ASSURING ALLIES AND PARTNERS

The Utility of Ballistic Missile Defense

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Assuring Allies and Partners:

The Utility of Ballistic Missile Defense

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Foreword

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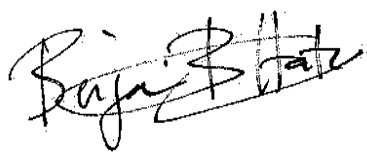

BENJAMIN B. HATCH
Colonel, USAF
Commandant

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Abstract

The multipolarity of today's global order presents a strategic environment that is more complex than ever before. Coercive behavior from nuclear-capable states such as Russia, China, and North Korea poses an increasing threat to non-nuclear states and calls into question the United States' ability and resolve to uphold its extended deterrence commitments. Furthermore, international law restricts the US from transferring nuclear weapons to any recipient, while domestic policy obligates it to reduce the role of nuclear weapons in US strategy. Though the US nuclear umbrella creates positive security guarantees that bolster nuclear nonproliferation among allies, its dependence on a posture of readiness and a large nuclear arsenal simultaneously discredits negative assurance guarantees. As an appealing non-nuclear alternative that may minimize this contradiction, this research paper examines the utility of ballistic missile defense (BMD) in assuring allies.

Utilizing the Republic of Korea, Japan, and Poland as case studies, this research evaluates foreign military sales and technology-sharing agreements, as well as strategic and domestic factors affecting each state's security policy, to determine the circumstances under which BMD successfully assures. The findings indicate that while BMD may play a limited role, it is not a one-size-fits-all solution. Its effectiveness depends on an ally's willingness to trust the US, its perceived level of threat, its preferred strategy to defend against that threat, and the United States' willingness to tailor BMD to meet the target state's specific considerations. Though this paper offers recommendations on how to increase BMD's assurance value, it ultimately finds that missile defense is not a replacement for offensive capabilities. Therefore, the United States must focus on strengthening its perceived resolve and ability to uphold extended deterrence guarantees—something BMD alone does not accomplish—if it wishes to keep non-nuclear states from hosting nuclear weapons or acquiring indigenous nuclear capabilities.

Introduction

For the first time since the dawn of the nuclear age, a multipolar world order is forcing deterrence experts to grapple with an increasingly complex security environment. Coercive behavior from nuclearcapable states such as Russia, China, and North Korea poses a growing threat to nonnuclear states and calls into question the US's ability and resolve to uphold its extended deterrence commitments. What is more, since its entry into force on 5 March 1970, the United States has maintained obligations under the Treaty on the NonProliferation of Nuclear Weapons (NPT) not to transfer, either directly or indirectly, "nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices," and to pursue "in good faith" measures relating to nuclear disarmament.[1] Additionally, the most recent *Nuclear Posture Review*, written under the Biden administration, reiterates the goal of "reducing the role of nuclear weapons in U.S. strategy."[2] Given these policy constraints, ballistic missile defense (BMD) is an appealing alternative to burden sharing or nuclear proliferation when attempting to assure allies. To successfully assure, however, BMD cannot simply deter adversary aggression; allies must also perceive its deterrent effect without questioning whether US resolve is weakened by its presence.

The 2022 *Missile Defense Review* asserts that cooperation with allies and partners to bolster integrated air and missile defenses remains a US priority because it "provides assurances essential to the cohesion of [US] alliances and partnerships in the face of growing regional missile threats, coercion and attacks."[3] While it is not yet clear how US nuclear policy will change under the new administration, President Donald Trump's executive order titled "The Iron Dome for America"—since renamed "Golden Dome for America"—indicates that missile defense will continue to be a priority. In addition to calling for a reference architecture and implementation plan for a "next-generation missile defense shield" to protect the US homeland, the executive order directs a "review of theater missile defense posture and initiatives" to identify areas in which bilateral and multilateral cooperation can grow, theater missile defenses (TMD) can be improved, and the sharing of US missile defense capabilities can be increased and accelerated.[4] This language suggests that the Trump administration understands the benefits of cooperation and coordination created through BMD technology sharing and will continue using this tool to increase assurance among US allies.

Despite the US perception that BMD increases allied assurance, however, non-nuclear states are showing heightened interest in maintaining a nuclear capability on their own soil. For example, Poland declared its desire to host

"nuclear weapons under NATO's nuclear-sharing policy" after Russia reportedly deployed nuclear weapons to Belarus in 2023.[5] Similarly, recent surveys have found that 70 percent of South Koreans support an independent nuclear arsenal and that most would prefer having nuclear weapons over US troops on their soil. Given these divergent views, this research paper examines the effectiveness of ballistic-missile defenses in assuring allies under the United States' nuclear umbrella.

Research Question and Preliminary Hypothesis

There is an enduring debate over BMD's utility in deterring adversaries, as well as the strategic instability these systems may produce. While much has been written on these topics by both supporters and opponents of missile defense, little research has been conducted to assess its utility in assuring allies. In *Security Assurances and Nuclear Nonproliferation*, Jeffrey Knopf studies the circumstances "under which security assurances are more or less likely to be effective."[6] He argues that extended deterrence, a positive security guarantee, requires "an adequate-size nuclear arsenal and a posture of readiness" that negate the credibility of negative security guarantees, or the promise not to use nuclear weapons.[7] He further posits that such contradictions might be avoided, or at least minimized, "if positive assurances did not require extending a nuclear security guarantee," and recommends further study of the possibilities.[8] This paper builds on Knopf's work by exploring the circumstances under which missile defense, a nonnuclear alternative, can provide effective security assurances to allies.

This research paper investigates the following questions: To what extent does BMD assure allies and partners that fall under the US's extended deterrence umbrella? Is this assurance sufficient to quell the desire of nonnuclear states to host nuclear weapons or acquire indigenous nuclear capabilities? The proposed thesis posits that while missile defense is a vital tool—capable of increasing cooperation between allies and boosting perceptions of security from a limited strike—it fails to replace offensive capabilities for the purpose of assurance. As adversary saber rattling intensifies and the concept of limited nuclear war becomes more probable, Herman Kahn's concept of nuclear superiority must be brought to the forefront. This requires a balance of both offensive and defensive concerns when seeking to assure allies and partners under the US nuclear umbrella. Therefore, the US must focus on strengthening its perceived resolve and ability to uphold extended deterrence guarantees—something that BMD alone will not accomplish—if it wishes to keep nonnuclear states from hosting nuclear weapons or acquiring their own nuclear capabilities.

Case Studies

Utilizing case studies, this research paper evaluates foreign military sales and technologysharing agreements to understand what aspects of missile defense have been shared with US allies and partners and the resultant assurance sentiments. The paper focuses on the missile defenses operated in three countries: Poland, Japan, and the Republic of Korea (ROK). These prove to be optimal case studies because, in addition to the specific aspects of analysis listed below, each is an ally over which the United States has extended nuclear guarantees, and each neighbors' one or more aggressive nucleararmed states that make up today's multipolar world order. This proximity drives a heightened level of insecurity compared to that of allies living farther from an adversary's borders and increases strain on the US's umbrella of assurance.

The evolution of the North Atlantic Treaty Organization (NATO) missile defense base in Redzikowo, Poland, provides three unique aspects for study. First planned as a "third site" to "complement existing USbased interceptors" under President George W. Bush, it was discontinued under the Obama administration and replaced with plans for the larger European Phased Adaptive Approach (EPAA) in 2009.[9] This provides an opportunity to assess the assurance capabilities of various aspects of BMD technology based on how allies perceive and react to these changes. Additionally, the plans for the site—now spanning seventeen years in varying forms—allow for the study of how the assurance effectiveness of BMD technology might fluctuate with the evolving strategic environment. Lastly, though the timeframe is short, this paper examines whether any changes in Poland's desire to participate in NATO nuclear sharing have emerged following the inauguration of the site in November 2024. This allows for the assessment of whether BMD can assure allies enough to abandon desires to host nuclear capabilities on their own soil.

This research paper also studies BMD in the IndoPacific, focusing on the perceptions of Japan and South Korea. Though the United States has shared, or operates, similar BMD technology in both countries, there is a marked shift in support for a nuclear program among South Korean citizens that does not exist among those in Japan. While this may be due to the generational trauma caused by the bombings of Hiroshima and Nagasaki, it also provides an opportunity to examine whether the ability to assure allies with missile defense depends on the nuances of each country's immediate threat: North Korea to the ROK and China to Japan. Building on two of Knopf's hypotheses about general assurance—(1) that a state's values, strategic culture, and leadership concerns affect the way in which it will be best assured, and (2) that assurance

effectiveness is inversely proportional to the level of insecurity a state feels—this research paper evaluates both factors as they pertain to missile defense.[10]

Layout of the Paper

This paper proceeds in four sections. The first reviews existing deterrence and assurance literature, with particular emphasis on the role of missile defense in both frameworks. The second outlines the research methodology used to evaluate the selected case studies. The third analyzes the cases of Poland, Japan, and the ROK. The final section presents the paper's conclusions and recommendations.

Literature Review

A clear understanding of the existing scholarship on deterrence, assurance, and BMD is essential before evaluating BMD's role in contemporary alliance dynamics. The academic literature spans multiple generations of strategic thought—from Cold War theories of coercion and credibility to post–Cold War analyses of denial strategies and alliance reassurance. These works collectively frame how states interpret threats, assess the reliability of security guarantees, and weigh the value of defensive technologies such as missile defense. Accordingly, this review surveys the major contributions to deterrence and assurance theory that inform the analytical foundation of this study, with particular attention to how scholars have debated the strategic, operational, and political implications of missile defense.

Deterrence Literature

The overarching concepts and forces driving deterrence—including extended deterrence—and assurance must be understood before layering in the nuances of BMD. Thomas Schelling argues, in *Arms and Influence*, that the credibility of deterrent threats, particularly extended deterrent threats, relies on commitment.[11] This requires the deterrer to remove all alternatives it may find "attractive in an emergency" and to arrange the status quo so that the adversary alone is left with the "last clear chance" to avert conflict.[12] Yet Schelling also acknowledges that there are times when a deterrent threat cannot be made credible in advance and instead "deterrent defense" is required to induce the adversary not to proceed. In this instance, resistance that is incapable of blocking aggression outright can still be worthwhile if it raises the adversary's expected costs to an unacceptable level relative to its objectives.[13] Although Schelling does not apply this directly to ballistic missile defense, the

logic aligns closely with contemporary debates: an adversary contemplating a limited strike with only a handful of nuclear weapons must factor in the possibility that BMD will blunt the attack, while adding more weapons to overcome defenses risks unwanted escalation. While some analysts argue that the technological challenges and cost of BMD limit its value, theorists such as Herman Kahn highlight its contribution to deterrent defense.

Unlike many of his contemporaries, Kahn believed that a limited nuclear war was not only possible but potentially winnable under certain conditions. In *On Escalation: Metaphors and Scenarios*, he argues that defensive measures have been largely neglected due to excessive focus on the least plausible scenario: a largescale, surprise first strike for which defenses would be insufficient.[14] However, a surprise attack is neither the only nor the most likely pathway to nuclear use.[15] Therefore, while the foremost purpose of strategic forces remains deterring conflict, the United States must also retain "some capability for limiting damage if…war occurs," which means "active defense cannot be responsibly ignored."[16] Kahn argues that modest antiballistic missile coverage could serve in several limited nuclear attack scenarios and provide the US with both the knowledge and industrial preparedness for rapid expansion in crisis.[17] Crucially, such defenses would not only "alleviate the consequences" should deterrence fail but also "help to deter crises and tension situations" in the first place.[18] While Kahn may have overestimated the capacity for rapid industrial mobilization, he is foundational to what is now termed *deterrence by denial*.

Alex Wilner and Andreas Wenger aim to bring this concept of deterrence by denial "into the twenty-first century."[19] *Deterrence by Denial: Theory and Practice* offers a theoretical and empirical assessment of modern denial strategies and draws lessons from diverse fields, including terrorism studies, criminology, and cyberspace. Wilner and Wenger argue that the Cold War's strong emphasis on nuclear punishment "purposefully ruled out threats of denial."[20] However, the proliferation of nuclear and missile technologies among regional powers, along with the development of antiaccess/areadenial (A2/AD) systems by China and Russia—which directly challenge US extended deterrence—have propelled denial strategies back into relevance. Moreover, whereas deterrence by punishment requires an identifiable perpetrator to retaliate against, denial is often more effective in managing today's lowerlevel and recurring conflicts by reducing the type, scale, or success rate of aggression, even if it cannot eliminate all threats.[21] Although the book covers denial theory across a wide range of disciplines, it explicitly recognizes the role of modern missile defense in supporting denialbased strategies.

Brad Roberts also makes a strong case for the importance of missile defense within denial strategies. While acknowledging the wellknown "shortcomings of

current US BMD systems and existing technologies in dealing with countermeasures and large raid sizes," he argues in *The Case for U.S. Nuclear Weapons in the 21st Century* that both regional and national missile defense systems still play a vital role.[22] Most notably, missile defense increases the raid size an adversary must employ to achieve its objectives. In an emerging political-military crisis, this shifts the burden of escalation onto the adversary, freeing "the United States and its allies from escalation decisions that might seem premature."[23] After a crisis has escalated into the red zone, BMD removes the adversary's ability to use a very small nuclear salvo as a coercive threat for a larger attack; instead, it must contemplate a much larger initial salvo, thereby risking allout nuclear war.[24] Roberts further argues that national missile defense strengthens regional deterrence by ensuring the US can respond to regional aggression "without risk of escalation to strikes against the homeland."[25] This has meaningful assurance implications, especially for allies concerned about the risk of US "decoupling" during a crisis.[26] While Roberts only briefly notes the assurance benefits of missile defense, his analysis underscores the need to examine assurance more fully to understand BMD's broader strategic value.

Assurance Literature

Jeffrey Knopf argues that, relative to deterrence, assurance remains an understudied tool of statecraft. His *Journal of Strategic Studies* article titled "Varieties of Assurance" seeks to identify and describe the different types of assurance strategies used by scholars and policymakers. He concludes that two distinct meanings of the term *assurance* exist—one as an element of deterrence and one related to alliance commitments—as well as a separate strategy of *reassurance*. Assurance as a component of deterrence is the implied promise by the deterrer not to impose the threatened cost so long as the adversary refrains from taking the proscribed action.[27] Conversely, alliance related assurance refers to the promise to protect partners and allies should they be attacked. This form of assurance is most often associated with nonproliferation related positive security assurances and the nuclear umbrella.[28] Reassurance, by contrast, is "a strategy of demonstrating nonaggressive intentions to an adversary"[29] and is commonly tied to negative security assurances—"promises by nuclear weapon states not to use or threaten the use of nuclear weapons against nonnuclear countries."[30] In addition to identifying and defining these terms, Knopf provides a critical survey of the disparate strands of assurance research. His analysis establishes the conceptual groundwork for further study into assurance's practical applications and the credibility of allied commitments.

Building on Knopf's work, Colonel Luke Stover's article in *Æther*, "Effective Assurance: A Strategic Imperative," focuses on alliance related assurance within the context of US policy. Stover argues that despite the US's frequent emphasis on assuring allies and partners, assurance is often treated as an afterthought "either conflated with or subordinated to a larger deterrence objective."[31] Treating it in this manner, or assuming its effectiveness as a given, ultimately weakens the asymmetric strategic advantage provided by US alliances. To counter this tendency, Stover offers a clear definition of assurance from the US perspective, describing it as "the process and product of actions taken to enhance an ally's or partner's confidence in securities provided through the capability and will of the US government."[32] This definition entails three key considerations.[33] First, assurance is both a *process* and a *product*. Second, the same variables that make deterrence effective—capability and will—also govern assurance. Stover identifies four avenues through which the US can demonstrate capability and will: "(1) robust capabilities, (2) past actions, (3) a compelling vision, and (4) perpetual integration."[34] The third consideration requires that assurance effectiveness be assessed from the perspective of the ally, rather than the provider. Stover concludes that while effective assurance is inherently challenging, it remains vital to maintaining US strategic advantage. Linde Desmaele examines the growing strain on US nuclear security assurances generated by today's tripolar nuclear environment in her *Survival* article, "US Security Assurances and Nuclear Tripolarity." She argues that multipolar competition produces three interrelated challenges. First, the United States must effectively assure multiple allies with "diverse concerns and requirements . . . across different geographic theaters."[35] Unlike the Cold War, when US extended deterrence centered overwhelmingly on the Soviet Union, today's strategic landscape requires the United States to balance commitments across separate regions where adversaries—China and Russia—operate independently. Missteps or reductions in one theater may therefore produce immediate repercussions in the other, heightening fears of abandonment.[36] If uncoordinated, this may increase allied fears of abandonment. Second, an increased number of nuclear-armed competitors heightens strategic ambiguity, complicating efforts to "strike a balance between deterrence and assurance."[37] Third, the proliferation of nuclear capabilities contributes to the "normalisation or legitimisation of reliance on nuclear weapons for national security goals."[38] While positive security assurances aim to reduce proliferation pressures, they may also reinforce the notion that nuclear weapons are indispensable instruments of statecraft, thereby strengthening pro-nuclear constituencies within allied states.[39] As Desmaele argues, these dynamics un-

derscore the importance of understanding how to apply security assurances effectively in support of nonproliferation.

Security Assurances and Nuclear Nonproliferation, edited by Jeffrey Knopf, evaluates 13 hypotheses across multiple case studies, encompassing both nonproliferation successes and failures. Knopf's findings yield four conclusions especially relevant to this paper. First, a simple offer of assurance is rarely sufficient to convince states to abandon nuclear ambitions—particularly when the state perceives grave or imminent threats.[40] Second, security assurances become more effective as political and economic ties between the provider and recipient deepen.[41] Third, although forwarddeployed US forces can enhance assurance, other forms of defense cooperation—particularly collaboration in which the recipient has a meaningful voice—are even more influential in fostering a state's "willingness to be satisfied by positive security assurances."[42] Finally, assurances are most effective when tailored to the target state. In doing so, Knopf's findings emphasize that a recipient's "strategic situation or domestic political preoccupations" are more decisive than cultural or leaderspecific factors.[43]

While substantial literature exists on deterrence, extended deterrence, and—though to a lesser degree—assurance, much of the work on deterrence has matured over four waves of scholarship that explicitly address the role of missile defense. By contrast, research on assurance remains comparatively broad and rarely considers BMD directly. *Security Assurances and Nuclear Nonproliferation* offers valuable insights into the factors shaping assurance outcomes, and its conclusions provide the foundation for this paper's study on the effectiveness of missile defense as a tool for assuring allies.

Research Methodology

Using the ROK, Japan, and Poland as case studies, this paper follows Alexander George's "structured, focused comparison" method to evaluate the effectiveness of BMD in assuring each ally.[44] To better assess how the strategic environment and varying degrees of cooperation may alter a state's willingness to be assured by BMD, the Poland case is divided into three timeframes. The first, 2002–2009, covers initial US plans for a "third site" under the George W. Bush administration. The second spans the Obama administration's transition to the EPAA in 2009 through Russia's 2014 annexation of Crimea. The year 2014 represents a significant turning point in the European strategic environment: NATO's "suspension of all practical civilian and military cooperation" with Russia formally ended the NATO–Russia Council's Missile Defense Working Group and marked Russia's shift from a future to an immediate threat.[45] The final timeframe examines developments over the past decade, with particular

emphasis on the November 2024 inauguration of the Aegis Ashore system in Redzikowo, Poland, and any shifts in allied perceptions through March 2025.

Table 1 orients the reader to the four focus areas used in the structured comparison, indicates the core variables in each, and shows where the detailed questions and cross-case judgments appear.

Table 1. Overview of focus areas and how to read the analysis

Focus Area	Purpose in Assurance Analysis	Core Variables Assessed	Where to Find Details
Threat Perception & Strategic Environment	Assesses the severity, proximity, and immediacy of the adversary threat and whether BMD can realistically mitigate it.	Threat immediacy; missile capabilities (range, trajectory, raid size); non-missile threats (aircraft, cruise missiles).	Poland, Japan, and ROK case-study sections (Threat Perceptions subsections); evaluative criteria in table 2; comparative judgments in table 3 ("Threat Severity & Immediacy").
Domestic Political & Strategic Considerations	Evaluates baseline trust in the United States, nuclear attitudes, and domestic constraints shaping alliance reliance.	Trust in US commitments; nuclear beliefs; sovereignty and cost concerns; civil-military preferences.	Domestic Politics subsections within each case study; structuring questions in table 2; net effects summarized in table 3 ("Domestic Trust," "Effect on Nuclear Demand").
Technology Shared / Increased Cooperation	Determines whether BMD cooperation is meaningful, tailored, and structurally binding.	System fit; interoperability; co-development/ production; allied agency.	BMD Capabilities and Cooperation subsections in each case study; framework in table 2; outcomes in table 3 ("BMD Tailored to Threat," "Degree of Cooperation & Integration").
Adversary Response & Strategic StabilityThreat Perceptions/ Strat. Environment	Measures whether adversary reactions materially alter the ally's security calculus or assurance outcomes.	Military modernization; nuclear signaling; economic/diplomatic coercion; escalation risks.	Adversary Response / Strat. StabilityAdversary Response subsections in each case study; analytical prompts in table 2; cross-case results in table 3 ("Adversary Response Impact").

Applying the four conclusions previously highlighted in Knopf's *Security Assurances and Nuclear Nonproliferation*, the research for these case studies is divided into three allied focused categories. The first analyzes each state's threat perceptions and broader strategic environment, while the second addresses internal domestic considerations. Both factors shape a state's overall willingness to accept assurance guarantees; therefore, a thorough under-

standing of each is necessary before assessing the degree to which BMD may play a successful role in providing assurance.[46] The third category evaluates the specific BMD technologies shared with each country, the associated cooperation agreements, and the extent to which these systems were tailored to fit the target state's strategic requirements and domestic constraints. Given that political and economic ties strengthen assurances—and that close cooperation, particularly when the recipient has a meaningful voice, is most effective in increasing a state's "willingness to be satisfied by positive security assurances"—the capacity of BMD technology sharing to enhance these elements may directly affect its overall effectiveness.[47] The final category in each case study focuses on adversary reactions and broader implications for strategic stability.

Knopf argues that negative assurances become more credible "if nuclear weapons states signal an interest in reducing their reliance on nuclear weapons."[48] To do so, however, these states must identify ways to provide positive assurances that do not require extending a nuclear umbrella.[49] While missile defense may serve as a nonnuclear alternative, its ability to assure allies depends partly on its capacity to protect against—or deter—adversary attack. Accordingly, each case study includes a comprehensive analysis of adversary responses to BMD cooperation and the resulting implications for strategic stability. Additionally, to assess BMD's viability as a positive assurance mechanism that does not undermine negative security assurances, this paper examines whether BMD reduces the perceived utility of nuclear weapons in each case. Further details on each of the four focus areas are provided in table 2.

Table 2. Integrated framework for assessing BMD as an assurance mechanism. (Source: Author)

Focus Area	Key Analytical Questions
1. Threat Perception and Strategic Environment	What is the severity, proximity, and immediacy of the adversary threat? What missile capabilities does the adversary possess (range, payload, accuracy, MIRVs, hypersonics)? How likely is missile use in crisis or conflict (limited strike, coercive escalation, deterrence failure)? Are there significant nonmissile threats (aircraft, cruise missiles, cyber, conventional coercion)? Can the proposed BMD architecture realistically mitigate the most salient threat? Does BMD reduce reliance on nuclear deterrence, or merely supplement it?
2. Domestic Political and Strategic Considerations	What are prevailing domestic views on nuclear weapons (opposition, support, or dependence)? How central is extended deterrence to national security strategy? Are there active debates over indigenous nuclear capabilities or nuclear sharing? How is BMD perceived domestically (cost, sovereignty, arms race concerns, stabilizing vs. destabilizing)? Is BMD aligned with the state's defense doctrine, or viewed as externally imposed? How did domestic political actors and the public initially respond to BMD proposals?
3. BMD Capabilities Shared and Degree of Cooperation	What BMD systems are shared or deployed (Patriot, THAAD, Aegis BMD, SM3 variants, etc.)? Are systems codeveloped, coproduced, or purchased off the shelf? Does the ally receive cuttingedge or limitedcapability versions? What military, political, and economic agreements accompany BMD cooperation? Does cooperation provide the ally a meaningful role in decisionmaking, operation, or production? Is BMD tailored to the ally's specific strategic and operational needs?
4. Adversary Response and Strategic Stability	How do adversaries respond diplomatically, militarily, or economically to BMD deployment? Do adversary responses materially alter the ally's security environment? Does BMD provoke force modernization, missile buildups, or countermeasures? Is BMD perceived by adversaries as defensive or as undermining strategic deterrence? Does BMD meaningfully lower the perceived utility of nuclear weapons—for the ally or the adversary? Does BMD enhance deterrence stability or exacerbate escalation risks?

Findings and Analysis

The following section applies the structured, focused comparison method to evaluate how BMD contributes to assurance across three distinct allied contexts. Each case study—South Korea, Japan, and Poland—illuminates different combinations of threat perception, domestic politics, alliance dynamics, and exposure to adversary pressure that shape how BMD is received and interpreted. By examining these factors in turn, the analysis highlights the conditions under which missile defense strengthens allied confidence, the limits of BMD when confronted with acute or evolving threats, and the broader strategic implications for the credibility of US extended deterrence. Together, these cases provide a comparative foundation for understanding the nuanced and often uneven assurance value of BMD in contemporary alliance management.

Republic of Korea

> *South Korea's confidence in its own security was set primarily by the level of threat it perceived, and only secondarily by whether sufficient assurances were provided to meet that threat, not vice versa.*
>
> —Jeffrey Knopf

From an adversarial perspective, two key players influence the ROK's strategic environment: North Korea and China. Although China's growing military and nuclear capabilities threaten both regional and global stability, its direct impact on the ROK is primarily economic and diplomatic—a dynamic addressed later in this case study. By contrast, the Democratic People's Republic of Korea (DPRK) has posed an existential and near continuous threat to South Korea since the Korean War. For thirty years following the 1953 armistice, "North Korea's military capability outweighed that of South Korea both qualitatively and quantitatively."[50] As a result, the ROK relied heavily on the presence of US troops and nuclear weapons to maintain a favorable military balance. Even as South Korea's conventional capabilities surpassed those of the DPRK, the country has "faced a threat from hundreds of North Korean theater ballistic missiles since roughly the late 1980s."[51] This persistent, proximate threat has had the most direct influence on South Korea's security policy, shaping its views of the US nuclear umbrella and its cautious approach to BMD.

Although the US–ROK Mutual Defense Treaty has been in place since October 1953, the alliance has periodically been strained by "tension and distrust" rooted in two longstanding concerns: fear of abandonment and fear of entanglement.[52] Fear of abandonment peaked during the 1970s, when the

Vietnam War underscored the limits of American military power and raised doubts about US security guarantees.[53] Concurrent efforts to reduce the number of US troops on the peninsula beginning in 1971 and to withdraw nuclear weapons starting in 1977 were regarded as a "clear erosion of US promises regarding the defense of South Korea," prompting Seoul's covert pursuit of an independent nuclear weapons program throughout the 1970s.[54] Although the ROK ultimately agreed to abandon this effort in exchange for tighter security cooperation and advanced US technology, its willingness to pursue an indigenous deterrent demonstrates the depth of its reliance on "deterrence by retaliation" to counter the DPRK.[55]

Divergent policy priorities have also contributed to fluctuating fears of abandonment and entanglement. South Korea's exclusion from successful US–DPRK negotiations in 1994, which resulted in North Korea suspending its withdrawal from the NPT, fueled distrust of the US.[56] Moreover, the US pledge "not to use or threaten to use nuclear weapons against the DPRK" at that time appeared to weaken extended deterrence guarantees.[57] Conversely, the ROK's attempts to improve inter-Korean relations through the "Sunshine Policy" and US skepticism of these efforts fostered concern that Washington might draw Seoul into an unwanted conflict with North Korea.[58] These factors led South Korea to seek "independence from the United States both militarily and politically," a sentiment that continues to influence its security posture.[59] While the ROK remains a close US ally, its "desire for expanded autonomy in national security," combined with persistent fears of entanglement, still underpin its approach to BMD.[60]

The ROK has largely rejected US proposals for an interoperable TMD architecture. Although Seoul initially agreed to participate in President Ronald Reagan's Strategic Defense Initiative (SDI) in January 1988, the subsequent ROK administration reversed that decision.[61] South Korea did not seriously revisit missile defense until North Korea's first nuclear test in 2006, after which it began developing the indigenous Korean Air and Missile Defense (KAMD) system.[62] The ROK's preference for autonomy—and its reluctance to depend on the US—is evident in its procurement strategy for KAMD.

Initially, South Korea minimized direct purchases from the United States, even when US developed components formed the bulk of the system.[63] Early acquisitions included second hand Patriot PAC2 units from Germany and two Israeli made Super Green Pine radars.[64] This approach limited opportunities for US–ROK technology sharing and hindered early KAMD performance: PAC-2 missiles were ineffective against North Korean threats, the radars experienced frequent failures, and maintenance challenges were significant.[65] Although the ROK later requested upgraded Patriot missiles, including the PAC3, in 2013

and 2014, it has continued to invest in its own mid- and upper-tier capabilities.[66] Development of the Long-range Surface-to-Air Missile (L-SAM) interceptor, designed for engagements above 40 km, was completed in 2024,[67] while the Cheongung II system, capable of intercepting missiles at approximately 20 km, began deployment in 2020.[68] KAMD operations remain distinct from the missile defense architecture of US Forces Korea (USFK), which is focused on defending US personnel and assets.[69]

Despite the reliance on early warning data from US satellites—and the colocation of command centers at Osan Air Base—the ROK and USFK maintain only a limited tactical data link established in 2016.[70] Seoul has emphasized that the link connects command centers only and that neither country has "direct and unmediated access to each other's BMD assets."[71] Despite the benefits South Korea might receive by increasing sensor sharing and targeting data, its hesitation to increase missile defense interoperability is partially driven by lingering anti-Japanese sentiment. Given the coordinated efforts between the United States and Japan to create a TMD system, a debate persists in South Korea over whether increased sensor sharing might indirectly contribute to the defense of Japan.[72] This concern was evidenced in the long debated decision to allow the deployment of a US Terminal High Altitude Area Defense (THAAD) system on the peninsula.[73] While this animosity may eventually be overcome—North Korea's aggression in 2016 helped push the two countries into a landmark intelligence sharing agreement—South Korea's reluctance to antagonize China will also continue to play a significant role.[74]

As one of the few countries perceived to hold influence over the DPRK, South Korea views China's cooperation as critical to managing the North Korean issue and is reluctant to make decisions that will alienate Beijing.[75] Furthermore, China remains South Korea's largest trading partner, accounting for 25.1 percent of its exports and 30.6 percent of its imports in 2023.[76] As such, China's opposition continues to play a significant role in the ROK's approach to BMD. South Korea announced the decision to deploy THAAD in July 2016—following the DPRK's fourth nuclear test—as a defensive measure against "North Korea's weapons of mass destruction and ballistic missile threats."[77] However, China claimed the system was aimed at constraining its power in the region and that the X-band radar would be configured to monitor and target Chinese, rather than North Korean, missiles.[78] In response, China launched an aggressive economic and diplomatic retaliation campaign against the ROK. It blocked market access for South Korean goods and services in the entertainment, consumer-products, and tourism sectors, and suspended or postponed military and defense interactions between the two

countries during the second half of 2016.[79] Given this response and South Korea's need to sustain positive relations with China, some argue that it is in the ROK's best interest to maintain separation from the broader TMD architecture and to highlight the independence of its KAMD system from the US.[80] The limited benefit South Korea would receive from complete integration into the regional system is further justification for maintaining this separation.

The regional nature of TMD is not conducive to countering the ROK's most immediate threat: long-range artillery and short-range ballistic missiles (SRBM) positioned just north of the Demilitarized Zone (DMZ). While creating a trilateral network of sensors would provide multiple angles from which to track incoming missiles, thereby improving engagement effectiveness, a Congressional Research Service report notes that Seoul would benefit least from this arrangement because "it is so close to North Korea that incoming missiles would likely fly on a lower trajectory and could arrive in a matter of minutes."[81] Seoul, its 9.5 million residents, and most ROK forces near the DMZ lie outside the THAAD system's effective engagement geometry for launches from southern DPRK.[82] Even if the system were repositioned, its parameters constrain intercepts against low-altitude SRBMs. Lower-tier defense provided by PAC-3 and Cheongung II missiles can fill part of this gap; however, their utility is limited to point defense over small areas.[83] Even without these limitations, North Korea's estimated inventory of roughly 500 short- and medium-range ballistic missiles means it could, if it chose, overwhelm South Korea's missile defenses.[84] Given these considerations, it is no surprise that South Korea has developed an offensive military doctrine aimed at deterring North Korean aggression, relying on its independent KAMD system rather than the US's theater missile defense.[85]

South Korea's strategic environment and domestic political considerations play a pivotal role in shaping its approach to strategic security and missile defense. The overwhelming threat posed by North Korean short-range missiles, coupled with the well-known limitations of BMD, makes "deterrence by denial" a challenge. This is further compounded by US attempts to persuade the ROK to join a missile defense construct that is not conducive to its security needs. Not only is the US–Japan TMD system ill-equipped to counter SRBMs, its presence angers China, on which the ROK relies for economic stability and diplomatic leverage with North Korea. For these reasons, South Korea has long prioritized a strategy of "deterrence by punishment" to dissuade the DPRK from attacking in the first place. Yet even in this realm, a history of distrust in US security commitments and a desire for greater autonomy limit South Korea's inclination to depend on the US for offensive capabilities. Coupled with its demonstrated willingness to pursue an indigenous nuclear program, the

present support among South Koreans for independent nuclear capabilities is readily explained.

Japan

> *The [United States and Japan] have established a six-decade-long relationship that closely intertwines not only their similar security concerns in East Asia . . . but their global economic interests as well.*
>
> —Jeffrey Knopf

Like South Korea, Japan's alliance with the United States has at times been questioned. Yet even in its tensest moments, domestic and political considerations have kept the US–Japan Security Treaty—originally signed in September 1951—at the center of Japanese national policy. After World War II, Japan embraced pacifism, reflected in Article 9 of its Constitution, which "prescribes the renunciation of war, the prohibition of war potential, and the denial of the right of belligerency of the state."[86] As a result, US–Japan security arrangements provided the central element of Japan's "peace, security, and independence."[87] The postwar Yoshida Doctrine captured this identity in three principles: (1) a minimal role for military power; (2) reliance on the US bilateral security alliance; and (3) security achieved through other instruments of national power, especially economic growth.[88] These principles have evolved—most notably with a larger role for the Self-Defense Forces—yet the centrality of the Japan–US alliance has remained steadfast.[89] Across administrations and policy shifts, Tokyo has consistently sought close coordination and robust cooperation with the United States.[90] Equally important has been Japan's leadership within the international nuclear nonproliferation regime.

While not constitutionally binding, Japanese nuclear policy has been guided since 1967 by the Three Non-Nuclear Principles and the Four Pillars of Nuclear Policy. The principles state that Japan will not "produce, possess, or allow the introduction of nuclear weapons onto Japanese soil."[91] They form the first pillar; the remaining pillars emphasize the peaceful use of nuclear energy, global nuclear disarmament, and US extended deterrence.[92] Japan's policy is rooted in its postwar identity as a peace state and as the only country "a victim of an atomic bomb."[93] Even so, at multiple points since 1951, Tokyo has studied the feasibility of an independent arsenal.[94] Each time—especially when confidence in US extended deterrence wavered—studies concluded that either the case was not justified or the costs to US–Japan relations and Japan's non-nuclear reputation outweighed any benefits.[95] Japan's consistent drive for closer cooperation with the United States, its self-defense-oriented security policy, and its

nonproliferation commitments make it a natural Indo-Pacific partner for a TMD system.

US–Japan cooperation on BMD dates to the early 1990s, when Japanese industry participated in SDI-related studies of Western Pacific missile defense.[96] Spurred by North Korea's 1998 Taepodong-I overflight, the US and Japan began bilateral research on the Navy Theater Wide Defense System.[97] This culminated in a 2006 agreement to codevelop the SM-3 Block IIA interceptor, which entered full-rate production in October 2024.[98] The program has been jointly managed by the US Navy and the Japan Maritime Self-Defense Force, with shared development costs.[99] Japan also hosts two US AN/TPY-2 radar systems and currently owns and operates six Patriot batteries equipped with PAC-3 missiles and seven Aegis sea-based BMD destroyers employing SM-3 Block IIA interceptors.[100] Cooperation has not been frictionless—domestic pacifist considerations have posed hurdles—but changes in the strategic environment have ultimately led to greater interoperability between the two allies.

While the Constitution of Japan has always affirmed Japan's right to self-defense, it did not historically recognize a right to *collective* self-defense. Prior to 2014, prevailing interpretations of Article 9 prohibited Japan from providing military support to another country unless Japan itself was under attack.[101] To many in Japan, a collaborative BMD system appeared to violate that prohibition by advancing "Washington's global and regional security strategy."[102] As the strategic environment changed, however, Japan's cabinet adopted a 2014 resolution allowing the Self-Defense Forces "to take action in support of an ally that has come under enemy attack (collective self-defense)."[103] This change led to the integration of Aegis-equipped Japanese destroyers with US-operated missile defense systems. Today, sensors from both nations feed a common operating picture at Yokota Air Base's Bilateral Joint Operations Coordination Center and at US Indo-Pacific Command headquarters in Hawai'i.[104] The evolving threat landscape has thus increased Japan–US missile defense interoperability—while also revealing its limits.

Unlike the US–ROK alliance, which remains targeted at contingencies on the Korean Peninsula, the US–Japan alliance is regional in scope. The regional logic of TMD integration is much more conducive to safeguarding Japan's strategic environment. Even so, offensive capabilities remain necessary. Though not as acute as the DPRK threat to South Korea, both China and North Korea present a direct and increasing security threat to Japan. Together they "possess more than 800 ballistic missiles capable of reaching Japan, and their missile forces are growing."[105] These include Chinese solid-propellant SRBMs aimed at Taiwan and believed capable of reaching Japan's Southwestern Islands, including the disputed Senkaku/Diaoyu Islands—sustaining concern that a Chinese attack on

Taiwan could entail attacks on Japan.[106] As Chinese coercion has increased in the East China Sea, Japan's ability to deter and respond to a Senkaku contingency has become central to its security planning.[107] Reflecting this, Japan's 2022 security policy documents not only reaffirm integrated air and missile defenses but also call for counterstrike capabilities that can "enable Japan to mount effective counterstrikes against the opponent to prevent further attacks while defending against incoming missiles by means of the missile defense network."[108] The trajectory is clear: a steady expansion of Japan's military role in national defense, largely unmoved by Chinese or North Korean rhetoric.

China is actively developing counter-BMD technologies and portrays its nuclear modernization as "a response to US BMD advances."[109] It also blames regional BMD cooperation for creating strategic instability—undermining conventional deterrents, provoking North Korean aggression, and instigating arms races.[110] Beijing's specific objections to Japan's missile-defense architecture focus primarily on the degree to which it integrates with, and extends, US coverage.[111] It further worries that such programs will strengthen US regional alliances and turn partner states against China.[112] While Tokyo once calibrated its actions to avoid antagonizing Beijing and framed its efforts largely in terms of the North Korean missile threat, escalating sovereignty disputes have emboldened Japan to speak more openly and act more assertively.[113] Japan understands the strategic implications of this shift toward a more proactive defensive posture and shows little intent to reverse course or decrease its cooperation with US missile defense.

US missile defense has proven an effective tool for bolstering Japanese assurance. The regional design of the TMD system aligns with Japan's strategic environment, and its defense-oriented national policy naturally lends itself to deterrence by denial. Domestic politics matter, however. Japan's dependence on US commitments—and its need to be assured by them—creates a reinforcing cycle: cooperation deepens trust, deeper trust enables closer cooperation. Japan's enduring aversion to nuclear weapons and its leadership role in the nonproliferation regime also bolsters its willingness to remain under the US nuclear umbrella. Managing this balance will be critical as Tokyo develops counterstrike capabilities and expands the military's role in the region's defense.

Poland

> *Most of the supporters of Poland's involvement in the Missile Defense project point unanimously at Russia and the possible future course of its policy.*
>
> — Lukasz Kulesa

Formal negotiations to establish a US missile defense facility on Polish territory began in January 2007, following informal discussions dating to 2002. At the time, the George W. Bush administration viewed Iran as dangerous, unpredictable, and uncontainable by traditional deterrence or diplomacy. Intelligence indicated a growing Iranian missile threat and assessed that Tehran could test an intercontinental ballistic missile (ICBM) by 2015.[114] These factors drove the United States to seek a European missile-defense capability to protect US forces in Europe, regional allies, and the US homeland from Iranian long-range ballistic missiles.[115] The proposal was contested—some doubted BMD reliability, others questioned Iran's ICBM trajectory or the immediacy of the threat to Europe.[116] Nevertheless, in August 2008 Poland signed an agreement with the United States to host a BMD interceptor site with ten ground-based interceptors (GBI).[117] Prestige mattered, but more compelling was Warsaw's desire to enhance security vis-à-vis Russia.[118] The "long-term risk from [Poland's] former Soviet masters," though perhaps decades away, outweighed the perceived downsides of hosting a US facility.[119]

Mirroring ground-based midcourse defense elements in Alaska and California, the United States' planned "third site" comprised silo-based interceptors in Poland, a refurbished X-band radar in the Czech Republic, and a transportable forward acquisition radar whose location was not specified.[120] Although the US agreed to share situational awareness with Poland, it intended to "construct, maintain, and operate" the facility while retaining full command-and-control authority.[121] The proposed European GBI would employ two rocket stages rather than the three-stage configuration used in the US. While the third stage was not required for the intended range, the two-stage variant had never been flight-tested, intensifying doubts about effectiveness.[122] Moreover, although Washington maintained—and NATO later affirmed—that the system would "make a substantial contribution to NATO's collective security and . . . be an integral part of any future NATO-wide missile defense architecture," the largely bilateral arrangement drew criticism among some European allies as another example of US unilateralism.[123] Even so, these limitations and critiques did little to deter Warsaw; the central debate among Polish leaders focused instead on what additional US cooperation and benefits could be secured in return.[124]

Under the agreement, Poland received enhanced security guarantees—viewed in Warsaw as a strengthening of NATO's Article 5—and a pledge from the US to help modernize its armed forces.[125] One of the first steps in this modernization effort included a promise to deploy a Patriot battery with associated US military personnel. Additionally, some Polish politicians saw the agreement as a potential avenue to address diplomatic issues, such as abolishing US visa requirements for Polish citizens.[126] The largest perceived benefit,

however, was the facility's physical presence. It was widely assumed that building a major US base would not only deter future aggressors but also give the United States "much stronger motivation to look after [Poland's] security."[127] For the Polish government, the desire for deeper bilateral integration with the US—and its associated benefits—dwarfed most domestic and political opposition to the system.

Poland's decision to host the GBI facility initially faced severe domestic resistance. A February 2007 poll reported that 55 percent of respondents opposed a US antimissile base in Poland, while only 28 percent supported its construction.[128] Sentiment remained similar through 2009, when 53 percent still opposed the decision.[129] Most objections centered on sovereignty concerns and doubts that the system would increase national security.[130] Some feared the base would make Poland a target for the very "rogue states" it was meant to deter; others worried it would damage strategic relations with neighboring states, including Russia. Even so, the United States occupied "a special place in Poland's strategic culture" and was seen as a vital supporter of a free and democratic Poland.[131] US security guarantees were regarded as the most credible—often more so than NATO's Article 5—owing to lingering memories of European abandonment in 1939.[132] Consequently, greater US cooperation was viewed as the best insurance policy against traditionally difficult and turbulent relations with Russia. Moscow's 2008 war in Georgia and repeated threats to deploy tactical missiles to Kaliningrad further bolstered this belief.[133]

From the outset, Russia strongly criticized US plans for the European "third site" as a threat to Russian nuclear forces, despite the system's limited number of interceptors. Moscow claimed the system's true purpose was to monitor Russian missile sites and naval operations, and that the modest GBI facility was merely a precursor to far more expansive BMD ambitions.[134] As retribution, Russia suspended its compliance with the Conventional Forces in Europe Treaty and threatened to withdraw from the 1987 Intermediate-Range Nuclear Forces (INF) Treaty.[135] More acutely, it threatened to retarget ICBMs toward the interceptor site in Poland and to deploy short-range Iskander missiles to Kaliningrad—a threat later reiterated in response to the prospect of US Patriot deployments in Poland.[136] Rather than deterring Polish cooperation with the US, however, these actions appear to have pushed the two countries into tighter alignment.[137]

In contrast to South Korea, the Polish case is instructive in identifying conditions under which US missile-defense initiatives can bolster allied assurance even when the system itself provides limited direct security benefits. Poland's exceptional trust in US security commitments led it to accept a BMD agreement that was not only unpopular domestically but also risked escala-

tion with Russia, its principal strategic threat. That trust underpinned Poland's pursuit of deeper bilateral cooperation with the US. As a mechanism to achieve this cooperation and signal US commitment, missile defense proved a vital instrument for increasing Polish assurance.

In September 2009, the Obama administration announced that it was cancelling plans for the European "third site," including prior agreements with Poland and the Czech Republic, in favor of the newly conceived EPAA. The decision reflected growing criticism of the original plan's technical viability and updated intelligence indicating that Iran's short- and medium-range ballistic missile threats were "developing more rapidly than previously projected," while its potential ICBM capabilities were advancing more slowly.[138] Under this revised assessment, Iran posed the most immediate risk to US forces, partners, and allies in the Middle East and Europe rather than to the US homeland. Accordingly, the EPAA emphasized deploying existing, proven technologies on an accelerated timeline—approximately six years faster than the original plan—while incrementally expanding defended areas across Europe by 2018.[139] Greater priority was also placed on integration within NATO's emerging missile defense architecture and alignment with allied national systems. Table 3 provides an overview of the EPAA from inception to the present.

Table 3. EPAA, 2009–Present

Phase	Initial Plan	Progress since 2009
Phase 1	~2011: Deploy sea-based Aegis System, SM-3 Block IA interceptors, and AN/TPY-2 radar system	2012: 29x Aegis-equipped ships deployed 2014: 4x Aegis-equipped ships permanently based in Rota, Spain
Phase 2	~2015: Deploy SM-3 Block IB in both sea- and land-based configurations, plus more advanced sensors	2016: Aegis Ashore site in Romania operational 2025: 65x Aegis-equipped ships expected
Phase 3	~2018: Deploy SM-3 Block IIA variant	2024: Aegis Ashore site in Poland operational
Phase 4	~2020: Deploy SM-3 Block IIB variant	Cancelled in 2013

Source: Office of the Press Secretary, "U.S. Missile Defense Policy"; and Daryl Kimball, "The European Phased Adaptive Approach at a Glance," Arms Control Association.

The new administration's decision was met with mixed reviews in Poland. BMD was still widely unpopular, and 56 percent of those polled favored cancelling the program.[140] Meanwhile, supporters of the agreement felt betrayed; they had spent political capital and courted strategic instability with Russia only to see the United States "appease Russian objectives by cancelling the program."[141] Nevertheless, in July 2010 the US and Poland signed an amendment to the initial BMD protocol. In lieu of a GBI site, Poland agreed to host an Aegis Ashore system equipped with SM-3 Block IIA missiles as part of Phase Three of the EPAA.[142] To overcome public and political resistance, the Polish government again emphasized the security and economic benefits accompanying the agreement. Russia remained Poland's principal strategic concern, and its recent aggression in Georgia underscored the need for stronger assurances. The presence of US troops made a direct challenge to Polish sovereignty less likely, and the government also leveraged the agreement to keep Poland near the top of European recipients of US military assistance.[143] These arguments eventually gained enough support to ratify the deal—even though the new architecture did little to address Poland's most immediate threat.

From an alliance perspective, the EPAA was more conducive to enhancing cooperation and addressing the theater's most salient security problems at the time. From the start, the Obama administration intended to integrate the architecture "with NATO members' missile defense capabilities, as well as with the emerging NATO command and control network that is under development."[144] When NATO leaders decided in November 2010 to develop a territorial BMD capability—aimed at a common command structure using voluntary national contributions—the EPAA became central to that effort.[145] For Poland specifically, Redzikowo is equipped with the United States' most advanced BMD technology, capable of intercepting "faster targets with a greater range, at higher altitudes."[146] However, it is optimized for individual medium-range ballistic missile and intermediate-range ballistic missile targets and is not designed to counter SRBMs, including those launched from Iran.[147] This limitation means that even if the system were oriented against Russia, it would have little effect on SRBMs stationed in Kaliningrad—the threat most proximate to Poland. Accordingly, the Polish government's argument to host Aegis Ashore continued to rest on the associated benefits of US bilateral security guarantees rather than direct local defense against short-range systems.

In negotiating its second agreement with the United States, Poland placed even greater emphasis on military modernization and continued US economic engagement. Although Warsaw was unable to secure significant direct financial assistance for modernization, it did receive a pledge of US support in that area, along with an "industrial agreement to boost Poland's defense industries

through cooperative technology research and development."[148] Washington also agreed to establish an aviation detachment in Poland to support periodic deployments of US aircraft.[149] Finally, in May 2010, the US honored its earlier commitment to deploy a Patriot air and missile defense battery, positioned approximately forty miles from Poland's border with Kaliningrad.[150] Russia harshly criticized this deployment, yet most of Moscow's responses to the EPAA architecture had little direct effect on Poland's security position.

Russia initially welcomed the Obama administration's announcement to change the European-based BMD architecture and publicly signaled its willingness to "continue dialogue."[151] The 2009–2014 period was marked by repeated—and ultimately unsuccessful—efforts to establish US–Russia–NATO cooperation on missile defense.[152] This openness soon gave way to renewed criticism, however, as Moscow cast the revised plan as a threat to its nuclear deterrent, focusing in particular on the advanced interceptors and prospective space-based components associated with Phase Four.[153] Russia attempted to leverage these objections during arms-control negotiations, claiming the need to expand its offensive arsenal to "preserve a strategic balance," but with little effect.[154] In April 2010, the US and Russia signed the New Strategic Arms Reduction Treaty without any limits on missile defense. Moreover, despite its rhetoric—and previous warnings to the contrary—Russia made no significant changes to its strategic posture following the deployment of the Patriot battery in Poland.[155] In practical terms, therefore, the EPAA produced few direct changes to Poland's strategic environment vis-à-vis Russia.

While the transition to the EPAA may have enhanced BMD's effectiveness in assuring the broader NATO alliance—owing to deeper integration within NATO structures and its realignment toward the prevailing regional threat—it appears to have had little direct impact on Poland's level of assurance. If anything, the abrupt policy shift risked undermining Warsaw's perception that the United States was a reliable ally, thereby constraining its willingness to trust US security commitments. That risk ultimately failed to materialize. Although the revised BMD architecture still did little to measurably improve Poland's immediate security, it remained an effective mechanism for sustaining US cooperation and reinforcing US security commitments. The decision to preserve the deployment of the US Patriot battery proved especially consequential, as it addressed Poland's most acute operational concern while signaling continued United States commitment despite changes to the broader BMD architecture. As Polish officials continued to view the bilateral dimension of defense cooperation as the most effective hedge against Russian pressure, BMD proved sufficient to assure Poland through 2014.

The year 2014 marked a significant shift in the European strategic environment. For Poland and other states formerly within the Soviet sphere of influence, Russia's annexation of Crimea completed its transformation from a latent to an immediate threat—a perception that has since deepened across Europe.[156] These tensions were compounded by the termination of civilian and military cooperation between NATO and Russia, the suspension of the INF Treaty by both Russia and the US in 2019, and Russia's second invasion of Ukraine in 2022. Russia's proximity and expanding capabilities further enable it to hold European targets at risk through means other than ballistic missiles, including aircraft and cruise missiles. Because the SM-3 interceptor is not designed to counter these threats, the EPAA architecture alone—even if conceptually reoriented—would be insufficient to defend Europe against Russian attack.[157] As these realities hardened and the Russian threat intensified, the strategic salience of Poland's Aegis Ashore facility in bilateral relations has slowly been overshadowed by other measures, most notably the deployment of additional US and NATO ground forces in Poland. That said, BMD cooperation between the United States and Poland has continued to deepen since 2014.

Beginning in 2013, Poland prioritized the development of its own three-tiered, medium-range air and missile defense system. The upper tier, named *Wisła*, is designed to intercept aircraft, cruise missiles, and unmanned aerial vehicles at ranges of up to 100 kilometers, as well as SRBMs in their terminal phase.[158] From the start, Poland's technical and operational requirements favored the acquisition of systems already developed, tested, and fielded by other NATO allies.[159] This calculus made the Patriot system the natural choice, enabling Poland and the United States to deepen economic and technical cooperation through BMD.

Under the associated agreements, Polish companies produce and service multiple Patriot components. This arrangement not only allows Poland to contribute to missile defense efforts at both the national and alliance levels, but also expands Polish autonomy in "production, technologies and research and development."[160] As a system deployed by multiple NATO members, Patriot is highly interoperable with allied forces and readily integrated into NATO's Integrated Air and Missile Defense (IAMD) framework.[161] Poland now operates thirteen Patriot batteries as part of the Wisła program—more than any NATO ally other than the US.[162] While Russia has condemned these deployments as destabilizing, it has simultaneously asserted that "Russian defensive resources are adequate to ensure the inviolability of [its] borders and the protection of [its] territory."[163] Understanding this apparent contradiction in Moscow's re-

sponse requires distinguishing between Poland's national air-defense posture and NATO's theater-level missile-defense architecture.

Air and missile defense in Europe operates across two distinct tiers: NATO's theater-wide BMD system and a distributed network of national air-defense systems operated by European NATO allies. At the theater level, a deliberate separation persists between NATO BMD and broader IAMD missions such as air policing, reflecting Russia's enduring concern that the BMD architecture could erode its strategic nuclear deterrent.[164] Accordingly, NATO BMD—including the United States' EPAA components—remains oriented toward ballistic missile threats originating "outside the Euro-Atlantic region, from the southeast." In contrast, Europe's network of national air-defense systems is structured to counter "air and missile threats from all strategic directions."[165]

Within this construct, the Aegis Ashore site at Redzikowo functions as a node within the broader IAMD warning network but provides no targeting data to Poland's national air-defense system.[166] While studies have reportedly explored the potential reorientation of the EPAA to defend Europe against Russian missile threats, whether US or NATO policy will shift in that direction remains uncertain.[167] Despite the inherent limitations of Aegis Ashore in the current strategic environment, Poland's expanding national-level contributions to BMD have materially strengthened NATO's Eastern Flank—an objective that has become increasingly urgent since Russia's invasion of Ukraine.

Poland's enduring fear of being drawn back into Russia's sphere of influence is evident in its staunch support of Ukraine and in its own accelerating military preparations. Since 2022, Warsaw has provided approximately €3.04 billion in military assistance—outpaced by only five countries when measured as a percentage of gross domestic product—and has frequently been among the first to transfer new categories of weapon systems to Ukrainian forces.[168] At the same time, Poland has intensified its own mass modernization effort. Prime Minister Donald Tusk's March 2025 announcement calling for an expansion of the Polish armed forces to 500,000 personnel and the introduction of a nationwide military training plan for all men follows a pattern established by successive Polish governments that have advocated similar, if less expansive, force increases.[169] Notably, while Tusk emphasized that these measures do not constitute a return to conscription, a May 2022 survey indicated that 45 percent of Poles would support reinstating a national draft.[170]

In parallel with these conventional preparations, Poland's interest in participating in NATO nuclear-weapon-sharing arrangements resurfaced in 2014 following Russia's initial invasion of Ukraine.[171] Since then, the issue has been reiterated and discussed with US officials during periods of heightened Russian hostility—including in 2022 after Russia's second invasion of Ukraine

and again in 2023 following reports that Russia had deployed nuclear weapons to Belarus and Kaliningrad.[172] This idea is also widely supported by the public; a February 2025 poll found that approximately 53 percent of respondents favored Poland possessing its own nuclear weapons.[173] That this sentiment has grown despite close US–Poland cooperation—including in air and missile defense—underscores why the inauguration of the Aegis Ashore site at Redzikowo has done little to sway Polish attitudes toward nuclear assurance.

The Aegis Ashore site in Redzikowo reached operational capability under the US Navy in December 2023 and was formally placed under NATO command and control in November 2024.[174] Shortly thereafter, defense policy under the new Trump administration shifted markedly away from Europe, reviving long-standing Polish concerns over US abandonment. In response, France advanced the prospect of extending its nuclear umbrella to European allies—a proposal Poland has indicated it is "carefully examining."[175] Concurrently, Polish leaders have continued to urge the United States to deploy nuclear weapons in Poland.[176] Announcing his modernization and training initiatives, Prime Minister Tusk argued that "purchases of conventional weapons, the most traditional ones, are not enough," contending that Poland would be safer with access to nuclear capabilities.[177] While he has not ruled out the possibility of an indigenous program, Tusk has acknowledged the formidable challenges such a path would entail and has instead focused Poland's near-term nuclear ambitions on NATO burden sharing and potential cooperation under France's deterrent. Even so, he has insisted that maintaining "the closest possible ties" with the US and NATO remains "undisputable"—though whether these ties will continue to provide sufficient assurance remains an open question.[178]

Missiledefense cooperation between the US and Poland is currently stronger than at any previous point, both at the national level and within NATO's theater-wide framework. Yet as these bonds have deepened, Poland's demand for explicit nuclear assurances has intensified rather than diminished. This dynamic reflects two related concerns: Poland's perceived need for offensive capabilities to deter or defeat a Russian attack, and its anxiety over the risk of nuclear abandonment should such a conflict occur. Missile defense and conventional modernization can partially address the former; they do little to resolve the latter. As Europe adapts to shifting US defense priorities, this assurance gap is likely to persist. So long as Russia poses an acute and growing threat, Poland will pursue the conventional and nuclear capabilities it deems necessary—whether supplied from an outside source or created internally—to secure its national survival.

Table 4. Comparative assurance outcomes by case and period

Focus Area	ROK (1953–Present)	Japan (1951–Present)	Poland (2002–2009)	Poland (2009–2014)	Poland (2014–Present)
Threat Severity & Immediacy	✗ Acute, proximate, overwhelming DPRK threat	⚠ Growing but regionally distributed threats	⚠ Russia latent, not imminent	⚠ Russia reemerging threat	✗ Acute existential Russian threat
Preferred Deterrence Strategy	✗ Punishment oriented; autonomy seeking	☑ Denial oriented; alliance centric	⚠ Reliance on US presence	⚠ Mixed (defense + presence)	✗ Increasing reliance on offensive / nuclear options
Domestic Trust in US Commitments	✗ Historically fragile	☑ Deep, durable trust	☑ High bilateral confidence	⚠ Temporarily shaken, then restored	⚠ Public trust strained by abandonment fears
BMD Tailored to Threat	✗ Poor fit (SRBM geometry, trajectory)	☑ Good regional fit	✗ Questionable effectiveness tolerated	⚠ Technically improved but misaligned	⚠ Limited relevance against Russia
Degree of Cooperation & Integration	✗ Minimal interoperability	☑ Deep codevelopment & integration	⚠ Bilateral, US led	☑ NATO integrated cooperation	☑ Deep national + NATO integration
Adversary Response Impact	✗ China retaliation constrains assurance	⚠ China/Russia rhetoric absorbed	⚠ Russian threats reinforce alignment	☑ Russian restraint sustains assurance	✗ Nuclear threats accelerate escalation logic
Effect on Nuclear Demand	✗ Increases support for indigenous nuclear options	☑ Dampens nuclear pressure	☑ Nuclear sharing not salient	⚠ Nuclear debate muted	✗ Strong nuclear/ burdensharing demand
Net Assurance Outcome	✗ BMD fails as assurance tool	☑ BMD reinforces assurance	☑ Assurance via presence, not defense	☑ Assurance sustained—narrowly	✗ BMD insufficient under existential threat

Legend:
☑ = strengthens assurance
⚠ = mixed / conditional effect
✗ = weak or no assurance effect

Conclusion and Recommendations

To assess the effectiveness of positive security-assurance mechanisms that do not undermine negative assurances, this paper has examined the conditions under which missile defense—a non-nuclear alternative—can provide credible assurance to allies. The findings suggest that while BMD may play a useful supporting role, it is not a universal solution. Missile-defense agreements can strengthen cooperation and trust among allies, particularly through enhanced technological collaboration, shared production capabilities, and economic burden sharing. These benefits, however, depend first on an ally's willingness to participate—an inclination shaped primarily by exogenous strategic and political factors rather than by missile defense itself.

Accordingly, the assurance value of BMD hinges on four interrelated variables: an ally's baseline willingness to trust the US; its perception of the threat it faces; its preferred strategic approach for countering that threat; and the US's ability—and willingness—to tailor missile-defense cooperation to the ally's specific security requirements and sometimes domestic political constraints. Once an ally concludes that its security ultimately depends on the presence of nuclear capabilities on its own soil, missile defense alone will do little to convince it otherwise.

Consistent with Jeffrey Knopf's original analysis regarding general assurance, a state's strategic environment—particularly the immediacy and severity of the threat it perceives—bears an inverse relationship to the level of assurance derived from missile defense: the greater the perceived threat, the less assurance missile defense alone can provide.[179] This effect is magnified when the proposed architecture is ill-suited to counter the specific threat confronting the ally. The ROK, for example, faces a persistent and consistent threat from North Korea, and even a perfectly configured missile-defense system would likely be overwhelmed in a large-scale attack. Moreover, the United States' proposed TMD architecture is not optimized to counter the low-altitude short-range ballistic missiles that pose the most immediate danger to the Korean Peninsula. Under these circumstances, South Korea has little incentive either to embrace US missile-defense initiatives or to derive meaningful assurance from them.

By contrast, missile-defense cooperation with Japan and Poland has produced systems more closely aligned with each state's security environment. Yet as the threats facing both countries have intensified, so too has their demand for additional capabilities or assurances beyond missile defense. Japan's traditionally defense-oriented posture is now evolving to include counterstrike capabilities, while Poland has moved openly toward seeking assurance

through an expanded nuclear role. Together, these cases illustrate a central conclusion of this study: even where missile defense is technically optimized to address a specific adversary, the severity of the threat may render defense alone insufficient as a foundation for assurance.

Independent of the objective threat environment, domestic political considerations regarding an ally's overall faith in, and willingness to rely on, the US—play a decisive role in determining whether BMD can function as an effective assurance mechanism. Japan, which has long entrusted its national security to the United States, remains a willing partner across multiple defense domains. Within this context, missile defense has proven an effective tool for deepening cooperation and reinforcing mutual trust. By contrast, the US–South Korea relationship has been shaped by persistent historical distrust and differing strategic priorities, leading the ROK to seek greater autonomy in national defense. This preference for independence extends to South Korea's approach to missile defense, leaving the United States little opportunity to employ BMD as a meaningful instrument of assurance.

As US strategic priorities continue to tilt toward the Indo-Pacific, the importance of underlying trust will remain central when addressing Poland's growing desire for nuclear capabilities. Although Polish leaders continue publicly to affirm confidence in the US–Poland relationship, any erosion of that trust under present policy trajectories would further reduce the ability of missile defense cooperation to assure Poland that the current nuclear construct is sufficient for its defense. This dynamic validates Linde Desmaele's assertion that shifts in perceived commitment in one theater can have immediate and destabilizing effects in another, heightening allied fears of abandonment if not properly coordinated.[180] Beyond general trust and willingness to be assured, there are also individual domestic factors that further condition the effectiveness of BMD as an assurance tool.

Public skepticism toward missile defense, by itself, appears to exert limited influence on assurance outcomes. When national leadership judges that the strategic benefits of BMD outweigh its political and financial costs, domestic opposition has historically done little more than delay implementation. Far more consequential is an ally's inclination toward nuclear weapons—an inclination driven primarily by its perceived need for offensive capabilities. States predisposed toward a strategy of deterrence by punishment, or approaching such a posture, are inherently less likely to be assured by missile defense. Because BMD plays only a limited supporting role within such strategies, it cannot curb an ally's turn toward nuclear capabilities once the perceived threat reaches a critical threshold. In these cases, the target state chooses to trust in

the US nuclear umbrella or to pursue its own nuclear capabilities is shaped by factors unaffected by missiledefense cooperation.

South Korea is a prime example of this dynamic. Poland's recent military build-up, while not formally declared as a deterrence-by-punishment doctrine, similarly reflects a perceived requirement for robust offensive capabilities in the event of war. As the Russian threat has increased, so too has Poland's reliance on nuclear deterrence as a hedge against catastrophic failure. Japan, by contrast, has thus far been willing to treat missile defense as a credible assurance mechanism, owing to its defense-oriented military posture and longstanding aversion to nuclear weapons. Yet even this case shows signs of strain: Japan's recent acknowledgement of the need for counterstrike capabilities may be a stepping-stone to greater demands for US nuclear assurances. Collectively, these cases underscore the central importance of understanding an ally's threat perception and preferred strategic response when offering assurances. Missile defense may be effective when deterrence by denial is sufficient to manage a moderate threat but will likely become less so as an ally's perceived need for offensive and nuclear capabilities grows.

In addition to its overarching security strategy, the specific capabilities and technologies proposed by the United States also shape the extent to which BMD can function as an assurance mechanism. These technical nuances appear to matter more when bilateral security agreements are already in place and far less when the recipient state's goal is simply to increase cooperation with the US. In the case of the ROK, US unwillingness to tailor its missile-defense approach to fit the peninsula's unique requirements—most notably, the regional TMD architecture's inability to address South Korea's immediate security concerns or its political reluctance to contribute indirectly to Japan's defense—has made it relatively easy for Seoul to remain unassured and to continue seeking its own capabilities. Japan represents the inverse case. There, missile-defense cooperation has been closely aligned with national strategy, enabling BMD to reinforce, rather than distort, broader assurance dynamics.

Poland's experience further underscores the contingent nature of missile-defense assurance. Between 2002 and 2014, when Poland sought above all to establish its own relations with the US, it did not matter that doubts about the technical effectiveness of proposed BMD systems—and even explicit Russian threats of strategic retaliation—proved largely irrelevant. The central objective was the establishment of durable US commitments. As that bilateral relationship has matured, however, the limitations of generic BMD solutions have become more salient, increasing the need for systems tailored to Poland's specific security requirements. This reiterates the point that assurance through missile defense is not a one-size-fits-all solution. It must be

tailored to an ally's specific threat environment. Its effectiveness depends on adaptation to the distinct strategic, political, and regional concerns of each ally which may also include reactions from third parties.

Adversary responses, at least those related to nuclear saber-rattling, appear to have little impact on the assurance value of missile defense, nor does missile defense lower the perceived utility of nuclear weapons. Russian and Chinese objections revolve around the supposed need to expand offensive forces and ballistic missile countermeasures in response to missile-defense deployments, framing BMD as a source of strategic instability. Yet these objections have rarely dissuaded allied participation. Instead, the magnitude and immediacy of the adversarial threat itself play the dominant role in shaping allied perceptions. As demonstrated in Poland's case, explicit nuclear threats often justify and energize its cooperation rather than dissuade support for missile-defense cooperation. Nevertheless, strategic context remains decisive. China's economic and diplomatic retaliation against the ROK following the deployment of THAAD illustrates how non-nuclear considerations may play an outsized role in affecting BMD assurance outcomes and must therefore be measured equally beside nuclear considerations.

Luke Stover's claim that the United States frequently treats assurance as an afterthought is particularly evident in its approach to BMD.[181] Although BMD has long been used to provide "assurances essential to the cohesion of US alliances and partnerships," successive administrations have largely evaluated missile-defense initiatives through a US-centric lens, rather than assessing their assurance value from the perspective of individual allies.[182] Addressing this shortcoming requires policymakers to engage more deeply with each ally's threat perceptions and preferred strategic responses—and to accept that missile defense may, in some cases, be poorly suited as an assurance tool. Where BMD is employed, its design should reflect the ally's operational requirements and domestic constraints rather than default US preferences. Above all, missile defense cannot substitute for trust: absent a baseline willingness to rely on the United States, allied cooperation on BMD is unlikely to materialize. That trust must therefore be diligently managed and pursued, especially when looking to assure allies in an era of cross-theater competition where perceived shifts in commitment reverberate quickly and unevenly across regions.

This research finds that while BMD may play a limited role in bolstering assurance, it is no replacement for offensive capabilities—particularly when allies confront existential threats. Effective assurance under the United States' nuclear umbrella requires a balance between defensive and offensive instruments, calibrated to the strategic realities each ally faces. If the United States

seeks to dissuade non-nuclear allies from hosting nuclear weapons or acquiring their own nuclear capabilities, it must do more than expand missile defenses. It must demonstrate enduring resolve and credible capacity to uphold extended deterrence commitments—an objective that missile defense alone cannot achieve.

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