





Cite this article as: Nematpour, A., & Shariati, Sh. (2024). U.S. Maximum Pressure and the Deterrence of Iranian Missiles. *Journal of World Sociopolitical Studies*, 8(2), pp. 335-385. <https://doi.org/10.22059/wsps.2024.376519.1437>

## U.S. Maximum Pressure and the Deterrence of Iranian Missiles\*

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(Received: Jan. 15, 2024 Revised: Feb. 13, 2024 Accepted: Mar. 23, 2024)

### Abstract

Following the Islamic revolution, Iran has consistently faced threats from neighboring countries and major global powers. In response to Iran's revolutionary stance and its challenging position in the international arena, the United States has imposed significant arms and military sanctions aimed at curbing Iran's influence in the region. However, drawing from historical lessons, Iran has adopted a deterrence strategy to counter external pressures. To compensate for its relative conventional military weaknesses and maintain deterrence against adversaries, Iran has prioritized the development and production of missile capabilities. This study delves into the development of Iran's missile capabilities and their correlation with U.S. arms embargoes. It seeks to answer whether these sanctions have effectively contained Iran's regional influence. Employing a Trend Impact analysis methodology that utilizes library resources, we will explore the trajectory of Iran's missile industry development under sanctions. Furthermore, we assess the efficacy of these sanctions on Iran's defense capabilities and military structure. The research findings indicate that U.S. military sanctions have failed to achieve their intended objectives and safeguard the interests of the U.S. and its regional allies. Contrary to assertions, the sanctions have strengthened Iran's missile capabilities and regional influence, solidifying the country's position as a regional power in the international system.

**Keywords:** Deterrence, Iran, Missile, Sanctions, United States of America

\* The authors express their gratitude to the Iran's National Elites Foundation and Tarbiat Modares University for their financial support of this research.

*Journal of World Sociopolitical Studies* | Vol. 8| No. 2| Spring 2024| pp. 335-385

Web Page: <https://wsps.ut.ac.ir/> Email: [wsps@ut.ac.ir](mailto:wsps@ut.ac.ir)

eISSN: 2588-3127

PrintISSN: 2588-3119

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## 1. Introduction

As superpowers increasingly resort to sanctions, these measures have become integral to the exercise of power in international politics. Being the global hegemon, the United States vigorously employs sanctions to advance its foreign policy objectives (Hufbauer & Jung, 2021, p. 28), thus establishing this tool as a cornerstone of American foreign policy. In the realm of international relations literature, sanctions denote actions undertaken by one or more international actors to caution others. Essentially, sanctions represent non-military punitive measures adopted by one or a coalition of states against specific governments or entities. They serve as coercive tools, capable of signaling or escalating hostilities without necessitating military confrontation (Felbermayr et al., 2020). The primary objective of sanctions is to either penalize the target country or compel it to align with the political aims of the sender country, expressing disapproval of the target's actions and behaviors. Military sanctions are one such option in this spectrum. In essence, sanctions serve the same purpose as military operations, but through less forceful means (Damrosch, 1993, p. 300). While diplomacy is not completely abandoned during sanctions, it operates within an adversarial atmosphere that may potentially escalate to armed conflict.

Iran has endured a prolonged history of grappling with various sanctions. The earliest instance traces back to the 1930s when Britain, in response to the nationalization of Iran's oil industry, initiated legal proceedings against buyers of Iranian oil. Consequently, numerous countries refrained from purchasing Iranian oil, precipitating a multifaceted crisis. This British oil embargo not only engendered international challenges, but also inflicted severe economic hardships on the Iranian populace.

Following the revolution and the subsequent hostage crisis at the American embassy in Tehran, Iran faced a fresh wave of sanctions from the United States. Among America's strategic objectives in imposing sanctions on Iran was the establishment of military and financial impediments aimed at curbing and constraining Iran's regional influence. The U.S. sanctions against Iran represent one of the most comprehensive and far-reaching sets of sanctions targeting the country. Leveraging its extensive political and commercial ties across the globe, the United States has been able to impose many of its unilateral sanctions against Iran on other nations. Through multilateral sanctions and coercive diplomacy, the United States endeavors to diminish Iran's power and encourage conformity with international norms.

However, despite the array of restrictive measures imposed by the United States, Iran persists in bolstering its power and influence in the region as a means of implementing effective deterrence against American intervention. The overarching policy of the Islamic republic of Iran, since its inception, has been centered on seeking independence and countering American hegemony and supremacy, aiming to thwart any interference in its internal affairs (Dehghani Firouzabadi, 1388 [2009 A.D.], p. 158). Consequently, Iran's sovereignty has been continually challenged by a series of unilateral and multilateral sanctions imposed by the United States.

This article exclusively focuses on Iran's ballistic missiles to evaluate its deterrence capabilities, omitting consideration of drones, anti-missile systems, and other advancements in Iran's aviation sector. It endeavors to assess whether the military and arms sanctions levied against Iran by the United States have achieved their intended goal of controlling and restraining the country within the region. To address this inquiry, we will conduct

a comprehensive review and analysis of library resources and documentary data, examining collected information and statistics to gauge the efficacy and impact of these sanctions on Iran's defense and military infrastructure. Employing a Trend Impact Analysis methodology, this research endeavors to assess the interplay between sanctions and Iran's missile development, drawing on findings to evaluate these two variables. We put forth the hypothesis that the military sanctions imposed on Iran have failed to serve the interests of the United States and its regional allies. Contrary to assertions, U.S. sanctions have not deterred Iran from accruing regional power. Particularly within the missile industry, there is evidence of an enhancement in Iran's defense capabilities. Contrary to theoretical arguments positing sanctions as an alternative to military conflict, it appears that there exists a correlation between escalating sanctions and Iran's increased missile prowess, potentially heightening the risk of regional conflict and warfare.

For this purpose, the article will first review the research literature and theories of international relations, examining different approaches to the relationship between sanctions and military capabilities. Then, it will analyze the history of U.S. sanctions against Iran across three time periods, exploring both the sanctions and Iran's responses. Considering the evolution of sanctions against Iran from unilateralism to multilateralism and the comprehensive sanctions imposed by the United States, Iran has sought to stabilize and strengthen its deterrence by developing its missile capabilities. Finally, the article will demonstrate that in response to increasing sanctions and maximum pressure from the U.S. and its allies, Iran has significantly enhanced the quantity and quality of its missiles, making them a cornerstone of its defense

strategy. Contrary to experts who believed the sanctions would weaken Iran's defense strategies, the increased pressure has enabled Iran to bolster its defense capabilities and solidify its presence as a regional power.

## 2. Literature Review

A plethora of studies have delved into the dynamics of US sanctions and Iran's responses. Lopez and Cortright, in their article, highlight sanctions as the primary alternative to military intervention in US foreign policy post-Cold War. They argue that the rise of international cooperation and economic interdependence in the era of globalization has amplified the effectiveness of sanctions while reducing their costs (Lopez & Cortright, 1995). Dizaji and Farzanegan (2021), in their study titled "Do sanctions constrain Iran's military spending?", explore the relationship between sanctions and Iran's military expenditure. They find that mounting pressure and escalating multilateral sanctions have resulted in a reduction in military spending.

Einhorn and Van Diepen (2019), in a research report, contend that despite sanctions, Iran's military program continues to advance, potentially sparking an arms and nuclear race in the region, contrary to American interests. They propose strategies to control and limit Iran's missile capabilities by scrutinizing the development of its missile industry. Kubbig and Fikenscher (2012) in their book, draw connections between Iran's missile capabilities and its nuclear program. They argue that sanctions have failed to address both the non-nuclear and nuclear concerns of the United States regarding Iran. According to the authors, lifting economic sanctions on arms and missile technologies could bolster Iran's military capabilities and stabilize its regional power.

Bahgat (2019), in his research, examines Iran's missile program and the regional and global responses to it. Despite significant economic and political pressures, Bahgat suggests that Iran remains resistant to restrictions on its missile program. He advocates for a reassessment of approaches to dealing with Iran, given the limited impact of regional and global efforts to halt the progress of its missile program. Eslami and Vysotskaya Guedes Vieira (2022), in an article, analyze Iran's strategic culture in utilizing missile weapons from the Iran-Iraq war to the present day. They explore how Iran's strategic choices are influenced by its Shi'ite culture, framing its defense strategy and use of missiles as a retaliatory tool. As explained, most experts believe that sanctions have weakened Iran's defense strategies, or at least managed to control them and hinder their progress. Some other experts consider sanctions useful for containing Iran in the region. This research focuses on the correlation between US sanctions and Iran's missile industries. It demonstrates that escalating sanctions by the United States have driven Iran to expand its missile capabilities quantitatively and qualitatively, in line with its defense strategy and deterrence objectives. This article shows that, contrary to the opinion of these experts, there is a positive correlation between U.S. sanctions and the increase in Iran's missile capabilities. In other words, the article challenges the claims of mainstream experts by using data to demonstrate that as sanctions against Iran have intensified, the Iran's missile capabilities have also increased.

### **3. Theoretical Framework**

Deterrence models are integral to the study of international relations, focusing on averting war and neutralizing threats by examining the dynamics of interests and power. Deterrence entails

employing the threat of retaliation to dissuade adversaries from initiating hostilities and posing threats (Brodie, 2015). This strategy leverages threats to deter adversaries from undertaking actions with potential adverse consequences. In essence, actors utilize deterrence to signal to rivals that the costs of aggression outweigh any perceived benefits. Deterrence operates as an ever-present mechanism, with governments prepared to execute threats should adversaries pose existential threats to the system (Snyder, 1961). Deterrence threats are typically explicit, aimed at safeguarding the state's survival within the anarchic international system. However, a key challenge lies in establishing the credibility and eminence of these threats, ensuring that adversaries perceive them as genuine and actionable.

Broadly, deterrence aims to prevent conflict, with two conventional types: denial and punishment (Snyder, 1961, p. 15). In deterrence by punishment, the target actor signals to adversaries that their vital assets will be targeted in response to any aggression. The goal is to dissuade adversaries by demonstrating that the costs of their actions outweigh the potential benefits. Essentially, deterrence by punishment conveys to adversaries that hostile behavior will incur significant costs, thereby deterring aggression (George & Smoke, 1974, pp. 39-40). This approach relies on the threat of inflicting severe damage on the adversary's critical assets to deter aggression effectively.

In contrast, deterrence by denial does not focus on threats; rather, it seeks to persuade adversaries that their goals cannot be achieved through violent means. This form of deterrence hinges on the target actor's ability to convincingly convey its capabilities to adversaries. Deterrence by denial aims to thwart adversaries' ability to successfully execute attacks on the target actor's valued

objectives (Jervis, 1989, pp. 9-11). Ultimately, it aims to undermine adversaries' confidence in their ability to achieve their objectives through force, thereby discouraging aggression.

Deterrence, initially conceived as a preventive strategy for war and crisis management, emerged during the Cold War era, characterized by the notion of existential deterrence. In this context, deterrence was not merely about avoiding war, but also about preserving the new order within the international system (Schelling, 2008). As military technology evolved and attitudes towards deterrence shifted, major powers transitioned from conventional deterrence to more intricate models.

The advent of advanced weaponry introduced new dynamics, prompting countries to revise their defense strategies from reliance on conventional arms to emphasizing war and deterrence. Many scholars emphasized the importance of preparing for potential attacks by major powers (George & Smoke, 1974, p. 30). This new deterrence concept, coupled with technological advancements, led countries to develop second-strike retaliatory capabilities. Some argued that focusing on retaliatory capabilities was essential for establishing sustainable deterrence, contending that mutual deterrence could dissuade the enemy's behavior due to the rational actors' mutual aversion to the widespread destruction of war. Central to this form of deterrence is the ability to instill fear in adversaries (Trujillo, 2014, p. 45), giving rise to the concept of a "balance of threat" and a focus on second-strike capabilities. Scholars like Schelling emphasized the importance of strategic destabilizing forces, such as ballistic missiles, in this deterrence model (Schelling, 1980, pp. 241-243).

The end of the Cold War and the emergence of new threats prompted a reassessment of deterrence theories. Many scholars



concluded that the assumptions about deterrence between superpowers during the Cold War did not hold in the unipolar era. These theories, predicated on rational actors weighing the cost-benefit of their decisions, proved ineffective in the post-Cold War era. With shifts in power dynamics and the Cold War's conclusion, strategies for controlling and managing order, including deterrence, underwent revision (Morgan, 2003). In response, regional powers began employing self-help strategies to safeguard their sovereignty, often seeking missile technology for national security. Some argue that governments' utilization of missile weaponry has complicated the concept of deterrence, leading weaker nations to pursue asymmetric capabilities and cost-effective deterrence strategies, challenging traditional deterrence theories and outcomes (Paul, et al., 2009).

This scenario has entrenched the Security Dilemma as a critical factor in the calculations of international actors. The Security Dilemma refers to a circumstance where multiple governments face the potential for hostile competition, despite their reluctance to escalate tensions or engage in direct confrontation. Seeking to bolster their security, states often pursue increased power, a move perceived as threatening by other actors. The anarchic nature of the international system amplifies concerns among states regarding their position within it and their relationships with other states (Sørensen, 2007, p. 359). This dynamic prompts governments to make decisions based on a calculus of costs and benefits. In their quest to mitigate threats, governments may opt for either balancing or bandwagoning strategies, depending on their power and relative standing in the international arena (Hansen, 2008, p. 30). Consequently, governments are drawn into a cycle of security competition to ensure their survival. Each state endeavors to

maximize its own power, often at the expense of other actors. In turn, competitors respond by seeking to enhance their own share of global power, thereby perpetuating a Security Dilemma rooted in uncertainty about the capabilities of others (Mearsheimer, 2001). This sets in motion a self-reinforcing cycle wherein efforts to enhance security paradoxically diminish it. Waltz contends that the security dilemma emerges as a consequence of the anarchical structure of the international system. Within this context, actors perceive others' motives, objectives, and capabilities as fundamental threats, compelling governments to embrace a principle of self-help and prioritize security within the international realm (Waltz, 2010).

Throughout history, the necessity of developing long-range weapons for use in conflicts and wars has been a prominent concern, driven by the perennial tensions in human societies. Technological advancements, particularly in the realm of missile development, have brought about significant changes in governments' aggressive and deterrent actions, cementing missiles as an integral component of modern deterrence strategies. The proliferation and enhancement of ballistic missile capabilities in developing nations have yielded profound strategic implications on the global stage, notably diminishing the significance of geographical distance in military operations.

In the Middle East, a region fraught with historical conflicts, the utilization of missile weaponry holds paramount importance. Given the region's historical experiences and the array of regional and extra regional threats, the Islamic Republic of Iran has fervently pursued technological advancements and expanded its missile capabilities to counter multifaceted threats. Iran's missile program has proven instrumental in bolstering its defense and deterrence

strategies, ensuring its security amidst the volatile landscape of the Middle East.

Conversely, the United States and its allies have consistently sought to curtail and dismantle Iran's missile systems as part of their defense and security strategy. To address this challenge, the United States has implemented extensive sanctions against Iran. American policymakers contend that sanctions serve as a deterrent to war, asserting an inverse relationship between the severity of sanctions and the likelihood of armed conflict. They advocate for diplomacy and coercion as alternatives to military solutions, advocating for containment as the primary paradigm guiding US policy towards Iran. The containment policy aims to prevent Iran from further regionalizing its power (Allin & Simon, 2010).

George (1991, p. 13) argues that the rationale behind coercive diplomacy lies in the effectiveness of threats of punishment for non-compliance, provided these threats are perceived as credible enough to compel obedience. Successful employment of coercive diplomacy hinges on the calculation that the costs of defying the coercing entity's demands outweigh the benefits, thereby incentivizing compliance (Jentleson & Whytock, 2005, p. 51). In coercive diplomacy, efforts are made to convey to the target actors the urgency of complying with demands, while simultaneously ensuring that they perceive themselves as lacking the capability to withstand the threats (George, 1991, p. 81). Strategists view states as rational actors driven by the pursuit of utility maximization, implying that increased costs prompt a reassessment of behavior (Trujillo, 2014, p. 45).

#### **4. US Sanctions and Iran's Missile Production and Development**

Sanctions, positioned between the extremes of military intervention and diplomatic measures, serve as a pivotal tool in a nation's foreign policy arsenal (Haass, 1998). The evolution of US sanctions against Iran can be delineated into three distinct periods. During the first period, spanning from the onset of the Islamic Revolution through the presidency of George Herbert Walker Bush, the United States unilaterally imposed sanctions against the Islamic Republic in response to events such as the hostage crisis. However, these measures had limited impact on Iran's business partners, primarily comprised of developed European countries.

The second period, commencing with the presidency of Bill Clinton and extending until the end of George W. Bush's term, witnessed a shift from unilateral sanctions towards a strategy of multilateral and targeted sanctions. Employing threats against international and financial institutions engaged with Iran, the US aimed to intensify the comprehensiveness and impact of sanctions. During this phase, efforts were made to bolster the blockade of Iran, including the passage of Security Council resolutions and increased European alignment with US policies. The success of the United States in building a consensus among its Western allies led to the adoption of several resolutions against Iran. These resolutions imposed a wide range of export and import restrictions, technical (military) restrictions, and financial and insurance sanctions on numerous individuals and institutions, particularly Iranian banks (Katzman & Kerr, 2016).

Under the presidency of Barack Obama, the third period unfolded. The US escalated pressure on Iran through the implementation of secondary sanctions and the negotiation of the

JCPOA. Leveraging global consensus, the US sought to exert comprehensive pressure on Iran via UN Security Council resolutions. Sanctions during this era targeted Iran's nuclear program, support for terrorism, and human rights violations. However, with Donald Trump assuming office, the US withdrew from the JCPOA in 2018 and reinstated previous sanctions while imposing new ones, pursuing a policy of maximum pressure to curtail Iran's regional influence.

Throughout these periods, Iran employed a strategy of deterrence, utilizing missile capabilities as a cornerstone of its defense strategy and national survival. In response to escalating sanctions and pressure, Iran sought to bolster its missile industries to maintain regional power balance in its favor. In this context, Iran used its deterrence strategy and missile capabilities as the cornerstone of its defense strategy and national survival. Although Iran's missile technology is not solely a response to U.S. sanctions and is part of a broader defense strategy shaped by regional security changes, the sanctions intensified the focus of Iran's leaders on enhancing missile capabilities. In response to increased sanctions and pressure, Iran aimed to strengthen its missile industry to maintain the regional balance of power in its favor.

During the first period, Iran procured missiles from various sources and pursued indigenous rocket manufacturing technologies. In the second period, Iran focused on enhancing the technology, range, and accuracy of its ballistic missiles. In the third period, amidst multilateral sanctions and maximum pressure from the US, Iran expanded its missile variety, accuracy, and quantity, acquiring technology for long-range ballistic and cruise missiles to bolster deterrence against perceived threats from the US.

#### **4. 1. First Period: Unilateral US Sanctions against Iran**

The imposition of sanctions on Iran traces back to the seizure of the American embassy and the subsequent hostage crisis. In response, President Jimmy Carter issued Executive Order 12170 in 1979, primarily aimed at restricting arms exports and preventing the shipment of military components to Iran. Carter also identified the United States' reliance on Iranian crude oil as a security vulnerability and prohibited its import (Farrar, 2010, p. 2356). Leveraging his legal authority and declaring a state of emergency, Carter froze Iranian properties and assets totaling \$12 billion (Executive Order 12205, 1979). Additionally, in 1980, he issued Executive Orders 12205 and 12211 (Executive Orders 12211, 1980), which prohibited all imports from Iran, barred American citizens from traveling to the country, and prohibited financial and commercial transactions with Iran. Following the resolution of the hostage crisis and as his presidency came close to its end, Carter revoked Executive Orders 12205 and 12211 with Executive Order 12282 in January 1981 (Executive Order 12282, 1981). However, Executive Order 12170, which imposed military arms embargoes, remained in effect.

According to table 1, during the 1980s, Iran found itself once again in the crosshairs of US sanction policies. Reagan's foreign policy during this era centered on implementing a containment strategy in both diplomatic and military realms (Zakaria, 1990). Reagan's decision to enforce sanctions against Iran stemmed from a desire to maintain military equilibrium amidst the conflict between Iran and Iraq. Throughout the imposed war on Iran, the United States employed this approach to gradually diminish Iran's defensive and operational capabilities (Fayazmanesh, 2003, p. 226). Moreover, the Reagan administration was alarmed by the

spreading ideological influence of Iran's Islamic Revolution across Middle Eastern nations, especially exacerbated by Israel's 1982 war against Lebanon and the emergence of Hezbollah. Operation Staunch, initiated in 1983 at the peak of the Iran-Iraq war, aimed to tightly regulate the export of any military weapons technology to both Iran and Iraq (Kemp, 2010). Subsequently, the United States endeavored to dissuade its allies from supplying American arms to Iran (Katzman, 2011). In 1987, under Executive Order 12613 (Executive Order 12613, 1987), Reagan enacted a ban on imports from Iran and prohibited arms sales to nations designated by the State Department as sponsors of international terrorism.

With the collapse of the Soviet Union in the 1990s, the United States emerged as the sole superpower remaining from the Cold War era, significantly amplifying its role in the international system. Concurrently, the escalating disparities between the United States and Iran framed Iran as a regional menace. The United States perceived Iran as possessing the capability to challenge its hegemony in the region post-Cold War (Khalilzad, 1995). These circumstances prompted the administration of George H. W. Bush to ratify the Iran-Iraq Arms Non-Proliferation Act in 1992, aiming to impose restrictions on the transfer of dual-use technologies and conventional military weapons (Iran-Iraq Arms Non-Proliferation Act, 1992). A pivotal aspect of this legislation, specifically applicable to Iran, was the imposition of sanctions on any American or foreign entity aiding Iran in acquiring weapons of mass destruction (H.R.5434 – Iran-Iraq Arms Non-Proliferation Act of 1992). This law can be regarded as one of the initial measures taken by the United States towards implementing multilateral sanctions on Iran. Table 1 outlines the unilateral sanctions that the United States imposed on Iran from 1979 to 1993. These sanctions

were a significant part of the early measures taken by the US to exert pressure on Iran.

**Table 1. The First Period: US Sanctions against Iran 1979-1993**

Name	Date	Sanctioner	Description
Executive Orders 12211, 12205, 12170	November 1979 to April 1980	Jimmy Carter	Blocked Iranian property and prohibited some trade, including import of all goods from Iran
State Sponsor of Terror designation	January 1984	Congress-Reagan	Banned arm sales and foreign aid to Iran
Executive Order 12613	October 1987	Ronald Reagan	Banned import of all goods from Iran
<i>Iran-Iraq Arms Non-Proliferation Act</i>	October 1992	George H. W. Bush	Sanctioned transfer of goods or technology related to WMD and some conventional Arms
Intensification of arms and technology restrictions against Iran	April 1994	Bill Clinton	Dual <i>Containment</i>

Source: Samore, 2015

#### **4. 2. First Period: The Genesis of Iran's Missile Production and Development**

Drawing from historical precedents and regional tensions, Iran has formulated its defense strategy around the concept of regional deterrence. Central to this strategy are Iran's missile systems, deemed pivotal in achieving the capability of second-strike retaliation against external threats, thereby bolstering regional



deterrence through missile capabilities (Shariati & Nematpour, 2023).

In the 1970s, Iran heavily relied on imported military weaponry, with the United States and Britain serving as primary suppliers. Iran's initial foray into acquiring ballistic missiles dates back to the twilight years of the Pahlavi regime. In the late 1970s, the Shah endeavored to procure short-range missiles from the United States, seeking to rival Turkey's acquisition of missiles from the same source. However, faced with the realization that his request would not be fulfilled, the Shah turned to Israel for a joint ballistic missile production venture. In 1977, a clandestine agreement was signed between Iran and Israel, coinciding with the Shah's covert efforts to attain nuclear capabilities (Tofanian, 1985). However, with the onset of the Islamic Revolution in 1979, these endeavors to acquire ballistic missiles were abruptly halted.

Following the Islamic Revolution and eight years of the imposed war with Iraq, Iran's military apparatus, including its air force, suffered significant setbacks, leading to a gradual erosion of the country's military capabilities during the war. To address this challenge and establish conditions for reciprocal response and deterrence against Iraq, Iran commenced importing missiles from countries such as Libya, China, and North Korea. Iranian strategists believed that acquiring missile technology could serve as a crucial deterrent against Iraqi missile attacks and contribute to halting the continuation of the conflict (Ajili & Rouhi, 2019).

Iraq's relentless missile assaults on Iranian cities inflicted extensive damage on urban areas and exacted a heavy toll on Iran's populace. Throughout this period, over 600 ballistic missiles were launched, claiming the lives of more than two thousand individuals

and injuring twelve thousand more, while causing widespread devastation (Taremi, 2005, p. 96). These attacks induced widespread fear among civilians, prompting hundreds of thousands, particularly in major cities like Tehran, to abandon their homes and seek refuge in safer locales (Karsh, 2014).

Iraq's repeated offensives on Iranian urban centers, coupled with Iran's perceived inability to mount effective responses to missile strikes, compounded by public pressure and escalating regional threats, spurred Iranian authorities to address the crisis through rapid bolstering of missile capabilities. Initially, Iran pursued limited imports of missiles, hopeful that retaliatory strikes against Iraq would deter further attacks on civilian populations (Cordesman, 2019). As shown in table 2., Iran embarked on the development of its indigenous missile program during the 1980s amidst the backdrop of the imposed war. Hindered by US sanctions, Iran turned to Eastern nations to fulfill its weaponry requirements, sourcing most of its missiles from countries such as China, North Korea, Russia, and Libya (Katzman, 2003). During this period, Iran's arsenal for countering Iraq's missile assaults consisted primarily of a few Scud-B missiles acquired from Libya, as well as M-9 and C-801 missiles imported from China (George, 1991). To address these deficiencies and bolster its technical expertise, Iran entered into missile cooperation agreements with Russia, China, and North Korea, facilitating technology transfer (Cordesman, 2015, p. 115). Leveraging reverse engineering, Iran succeeded in developing missiles like the Shahab-1 and Naze'at (Tabnak, 1397 [2018 A.D.]), deploying them in the war against Iraq despite US sanctions.

Following the cessation of hostilities, Iran confronted a dearth of weaponry resultant from the war and embarked on initial efforts to

procure missile armaments. Recognizing missiles as a means to mitigate the country's immediate military shortcomings and leverage available resources, Iran initiated imports of the Chinese C-801 missile with a range of 150 km in 1989, followed by the acquisition of the C-802 missile with solid fuel in 1993 (George, 1991). Dissatisfied with the performance of these imported missiles and constrained by US sanctions, Iran pivoted towards enhancing its indigenous missile capabilities post-war. In a seminal move, Iran commenced the production of the Shahab-2 and Zelzal-1 (*Hamshahrionline*, 1391 [2013 A.D.]) missiles in 1990. Notably, this period underscored Iran's efforts to procure missiles from various sources and endeavor to indigenize them through reverse engineering. Table 2 details the types of missiles Iran imported after the revolution and during the Iran-Iraq War. Additionally, this table highlights Iran's initial steps toward developing its own missile capabilities, marking the beginning of its missile program.

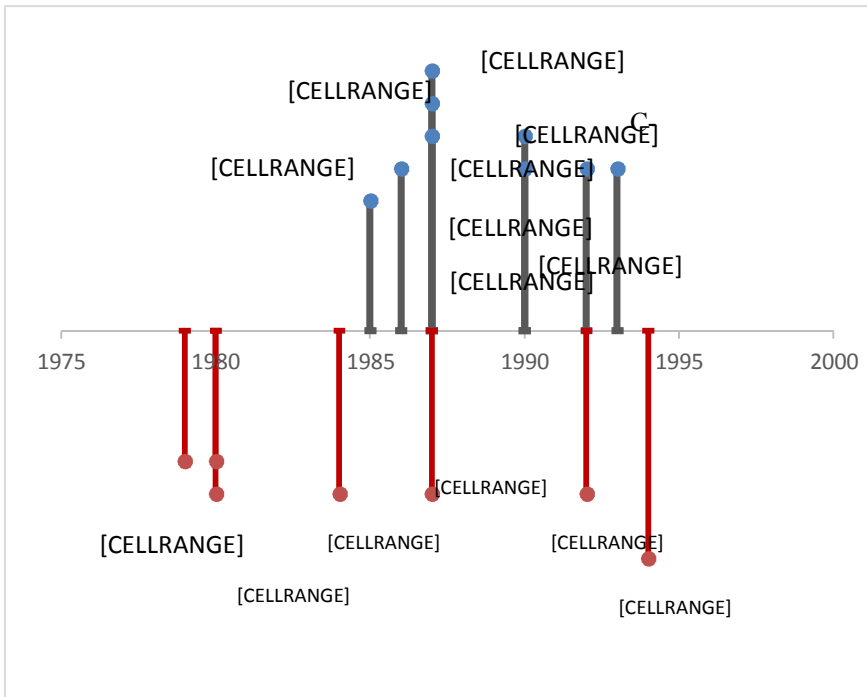
**Table 2. Iran's Missiles 1979-1993**

Name	Date	Description
Shahab-1	1985	300 km range, SRBM
HY-2	1986	95 km range, liquid fuel, imported from China
Naze'at	1987	130 km range, solid fuel, SRBM
C-801	1987	40 km range, solid fuel, imported from China
M-9	1987	600 km range, solid fuel, imported from China
Shahab-2	1990	500 km range, liquid fuel, SRBM
Zelzal-1	1990	150 km range, solid fuel, SRBM
M-7	1992	160 km range, solid fuel, imported from China
C-802	1993	160 km range, solid fuel, imported from China

Source: Authors' Collected Data

As depicted in the figure 1, over this timeframe, Iran pursued a strategy of importing missiles from various nations while concurrently striving for self-reliance in this domain through reverse engineering. Moreover, as illustrated in the graph, Iran sought to counterbalance America's sanctions policy by augmenting its missile capabilities through both imports and indigenous development. Consequently, with each imposition of US sanctions, Iran responded by bolstering its missile industry, thereby asserting its resilience and determination to safeguard its interests.

**Figure 1. Balance between Missile Power and Resilience of Sanctions 1979-1993**



Source: Authors

### **4. 3. Second Period: Multilateral and Targeted US Sanctions against Iran**

Iran sanctions continued in a more organized form during the Clinton era. During this period, the form of US sanctions underwent a quantitative and qualitative upgrade, getting a cross-border feature in a way that both American and non-American people were (and still are) required to implement them and in case of non-compliance, they would be subject to American sanctions. The first reason for the tightening of sanctions in this period is the increase in tension between the members of the Hamas movement and the Palestinian Islamic Jihad with the Israeli, which was supported by Iran both morally and materially. These tensions led to an increase in the activity of Israeli lobbies in the United States for Washington to put more pressure on Tehran by imposing more sanctions on Iran (Kemp, 1994, pp. 107-108). As depicts in table 3, these provocations finally led to the issuance of executive orders 12957 and 12959 by Bill Clinton in 1995 (Executive Orders 12957, 1995). According to these decrees, trade with Iran and investment in this country by American companies and foreign companies affiliated with them, and participation in the development of Iran's oil projects were prohibited. In order to increase the pressure on Iran and raise the risk of cooperation of other countries with Iran, the Iran and Libya Sanctions Act (ILSA) was approved by Congress in 1996 (Iran and Libya Sanctions Act, 1996). According to this law, any new investments in the oil and gas industry of Iran and Libya were prohibited; this was the starting point for the comprehensive US sanctions on Iran (Katzman, 2005, p. 3). In line with this law, Clinton signed the Executive Order 13059 in 1997 (Executive Order 13059, 1997), which prohibited the export of any type of goods, services and technology by American persons directly or indirectly to Iran.

The terrorist attacks of September 11, 2001, had far-reaching implications for the foreign policy of the United States and its role on the global stage. In response, President George W. Bush sought a strategic shift in US foreign policy, aiming to align the issue of Iran with the broader fight against terrorism and efforts toward arms control and non-proliferation (Allison, 2004, p. 67). Bush's explicit designation of Iran as part of the "axis of evil" must be understood within this context (Katzman, 2011, p. 61).

Additionally, the revelation of leaked documents concerning Iran's undisclosed nuclear facilities at Natanz and Arak in 2002, along with a report by Mohamed ElBaradei, the Director-General of the International Atomic Energy Agency (IAEA), to the Agency's Board of Governors in 2003, further heightened tensions between the two nations. The United States endeavored to rally support among member countries of the IAEA, particularly its allies, against Iran. In pursuit of this goal, the US portrayed Iran as actively pursuing nuclear weapons programs, seeking to lay the groundwork for referring Iran's nuclear dossier to the United Nations Security Council (Andrews & Chamberlain, 2004, p. 5). Ultimately, persistent American advocacy for imposing sanctions on Iran through the Security Council in 2006 persuaded Russia and China to agree to the referral of Iran's nuclear dossier to the Security Council (Hufbauer, 2012, p. 34).

This consensus resulted in the transfer of Iran's case from the IAEA to the Security Council, leading to the adoption of several resolutions against Iran, including resolutions 1696 and 1737 in 2006 (UNSC Resolution 1696 & 1737, 2006), resolution 1747 in 2007 (UNSC Resolution 1747, 2007), and resolutions 1803 and 1835 in 2008 (UNSC Resolution 1803 & 1835, 2008). These resolutions imposed a range of export and import restrictions,

technological (military) constraints, and financial and insurance sanctions against numerous individuals and entities; particularly certain Iranian banks (Katzman & Kerr, 2016). In light of these developments, US sanctions policies against Iran also entered a new phase. For instance, in 2007, the US Treasury Department curtailed the activities of foreign banks engaging with Iranian banks by issuing a blacklist (US Department of the Treasury, 2018). Table 3 explains the multilateral and targeted sanctions implemented by the United States between 1993 and 2009. These sanctions represent the second period of increased international pressure on Iran.

**Table 3. The Second Period: US Sanctions against Iran 1993-2009**

Name	Date	Sanctioner	Description
Executive Order 12957 and 12959	March-May 1995	Bill Clinton	Prohibited all U.S. investment in Iran, Banned export of the American goods to Iran
Iran and Libya Sanctions Act	August 1996	Bill Clinton	Sanctioned companies that invest more than 20 million in Iranian oil sector
Executive Order 13059	August 1997	Bill Clinton	Expanded ban on exports to Iran
Iran Non-proliferation Act	March 2000	Bill Clinton	Sanctioned entities providing goods related to WMD or ballistic missiles
Executive Order 13224	September 2001	George W. Bush	Blocked property of terrorists and financial supporters
Executive Order 13382	June 2005	George W. Bush	Blocked property of WMD proliferation
Iran Freedom Support Act	September 2006	George W. Bush	Sanctioned involvement in Iranian development of WMD/advanced conventional weapons, codified U.S. trade ban
Executive Order 13438	July 2007	George W. Bush	Blocked property of those involved in destabilizing Iraq

Source: Samore, 2015

#### **4. 4. The Second Phase of Missile Development: towards Ballistic Missiles**

In the aftermath of the war and amidst various sanctions imposed by the United States on Iran's military industries, the imperative of bolstering Iran's missile capabilities through indigenous technology became evident as a means to attain military parity (Cordesman, 2015, pp. 1-2). Thus, following the initial production of Iranian missiles via reverse engineering, Iran embarked on a path toward domestic ballistic missile manufacturing and the enhancement of its missile capabilities.

Given Iran's disadvantaged position relative to its neighbors in terms of military equipment balance post-war, coupled with a significant aerial advantage enjoyed by its regional adversaries, the imperative of enhancing deterrence capabilities through missile production and development emerged. Concurrently, Iran's geopolitical landscape, marked by Saddam Hussein's aggression against Kuwait and subsequent US-led intervention in the Persian Gulf War, underscored the importance of peripheral threats and the reassessment of deterrence capabilities. To address these imperatives, Iran pursued a dual strategy of importing weapons and advanced military technology while concurrently bolstering domestic military production to reduce reliance on foreign suppliers. As shown in table 4, Iran's endeavors to overcome challenges in procuring and maintaining military equipment, along with the need to compensate for limitations and weaknesses in conventional weaponry, fueled a concerted effort to advance missile capabilities and attain indigenous production technology.

During President Clinton's tenure, as pressure on Iran escalated and new arms embargoes were imposed, Iran achieved a degree of independence from foreign missile imports with the production of



Zelzal 2 and 3 in 1994 (*Mashreghnews*, 1400 [2021 A.D.]). Subsequent to increased pressure during the Bush administration, Iran unveiled the Noor, Fateh-110, and Shahab-3 missiles. The development of the Shahab-3 conferred a significant defense advantage upon Iran, elevating the country to the realm of ballistic missile capabilities (Federation of American Scientists, 2001). Following this milestone, Iran shifted its focus to the production of ballistic missiles with enhanced range and accuracy, exemplified by the Kowsar, Ashoura, and Nasr-1 missiles. Notably, the Ashura missile stands as the cornerstone of Iran's missile arsenal, furnishing potent strike capability against both population centers and specific targets (*Mehrnews*, 1386 [2007 A.D.]). It represents one of Iran's earliest two-stage ballistic missiles utilizing solid fuel (Cordesman, 2015, p. 114). Table 4 illustrates Iran's progress in producing ballistic missiles and enhancing their quality during this specific period. It demonstrates Iran's strategic shift towards self-reliance in missile production.

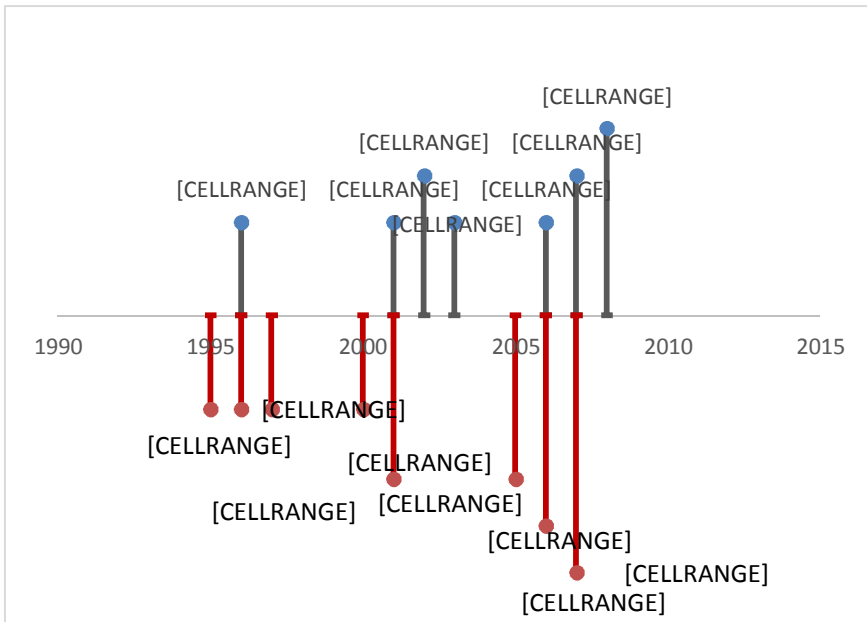
**Table 4. Iran's Missiles 1993-2009**

Name	Date	Discription
Fajr-3	1996	43 km range, solid fuel, intermediate-range missile
Noor	2001	Range 220 km, long-range Anti-ship cruise missile
Fat-h 110	2002	300 km range, solid fuel, SRBM
Shahab-3	2003	2000 km range, liquid fuel, medium-range ballistic missile
Kowsar	2006	15-20 km range, medium-range, land-based anti-ship missile
Ashoura	2007	2000 km range, solid fuel, medium-range ballistic missile
Nasr-1	2008	35 km range, solid fuel, Anti-ship cruise missile

Source: Authors

As depicted in the figure 2, mounting pressure from the United States has spurred Iran to enhance its deterrence capabilities and respond to potential threats by intensifying production and development within its missile industry. The upward trajectory of bolstering and advancing Iran's missile system during this period serves a dual purpose: to fortify the nation's defense policy and bolster its military prowess in regional dynamics, while simultaneously extending its deterrence capabilities beyond its borders. Throughout this period, we observe a consistent upward trend in Iran's missile capabilities in response to US sanctions, with each imposition met by the unveiling of new missile productions.

**Figure 2. Balance between Missile Power and Resilience of Sanctions 1993-2009**



Source: Authors

#### **4. 5. Third Period: Comprehensive Sanctions and Maximum Pressure of US against Iran**

In the third phase, following President Obama's victory in the 2009 elections, US sanctions policies against Iran underwent significant developments. A notable achievement during this period was the expansion of multilateral international sanctions, spurred by media scrutiny of Iran's nuclear enrichment activities near the city of Qom, which heightened international concerns about Tehran's actions. This situation facilitated the United States' efforts to garner global consensus against Iran's nuclear program (Dawson, 2011, pp. 153-157). Consequently, in 2010, the UN Security Council passed Resolution 1929 (UNSC Resolution 1929, 2010), targeting Iran's nuclear weapons development, conventional military capabilities, and, notably, its financial sector for the first time (Farrar, 2010, p. 2371). According to tables 5 and 6, the US Congress enacted the CISADA in 2010, imposing stringent sanctions on Iran's oil sales and its access to the international financial system (Comprehensive Iran Sanctions, Accountability, and Divestment ACT, 2010).

Before 2002, European countries exhibited less concern regarding Iran's regional activities, but US pressure during the Obama administration galvanized European Union unity in a new phase. These apprehensions spurred increased regional influence by Iran and cooperation with the United States in imposing global sanctions, leading to the imposition of sanctions by the European Union against Iran (European Union Law, 2012). Concurrently, the United States endeavored to enlist Middle Eastern countries in its embargo policies (Cordesman, 2015, p. 46), presenting an unprecedented opportunity to exert comprehensive pressure on the Iranian government to halt its weapons and military programs (Farrar, 2010, p. 2349).

The 2011 report by the International Atomic Energy Agency (IAEA) marked the first instance of Iran being accused of developing nuclear technology for military purposes (IAEA, 2011). In response, the United States seized upon this new opportunity to escalate sanctions against Iran. In 2011, President Obama exerted significant pressure on Iran's governance structure through the issuance of executive orders 13572, 13574, and 13590, along with the enactment of the National Defense Authorization Act and the Patriot Act. These measures focused on addressing concerns regarding money laundering by the Central Bank of Iran and sanctioning Iran's energy infrastructure (Reardon, 2012, p. 137). Pursuant to these laws, financial institutions in any country aiding transactions for the sale of Iranian oil faced sanctions, with violators also barred from the US financial system (Iran Threat Reduction and Syria Human Rights ACT, 2012). In 2012, President Obama further intensified financial restrictions against Iran by issuing executive orders 13606, 13608, 13622, and 13599, seeking to prevent the purchase of oil and petroleum products from Iran. Additionally, the enactment of the Iran Threat Reduction and Syria Human Rights Act by Congress in 2012 heralded another phase of sanctions against Iran (Ataev, 2013, p. 28). Subsequently, in 2013, the issuance of executive orders and sanctions laws against Iran persisted, including the significant Executive Order 13645 and the Law for the Protection of Freedom and Countering the Proliferation of Nuclear Weapons (IFCA, 2012).

Following Hassan Rouhani's victory in 2013, a dual policy approach emerged, combining negotiations aimed at lifting sanctions barriers with continued pressure through sanctions to compel Iran to engage in nuclear negotiations with major powers. Economic challenges facing Iran and security concerns among the P5+1 countries drove the nuclear negotiation process toward a

mutually beneficial outcome. Negotiations commenced in Vienna, culminating in the 2015 Lausanne Nuclear Treaty, where parties reached a comprehensive agreement outlining parameters for enrichment levels, the timetable for sanctions relief, and implementation details. The UN Security Council endorsed the Joint Comprehensive Plan of Action (JCPOA) and rescinded all nuclear-related sanctions through Resolution 2231 (UNSC Resolution 2231, 2015). Furthermore, in 2016, the European Union lifted all economic and financial sanctions tied to Iran's nuclear program (European Council, 2016). However, the agreement fell short of expectations and failed to resolve the crisis as Iran sought broader sanctions relief for economic recovery, while the US and its allies demanded increased transparency to ensure the peaceful nature of Iran's nuclear program.

Amidst these pressures, Iran managed to cultivate improved relations with the international community in the aftermath of the Joint Comprehensive Plan of Action (JCPOA), leveraging emerging opportunities effectively. With a relative easing of sanctions and pressures, Iran reasserted itself as an active oil powerhouse within OPEC and witnessed enhanced economic growth. However, these accomplishments unsettled anti-Iranian factions within the Trump administration. From the outset of Trump's presidency, these factions sought to disrupt the JCPOA's implementation. The Trump administration adamantly opposed the JCPOA, viewing the agreement as contrary to US interests (The White House, 2018). Embracing a policy of maximum pressure, Trump ultimately, on May 8, 2018, through Executive Order 13846, accused Iran of non-compliance with the JCPOA and support for terrorist groups, thereby violating UN Security Council Resolution 2231 and formally withdrawing from the agreement. Subsequently, Trump reinstated sanctions against Iran and imposed

additional stringent measures on the country (Landler, 2018). Notable among these were Executive Orders 13871 and 13876 in 2019 and 13902 and 13949 in 2020, which aimed to impose severe restrictions on Iran's nuclear and missile activities by intensifying secondary sanctions. In justifying the policy of maximum pressure and escalating sanctions, Trump cited Iran's advancement of its missile program and support for militant groups in the region.

Following Trump's tenure, Joe Biden, who advocated for multilateralism and a return to diplomacy and negotiation, did not actively pursue rejoining the JCPOA despite his pre-election criticism of Trump's policies. Despite Biden and his national security team's intentions, Iran's strategic resolve to develop its missile program and extend its regional presence and influence continued to gather momentum. Tables 5 and 6 showcase the comprehensive sanctions and the maximum pressure campaign that the United States employed against Iran from 2009 to 2023. This period marks a significant escalation in the US efforts to curb Iran's missile program and other activities.

**Table 5. The Third Period: US Sanctions against Iran 2009-2013**

Name	Date	Sanctioner	Discription
Comprehensive Iran Sanctions, Accountability & Disinvestment Act	July 2010	Congress and Obama	Sanctioned sale to Iran of gasoline or supporting domestic gasoline industry
Executive Order 13553	September 2010	Obama	Blocked property of those involved in human rights abuses in Iran
Executive Order 13572	April 2011	Obama	Blocked property of those involved in human rights abuses in Syria, including Iran
Executive Order 13590	November 2011	Obama	Sanctioned contributing to maintenance or expansion of Iranian petroleum

<b>Name</b>	<b>Date</b>	<b>Sanctioner</b>	<b>Discription</b>
USA PATRIOT ACT	November 2011	Congress and Obama	Designated Iranian financial sectors as jurisdiction of primary money laundering concern
Section 1245	December 2011	Congress and Obama	Restricted export of Iranian oil, codified section 311 money laundering designation
Executive Order 13599	February 2012	Obama	Blocked all Iranian government property under U.S. jurisdiction
Executive Order 13606	April 2012	Obama	Blocked property of those involved with human abuses perpetrated through information technology
Executive Order 13608	May 2012	Obama	Sanctioned evaders of sanctions
Executive Order 13622	July 2012	Obama	Sanctioned foreign financial institutions that facilitate petroleum sales
Iran Threat Reduction and Syria Human Rights Act	August 2012	Congress and Obama	Sanctioned support of petroleum sector, mandated that Iran's revenue be locked up in special escrow accounts
Executive Order 13628	October 2012	Obama	Expanded Iran Threat Reduction Law and Syria Human Rights Act
Iran Freedom and Counter Proliferation Act	January 2013	Congress and Obama approval	Sanctioned involvement in Iranian energy, shipping or shipbuilding, or provision of insurance or reinsurance to shipping firms, sanctioned provision of precious metals to Iran
Executive Order 13645	July 2013	Obama	Sanctioned involvement in Iranian automotive industry, Blocked assets of banks doing business in rials

Source: Samore, 2015

**Table 6. The Third Period: US Sanctions against Iran 2014-2023**

Executive Order 13846	August 2018	Trump	Reinstate all sanctions that were lifted as part of the 2015 nuclear deal or the Joint Comprehensive Plan of Action
Executive Order 13871	May 2019	Trump	Prohibition of transactions with Iran's iron, steel, aluminum and copper sectors
Executive Order 13876	June 2019	Trump	Sanctioned the leadership and the office as well as the elected officials of the leadership and those related to his office
Executive Order 13902	January 2020	Trump	Prohibition of transactions with the U.S. financial system for any person or entity operating in the construction, manufacturing, textile, or mining sectors of the Iranian economy
Executive Order 13949	September 2020	Trump	Secondary sanctions against people who support Iran's nuclear, missile and conventional weapons activities
Executive Order 13382	June 2023	Biden	Sanctioned a network of suppliers of sensitive materials and technology for Iran's ballistic missile and drone programs

Source: Authors

#### **4. 6. The Third Phase of Missile Development: Long-range Ballistic and Cruise Missiles**

Iran's pursuit of advanced military technologies has been significantly impeded by extensive US sanctions, while facing threats from regional and extra-regional adversaries. Consequently, the missile industry has emerged as a strategic priority for Iran, serving as a cornerstone of its deterrence strategy against regional rivals and international adversaries. Facing various threats and surrounded by nuclear-armed neighbors, Iran views its missile arsenal as vital for maintaining sovereignty and defending against existential threats, including the presence of US military bases in



the Persian Gulf and the Israeli regime's military posturing in the region.

Against this backdrop, as depicts in table 7, Iran has accelerated the expansion and enhancement of its rocket industry technology during the third phase, resulting in the development of missiles with enhanced capabilities and extended ranges. Leveraging its expertise in liquid fuel rocket production, Iran has made significant strides in this domain, culminating in the creation of missiles such as the Qadr and Shahab series, with a maximum range of 2000 km (Hildreth, 2012, p. 15). Furthermore, Iran achieved a milestone with the development of the Qiam missile, heralded as a precursor to ballistic missile development (*Kayhannews*, 2010).

Buoyed by successes in liquid fuel rocketry, Iranian scientists turned their attention to the design and construction of solid fuel missiles, aiming to surpass the capabilities of their liquid-fueled counterparts. Following the testing and deployment of Shahab missiles, Iran intensified research and development efforts to create solid fuel missiles as part of its defense strategy. Notable among these efforts is the construction of solid fuel rockets, including the Sajil-2 (Hildreth, 2012, p. 23). The Sejil-2 stands out as Iran's first long-range missile (2000 km) equipped with solid fuel and featuring a mobile launch system. Additionally, Iran's development of the Emad missile, a long-range ballistic missile equipped with precision guidance systems, represents a significant enhancement of Iran's deterrence capabilities, providing unprecedented precision in targeting potential threats (ISNA, 1394 [2015 A. D.]). Table 7 describes the third phase of Iran's missile development, which includes advancements in long-range and cruise ballistic missiles. This table provides an overview of Iran's latest capabilities and the ongoing evolution of its missile technology.

**Table 7. Iran's Missiles 2009-2023**

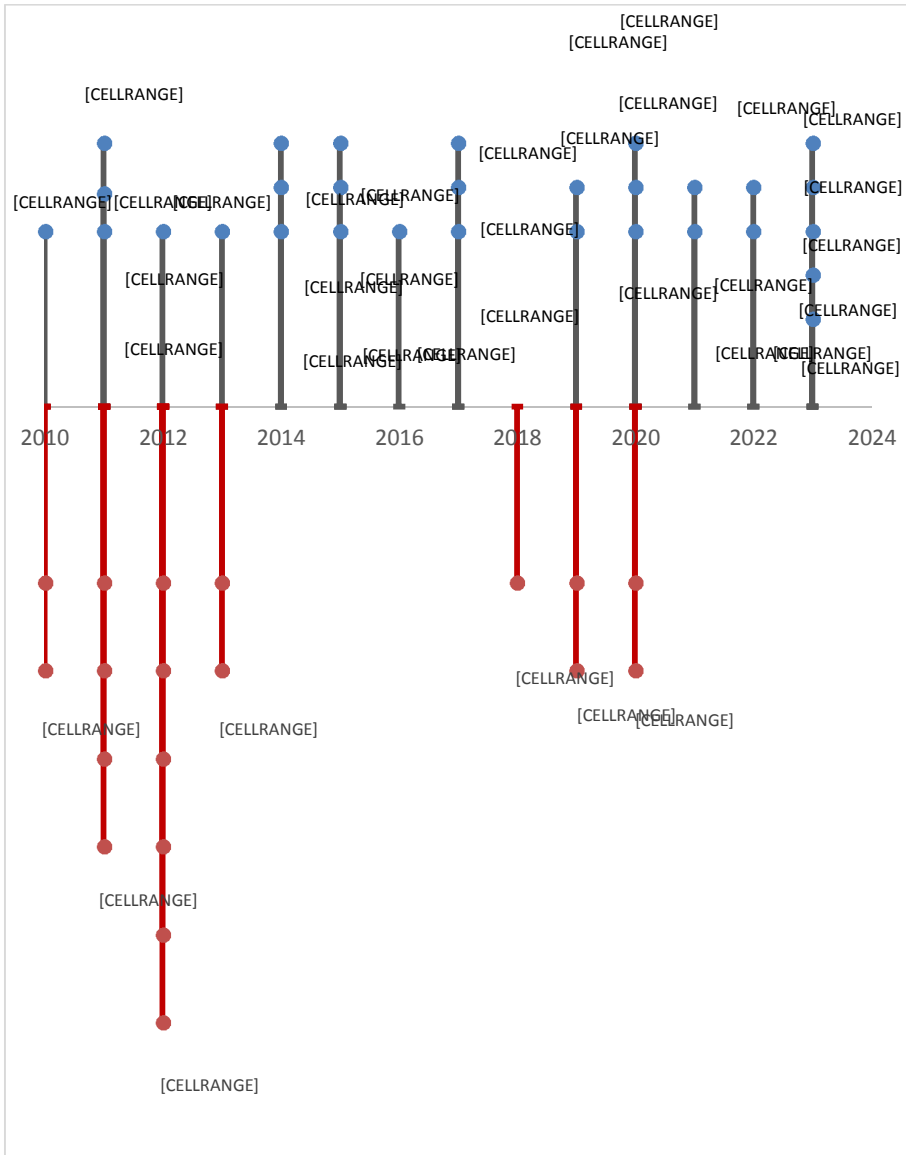
<b>Name</b>	<b>Date</b>	<b>Description</b>
Qiam-1	2010	800 km range, liquid fuel, Sort-range ballistic missile
Ghader	2011	300 km range, medium-range anti-ship cruise missile
Zafar	2011	25 km range, Anti-ship cruise missile
Khalij-e fars	2011	300 km range, solid fuel, Anti-ship SRBM
Soumar	2012	2000 km range, long-range cruise missile
Meshkat	2013	2000 km range, medium-range cruise missile
Hormuz	2014	300 km range, solid fuel, Anti-radar and Anti-ship SRBM
Sajjil	2014	Range 2000-2500 km, solid fuel, medium-range ballistic missile
Ghadir	2014	300 km range, Anti-ship cruise missile
Fateh-313	2015	500 km range, solid fuel, SRBM
Emad	2015	1700 km range, liquid fuel, medium-range ballistic missile
Ya Ali	2015	700 km range, Air-launched cruise missile
Qadr-110	2016	1800-2000 range
Zulfiqar	2017	first stage liquid
Khorramshahr	2017	Second stage solid, medium-range ballistic missile
Nasir	2017	700 km range, solid fuel, SRBM
Hoveyzeh	2019	Range 1800-2000 km, liquid fuel, medium-range ballistic missile
Heydar	2019	90 km range, anti-ship cruise missile
Tonder-500	2020	Range 1350, cruise missile

Name	Date	Description
Haj Qassem Soleimani	2020	200 km range, long-range cruise missile
Martyr Abu Mahdi al-Muhandis	2020	500 km range, solid fuel, SRBM
Fath-360	2021	1400 km range, solid fuel, medium-range ballistic missile
Dezful	2021	1000 km range, Naval cruise missile
Khybershakan	2022	120 km range, solid fuel, short-range tactical ballistic missile
Fattah	2022	1000 km range, liquid fuel, medium-range ballistic missile
Heaven	2023	1450 km range, solid fuel, medium-range ballistic missile
Khyber	2023	1500 km range, solid fuel, hypersonic medium-range ballistic missile
Paveh	2023	1400 km range, solid fuel, medium-range ballistic missile
Qadr-474	2023	2000 km range, solid fuel, medium-range ballistic missile
Talaiyeh	2023	1650 km range, long-range cruise missile

Source: Authors

During this period, as depicted in the figure 3, Iran strategically pursued missile development, implementing both quantitative and qualitative enhancements to fortify its deterrence capabilities amidst escalating US pressure. Responding to America's shift towards comprehensive sanctions and maximum pressure tactics, Iran intensified its missile program to assert a formidable balance. Notably, Iran introduced high-range, high-precision missiles in direct response to US sanctions, signaling a resolute defense stance and deterrence policy.

**Figure 3. Balance between Missile Power and Resilience of Sanctions 2009-2023**



Source: Authors

The graphs and tables unmistakably illustrate a direct correlation between tightening sanctions and Iran's bolstered missile capabilities, underscoring the way in which sanctions enforcement has fueled Iran's missile advancements, thereby heightening regional tensions and the potential for conflict escalation. Despite the adversarial sanctions regime imposed by the US, Iran has emerged as a regional missile power, consolidating its position as a dominant force in regional dynamics.

The historical experiences of Iran, marked by wars and threats from major powers and neighboring countries, have ingrained a perception among its rulers that prioritizes defense and deterrence strategies to safeguard national interests. This has led to the recognition of Iran's developing and strengthening defense capabilities as a crucial pillar of deterrence and a tool to ensure national security. Consequently, enhancing missile capabilities and leveraging these capabilities to create a credible second-strike threat have become integral components of Iran's defense strategy.

With the escalation of U.S. sanctions and its strategic shift from unilateralism to multilateralism and maximum pressure, Iran has been denied access to advanced military technologies. In response, relying on the missile industry for deterrence emerged as a rational choice to maximize the efficacy of Iran's defense strategies at a lower cost. As a result, Iran's missile capability, which was limited to short-range missiles until 2015, has gradually expanded to include long-range missiles, such as the Qadr, with ranges up to 2,000 km. Additionally, the development of ballistic missiles, which are less likely to be countered by missile defense shields, and the pursuit of hypersonic missiles to threaten transcontinental targets, have provided Iran's armed forces with powerful and deterrent weapons, reinforcing the country's defense and deterrence

strategy. High-ranking Iranian military officials have asserted that, relying on missile power, Iran's armed forces now pose a threat to American bases in the region and possess the capability to target them effectively.

The data presented in this article contradicts expert expectations that U.S. sanctions would curb Iran's missile capability and alter the regional balance of power. Instead, the tables and graphs demonstrate a positive correlation between the intensification of sanctions and the strengthening of Iran's missile power. Contrary to U.S. expectations, increased sanctions and maximum pressure did not halt Iran's missile development, but rather stimulated it. Information and statistics from high-ranking Iranian military officials, corroborated by foreign institutions and media, indicate that Iran is now one of the leading missile powers in the region, asserting its role as a dominant force in regional dynamics. In this context, it appears that the intensification of U.S. sanctions has been a significant driver of Iran's perception of the necessity for missile deterrence in its foreign policy. This has exacerbated the security dilemma, ultimately facilitating significant advancements in Iran's missile capabilities.

## 5. Conclusion

Throughout its history, Iran has confronted persistent security threats, driven by its unique geopolitical position and abundant natural resources, which have made it a coveted target for adversaries. Following the Islamic Revolution, Iran endured one of the longest and most arduous wars of the 20<sup>th</sup> century. These historical trials, compounded by the volatile Middle Eastern landscape, compelled the Iranian leadership to prioritize effective

deterrence and defense strategies to safeguard national security interests. Central to Iran's security calculus is the defense of its territorial integrity and political independence, achieved through the development of robust defense capabilities. Among these, the enhancement of missile capabilities emerges as a critical component, enabling Iran to deter aggression by posing a credible second-strike threat. Moreover, in the face of extensive sanctions depriving Iran of access to advanced military technologies, missile industries serve as a crucial deterrent.

Iran's entanglement with US sanctions dates back to the early years following the Islamic Revolution, escalating over time in both number and scope. The United States, apprehensive of revolutionary Iran's revisionist foreign policy, sought to exert control and containment through various punitive measures, including unilateral and multilateral sanctions. Leveraging Iran's nuclear program as a pretext, the US portrayed Iran as a proliferator of weapons of mass destruction, rallying global consensus against it. This narrative positioned Iran as an irrational actor and a security threat to the international order, enabling the US to wield multilateral sanctions and coercive diplomacy to isolate Iran.

In response to US pressures, Iran pursued effective deterrence strategies, bolstering its regional power and influence, while striving for independence and sovereignty. Despite enduring successive rounds of sanctions, Iran's principled resistance persisted, manifesting its steadfast pursuit of missile capabilities as a potent deterrent against regional and extra-regional adversaries. Contrary to expectations, US sanctions failed to curb Iran's regional ascendancy; instead, Iran's missile industry witnessed significant growth, underscoring its resilience and determination.

Throughout periods of sanctions, Iran endeavored to maintain a robust balance of power through missile development, leveraging quantitative and qualitative advancements to bolster its deterrent posture against US pressures. Empirical data indicate a clear correlation between escalating sanctions and Iran's growing missile capabilities. This suggests that intensified sanctions could heighten regional tensions and raise the risk of conflict. Iran's recent missile strike on the Ain al-Asad air base, housing American forces, and the recent attack on Israel's Nevatim Air base, conducted with prior warnings to regional countries and the United States, underscore Iran's capability and determination to safeguard its territorial integrity. Despite pressure from the US, Iran's resilience has contributed to the relative success of the resistance axis, strengthening the Islamic Republic's regional hegemony.

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