cycle, the 20 largest U.S. military-industrial companies and their employees donated a total of \$36.4 million to members of Congress and presidential candidates, a 15% increase from 2016. Notably, these donations were concentrated on members of key institutions such as the Armed Services Committees and Appropriations Committees. Data shows that of the top 20 members of Congress receiving donations from military-industrial companies, 18 were from the Armed Services Committees of the House and Senate—the very committees responsible for reviewing and approving defense budgets and military procurement contracts. Through these "donation offensives," military-industrial companies not only influence the voting tendencies of legislators but also affect personnel appointments in the defense sector. In 2017, then-Secretary of Defense James Mattis publicly stated that several of his senior aides were appointed at the recommendation of military-industrial companies. This influence extended to the cognitive warfare domain, leading to the approval and funding of cognitive warfare projects that did not meet actual needs.

The "revolving door" phenomenon is particularly prominent in the rent-seeking activities of military-industrial companies. The term "revolving door" refers to the movement of executives between

military-industrial companies and government departments or vice versa. This personnel flow intensifies the collusion between military-industrial interest groups and government decision-makers. Between 2008 and 2018, nearly 650 generals and senior Pentagon officials joined military-industrial companies after leaving government service, including nearly 30 four-star generals. These "revolving door" individuals leverage their influence and networks within government to secure projects and contracts for military-industrial companies. For instance, in fiscal year 2021, military-industrial companies employed 46 former senior Pentagon officials, including former Under Secretary of Defense Ellen Lord, former Director of the Defense Intelligence Agency Robert Ashley, and former Assistant Secretary of the Navy James Geurts. A typical case involves Robert Gates, who, after stepping down as Secretary of Defense in 2011, joined the board of defense giant Lockheed Martin. Subsequently, Lockheed Martin secured multiple defense contracts worth billions, including the F-35 fighter jet program. The "revolving door" phenomenon has thus become a significant pathway for military-industrial interest groups to infiltrate defense decision-making.

Under the influence of rent-seeking activities, U.S. defense decision-making has deviated significantly from national interests, resulting in resource misallocation and inefficiency. On the one hand, weapons projects promoted by military-industrial interest groups may not align with actual military needs. For example, despite the U.S. Army's repeated statements that no more tanks were needed, Congress approved a new procurement budget for General Dynamics' tank production line, driven by the insistence of Ohio Senator Mike Turner, then chairman of the Senate Armed Services Committee. It is worth noting that General Dynamics' tank factory is located in Turner's district. Moreover, due to the monopoly enjoyed by military-industrial companies in research, development, and production, the government struggles to effectively supervise their costs and pricing, leading to widespread overpricing and overcharging. A 2019 audit report by the U.S. Department of Defense Inspector General found that 6 out of the Pentagon's top 10 defense procurement projects had significant cost overruns, with an average overrun rate of 60%.

On the other hand, the pursuit of excess profits by military-industrial companies encroaches on other defense investments, leading to insufficient funding for military innovation and readiness. Over the past 20 years, the proportion of the U.S. defense budget allocated to procurement and research and development (R&D) has steadily declined, dropping from nearly 35% in 2001 to less than 25% in 2021. In contrast, various indirect costs meant to sustain the profits of military-industrial companies, such as management fees and market development expenses, have sharply increased, now accounting for more than 15% of the defense budget. This means that an increasing share of defense resources is being consumed by the profit-seeking behavior of military-industrial companies, while investments in enhancing military capabilities are becoming increasingly scarce. If this trend continues, it will severely weaken the U.S.'s capacity for military innovation and modernization.

In summary, the U.S. government and military-industrial companies have formed a community of shared interests through rent-seeking activities, resulting in the creation and continuous reinforcement

of the military-industrial complex. In this process, defense decision-making has deviated from national interests, leading to resource misallocation and inefficiency, which in turn undermines U.S. defense capabilities. The military-industrial complex has become a powerful and enduring interest group within the U.S. political and economic system, shaping budget priorities and influencing defense policy while reaping enormous profits in the process. The essence of the military-industrial complex problem is the "institutional capture" of national policy-making by military-industrial interest groups. Addressing this capture and ensuring that defense decisions serve national interests is a critical issue that the U.S. urgently needs to resolve.

6. F-35 Joint Strike Fighter Program: A Microcosm of the Military-Industrial Complex

The F-35 Joint Strike Fighter (JSF) program stands as the most expensive weapons development initiative in U.S. military history and serves as a quintessential example of the military-industrial complex in operation. Initiated in the 1990s, the program aimed to develop a multirole fighter capable of fulfilling the needs of the U.S. Air Force, Navy, and Marine Corps. As the primary contractor, Lockheed Martin projected the total cost to exceed \$1.7 trillion, a figure that dwarfs the total expenditure of the Apollo moon landing program. However, the F-35 program has been plagued by significant cost overruns and delays. According to the U.S. Government Accountability Office (GAO), as of 2021, the unit cost of the F-35 had increased by 21% from its original estimate, and deliveries were nearly a decade behind schedule. This scenario highlights the principal-agent problem inherent in the military-industrial complex: Lockheed Martin, leveraging its informational advantage and the technical complexity of the project, has continually escalated the budget, while the government has struggled to exert effective oversight and control. Additionally, the delays in project completion have exposed numerous issues in the contractor's technical development and project management, including software development lagging and poor supply chain management.

The F-35's progress has been heavily reliant on Lockheed Martin's vigorous lobbying efforts. Between 2008 and 2023, the company spent over \$2.26 billion on political donations and lobbying activities, substantially influencing Congressional decisions to secure continuous budget support for the program. A notable instance occurred in 2015 when then-Chairman of the Senate Armed Services Committee, John McCain, proposed reducing the F-35 procurement numbers. However, under Lockheed Martin's lobbying, this proposal ultimately failed to pass. The F-35 program also exemplifies the symbiotic relationships within the military-industrial complex. The military gains advanced weapons systems, Lockheed Martin secures contracts worth up to \$400 billion for development and procurement, and politicians benefit from the economic and political capital associated with supporting the program. For example, components of the F-35 are produced and assembled by thousands of suppliers and contractors across 45 states, ensuring that the program's benefits are distributed across almost all congressional districts. This intricate web of interests makes the F-35 program difficult to cancel or significantly reduce, even in the face of severe cost overruns and performance issues.

From a defense capability perspective, the impact of the F-35 program is twofold. Proponents argue that the program has injected substantial funds into the U.S. aerospace industry, maintaining its global leadership and enhancing America's air superiority and strike capabilities in the 21st century. The F-35, equipped with advanced stealth technology, sensors, and weapons systems, is capable of performing a wide range of missions, including air superiority, ground attack, and intelligence gathering. The U.S. Air Force Chief of Staff has described the F-35 as "the aircraft every Air Force pilot dreams of flying." The program's widespread subcontracting has created numerous jobs and spurred technological advancements in related industries. However, critics contend that the program's monopolistic nature stifles competition, driving up procurement costs in the defense industry. The ballooning budget of the program has squeezed out smaller defense firms and increased industry concentration. Moreover, the enormous resources allocated to the F-35 may limit investments in other critical areas, such as infrastructure development, personnel training, and emerging technologies. The substantial resource commitment to large-scale weapons programs like the F-35 could also hamper U.S. research and development in fields such as artificial intelligence, unmanned systems, and directed energy weapons, potentially compromising America's dominance in future military technological revolutions. The exorbitant costs and ongoing technical challenges present significant challenges to the U.S. defense budget and military modernization efforts. Former U.S. Department of Defense Comptroller Robert Hale warned that the F-35 program could become a "black hole" devouring defense budgets. Additionally, the delays in the program have had quantifiable impacts on the U.S. military's operational readiness. Specifically, these delays have impaired the military's ability to effectively counter advanced air defense systems and fifth-generation fighter aircraft developed by potential adversaries. For instance, the F-35's delays have resulted in a 20% reduction in the U.S. Air Force's projected combat capability against near-peer threats. In the interim, the U.S. military continues to rely on fourth-generation aircraft like the F-16 and F/A-18. While these platforms have undergone upgrades, they still face significant limitations when confronting modern anti-access/area-denial (A2/AD) systems. For example, the F-16's combat radius of approximately 500 nautical miles is insufficient for operations in the vast Pacific theater, where China has deployed long-range surface-to-air missiles with ranges exceeding 250 km. Similarly, the F/A-18's radar cross-section, which is up to 100 times larger than that of the F-35, makes it highly vulnerable to detection by advanced air defense networks employed by countries like Russia.

The F-35 program has also sparked discussions about U.S. foreign military sales policy. To offset costs, the U.S. Department of Defense has aggressively promoted the F-35's international sales. Several countries, including key allies such as the United Kingdom, Italy, and Canada, have joined the program. U.S. officials argue that selling the F-35 to allies strengthens partnerships and upholds the U.S.-led international order. However, the proliferation of the F-35 may trigger regional arms races, lowering the threshold for conflict. If conflicts were to arise among allies, the U.S. could face the uncomfortable scenario of F-35s being used against each other. Furthermore, the complex technology transfer

associated with the F-35 poses challenges for allies' absorption capacities; some countries may struggle to fully master its maintenance and upgrades, ultimately increasing their dependence on U.S. technology.

In summary, the F-35 program serves as a microcosm, reflecting the multifaceted operations of the military-industrial complex. The symbiotic relationships within the complex, sustained through mechanisms of information asymmetry, political influence, and interest exchange, perpetuate and reinforce the vested interests of its stakeholders. While these relationships facilitate the development of advanced weapons systems, they may, in the long run, distort defense resource allocation, delay military modernization, and negatively impact U.S. defense capabilities.

7. The Impact of the Military-Industrial Complex on U.S. Foreign Affairs

The military-industrial complex not only influences the United States' defense capabilities but also profoundly affects its foreign policy direction. The symbiotic alliance formed by the military, defense industry, and political elite has become a significant force driving the militarization tendency in U.S. foreign policy. Through shaping threat perceptions and influencing decision-making processes, the military-industrial complex has reinforced the U.S. inclination to use force in resolving international issues, intensifying regional and global strategic competition, particularly the tensions in U.S.-China relations.

Under the impetus of the military-industrial complex, the United States actively seeks and fabricates "enemies" to justify expanding military expenditures and launching military operations. From the 1991 Gulf War to the 2003 Iraq War, and from the 2001 Afghanistan War to the 2011 Libya intervention, the military-industrial complex has been a constant presence in the series of U.S. military interventions. During the war decision-making processes, the complex has consistently promoted the necessity and feasibility of military strikes through think tanks and media channels, influencing public opinion and policy formulation. In each conflict, U.S. defense contractors have secured substantial arms orders and reaped considerable profits. During the Iraq War alone (2003-2011), U.S. military-industrial firms profited over \$138 billion. It can be argued that without the military-industrial complex's promotion, the U.S. tendency towards frequent wars and military interventions would be difficult to sustain.

In the new era, the military-industrial complex has increasingly portrayed China as the United States' "primary strategic competitor," continually exaggerating the "China threat" and fueling strategic competition between the two nations. Instigated by military-industrial interest groups, U.S. Congress members and high-level government officials frequently express anti-China rhetoric, depicting China as an "all-around challenger" to the United States. In 2018, the U.S. Department of Defense's "National Defense Strategy" labeled China as a "revisionist power," accusing it of attempting to "reshape the regional order and challenge U.S. global dominance." Subsequent policy reports and public speeches by U.S. officials have further characterized China as the "greatest long-term strategic competitor" and the "primary geopolitical challenge." Accompanying this hardline rhetoric towards China, the U.S. Congress has passed a series of China-focused bills, significantly increasing military deployments and

arms sales targeting China. The 2022 National Defense Authorization Act explicitly listed China as a "strategic competitor" to the United States and called for strengthening military presence in the Indo-Pacific region to contain China's expanding influence. On the Taiwan issue, the U.S. has consistently challenged the One China principle, increased arms sales to Taiwan, and repeatedly dispatched warships and military aircraft to the Taiwan Strait. These actions clearly violate the spirit of the three U.S.-China joint communiqués, severely undermining the political foundation of U.S.-China relations. It can be said that, driven by the military-industrial complex, containing China has become the dominant theme in U.S. policy towards China, intensifying strategic competition between the two countries.

More alarmingly, the military-industrial complex's influence on U.S. foreign policy exhibits long-term and structural characteristics. On one hand, relying on an extensive political lobbying network and solid institutional foundations, the complex's impact on U.S. foreign policy is difficult to eliminate in the short term. For instance, defense contractors annually establish hundreds of lobbying organizations in Congress, employing numerous lobbyists to influence legislators through various channels. Lawmakers who consistently support military-industrial interests often receive more political contributions and campaign support from defense firms, subsequently gaining control over key institutions such as military committees. This stable interconnection of interests enables the military-industrial complex's influence on U.S. foreign policy to persist across party lines and government transitions. On the other hand, the military-industrial complex is interwoven with numerous domains of U.S. domestic politics and economy, forming a structural force. Economically, the defense industry is a crucial component of U.S. manufacturing, providing millions of jobs and affecting the economic livelihood of numerous states and constituencies. This makes it difficult for local politicians to resist pressure from military-industrial interest groups, leading them to actively support defense industry investments and employment in their states. Politically, supporting military-industrial interests has become a key political demand of U.S. conservative forces. Many right-wing politicians view increasing military spending and adopting tough foreign stances as inherent to upholding "America First" and "unilateralism" principles. Faced with such a powerful political and economic alliance, moderate forces advocating for reduced military spending and promoting foreign cooperation often struggle to compete.

The military-industrial complex's influence on U.S. foreign policy is also reflected in its shaping of American political culture and social psychology. Under the long-term permeation of the military-industrial complex, American society has developed a deeply ingrained "military-first" mindset, readily resorting to force and viewing war as the preferred means of problem-solving. From Hollywood films to television news, from elementary school textbooks to university classrooms, American popular culture and public discourse are saturated with content glorifying military power and exaggerating external threats. In this atmosphere, military means have been unprecedentedly romanticized, the military profession enjoys high social status, while voices advocating for diplomatic solutions are often marginalized. It can be said that under the influence of the military-industrial complex, a culture of

belligerence has become deeply rooted in American social ideology and values, undoubtedly providing fertile ground for the militarization tendency in U.S. foreign policy.

In conclusion, as an interest community comprising the military, defense industry, and political elite, the military-industrial complex has become a significant force influencing U.S. foreign policy. Under its promotion, U.S. foreign policy increasingly emphasizes military means, exacerbating regional and global strategic competition. Particularly in China policy, the military-industrial complex continuously exaggerates the "China threat," intensifying the confrontational nature of U.S.-China relations and becoming a prominent factor affecting bilateral relations. This not only undermines mutual trust between China and the United States but also threatens peace and stability in the Asia-Pacific region. As U.S. scholar Bray observed, "The military-industrial complex needs a 'threat' to maintain its political influence and economic interests. After the Cold War, this 'threat' was terrorism; now it is China." Thus, recognizing and addressing the negative impacts of the military-industrial complex is not only necessary for peaceful coexistence between China and the United States but also an inevitable requirement for maintaining global security.

8. Conclusion

The military-industrial complex's influence on U.S. defense capabilities and foreign policy is complex and far-reaching. This paper employs principal-agent theory, rent-seeking theory, and military-industrial relations theory to construct a multi-level, multi-dimensional analytical framework for systematically examining the impact of the military-industrial complex.

At the micro level, the high degree of monopolization and long-cycle nature of the defense market exacerbate opportunistic behaviors of defense contractors, leading to principal-agent problems such as cost increases and inefficiencies, thereby weakening U.S. defense capabilities. At the meso level, defense firms engage in rent-seeking behaviors through lobbying and political contributions, forming an interest exchange relationship with the government, distorting defense resource allocation, and crowding out funds for military innovation and readiness. At the macro level, the symbiotic alliance of the military, defense industry, and political elite has become a significant force influencing U.S. foreign policy, promoting the use of military means and intensifying regional and global strategic competition, particularly the confrontational nature of U.S.-China relations. These findings reveal the complex mechanisms through which the military-industrial complex affects U.S. defense capabilities and foreign policy, validating the explanatory power of the theoretical framework proposed in this paper.

Theoretically, this paper constructs a systematic and targeted analytical framework through theoretical integration, expanding the application of principal-agent theory, rent-seeking theory, and military-industrial relations theory. It provides new possibilities for interdisciplinary dialogue among political science, economics, and sociology. By thoroughly analyzing the organizational operations and influence mechanisms of the military-industrial complex, this paper reveals the special interest configuration formed by the intertwining of the defense industry and political processes, enriching and developing the theoretical connotations of the military-industrial complex.

Practically, the influence mechanisms of the military-industrial complex revealed in this paper have important implications for accurately grasping U.S. foreign policy trends, especially in addressing U.S.-China strategic competition. The significant role played by the U.S. military-industrial complex in promoting a hardline approach towards China reminds us of the necessity to pay close attention to its influence in U.S.-China relations. This requires us to fully recognize the negative impact of U.S. military-industrial interest groups on China policy, rationally face the resulting challenges, and avoid falling into the trap of an arms race. On the other hand, we need to deepen exchanges and dialogues at various levels between the two countries, increase mutual trust, dispel misunderstandings, and jointly create a favorable atmosphere for U.S.-China cooperation and mutual benefit. Only in this way can we escape the "Thucydides Trap" dominated by the military-industrial complex and achieve long-term stable development of U.S.-China relations.

In the future, the military-industrial complex will remain an important force influencing the political and economic landscape of the United States and the world. How to curb its negative impacts, promote healthy development of the defense industry, and construct stable and cooperative great power relations will be common challenges faced by the international community. This requires the joint participation of governments, enterprises, and the public from various countries. Based on strengthening communication and dialogue, it is necessary to establish coordination mechanisms for various interests, improve defense procurement and military-industrial management systems, and promote global arms control and disarmament processes. Only through multilateralism and global governance can we minimize the negative impacts of the military-industrial complex, ensure that military power truly serves peace, and promote the building of a community with a shared future for mankind.

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Availability of Data and Materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest to report regarding the present study.

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