

AMERICA'S NUCLEAR CROSSROADS



EDITED BY
CAROLINE DORMINEY
AND ERIC GOMEZ

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Buying the Bang for Fewer Bucks

Managing Nuclear Modernization Costs

Caroline Dorminey

Introduction

Creating, deploying, and maintaining the American nuclear arsenal is an extremely costly, but necessary, enterprise. This chapter explores options for reducing the costs of the ongoing nuclear modernization plan not only for the sake of cost savings, but also because of strategic utility. There are ample opportunities to craft a revised nuclear modernization plan that better reflects the shifting strategic priorities and the evolution of threats facing the United States.

Most of the nation's current nuclear forces—both delivery platforms and warheads—are nearing the end of their service lives. Naturally, the time has come to make decisions on how to either extend those service lives through Life Extension Programs (LEPs) or replace the systems entirely with upgrades.

Over the next 30 years, the U.S. military plans to either replace or expand the number of platforms with the aim to reach 12 nuclear ballistic missile submarines (SSBNs), 400 fielded intercontinental ballistic missiles (ICBMs) (450 missiles and silos total), and 109 fielded nuclear bombers (120 deployed and nondeployed warheads total).¹ As it stands, this plan will cost close to \$400 billion and account for roughly 5 percent of the total costs of the next 10 years of defense spending, alternating roughly between 5 percent and 7 percent each year.² The Congressional Budget Office (CBO) expects modernizing the whole nuclear arsenal to cost roughly \$1.2 trillion dollars.³

The majority of the nuclear modernization plan was crafted and put into action by the Obama administration.⁴ In turn, the Trump administration inherited that plan and added its own requirements and alterations.⁵ When the plan was first formed, then-Secretary of Defense Ashton Carter said that for many of these decisions, "It's not a choice between replacing these platforms or keeping them; it's really a choice between replacing them or losing them."⁶ He likely intended to garner support for the expansive plan by underlining that capabilities without plans for revitalization will be lost.

However, his statement also drew attention to the fact that now is the perfect time to reassess all aspects of the U.S. nuclear arsenal. The systems funded and produced now will stay in the arsenal for the next 30 to 50 years, given the increased lifespan of technology. Nuclear modernization will require a large percentage of annual budgets for the foreseeable future; it is eminently possible that the current plans for overhauling nuclear assets could end up competing for funding with conventional priorities.⁷

Bad timing has created a large group of investment priorities that will all require considerable resources—if the next few administrations stay the course. Over the next 30 years, the Pentagon plans to drastically increase the number and complexity of ships in the navy, overhaul the makeup of the air force by retiring a significant number of older planes in favor of new acquisition projects, and increase the size of the active duty army—which will create sizable follow-on personnel costs.

Now is the time to look critically at all these best-laid plans, because they could derail each other without adequate attention. This chapter will examine the current modernization proposals, question their tenets, and provide a range of policy options that would allow for cost savings and reinvestment in the future force.

The Plan, as It Stands

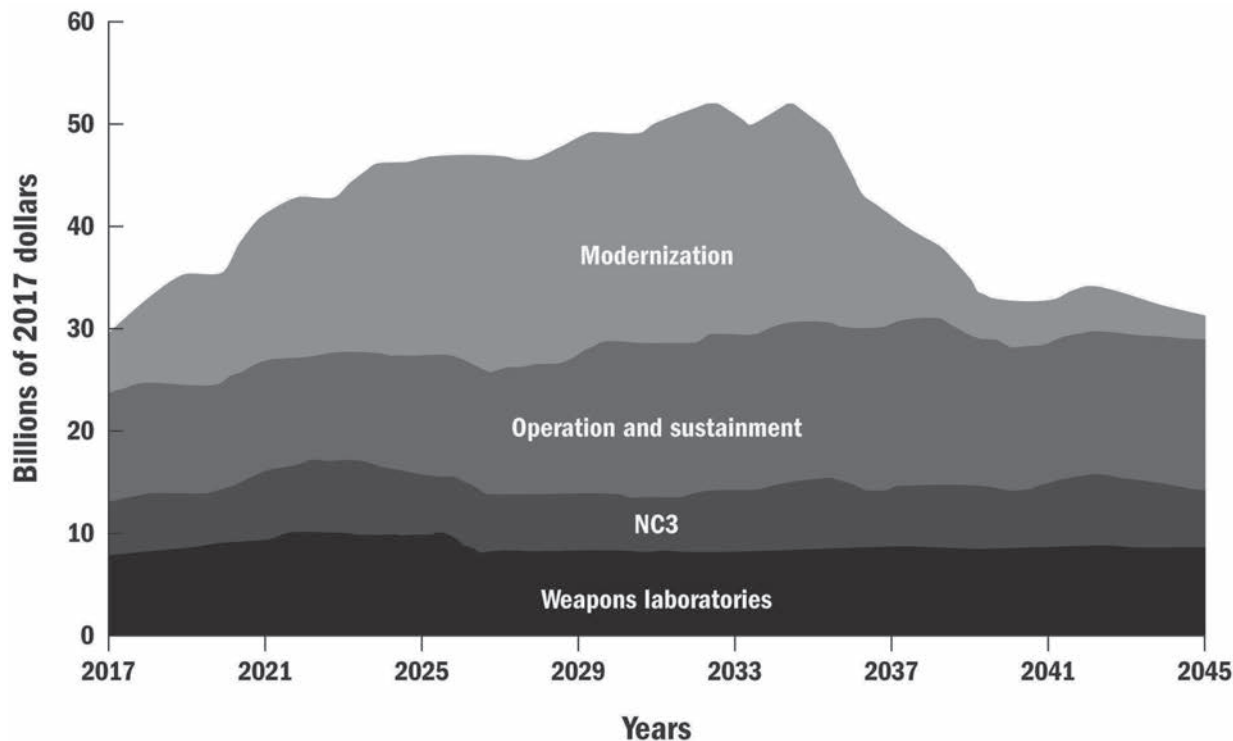
To recapitalize the nuclear triad, the Department of Defense (DoD) and the Department of Energy (DOE) crafted nearly 20 major LEPs and entirely new systems that will be implemented over the next few decades.⁸ These programs are in varying stages of development and require several phases of funding over the next 30 to 50 years (see Figure 1.1).

To upgrade the ground leg of the triad, the nuclear modernization plan calls for developing a new ICBM, known as the Ground Based Strategic Deterrent (GBSD), and renovating all current ICBM silos and associated infrastructure. The sea-based leg of the triad will consist of 12 *Columbia*-class SSBNs armed with refurbished Trident D5 submarine-launched ballistic missiles (SLBM) equipped with updated W76 and W88 warheads. For the air leg, the modernization plan includes two new capabilities, the B-21 Raider bomber aircraft and the Long-Range Standoff (LRSO) cruise missile. There is also a planned LEP for the B61 gravity bomb known as B61-12.⁹

All three legs of the nuclear triad—SSBN-based ballistic missiles (SLBMs), bombers, and land-based ICBMs—are valued for different reasons: SSBNs for their survivability, bombers for their flexibility and recall ability, and ICBMs for their numbers and price tag per unit.¹⁰ But these three legs do not contribute the same value to deterrence.

Submarines can access most of the world's surface area and therefore provide the range of bombers with minimal losses to flexibility of deployment.¹¹ As of today and for the foreseeable future, other

Figure 1.1.
COST OF NUCLEAR FORCES UNDER THE 2017 PLAN, 2017 TO 2045.



SOURCE: Bennett, *Approaches for Managing the Costs of U.S. Nuclear Forces*, Figure 1.

NOTE: NC3 = nuclear command, control, communications, and early warning systems.

nations cannot reliably track U.S. ballistic missile submarines—let alone do so with the sort of reliability required to attempt a preemptive strike against all of them at the same time.

Bombers maintain flexibility of the nuclear arsenal as they are yet another mobile leg of the triad.¹² However, this leg is easier for other nations to find, track, and target—so these weapons are less survivable than assets placed on SSBNs. Although they are easier to track, they can also be recalled once launched, and they boast high accuracy rates. Bombers can also serve as dual-use platforms for both nuclear and conventional weapons.

ICBMs provide the fewest advantages and contribute the least to overall deterrence. In theory, ICBMs add to strategic deterrence by increasing the overall number of targets that an adversary would need to eliminate in a first strike against the United States.¹³ But if SSBNs cannot be reliably tracked and bombers provide more flexibility as mobile targets, ICBMs become less important as we move away from Cold War dynamics into a multipolar world with nuclear powers fielding substantially smaller and less diversified arsenals.

Changes to the Ground Leg of the Triad

To build a future force equipped to handle the strategic situations of the next 30 to 50 years, the triad must evolve. The United States no longer faces a monolithic nuclear threat as it did during the Cold War, and it operates in a much more restrained fiscal environment today. The most obvious and necessary alteration to the current mix of capabilities is drastically altering the triad's ground leg. This leg makes up a large portion of the overall warhead count and includes up to 400 deployed and 50 nondeployed ICBMs in immobile silos located in Montana, North Dakota, and Wyoming.¹⁴

In 2017 the CBO released a report analyzing options for managing the cost of modernizing the nuclear weapons arsenal. It found that completely eliminating the ICBM leg of the triad would reduce the ability of the United States to engage in a large-scale nuclear exchange.¹⁵ The 2018 *Nuclear Posture Review* notes, "In the absence of our ICBM force, a large proportion of our strategic nuclear triad, including SSBNs in port and non-alert bombers, could be subject to an attempted nuclear first strike involving a relatively small number of nuclear weapons."¹⁶

The goal of nuclear deterrence is to never enter into a nuclear exchange. If ICBMs are only useful in increasing the number of targets to be destroyed in a large-scale exchange, then nuclear deterrence, diplomacy, and all the safeguards against this type of conflict will have failed. Although a large-scale nuclear first strike involving that many warheads may have been a legitimate fear and thus required strategic planning in the past, this type of nuclear conflict scenario seems less likely today and in the foreseeable future.

While great power politics has returned to the fore of U.S. military strategy, a bolt-from-the-blue nuclear attack by Russia is improbable; China, in turn, does not possess a large enough arsenal to attack America's ICBM fields and have enough forces left over to hold U.S. cities at risk.¹⁷ Moreover, the most likely scenarios that could draw the United States into conflict with Russia and China are limited conventional fights, not the large-scale invasion scenarios that worried U.S. nuclear planners during the Cold War. North Korea and Iran, both rogue states with varying degrees of nuclear capabilities, are often cited as more immediate nuclear threats. But Iran has yet to develop nuclear weapons, and North Korea maintains a small and unsophisticated arsenal that cannot threaten the U.S. triad with a disarming attack.¹⁸

It stands to reason that in the next 30 to 50 years, large-scale first-strike nuclear exchanges are unlikely to occur. A secure and robust SSBN fleet, rather than the ICBM force, is arguably the most important component of the triad for preserving America's second-strike capability. Former Secretary of Defense

William Perry has argued this very point, saying that ICBMs are no longer essential to nuclear deterrence because “any sane nation would be deterred by the incredible striking power of our submarine force.”¹⁹

Under current conditions, the strategic need to modernize and expand the ICBM force is much lower than when the leg was established during the Cold War. This change in strategic circumstances creates a valuable opportunity to modify our force structure moving forward and to move toward a leaner, more agile arsenal while accruing the financial benefits of limiting ICBM recapitalization.

OPTION ONE, MINIMAL ALTERATION: Cutting the ground leg by 50 percent.

This option would cut the ICBM force in half—fielding 200 missiles instead of the 400 currently deployed. That recommendation would lead to \$19 billion in cost savings over the next 30 years, according to the CBO.²⁰ This estimate does not include an offset for retiring ICBM warheads early, because decommissioning costs are already built into the 30-year plan as older systems are phased out. There would be no immediate need to decommission all the ICBMs at once; they could be gradually phased out until the force has been reduced by 50 percent.

The United States currently operates 450 missile silos distributed over three military bases.²¹ As with all follow-on options, reducing the ICBM leg by 50 percent would likely result in additional savings from base closures. Since only 250 silos would be required, 200 silos could be shut down or repurposed.²² However, the estimated savings from this proposed change do not account for reduced overhead because it is unclear how or when the remaining forces would be redistributed.

Option one would leave most of the current plan intact but cut down on the number of new warheads procured over the next few decades. Strategically, this option would have very little impact. The triad would be slightly leaner but still fully functional and prepared for a large-scale nuclear exchange.

OPTION TWO, MODERATE ALTERATION: Cutting the ground leg by 75 percent.

This option would reduce the ICBM force by roughly 75 percent; the ICBM force would drop from 400 deployed missiles to 100. The CBO estimates that this change would create an overall savings of \$27 billion over the course of the whole modernization plan.²³ The U.S. military prefers to sustain 50 more silos than fielded warheads—so this option would also theoretically create extra savings from closing roughly 300 silos (leaving 150 instead of the current 450 silos).²⁴

Option two would leave the triad intact but significantly cut down on the number of new warheads procured as well as the investment needed to refurbish and maintain the entire associated infrastructure. As with option one, decommissioning costs are already built into the current plans, and building down to 25 percent of the current force could occur gradually through attrition.

OPTION THREE, LARGE ALTERATION: Cutting the ground leg entirely.

ICBMs may be relatively cheap to maintain, but severing this leg would save even more. The CBO estimates that fielding a dyad without the ICBM leg would create huge cost savings over the next 30 years. In terms of modernization program costs alone, the United States would save \$88 billion in 2017 dollars.²⁵

When taking into account total savings—reduced modernization as well as reduced operational and support costs—the figure rises to \$120 billion or roughly 10 percent of total projected costs over the next 30 years.²⁶ Completely cutting the ICBM force would also allow for additional cost savings from shuttering all former silos and repurposing the bases for commercial use.²⁷

Moreover, this estimate is based on fielding current forces until the end of their service lives and then decommissioning them. If this change was implemented immediately, more savings could accrue to

the tune of an additional \$29 billion dollars—bringing the total to roughly \$129 billion over the next 30 years.²⁸ These savings primarily come from canceling the current LEPs for the existing force and then reaping the benefits of lowered costs for operating, sustaining, and supporting that force.

Changes to the Air Leg of the Triad

Over the next 30 years, the federal government plans to spend roughly \$266 billion on the air leg of the triad. This includes all expenses associated with modernizing systems, as well as the cost of operating and supporting systems. The current force structure includes 46 B-52s and 20 B-2s—the B-1 fleet was recently relieved of its nuclear mission under the U.S.-Russia New START agreement.²⁹ These systems have been part of the force structure for decades and function well together. Overall, they have benefited from several LEPs over their service lives and are expected to be in the force for several decades to come.³⁰

The Department of the Air Force intends to add a new bomber to the fleet within the next 10 years. The B-21 Raider, formerly known as the Long Range Strike Bomber, is a stealth bomber that will eventually be fielded as a dual-use platform for both nuclear and conventional missions.³¹ Very little is known about the budgetary implications for this system because it is a special-access (i.e., highly classified) program and thus not included in unclassified documents.³² The bomber is currently in the research, development, test, and evaluation (RDT&E) phase, and Congress has allocated less than \$5 billion annually to the plane's development over the last few years. However, with procurement starting in the 2020s, overall program costs will rise rapidly as the air force buys roughly 100 aircraft into the late 2030s.³³

OPTION ONE, MINIMAL ALTERATION: Changes to planned missile development and forgoing the nuclear certification for the F-35A.

The military plans to add a nuclear mission to the repertoire of the F-35A combat aircraft despite repeated problems—especially in the fighter's system development and performance.³⁴ But adding another mission set to an arguably overburdened platform would be unwise. Because the current modernization plan retains the rest of the bomber fleet (B-52s and B-2s) through the 2040s and 2050s, respectively, and the B-21 Raider will be in full operational capacity by then, there is little need to add another type of delivery system to the air leg of the triad. The submarine leg of the triad covers any operational advantage in terms of stealth, and heavier existing bombers already achieve the flexibility and signaling that the air leg provides.

The bomber leg is scheduled to include several upgrades to the nuclear bombs themselves. The B61 gravity bomb is slated for another LEP that will consolidate all the existing models of the B61 into a singular design, known as the B61-12, that is compatible with both the B-2 and B-21 bombers as well as the F-35A. The LRSO missile is also currently in the research and testing phase of development. It boasts a longer-range, flexible yield and is designed to survive advanced integrated air defense systems.³⁵ In contrast, the B61-12 can be fielded on tactical aircraft and has only mild ground-penetrating capability. For these reasons, it makes sense to continue investing in the development of the LRSO and not the B61-12.

Eliminating the nuclear mission for the F-35A provides another good reason for canceling the B61-12 LEP in its entirety. The B-2 and B-21 bombers will have other compatible missiles to use, while the B61-12 modifications primarily support the F-35's nuclear mission. The savings accrued from all of the above changes would be roughly \$27 billion over 30 years.³⁶ The CBO estimate for this change includes \$6 billion in savings from canceling the current B61-12 LEP. The remaining \$21 billion in savings can be garnered from forgoing the F-35A's nuclear mission and the costs of maintaining the fighters with that certification. That \$21 billion also includes the operational and support costs of the B61-12 and forgoing

another LEP currently scheduled for the 2030s.³⁷ Option one would maintain the current B-61 bombs to deploy on B-2s and B-21s until the LRSO is fielded—an investment of \$5 billion to ensure that B-2s retain their nuclear mission in the interim.³⁸

OPTION TWO, MODERATE ALTERATION: Delaying the program by 10 years and buying the full 100 planned B-21 bombers.

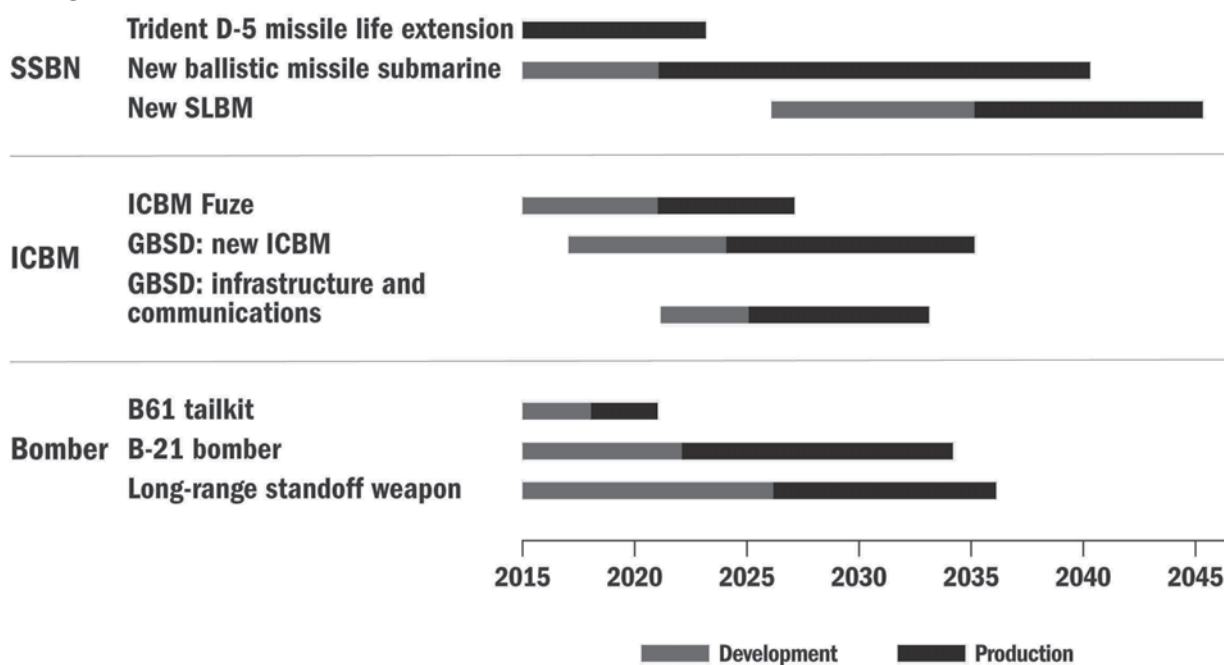
Another change that could produce significant savings in the near term would be delaying the modernization program by 10 years. This recommendation is designed to optimize the use of our existing force structure before retiring the current capabilities. The B-52s and B-2s that make up the current bomber wings of the nuclear triad are scheduled to remain part of the force until roughly 2040 for the B-52s and sometime in the 2050s for the B-2s, so delaying production of the B-21 Raider until the 2030s would not result in a substantial reduction in capabilities.³⁹ The B-21 could seamlessly transition into the force as the B-52s retire and still share the skies with the B-2s for 20 or more years. (See Figure 1.2.)

This recommendation aims to align the procurement window of many of the B-21s with the procurement time of other systems. As Figure 1.2 shows, the B-21 development and production coincide with upgrades to the other legs of the triad. Delaying production by 10 years would get more time out of the service life of the current bomber fleet and save money in the short term for other competing funding priorities. Overall, this change would save roughly \$37 billion over the next 30 years but extend the B-21s' production past the 30-year window, accruing costs into the 2050s.⁴⁰

Figure 1.2.

APPROXIMATE TIMELINES FOR MODERNIZATION OF NUCLEAR FORCES, 2015 TO 2045.

Delivery system life extensions or replacements



SOURCE: Bennett, *Approaches for Managing the Costs of U.S. Nuclear Forces*, Figure 2.

NOTE: GBSD = Ground Based Strategic Deterrent; ICBM = intercontinental ballistic missile; SLBM = submarine-launched ballistic missile; SSBN = nuclear ballistic missile submarine.

OPTION THREE, LARGE ALTERATION: Delaying the program by 10 years and capping development at 80 B-21 bombers.

Early plans for the B-21 involved procurement of 80 to 100 planes and potentially up to 200 aircraft eventually.⁴¹ Because of other changes to the nuclear force structure and competing budgetary priorities, capping the procurement at 80 planes makes financial and strategic sense. This option would still procure the system within reasonable parameters of the current modernization plan but keep the number at the lower end of the spectrum. A nuclear bomber force comprising 20 B-2s and 80 B-21s would still be larger than the current fleet of 66 planes.

Option three would produce savings up front by virtue of buying 20 fewer planes, and it would lower operational and support costs over those planes' service lives. Publicly available data suggest that stopping production at 80 planes rather than 100 would generate savings of roughly \$11 billion to \$13 billion in procurement alone based on a hypothetical eight-per-year production schedule and a \$564 million per-unit cost.⁴² All in all, delaying the timeline by 10 years and capping the program at 80 planes would produce roughly \$50 billion in total savings over the 30-year period. This option would not reduce any RDT&E or military construction funding for this program. However, if the strategic environment were to change, this option could be easily adapted to buying the full 100 planes in the out years, simply by keeping the production lines open longer.

Changes to the Sea Leg of the Triad

As the current modernization plan stands, the government will spend the largest piece of the budgetary pie on modernizing the sea leg of the triad. Over the next 30 years, the U.S. Navy will spend \$313 billion on the SSBN force—\$79 billion on maintaining existing systems and \$234 billion on adding new platforms and systems.⁴³

The current force of *Ohio*-class submarines includes 14 SSBNs, although at any given time 12 are deployed and 2 are in maintenance facilities.⁴⁴ The military plans to start retiring the *Ohio*-class as the first of the new-generation *Columbia*-class become operational. The oldest of the *Ohio*-class will begin exhausting its nuclear reactor fuel just as the production and procurement of the *Columbia*-class ramps up in the 2020s.⁴⁵ This timing should lead to a relatively seamless transition between the two generations of technology.

The military plans to procure a total of 12 *Columbia*-class submarines—replacing 2 fewer submarines than the current force structure.⁴⁶ This program is still in the RDT&E phase, with funding levels scheduled to ramp up soon.⁴⁷ As it stands, the government plans to buy one unit every few years until the mid-2020s, when the pace increases to one submarine per year. This program will be costly—but to sustain America's credible nuclear deterrent, it is a necessary investment in force structure and capabilities.

The government already plans to spend close to \$17 billion in fiscal years 2018–2022 on RDT&E and early stages of procurement. After that five-year period, the system will require more than \$100 billion in procurement funds to build all 12 submarines, then an additional \$133 billion in operations and support costs over their service lives (estimated at 40-plus years).⁴⁸

The submarine force constitutes the most crucial leg of the triad overall. Thus, it is a priority not just strategically but also in terms of funding. Therefore, all options for altering this part of the modernization plan are offered in the context of alterations to the other legs. Minimal or moderate alterations to the ground and air forces would free up considerable resources that could be saved or partially reinvested in the submarine force. However, given current budgetary realities, investing more in the sea leg of the triad will not be feasible without downsizing elsewhere. This section draws attention to the need to set priorities in U.S. nuclear force structure and the gains that can be achieved by realigning those priorities.

OPTION ONE, MINIMAL ALTERATION: Stay the current course with SSBN procurement while reducing by 50 percent the ICBM leg and forgoing the nuclear certification of the F-35.

The current plan for SSBN procurement will ensure that the sea leg of the triad remains strong for the foreseeable future.⁴⁹ To offset some of the enormous costs associated with overhauling the sea leg of the triad, the two other legs should be altered.

The Government Accountability Office, among others, has questioned the financial feasibility of the current modernization plan, citing significant differences between policy and budget numbers.⁵⁰ Reducing the ICBM force by 50 percent and forgoing the nuclear mission for the F-35A and associated missile systems would make a significant difference in how funding can be allocated. Changes to the ground leg would produce \$19 billion in savings, while changes to the air leg would accrue another \$27 billion over the next 30 years. Together, these alterations would give the nuclear force structure almost \$50 billion in budget breathing room.

Under current fiscal realities, competing priorities will lead to friction and necessitate hard decisions. Option one aims to sustain funding for the current plan for the sea leg's modernization by downsizing the other two legs without fully decommissioning either.

OPTION TWO, MODERATE ALTERATION: Invest in two more SSBNs while cutting 75 percent of the ICBM force and delaying the B-21.

Implementing some of the other options to reform the nuclear triad would free up a considerable amount of funding for both cost savings and reinvestment in other areas. While this suite of options does not entail reallocating *all* the savings produced by reducing other capabilities, it would use *some* of those funds to increase the *Columbia*-class procurement by two submarines.

Procuring another two SSBNs in the 30-year time period would increase costs by \$16 billion but increase the size of the force from 12 to 14, matching current capabilities.⁵¹ The overall goal with this alteration is to increase the flexibility of the fleet and allow for increased maintenance and depot time if necessary.

Combining moderate alterations to the ground and air legs would produce enough savings to acquire additional assets for the sea leg while keeping the triad intact and functional, making this option more fiscally feasible. This would mean sustaining 100 fielded ICBMs in the ground leg and maintaining the existing fleet of B-52s and B-2s through the end of their service lives until the B-21 makes its operational debut.

Moderate alterations to the air leg would come from combining the \$27 billion from forgoing the F-35's nuclear mission with the \$37 billion in savings from delaying the B-21 procurement by 10 years. The CBO estimates that reducing the ICBM force by 75 percent over the next 30 years would result in another \$27 billion in savings.

In total, moderate alterations to the other legs of the triad would free up \$91 billion over the next 30 years. Some of those savings could feasibly be reinvested in the nuclear architecture to buy the most survivable leg of the triad more flexibility. Procuring two more *Columbia*-class SSBNs over the next 30 years would cost an additional \$16 billion, leaving \$75 billion in savings.

OPTION THREE, LARGE ALTERATION: Invest in four more Columbia-class SSBNs while cutting 100 percent of the ICBM force and delaying/capping the B-21.

In line with the moderate option, this large alteration is the culmination of three sets of major changes to the current modernization plan. Leaving aside political feasibility in the current budgetary environment, this option details what could be achieved through a significant reorganization of assets and requirements.

This option would take the U.S. force structure from a triad to a dyad by eliminating the ICBMs that constitute the ground leg and their entire associated infrastructure. This option is a substantial departure from current plans but would produce savings of \$129 billion over 30 years. These savings would be combined with those from eliminating the planned nuclear mission for the F-35 (\$27 billion), delaying the B-21 procurement by 10 years (\$37 billion), and capping the B-21 procurement at the lower end of the acceptable range—at 80 planes rather than 100 (\$13 billion). Together, these changes would total \$206 billion in cost savings.

Option three would use some of that \$206 billion saved to add four additional submarines to the planned SSBN fleet, bringing the total to 16. This investment would cost \$30 billion, making the net savings \$176 billion.⁵² This alteration would be a significant change in force structure that would favor the sea leg while keeping the air leg intact and modernized, albeit on a delayed build schedule to accommodate the upfront costs of the *Columbia*-class program.

Conclusion

Ultimately, the most politically feasible of these options would result in minor alterations to the 30-year nuclear modernization plan. But any of these changes, however big or small, would set the United States on a better track to a sustainable and reliable nuclear force structure that would serve national security interests for the foreseeable future.

These options are all intended to align strategy with resources and fiscal reality. Sustaining America's nuclear deterrent capabilities and ensuring that U.S. forces can face any threat will always be a costly endeavor. Poor planning has led the nuclear and conventional bow waves to coincide in an era when annual defense budgets cannot grow much more without dangerously affecting the country's debt and deficits.

Policy makers cannot simply increase the defense budget to allow for all the added funding needed to accomplish every aim in the 30-year nuclear modernization plan. Those with the power to decide must also factor in the other conventional capabilities currently being requested: a 355-ship navy, a 368-squadron air force, a 540,000-strong active-duty army, and the creation of a space force. The time to prioritize is now, not when crucial assets meant to work together end up competing for funding.

Caroline Dorminey is a policy analyst in defense and foreign policy studies at the Cato Institute. She works on issues pertaining to the U.S. defense budget, defense politics, force structure, and the international arms trade.

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It Can Get You into Trouble, but It Can't Get You Out

Missile Defense and the Future of Nuclear Stability

Eric Gomez

Introduction

Missile defenses have come a long way since the Cold War. Then, the superpowers controlled inaccurate, nuclear-armed interceptors. Now, an ever-growing number of countries—including some that do not possess nuclear weapons—have more accurate, hit-to-kill systems in their inventories. The United States possesses the most advanced missile defense system by a wide margin, fielding a combination of regional systems that protect forward-deployed military units in addition to capabilities that purport to protect the entire U.S. homeland from limited nuclear attack.¹ Nonetheless, the threatening missile capabilities of potential adversaries combined with strong political support in Washington for better defenses are driving both qualitative and quantitative improvements to U.S. systems.² The Missile Defense Agency (MDA) received a record appropriation of \$11.5 billion in fiscal year 2018.³ The Trump administration's *Missile Defense Review* (MDR), released in January 2019, outlines a wholesale expansion of U.S. missile defense capabilities to counter the offensive missiles of both rogue states and great powers. Examples of new capabilities mentioned in the MDR include a space-based sensor layer for earlier missile detection, unmanned aircraft that can disrupt missiles with onboard lasers, and a missile defense mission for the F-35 aircraft.⁴ While the primary targets of U.S. missile defense systems are rogue states such as Iran and North Korea, steady improvements in America's defenses are also a point of concern for China and Russia.⁵

Washington's plan to expand missile defenses combined with its focus on great-power competitors have important implications for nuclear stability. During the Cold War, there was a general understanding that limitations on nuclear weapons had to go hand in hand with limitations to missile defense. If neither side possessed an effective defense, then neither could gain a decisive advantage in a large-scale nuclear exchange by attacking the other's nuclear forces first and then absorbing the retaliatory blow with missile defenses.⁶ The United States and the Soviet Union were highly sensitive to one another's missile defense developments, even if an effective defense was technically and economically infeasible at the time.⁷

The desire to protect the U.S. homeland against attack by rogue states such as Iran and North Korea has overtaken Cold War-era concerns about the destabilizing effects of missile defense since 2002, when the United States withdrew from the Anti-Ballistic Missile Treaty. However, attempts to reassure China and Russia that they are not the intended targets of steady U.S. missile defense expansion have not mollified either nation. Both China and Russia cite U.S. missile defense as a major contributor to their own nuclear force structure and strategy decisions.⁸ The United States will probably not be able to construct a missile defense system capable of reliably protecting against even limited nuclear attack, but that won't stop other great powers from regarding U.S. missile defenses as a threat. Furthermore, the steps that other great powers take in response will further erode nuclear stability by increasing the risk of inadvertent escalation.

This chapter examines how proposed changes to U.S. missile defense systems will likely affect nuclear stability with other great powers. I argue that adversaries' threat perceptions are a more important driver

of their behavior than the technical shortcomings of U.S. missile defenses. Thus, I recommend retaining U.S. capabilities for defending against shorter-range threats while forgoing enhanced homeland missile defense to slow the current slide toward nuclear instability.

The Present and Future of U.S. Missile Defense

America's missile defense architecture is designed to protect the United States as well as its allies and forward-deployed troops from limited attack. Current U.S. missile defense systems can be divided into two broad categories: regional defense systems and homeland defense systems.

Regional missile defense capabilities protect relatively small swaths of territory or high-value targets such as bases and command-and-control facilities from shorter-range ballistic missiles.⁹ Usually, regional missile defense systems engage incoming missiles in the terminal stage of flight as the missile or its warhead falls to earth near its target, although some regional systems can engage targets in the midcourse phase of flight (e.g., SM-3 IA, IB, and IIA on Aegis warships). Another defining technical characteristic of regional missile defense is the systems' mobility. Ground-based interceptors such as the Patriot and the Terminal High Altitude Area Defense (THAAD) systems can be transported by military cargo aircraft.¹⁰ The Aegis ballistic missile defense system uses several types of interceptors carried in warship vertical launch cells. As of fiscal year 2018, 38 U.S. Navy ships were missile-defense capable.¹¹ The United States frequently takes advantage of this mobility to quickly deploy systems to reassure or protect allies during crises.¹² Regional missile defense systems also tend to be more accurate than their homeland defense counterparts. As of December 2018, the THAAD system had a perfect record in intercept flight tests, and the Aegis system had 40 successful intercepts in 49 attempts (81.6 percent success rate); the homeland defense Ground-based Midcourse Defense (GMD) system only had 10 intercepts in 18 attempts (55.5 percent success rate).¹³ Moreover, the regionally focused Patriot system is the only component of the U.S. missile defense architecture that has intercepted ballistic missiles in combat, albeit with mixed success and against relatively unsophisticated adversaries.¹⁴ Testing records are an imperfect indicator of future performance since systems are upgraded to account for shortcomings revealed by tests. However, the discrepancy between the GMD and regional defense systems indicates that intercepting shorter-range ballistic missiles is easier than intercepting longer-range missiles that can strike the United States.

As the name implies, homeland missile defense capabilities aim to protect U.S. territory from intercontinental-range ballistic missiles (ICBMs). Whereas the United States has several types of regional missile defense interceptors (e.g., Patriot, THAAD, and Aegis), the 44 interceptors of the GMD system are the only option for defending the United States from ICBM attack.¹⁵ This small stock of interceptors depends on widely distributed sensors, including early-warning satellites and various land- and sea-based radars, to have a reasonable chance of successfully engaging attacking warheads.¹⁶ The GMD's poor accuracy in missile defense tests means that in a combat scenario, multiple interceptors would have to be launched per attacking missile to maximize the chance of a successful intercept.¹⁷

The small size and inaccuracy of the GMD should reassure other great powers that their nuclear arsenals can effectively hold the U.S. homeland at risk, thereby bolstering nuclear stability. However, Washington is not satisfied with the current state of its missile defense systems. Many of the proposed improvements to U.S. missile defenses currently under consideration are meant to overcome the limitations and shortcomings that give China and Russia confidence in the effectiveness of their own nuclear arsenals.

Proposed improvements to U.S. missile defense capabilities prioritize homeland defense by expanding the number of interceptors and developing new technologies to provide more options for defeating intercontinental-range missiles. Congress has already approved funding to expand the number of GMD

interceptors from 44 to 64 by 2023 and to start construction on new radar sites to improve the GMD's ability to differentiate between incoming warheads and missile debris or countermeasures.¹⁸ The MDA is also developing the Multi-Object Kill Vehicle, a miniaturized version of the single, large kill vehicles carried by GMD interceptors.¹⁹ If this capability performs as advertised, one GMD interceptor could engage multiple targets, marking a significant increase in the overall capacity of the system.

More exotic technologies for improving homeland missile defense currently under consideration include lasers carried by unmanned aircraft that destroy ICBMs before they leave the atmosphere, as well as cyber and electronic warfare capabilities that disrupt missiles before they are launched.²⁰ Of course, even strong political and budgetary support for new missile defense technology does not guarantee that current research and development efforts will come to fruition. The history of U.S. missile defense is replete with grandiose projects that ended up being scaled down or canceled and cutting-edge technology that failed to live up to expectations. However, near-peer adversaries like Russia and China will try to stay ahead of U.S. developments to keep their nuclear deterrent force effective. Those reactions to missile defense will have a greater effect on nuclear stability than missile defense itself.

Missile Defense, Adversary Perceptions, and Nuclear Instability

Missile defense is neither inherently stabilizing nor destabilizing. Rather, the effect of missile defense on nuclear stability depends on how defensive capabilities factor into a country's broader strategy. If a country possesses a large arsenal of offensive weapons in addition to a well-developed missile defense architecture, it will encourage perceptions that the country wants to achieve decisive nuclear superiority and make itself immune from retaliation. Nuclear stability is further affected by the counter strategies countries adopt in response to missile defenses.

American missile defense capabilities are destabilizing because they are just one part of a broader suite of systems that the United States can use to destroy adversary nuclear forces in a possible first strike. By themselves, U.S. missile defenses are unable to offer meaningful protection. However, alongside the United States' sizable arsenal of highly accurate offensive conventional and nuclear strike capabilities, America's limited missile defenses look much more menacing.²¹ These offensive and defensive capabilities are part of an approach to nuclear strategy known as damage limitation. If the United States can limit—or potentially eliminate—the damage it would suffer in a nuclear war by destroying a substantial share of an adversary's nuclear forces and then use missile defense to intercept those that survive a first strike, then it will enjoy a dominant position vis-à-vis other nuclear powers.²²

The fear of one-sided nuclear vulnerability is an important driver of Chinese and Russian reactions to U.S. missile defense. Although U.S. defensive systems are currently ineffective and limited, Washington's push to expand their size and sophistication plays into the perception that it seeks nuclear superiority.²³ The perception that the United States wants to hold other nuclear-armed states at risk while insulating itself from damage is a far more important driver of Chinese and Russian threat perceptions than the shortcomings of current U.S. missile defense technology.²⁴ The United States argues that its missile defenses are incapable of protecting against the Chinese or Russian nuclear arsenals. But those arguments fall on deaf ears because they do not adequately account for either adversary's concern that future defenses might have that capability—in which case China or Russia would be in grave danger of a U.S. disarming first strike.²⁵

Nuclear stability is further damaged by the counter strategies that China and Russia are implementing to keep their nuclear arsenals viable in the face of improved U.S. missile defenses. Neither country seems interested in significantly increasing the size of its nuclear forces to raise the probability that enough warheads could both survive a disarming attack and overcome defensive systems.²⁶ Such a buildup

could spark an arms race with the United States, but it could also improve nuclear stability by making adversaries less worried about U.S. missile defenses and other damage-limitation capabilities.²⁷

Additionally, a larger nuclear arsenal reduces incentives for escalation within a conflict. For example, in a hypothetical war between China and the United States, Chinese ballistic missile bases would be a high-priority target given their ability to attack U.S. air and naval bases in the region.²⁸ However, some of China's bases house missiles that can carry either a nuclear or conventional payload. An American attack intended to destroy a conventional missile unit would run the risk of destroying a nuclear unit instead, which could in turn be interpreted as the start of a broader U.S. effort to eliminate China's nuclear forces.²⁹ The unintentional destruction of one nuclear missile unit would be less threatening, from Beijing's perspective, if the country built up its nuclear forces; a larger arsenal could absorb the loss and remain viable as a retaliatory force. Thus, having a larger arsenal would reduce pressure on Chinese leaders to respond to such an attack with nuclear weapons out of fear that any hesitation might lead to the loss of their entire nuclear deterrent.³⁰

While China and Russia have slightly increased the size of their nuclear arsenals in recent years, neither is really trying to build its way out of nuclear vulnerability. Instead they are taking two other steps to counter the expansion of both U.S. missile defense and, more broadly, damage-limitation capabilities. First, they are introducing new technology to improve the ability of their nuclear weapons to penetrate U.S. missile defenses. One such technology is the hypersonic glide vehicle (HGV), which approaches its target on a less predictable trajectory than a ballistic missile warhead and is therefore more difficult to successfully intercept.³¹ Both China and Russia are pursuing HGVs, and worries of falling behind in a new arms race have spurred U.S. efforts to develop both its own HGV systems and research new missile defenses to protect against adversary capabilities.³² Russian leader Vladimir Putin recently unveiled other examples of new nuclear capabilities designed to defeat U.S. missile defense, including a nuclear-powered cruise missile and nuclear-armed underwater unmanned vehicles.³³

Many of these counter-missile defense technologies are not fully developed, and some will likely fail to deliver their expected benefits. However, investments in these capabilities signal Russian and Chinese concerns about the strategic implications of U.S. missile defenses.³⁴ Both potential rivals are clearly worried about the ability of their nuclear forces to defeat U.S. defenses—despite current technical shortcomings of U.S. systems—and they are devoting considerable effort and resources to staying a step ahead.

The second step China and Russia are taking to counter U.S. missile defense expansion is to adopt military strategies aimed at reducing the U.S. military's situational awareness in order to quickly win limited, conventional conflicts in areas where the stakes are higher for them than for the United States. These strategies are not explicitly focused on making the United States more vulnerable to nuclear attack. Rather, they are meant to bring about a quick victory over local U.S. forces and present Washington with a fait accompli: either accept a small defeat or absorb considerably more pain to reverse it. Degrading U.S. situational awareness by destroying or disrupting systems such as land-based missile defense radars or early-warning satellites is a high priority for potential adversaries because the U.S. military depends heavily on such capabilities to fight modern wars.³⁵

These military strategies have dangerous implications for nuclear stability. Many of the capabilities essential for situational awareness—and likely near the top of Russian and Chinese target lists—are not exclusively used for conventional operations. In the words of James Acton of the Carnegie Endowment for International Peace: "[These capabilities] are typically dual use; that is, they enable both nuclear and nonnuclear operations. Second, they are increasingly vulnerable to nonnuclear attack—much more vulnerable, in fact, than most nuclear-weapon delivery systems."³⁶ For example, Chinese leaders have an incentive to destroy U.S. missile defense radar sites in East Asia because doing so would make China's

conventional offensive missile operations in a regional conflict more effective.³⁷ However, these radar sites also provide data to homeland missile defense interceptors that protect the United States from nuclear attack.³⁸ A similar problem exists in outer space. The same satellites that provide Washington with early warning of a nuclear attack are used to cue missile defenses against conventional ballistic missiles.³⁹ Reducing U.S. situational awareness would naturally fit into adversary conventional war plans, but such attacks increase the risk of inadvertent nuclear escalation by appearing to target U.S. nuclear command and control—even if that wasn't the object. Just as Chinese and Russian leaders could reasonably interpret attacks on their forces as a prelude to a wider assault on their entire strategic deterrent, so too might U.S. officials react to attacks on critical sensors as the first move in a broader nuclear attack.

America's current and planned missile defense architecture are bad for nuclear stability. The pursuit of bigger and better missile defenses stokes fears that the United States is uninterested in deterrence and instead seeks nuclear superiority. China and Russia are developing technologies and implementing military strategies in response to U.S. missile defense that make conflicts more prone to inadvertent nuclear escalation. Maintaining the current trajectory of missile defense expansion will only exacerbate these destabilizing effects, making future crises more dangerous at a time when U.S. relations with both potential adversaries seem likely to deteriorate for the foreseeable future.

Balancing Missile Defense and Nuclear Stability

Setting restraints on U.S. missile defense capabilities, especially systems that defend the continental United States, could help slow or even reverse the erosion of nuclear stability with other great powers. Moving away from homeland defense would allow the U.S. military to focus on developing and fielding systems optimized to counter shorter-range missiles. Such a change in missile defense policy would improve nuclear stability by reducing adversary "use or lose" pressure in crises while also making it harder for adversaries to initiate limited, regional conflicts.

Restraining homeland missile defense is a sensible policy shift for both technical and strategic reasons. America's only homeland defense system—the GMD—has the worst testing record of all currently deployed missile defense systems.⁴⁰ Current technical shortcomings can presumably be solved, but the effort to develop and deploy the various improvements will take a great deal of time and money—and there is no guarantee the new technology will live up to expectations.⁴¹ Expanding the GMD while pursuing new homeland defense capabilities will only deepen Russian and Chinese concerns that the United States is building up missile defense to make their own nuclear arsenals ineffective, which in turn will encourage them to make counter moves that increase the risk of nuclear war.⁴² Setting restraints on homeland missile defense should be a low-hanging fruit for U.S. policymakers.

A restrained posture could entail a range of options, from capping the capacity of existing systems to eliminating them entirely. While either caps or divestment would be strategically sound, caps are more politically expedient given current legislative and executive branch support for missile defense. Introducing a hard ceiling on the number of deployed GMD interceptors would be a good first step for limiting homeland missile defense. According to current plans, by 2023 64 GMD interceptors will be deployed across two sites, with most (60) in Fort Greely, Alaska.⁴³ Capping the number at 64 would provide a degree of protection against limited nuclear threats, such as North Korea. At the same time, a cap would increase the credibility of U.S. assurances that missile defense cannot reliably defend against more sophisticated arsenals and therefore does not undermine the credibility of China's or Russia's nuclear deterrent.

However, since China and Russia have not been swayed by U.S. promises to date, merely setting a cap would not be sufficient. Washington would also have to reclaim its position as a leader in arms control

to make the GMD cap more compelling. Using the GMD cap as a carrot to get other great powers to agree to similar limitations on their own missile defense systems, for example, or to launch negotiations on strategic transparency, would underscore Washington's commitment to nuclear stability even if its broader relationships with China and Russia deteriorate. The diplomatic and political opportunities created by an interceptor cap would be a much more valuable tool for reinforcing nuclear stability than the cap itself.

A more ambitious form of U.S. restraint would be a complete divestment from homeland missile defense. Divestment would entail dismantling all GMD interceptors, abandoning research and development on boost-phase defenses that engage enemy missiles as they begin flight, and forswearing interceptors in outer space. In this scenario, the various sensors that support homeland missile defense would be solely focused on other missions, such as providing early warning of nuclear attack or tracking objects in orbit.⁴⁴ Complete divestment from homeland missile defense would send a strong signal to other near-peer competitors that the United States does not wish to negate their nuclear arsenals.

Divestment from homeland missile defense would reinforce nuclear stability in two ways. First, if rival great powers have faith in the effectiveness of their second-strike nuclear forces, they will not face strong pressures to use their nuclear forces quickly for fear of being disarmed. Reducing this so-called use-or-lose incentive makes crises less prone to nuclear escalation. Second, taking the homeland missile defense mission away from U.S. early-warning satellites would help clarify the escalation risks of attacking these systems; the link between attacks on U.S. early-warning capabilities and the risk of a U.S. nuclear response would be much more direct. This clarity would increase the costs of Chinese or Russian offensive action in outer space, which is a more effective way to deter attacks than the current U.S. approach that entangles nuclear and nonnuclear systems in that domain.⁴⁵

Moving away from homeland defense does not mean that the United States would have to give up on missile defense entirely. In fact, without a homeland missile defense capability, regional missile defenses are far less dangerous for nuclear stability and could even bolster it. Regional missile defense already enjoys one benefit over its homeland defense counterpart: it works.⁴⁶ Systems that defend relatively small areas from shorter-range threats have much more successful testing records than the GMD, and some regional systems such as Patriot and Iron Dome (an Israeli system made with considerable U.S. support) have enjoyed some success in combat.⁴⁷ Shifting funding toward proven technology and away from the ineffective GMD and other dubious homeland missile defense systems would be a far more efficient use of defense dollars.

Strategically speaking, a more robust regional missile defense architecture can buttress nuclear stability by making it harder for great-power adversaries to win quick, conventional wars. American military bases and communication facilities would be high-priority targets of Russian and Chinese missile capabilities in the opening stages of a conflict. Current regional missile defense interceptors, coupled with emerging missile defense technologies like high-powered microwaves and solid-state lasers, could create densely layered protection for these fixed, ground-based targets.⁴⁸ Those capabilities would raise the costs and reduce the likelihood of rival great powers initiating *fait-accompli* military action against the United States. Meanwhile, the absence of U.S. homeland missile defense would reduce adversary fears of a rapid U.S. counter escalation that could destroy the adversary's nuclear forces.

An expansion of U.S. regional missile defense is conducive to nuclear stability only if the United States also moves away from homeland missile defense. Stronger regional missile defense raises the costs of initiating limited conflicts. If a great power decides to initiate a conflict anyway, regional missile defenses would help slow down the pace of the conflict and reduce the risk of inadvertent nuclear escalation. The lack of a U.S. homeland missile defense shield would also engender a more restrained U.S.

approach to a hypothetical conflict by raising the risks of military strikes against enemy nuclear forces. In other words, stronger regional missile defense coupled with weaker homeland missile defense should help prevent the most likely form of great-power conflict in the 21st century and help keep any conflict that does break out from escalating to a nuclear exchange.

Conclusion

Missile defense gets the United States into trouble, but it can't get us out. The steady expansion of the U.S. missile defense architecture has fostered destabilizing counter strategies by America's great-power rivals without providing systems capable of protecting the United States from the consequences. Forging ahead with missile defense expansion will only cost more money while further eroding nuclear stability at a time when U.S. relations with both Russia and China are deteriorating.

This approach is unsustainable and dangerous. To arrest these trends, Washington should divest itself of ineffective and destabilizing homeland missile defense systems and devote its effort and resources to improving regional missile defense systems that protect smaller areas. Such a shift will reassure rivals that America does not seek nuclear dominance over them while also making it more difficult for them to go on the offensive in the hope of winning quick conflicts. This approach is a more effective use of taxpayer money and has better implications for nuclear stability than continuing to expand all aspects of U.S. missile defense.

Eric Gomez is a policy analyst in defense and foreign policy studies at the Cato Institute.

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Nuclear Blackmail

The Threat from North Korea and Iran

Matthew Fuhrmann and Todd S. Sechser

Introduction

In October 2006, the Democratic People's Republic of Korea (DPRK) conducted its first successful test of a nuclear device. In U.S. foreign policy circles, the conversation about North Korea's nuclear program underwent a marked shift. Having focused for more than a decade on preventing North Korea from acquiring a nuclear arsenal, the policy debate began to center around the consequences of having failed to achieve that objective. Now that North Korea had crossed the nuclear threshold, how would it use its newfound capability?

This question has become even more pressing as North Korea's nuclear capabilities have grown. In September 2017, North Korea conducted its sixth and largest nuclear test, which it claimed to be a thermonuclear device. U.S. intelligence agencies have estimated that North Korea has enough fissile material for between 30 and 60 nuclear warheads.¹ As its nuclear capabilities have expanded, so too has North Korea's ability to deliver nuclear weapons to faraway targets. Under Kim Jong Un's leadership, North Korea has conducted more than 80 missile tests, including a test of a missile that could place the entire continental United States within the range of North Korean nuclear forces.²

What will North Korea try to do with its nuclear weapons? It is widely believed that at least one purpose of North Korea's nuclear arsenal is to deter an attack from the United States and protect the survival of the Kim regime. For their part, North Korean officials have long held that self-defense is the primary motivation for the country's nuclear program, asserting that "nuclear weapons will help DPRK avoid the fate of Iraq, Afghanistan, Libya, and Syria."³

But many observers believe that North Korea's objectives are much more ambitious. They argue that its aims are offensive, not defensive, and that it plans to use nuclear threats to fracture U.S. alliances with South Korea and Japan, to undermine the U.S. military presence in East Asia, and even to forcibly reunify the Korean peninsula under North Korean control.⁴ During his tenure as director of the Central Intelligence Agency, for example, current Secretary of State Mike Pompeo argued that North Korea's nuclear weapons were meant for "more than just regime preservation . . . coercive is perhaps the best way to think about how Kim Jong Un is prepared to potentially use these weapons."⁵ In this view, North Korea's nuclear arsenal gives it the ability to practice coercion and blackmail, not just deterrence.

Recent debates about Iran feature similar arguments. Iran does not possess nuclear weapons, but the growth of its uranium enrichment capability over the past decade fostered anxious speculation about how Iran might behave as a nuclear power. Would it simply seek to deter its adversaries or instead attempt to intimidate and blackmail them into making concessions? Many observers fear the latter. One Arab official reportedly put it this way: "What happens after Iran gets a nuclear bomb? The next day they will tell the king of Bahrain to hand over power to the opposition. They will tell Qatar to send the American Air Force home. And they will tell King Abdullah [of Saudi Arabia], 'This is how much oil you may pump and this is what the price of oil will now be.'"⁶ A former high-ranking official in the U.S. Department of Defense argued along similar lines: "A nuclear Iran would be disastrous for the countries of the region and for the United States. . . . The Islamic Republic could be emboldened to act even more

aggressively than it currently does in regional or global conflicts. . . . Iran would extraordinarily increase its coercive leverage.”⁷

These pessimistic projections reflect a broader view about the role nuclear weapons play in international relations. During the Cold War, most discussions about nuclear weapons in U.S. foreign policy revolved around deterrence. But protecting the United States and its allies is just one half of the equation. Nuclear weapons might also help countries commit aggression, not just prevent it. By threatening nuclear attack, nuclear-armed states might be able to pressure adversaries into giving up territory, changing their foreign policy, deposing a leader, or making other kinds of concessions. In other words, nuclear weapons might be useful instruments of *coercion*—for changing the status quo.

Scholars and policymakers often argue that nuclear weapons are effective weapons of coercion, not just deterrence. This “coercionist school” of nuclear politics holds that the threat of nuclear punishment can induce states not only to refrain from aggression, but also to make concessions they would not otherwise make. As political scientist Robert Pape has argued, “Even if the coercer’s nuclear resources are limited, the prospect of damage far worse than the most intense conventional assault will likely coerce all but the most resolute defenders.”⁸ The idea is simple: no state wants to suffer the terrifyingly destructive consequences of a nuclear attack. When confronted with a coercive demand backed by the threat of nuclear punishment, a leader has no choice but to back down, even if it means relinquishing something valuable.

The coercionist school has a long lineage in American foreign policy. At the very outset of the nuclear age, U.S. officials expressed optimism that the U.S. nuclear monopoly would allow it to bully the Soviets into accepting America’s vision for the postwar world: “After all, we’ve got [the atomic bomb] and they haven’t,” boasted Harry Truman’s secretary of state, James Byrnes.⁹ This belief has also underpinned fears about nuclear proliferation: in the 1960s, for example, U.S. officials worried that China’s imminent acquisition of nuclear weapons would aid its efforts to “eject the United States from Asia” through coercion and intimidation.¹⁰

The policy implications of this perspective are stark: if nuclear weapons are indeed useful tools of coercion, then nuclear proliferation is not merely a threat to international stability—it is a threat to America’s position in the world. North Korea might be emboldened to make “even greater demands and coercive nuclear threats”; and a nuclear Iran could become “the dominant regional power in the Middle East,” able to compel its adversaries to do its bidding.¹¹ Military action might be justified to avert these outcomes—as many have advocated.¹²

How well does the historical record support these views? Can new nuclear states more effectively impose their will on adversaries, either by threat or by force? In this chapter, we argue that the coercionist view suffers from several logical and historical errors. Coercive nuclear threats face a nearly insurmountable credibility problem that stems from the fundamental distinction between deterrence and “compellence.” A close look at the evidence supports this view, suggesting that worst-case fears about nuclear coercion from North Korea and Iran are not warranted.

Compellence and the Nuclear Credibility Gap

“The aggressor is always peace-loving,” wrote the Prussian military theorist Carl von Clausewitz. “He would prefer to take over our country unopposed.”¹³ Clausewitz’s insight reminds us that coercion is most successful when military force is not used at all: winning without a fight is the coercer’s ideal outcome.

Thomas Schelling coined the term “compellence” to describe threats aimed at changing the status quo.¹⁴ Compellent threats are distinct from deterrent threats, which aim to prevent an adversary from taking action. Demands to relinquish territory, to withdraw troops, to change national policies, or to

abdicate from power all fall under the umbrella of compellence. Is North Korea—or, perhaps someday, Iran—better positioned to make compellent threats because of its nuclear capability?

In our book *Nuclear Weapons and Coercive Diplomacy*, we evaluated the coercionist school's assertion that compellent threats are more effective when they are made by countries wielding nuclear weapons.¹⁵ We used a comprehensive database of more than 200 compellent threats to determine whether nuclear-armed coercers achieve their goals more often without resorting to war.¹⁶ The database contains well-known cases of attempted compellence (e.g., U.S. threats during the Cuban missile crisis), as well as more obscure episodes. Moreover, it contains threats made by both nuclear and nonnuclear coercers. By comparing their success rates, we sought to reveal the utility—or futility—of nuclear coercion.

The evidence suggests that nuclear weapons offer few advantages for coercers hoping to use threats to alter the status quo. Three patterns stand out. First, compellent threats are not more successful when they are made by nuclear powers: in the database of compellent threats, roughly 20 percent of threats from nuclear states succeeded, compared with 32 percent from nonnuclear states.¹⁷ Second, having nuclear superiority does not improve the effectiveness of compellent threats: indeed, every compellent threat issued by a nuclear-armed state was issued against a state that had either an inferior nuclear arsenal or none at all.¹⁸ Third, targeting adversaries that lack the ability to retaliate with nuclear weapons does not improve the odds of success: nuclear coercers compiled just a 16 percent success rate against nonnuclear adversaries, while other types of threats clocked in at 33 percent. This evidence is not encouraging for North Korean or Iranian officials who believe that nuclear weapons will give them a trump card to wield against recalcitrant neighbors.¹⁹

Why are nuclear weapons such poor tools of compellence? Answering this question requires understanding how compellence differs from its counterpart, deterrence. Deterrent threats are often credible because they aim to protect what a nation already owns. Not only are the stakes often very high in deterrence—rising even perhaps to the level of national survival—but the secondary political costs of using nuclear weapons for deterrence are minimal, since self-defense is widely seen as a legitimate justification for using extreme military measures. No mental gymnastics are needed to imagine, for example, that North Korea or a nuclear Iran would be willing to use nuclear weapons to repel an invader.

Compellent threats, however, are different. Because they aim to alter the status quo, compellent threats necessarily center around objects or issues that the coercer covets but does not possess—and may never have possessed. In other words, the coercer has already demonstrated that it can live without its demands being met, even if it would prefer not to. This fact might not be problematic if the costs of using nuclear weapons for compellence were minimal. However, they are not likely to be. Using nuclear threats—to say nothing of actual nuclear strikes—to extract concessions from an adversary would entail significant drawbacks for would-be coercers. A nuclear coercer could find itself isolated, targeted by crippling international sanctions, or even subject to attack by a coalition that feared becoming its next victim.²⁰ In short, states face higher costs and lower stakes when practicing nuclear coercion compared to nuclear deterrence. Both weaken the credibility of coercive nuclear threats.

This logic calls into question the intrinsic credibility of a coercive nuclear threat from North Korea or Iran. One could envision a scenario in which North Korea demanded that South Korea stop hosting U.S. troops, while making thinly veiled references to its nuclear arsenal to underscore the threat. Were Iran to acquire nuclear weapons in the future, perhaps it could demand something similar of its neighbors. Yet it would be difficult to believe these threats. Simply issuing them—much less carrying them out—would drive countries deeper into the arms of the United States, other regional powers, and one another. North Korea and Iran would find themselves more isolated and their adversaries more unified. Given that both countries have been able to live with U.S. troops nearby for decades, their avowal that they had

suddenly, precipitously reached a breaking point that made them willing to suffer dire costs to evict U.S. forces from their respective neighborhoods would be difficult to believe.

In nuclear confrontations, credibility is both essential and elusive. The historical record demonstrates that using nuclear weapons to deter aggression is easier than using them to engage in it. Even if North Korean or Iranian leaders are emboldened to try to overturn the status quo with coercive threats, nuclear weapons are unlikely to play a role in their success or failure.

Nuclear Shields and Territorial Aggression

The preceding discussion underscores the likelihood that explicit attempts at nuclear blackmail will fail. However, nuclear powers might be able to impose their will on other countries in a subtler way—one that does not involve verbal ultimatums. A revisionist state armed with nuclear weapons could seize a slice of disputed territory without warning and force its adversary to fight in order to reverse the aggressor's gains. Fighting would be risky, based on this line of thinking, because it could lead to nuclear escalation. Having nuclear weapons, then, might enable countries to engage in territorial aggression with greater ease.

Are nuclear arsenals akin to large shields that protect countries from retaliation following aggressive maneuvers? We examined the connection between nuclear arsenals and territorial aggression in *Nuclear Weapons and Coercive Diplomacy*. Using a database that contains information on 348 territorial disputes in the 20th century—including prominent cases like the Kashmir conflict between India and Pakistan—we studied the history of nuclear-backed aggression.²¹ Our approach was simple: we looked at whether nuclear powers behaved differently or experienced more favorable outcomes than their non-nuclear counterparts when relying on military force to settle territorial disputes. We found that they did not. In general, concerns about nuclear weapons facilitating territorial *faits accomplis* are overblown.

First, nuclear-armed countries and nonnuclear states initiate military challenges over territory at a similar rate. For both groups, fighting occurs in 6 percent of the relevant opportunities. Nuclear powers do sometimes use military force in an attempt to overturn the status quo. For example, the Soviet Union provoked a confrontation with the United States and its allies over the status of Berlin from 1958 to 1961. And Russia challenged Georgia militarily during a dispute over military basing rights in the 1990s. But nonnuclear states fight over territory with the same frequency, suggesting that nuclear weapons do not generate unique emboldening effects.

Second, nuclear weapons do not appear to embolden countries to engage in conventional escalation during ongoing military conflicts. The nuclear coercionist school implies that countries will push harder during confrontations when they have a nuclear advantage, but history tells a different story. In our database, nuclear-armed challengers escalated disputes in just 4 of their 21 opportunities to do so. Those four episodes all occurred in the context of a single case: China's border dispute with Vietnam. Non-nuclear challengers actually escalated at a slightly higher rate (24 percent compared to 19 percent).

Third, nuclear powers rarely succeed when they use military force in an attempt to redraw the map. We examined the outcomes of all cases in our database in which nuclear-armed challengers instigated military disputes. There were 23 such episodes of conflict across 7 territorial disputes. Our analysis reveals that 70 percent of the time, military force failed to produce major territorial gains for the nuclear power. Proponents of the "nuclear shield" argument often point to Pakistan as a case that illustrates the utility of nuclear weapons for territorial aggression.²² Pakistan has indeed instigated military challenges in the context of the Kashmir dispute, but it has little to show for its efforts. Islamabad's 1999 gambit to surreptitiously seize land in the mountainous Kargil region of Kashmir, for instance, did not result in any territorial gains.

These findings carry lessons for contemporary policy debates. U.S. officials on both sides of the aisle worry that Iran would use nuclear weapons as a shield for aggression if it were to obtain an arsenal.

For example, Colin Kahl, who served as deputy assistant to the U.S. president and national security advisor to the vice president from 2014 to 2017, wrote that if Iran had nuclear weapons, “Tehran would likely dial up its trouble-making and capitalize on its deterrent to limit the response options available to threatened states.”²³ Robert Danin, a scholar at the Council on Foreign Relations, expressed similar fears, arguing that “Iran’s nuclear capability could lead it to use its conventional military forces more aggressively.”²⁴ These concerns have some merit. However, the possibility of Iran engaging in nuclear-backed aggression is less threatening than it might initially appear.

The “nuclear shield” argument assumes that getting nuclear weapons emboldens states to do things that they otherwise would not. However, nuclear and nonnuclear states tend to behave similarly, at least in the case of territorial aggression. Proponents of the view that nuclear weapons embolden aggression often point to actions Iran might take if it gets a nuclear bomb—for example, supporting Shiite extremist groups such as Hezbollah or threatening to escalate territorial disputes with neighboring countries.²⁵ But Tehran is already doing these things as a nonnuclear state. It is far from obvious that getting nuclear weapons would lead to an overall increase in Iranian aggression, as opposed to continuation of its present policies.

This brings us to the question of effectiveness. Could Iran alter the status quo in its favor through nuclear-backed *faits accomplis*? Our analysis suggests that it could not. Other revisionist leaders have had little luck using threats of nuclear retaliation to swipe territory or other valuable objects from their adversaries. It is hard to see why Iran would fare better.

The Soviet experience offers a valuable illustration. In 1962, Nikita Khrushchev introduced nuclear missiles in Cuba. He intended to present the United States with a *fait accompli*. As Khrushchev instructed the Presidium: “Carry this out secretly. Then declare it.”²⁶ Once these capabilities were revealed, the United States would face a stark choice: accept the new status quo or use military force to reverse it. Khrushchev seemingly believed that his nuclear arsenal would compel Washington to choose the former course. Unfortunately for Khrushchev, his operation did not go according to plan. His actions triggered the Cuban Missile Crisis, which brought the two superpowers to the brink of nuclear war. Khrushchev ultimately caved to the U.S. demand to remove the missiles from the island.²⁷ These events underscore the point that nuclear-backed aggression can be exceedingly dangerous and does not ultimately benefit those who attempt it.

Timing matters when it comes to nuclear-backed aggression. A 2009 study by the political scientist Michael Horowitz shows that nuclear powers behave more aggressively than nonnuclear states—but only in the first few years after they acquire an arsenal.²⁸ A nuclear-armed Iran might well follow this pattern. Tehran might attempt to employ its arsenal as a shield shortly after becoming a nuclear power. For example, it might fuel Hezbollah-backed attacks against Israel or escalate its involvement in the Syrian civil war. Over time, though, Iran is likely to learn a valuable lesson: nuclear-backed *faits accomplis* do not pay off. The United States could facilitate the learning process by frustrating Tehran’s initial attempts to gain ground via nuclear shield-backed aggression—if it were to attempt such ploys.

Nuclear Coercion and Preventive War

The preceding analysis carries implications for U.S. nonproliferation policy. It may help officials better understand the options that they should (or should not) pursue to counter the international spread of nuclear weapons.

One option in the nonproliferation toolkit is preventive strikes against an adversary’s nuclear facilities. The goal of this policy is to eliminate critical infrastructure, thereby eroding a state’s capacity to make bombs. This option has a rich history. Countries have seriously considered attacking enemies’ nuclear plants no fewer than 18 times.²⁹ Some of these cases resulted in actual preventive strikes. Israel,

for instance, carried out two prominent attacks in the name of nonproliferation—one against Iraq in 1981 and another that targeted Syria in 2007. Preventive strikes are a potential option for dealing with the nuclear challenges posed by Iran and North Korea today. There are signs that President Donald Trump once favored (and may still desire) such an approach.

President Trump withdrew from the nonproliferation agreement with Iran known as the Joint Comprehensive Plan of Action on May 8, 2018. This move led to speculation about the possible use of military force against Tehran. John Bolton, Trump's current national security advisor, has been a vocal proponent of this option. His 2015 op-ed in the *New York Times* had the title "To Stop Iran's Bomb, Bomb Iran."³⁰ Trump himself has hinted at the possibility of attacking Iran. He threatened Iranian president Hassan Rohani in a July 22, 2018, tweet: "NEVER, EVER THREATEN THE UNITED STATES AGAIN OR YOU WILL SUFFER CONSEQUENCES THE LIKES OF WHICH FEW THROUGHOUT HISTORY HAVE EVER SUFFERED BEFORE."³¹

Trump has similarly raised the prospect of war with North Korea. In August 2017, he threatened to unleash "fire and fury like the world has never seen" against Pyongyang.³² Ten months later, he met with North Korean leader Kim Jong Un in Singapore during a historic summit. The two leaders released a statement shortly after their meeting in which Pyongyang pledged to "work toward complete denuclearization of the Korean peninsula."³³ Yet many people doubt that North Korea will give up its nuclear weapons. After all, the Singapore declaration represents a vague, open-ended commitment—not an ironclad promise to unilaterally disarm, as some people interpret it. Trump is reportedly frustrated by North Korea's lack of progress on disarmament.³⁴ The prospect of military force looms in the background if North Korea continues to dig in its heels.

Advocates of preventive strikes often accept the nuclear coercionist take on blackmail. A nuclear-armed Iran or North Korea, they argue, can bully the world into submission. In an article titled "The Case for Bombing Iran," one observer argued that an Iranian nuclear capability would allow it to "dominate the greater Middle East, and thereby to control the oilfields of the region and the flow of oil out of it through the Persian Gulf," simply through the use of "intimidation and blackmail."³⁵ The only way to avoid being victimized by Iran, advocates of preventive war argue, is to attack its nuclear facilities before it's too late.

If nuclear weapons enable aggression and victimization—not merely self-defense—preventive strikes against nuclear programs may be warranted in some situations. Our analysis shows, however, that they generally do not. This finding substantially weakens the argument in favor of military strikes against Iran or North Korea.³⁶ There are, in fact, many undesirable effects associated with nuclear proliferation. For instance, the further spread of nuclear weapons increases the risk that nuclear weapons will be used because of accidents or miscalculation. But worst-case thinking about contemporary proliferators is badly misguided and potentially dangerous.

Conclusion

The fear of nuclear blackmail permeates international politics. World leaders worry that their adversaries will bully them into submission by dangling nuclear threats. They also fear that a nuclear-armed rival could use its arsenal to commit aggression with greater ease. Both of these concerns are largely unfounded. Nuclear weapons have great utility in some situations—particularly in defending the homeland against invasions. But they are poorly suited for changing the status quo. Coercive nuclear threats lack credibility because they would be too costly for the coercer to implement in most situations. There is little evidence that nuclear powers are systematically more aggressive than their nonnuclear counterparts. When nuclear-armed countries have attempted daring land grabs or other *faits accomplis*, they have often failed.

Nuclear proliferation is by no means desirable for the United States. Officials in Washington would do well to consider the coercive limitations of nuclear weapons when crafting U.S. nonproliferation policies. In many circumstances, when attempting to influence the behavior of nascent nuclear-weapons states or the decisionmaking of states that are contemplating joining the nuclear club, it may be wiser to reach for diplomatic and economic tools than military ones.

Matthew Fuhrmann is a professor of political science at Texas A&M University. Todd S. Sechser is the Pamela Feinour Edmonds and Franklin S. Edmonds Jr. Discovery Professor of Politics at the University of Virginia and a senior fellow at the Miller Center of Public Affairs.

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- ⁸ Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996), p. 38. Other examples of the coercionist school include Kyle Beardsley and Victor Asal, "Winning with the Bomb," *Journal of Conflict Resolution* 53, no. 2 (2009): 278–301; John Merrill and Ilan Peleg, "Nuclear Compellence: The Political Use of the Bomb," *Crossroads* 11 (1984): 19–39; and Bradley A. Thayer and Thomas M. Skypek, "Reaffirming the Utility of Nuclear Weapons," *Parameters* 42, no. 4 (2013): 41–45.
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 - ¹⁴ See Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), pp. 69–91.
 - ¹⁵ Todd S. Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (Cambridge: Cambridge University Press, 2017).
 - ¹⁶ Todd S. Sechser, "Militarized Compellent Threats, 1918–2001," *Conflict Management and Peace Science* 28, no. 4 (2011): 377–401.
 - ¹⁷ Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, pp. 84–85. The overall result remains similar if we loosen the definition of a successful compellent threat; see Todd S. Sechser and Matthew Fuhrmann, "The Madman and the Bomb: Nuclear Blackmail in the Trump Era," *Virginia Policy Review* 10, no. 2 (2017): 81–87.
 - ¹⁸ For a separate article, we repeated these tests using several different definitions of nuclear "superiority," but the findings were the same. See Todd S. Sechser and Matthew Fuhrmann, "Crisis Bargaining and Nuclear Blackmail," *International Organization* 67, no. 1 (2013): 173–95.
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 - ²⁰ We elaborate on these and other potential costs in Sechser and Fuhrmann, *Nuclear Weapons and Coercive Diplomacy*, pp. 48–50.
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 - ²⁷ The United States promised not to invade Cuba in exchange for the removal of the Soviet missiles. In addition, Khrushchev privately obtained a second concession from the United States—namely, the agreement to withdraw nuclear missiles from Turkey.
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- ³⁵ Norman Podhoretz, "The Case for Bombing Iran," *Commentary*, June 1, 2007, <https://www.commentarymagazine.com/articles/the-case-for-bombing-iran/>.
- ³⁶ For further details on the challenges the United States would face in using preventive war threats to limit or roll back nuclear programs in Iran and North Korea, see Matthew Fuhrmann, "When Preventive War Threats Work for Nuclear Nonproliferation," *Washington Quarterly* 41, no. 3 (2018): 111–35.

