


June 2022

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Recommended Citation

Bronder, T. Justin (2022) "Future Directions for Great Power Nuclear Arms Control," *Space and Defense*: Vol. 13: No. 0, Article 4.

DOI: 10.32873/uno.dc.sd.13.01.1062

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Future Directions for Great Power Nuclear Arms Control

T. Justin Bronder

Extending the current New START regime can help maintain traditional strategic stability; however, such an approach fails to address destabilizing trends related to non-nuclear strategic technologies and China's expanding forces.

Introduction

Arms control in the nuclear age has proved a useful tool of national security, meeting ends as diverse as reducing the risks of nuclear war to channeling strategic competition.[1] Yet recent trends indicate arms control may be at an inflection point; the suitability of this tool in general and the viability of securing new agreements specifically are both unclear.[2] The New Strategic Arms reduction Treaty (New START) extension somewhat reverses the trend that has seen the collapse the Antiballistic Missile (ABM) Treaty and Intermediate-Range Nuclear Forces (INF) agreement. However, the pathway to a future ratified treaty is uncertain due to continued mistrust between Washington and Moscow, punctuated most notably by Russia's recent invasion of Ukraine.[3] Domestically, the politically polarized environment in the United States presents additional internal challenges to arms control.[4] Looking beyond the two nuclear superpowers, uncertainty regarding China's nuclear modernization and expansion is also challenging how U.S. leaders consider both regional and strategic stability.[5] Meanwhile, continued development of non-nuclear strategic technologies such as hypersonics and increased military competition in domains like space and cyberspace further complicate long-held views on deterrence, stability, and arms control.[6]

The unique challenges of today's dynamic security environment have prompted many expert recommendations regarding future directions for nuclear weapons policy and arms control.[7] Other works dive deeper still, providing additional qualitative or quantitative considerations to frame key questions of arms control, deterrence, and stability.[8] This study leverages these expert opinions to provide a new type of focused analysis, synthesizing and methodically comparing plausible arms control courses of action and their impacts through the decade following the end of New START, 2026 – 2036. Based on a thorough review of current literature, four distinct arms control categories, or “approaches” are proposed:

- Approach 1 “Bilateral strategic arms limitations” – maintaining bilateral U.S.-Russian strategic arms limitations at similar New START levels.
- Approach 2 “Long-term multilateral reductions” – pursuing major long-term nuclear warhead reductions in a legally binding multilateral framework.
- Approach 3 “Bilateral non-ratified frameworks” – a set of bilateral U.S.-Russia and

U.S.-China agreements based on non-ratified understandings covering a range of nuclear and non-nuclear topics.

·Approach 4 “Pursue nuclear superiority” – abandoning arms control to pursue U.S. nuclear superiority.

This study also introduces a new methodology to analyze potential impacts from these approaches, comparing their influence on U.S. national interests across six qualitative criteria: Strategic Stability, Extended Deterrence, Proliferation, Cost, Competitive Advantage, and Political Feasibility. The result is a framework that more fully investigates the interplay of both traditional and new aspects of nuclear competition and arms control. This theoretical comparison indicates that each approach produces mixed outcomes for the United States and its allies across the analytical criteria. However, these conclusions also outline important considerations within each regime that can be used to combine the benefits of each approach for a more comprehensive nuclear policy structure in a post-New START world.

Background

Historically, arms control has served goals such as managing proliferation of specific weapons, promoting general stability, and strengthening norms or institutions.[9] In the nuclear era these objectives were further shaped by the classical philosophies of Thomas Schelling, Morton Halperin, Bernard Brodie, and others to form arms control methodologies aimed at making nuclear war less likely or, should it occur, less costly.[10] This classical thinking, combined with additional political and conceptual breakthroughs, ensured arms control became a critical tool in managing U.S.-Soviet nuclear competition and nuclear risks.[11] The most significant agreements from this initial Cold War Era, such as the bilateral Strategic Arms Limitations Talks (SALT I) and ABM (both signed in 1972), or multilateral Limited Test Ban Treaty (signed in 1963) and Nuclear Non-Proliferation Treaty (NPT, signed in 1968), promoted strategic stability and risk mitigation.[12] These treaty-based efforts to manage nuclear risks were complimented by confidence building measures like the “hotline” between Washington and Moscow and long-running efforts to progressively limit explosive nuclear testing. That formal agreements such as ABM and SALT were reached with support through multiple U.S. presidential administrations testifies to the pervasiveness of classical thinking on nuclear arms control.[13] The long road to ratification for these agreements also helped solidify critical theories on deterrence and mutual vulnerability.

These trends underpinned a later “golden age” of nuclear arms control that helped precipitate the end of the Cold War and then facilitated non-proliferation and arms reductions in the years that followed.[14] The notable binding regimes from this era like the INF Treaty were supplemented by unilateral Presidential Nuclear Initiatives (PNIs) in the 1990s and the Strategic Offensive Reductions Treaty (SORT) in 2002,

both of which highlighted other avenues to enact arms-limiting agreements and illustrated the potential of mutual restraint under the right strategic conditions.[15] New START very much leveraged these classic foundations, and until 2026, the treaty will limit U.S. and Russian forces to a maximum of 700 deployed launchers (i.e., missiles and bombers with an overall cap including non-deployed systems at 800) and 1,550 deployed nuclear warheads.[16]

The continued maintenance of New START supports the notion that concepts of stability, deterrence, and mutual vulnerability developed during the Cold War still have salience. Yet even in this case, both parties to New START have a list of issues – like the lack of constraints on Russia’s “non-strategic” nuclear weapons (NSNW) or U.S. European-based Ballistic Missile Defense (BMD) systems, to name two – that are seen as critical shortcomings in the treaty. The current era of great power competition, China’s potential race to nuclear parity, and the continued pace of technological development present additional challenges to this legacy bilateral framework. Despite these complicating factors, the history of nuclear arms control reiterates the important links between arms control and other aspects of national security. However, interconnected topics of deterrence, stability, alliance cohesion, and defense budgets present a rich parameter space that is often not fully explored within the many proposed options for arms control. This study attempts to fill this gap, presenting an analytical framework that can be used to elucidate the costs and benefits of various arms control approaches in a more qualitative and coherent manner.

Methodology

This study focuses on some of the most important factors for nuclear weapons policy and arms control – Strategic Stability, Extended Deterrence, Proliferation, Cost and Competitive Advantage. In addition to their import to nuclear strategy, these topics lend themselves to a comparative analytical framework as they are characterized by a fairly common understanding or “baseline” in the current strategic context. This “baseline,” understood from the point of view of the United States, provides a useful benchmark for evaluating relative changes from today’s situation or “status quo.” Note that this “baseline” is assumed from the period prior to Russia’s attack against Ukraine; the full implications of this significant military escalation and global response are impossible to quantify in the few days of military action as this paper was undergoing revision. Relative changes, from the U.S. perspective and according to each criterion, can be qualitatively assessed and assigned a “rating” of either positive, negative, or neutral based on this approach. As an analytical exercise, there are likely results where strong cases can be made for multiple ratings; in such cases a “mixed” rating of the most likely results will be used. A final category of Political Feasibility is also considered to capture the likelihood of each approach. For clarity, the following definitions for each category

are used:

·Strategic stability is comprised of both “first strike stability” and “arms race stability.” The widely accepted definition of “first strike stability” is essentially the absence of an incentive to initiate a nuclear strike, while “arms race stability” refers to the absence of an arms race to pursue or maintain such a capability.[17] To support a qualitative estimate of this criterion, projected strategic force structures for the United States, Russia and China that could result from each proposed arms control approach are presented, based on publicly available reporting.[18] As a baseline, rough ratios along the lines of the current 2022 status quo are assumed to be neutral while any relative changes that threaten first strike or arms race stability will be considered negative; differences that potentially improve stability will result in a positive rating.

·Extended Deterrence lacks an overarching definition due to the different regional factors affecting allies under the U.S. “nuclear umbrella.”[19] This study will consider relative impacts to U.S. extended deterrence security guarantees for key relationships in Europe and East Asia. These guarantees are generally grounded in the capability and credibility of the United States to deter a nuclear or other large-scale attack on these allies.[20] Similar to the strategic stability estimate described above, the overall ratios of strategic forces and nuclear force margins over U.S. competitors will be reviewed in a more regional context to help qualitatively frame the credibility underpinning this extended deterrence criterion. Increased ambiguity or decreased commitment that could potentially stem from an arms control approach would lead to a negative assessment, for example. These negative impacts in themselves could result from force posture changes, specifically those that reduce U.S. margin against its nuclear competitors. Regional stability must also be considered, given that conflict and escalation could challenge the credibility of U.S. extended deterrence guarantees.

·Proliferation is another diverse topic that can be qualified by determining whether an arms control regime would increase or decrease proliferation pressures for existing programs (declared states such as India and Pakistan as well as rogue regimes in North Korea and Iran) or prompt the emergence of new nuclear aspirants.[21] Another important factor is the strength of the current NPT regime, particularly the influence of U.S. and Russian commitments to NPT Article VI responsibilities.

·Costs for implementing each approach will be evaluated according to impacts to U.S. budgets. This assessment will be made quantitatively by estimating the potential deviations from the most recent projected budgets as a baseline.[22] Any changes within approximately $\pm 15\%$ will be considered neutral while higher and lower excursions will be negative and positive, respectively. This 15% threshold corresponds to the definition of a “significant” breach in an individual program’s

cost over its current baseline, per Nunn-McCurdy Act Congressional reporting requirements for major defense programs.

·Competitive Advantage considers the degree to which the theoretical arms control outcomes enable a U.S. military advantage over great power competitors and how the various approaches potentially affect the direction and velocity of that competition. This criterion will take a broader view than just strategic stability, considering non-nuclear strategic impacts and other facets of great power arms racing or geopolitical tensions. Using today's global geopolitical situation between great powers, a decreased U.S. advantage in any significant area of military competition, or increased points of contention between great powers, could lead to a negative assessment assuming the United States has steady or limited resources to apply to competition in these areas. Implications from the cost analysis will also be included, assuming reduced costs for nuclear forces could provide additional resources to better compete in non-nuclear strategic areas and vice-versa.

·Political feasibility roughly estimates the likelihood the proposed arms control regime could be enacted by all parties. Specific considerations that could improve this likelihood are discussed when defining each approach, but the final "rating" within this criterion is intended to capture how likely such steps are to achieve the proposed arms deal.

Approaches

Contemporary arms control literature is rich with proposed frameworks and conditions for new U.S.-Russian bilateral arms control regimes,[23] ideas on how to incorporate America's other great power competitor in China,[24] and recommendations for ways forward without an arms control agreement at all.[25] The main themes from these disparate recommended frameworks and treaty conditions can be separated into four strategic approaches for arms control in a post-New START world – maintaining bilateral U.S.-Russian strategic arms limitations at similar levels to today; pursuing major long-term nuclear warhead reductions in a legally binding multilateral framework; a set of bilateral U.S.-Russia and U.S.-China agreements based on non-ratified agreements covering nuclear and non-nuclear topics; and abandoning arms control to pursue U.S. nuclear superiority.

There are many ways these approaches or their specific conditions could potentially overlap in a future treaty, but to facilitate more distinct analysis, each of these arms control regimes is analyzed as a separate, stand-alone agreement for this study. The following paragraphs summarize these approaches, briefly outlining the overall strategy, assumptions, and conditions for each. As this study was in final review prior to Russia's invasion of Ukraine, the basic assumptions and conditions for each hypothetical treaty framework track the geopolitical situation in the months and years prior to February 2022, but some additional considerations and notes based

on this dramatic turn in global affairs are listed where appropriate. A more complete list of potential conditions for each approach and additional references can be found in a separate publication on this same subject.[26]

·Approach 1 “Bilateral strategic arms limitations”– This approach prioritizes U.S.-Russian bilateral strategic stability in a framework like New START. Leveraging this existing framework presumably maximizes the probability of legal ratification. The New START follow-on does not reduce forces but achieves a freeze on current active stockpiles with an updated verification and monitoring regime.[27] Some tradeoffs on non-strategic issues are made to meet priority issues for both sides. For example, Russian BMD concerns could be met through transparency steps to confirm the purely defensive nature of these systems, in addition to other data sharing and confidence-building measures.[28] To meet U.S. concerns on NSNWs, Russia agrees to some mix of transparency measures, inspections, or portal monitoring.[29] By definition, force postures would remain at similar limits to today, with minor deviations based on the retirement of legacy systems and initial fielding of new ones.[30] Under this approach, China is assumed to continue along its recent, and apparently accelerating, nuclear armament growth, noting significant error bars on the size of the forces actually fielded.[31]

·Approach 2 “Long-term multilateral reductions”– This approach describes a long-term effort aimed at achieving major reductions in the number and role of nuclear weapons. This process would unfold over two major steps or milestones. Step 1 (sometime over 2026-2031) would see the implementation of a similar New START replacement as Approach 1 that includes further reductions (down to 1,000 deployed strategic warheads and 600 launchers) as well as an active stockpile warhead freeze.[32] Step 2 (enacted in 2031-2036) would follow with a U.S.-Russian agreement for additional reductions down to a limit of 500 deployed warheads with 500 launchers.[33] These major cuts are assumed to foster an expanded effort with P5 nations for a multilateral binding agreement. Presumably, China would continue the trajectory discussed under Approach 1 regarding total stockpile size but would accept similar limits to Russia and the United States for fielded systems with attendant verification measures. The focus for Approach 2 is on strategic nuclear weapons but would likely include steps to limit INF-range systems. Strategic non-nuclear technologies are not explicitly addressed to facilitate a more distinct comparison with Approach 3. A breakthrough in international relations and significant reduction in global tensions would realistically be required to precipitate such a treaty, but the proposed two-step process could help stimulate such an environment for nuclear weapons.

·Approach 3 “Bilateral non-ratified frameworks”– This approach would side-step procedural ratification issues to pursue a more flexible framework built upon bilateral U.S. political agreements with Russia and China. Such an approach would

concede some of the transparency and predictability provided by legally binding regimes but would also allow for greater U.S. freedom of action while possibly opening the aperture of cooperation with Russia and China, individually. The primary goals would be to reduce major risks through political agreements and new communication channels, providing mutual transparency on priority nuclear and NC3 topics and reinforcing agreed-upon norms in space and cyberspace. This framework could enable more transparent management of future arms racing for nuclear weapons and developing technologies by reducing ambiguity between great powers in these areas. A major assumption is that both the United States and Russia would exercise mutual restraint to remain near New START levels for deployed strategic forces. Such restraint could be motivated by strategic risk reduction considerations, NPT commitments, cost savings, or some combination of all three. Inspections and verification measures in this case would be limited, but this shortcoming could be reinforced through data exchanges, pre-notification standards, or other technological means to emulate inspections remotely.[34] Force structures would presumably remain near levels illustrated under Approach 1 for all parties.

·Approach 4 “Pursue nuclear superiority”– Under this approach, the United States would pursue the proposed benefits of strategic nuclear superiority with a more robust force structure. A benchmark for such an approach could be to achieve credible counterforce targeting against combined threats from Russia, China, and North Korea; the number of estimated deployed warheads to meet this goal at present would be about 2,300.[35] The budget impacts of such an approach would vary widely depending on the scope of increased forces and weapons programs. In the competitive environment created by this approach, potentially significant increases in non-nuclear forces, missile defense, and space-based programs would also be possible. Strategic nuclear force posture changes would be constrained in the near term due to budget and planning limitations, but the United States and Russia could increase daily deployed forces after 2026 by maximizing currently available warheads and launchers. Current triad modernization plans would continue, augmented by maximizing available ICBM silos and warhead loads on ICBMs and SLBMs. Washington would also pursue other qualitative advantages in submarine- and ground-launched cruise missiles, and hypersonics. The United States is assumed to also field expanded missile defense capabilities, including additional Ground Based Interceptor (GBI) silos at Ft. Greely, a new continental U.S. BMD site located somewhere like Ft. Drum, and additional Theater High Altitude Area Defense (THAAD) deployments. China forces are assumed to include a mix of strategic and non-strategic weapons up to the maximum “accelerating pace” described in the latest Department of Defense reporting along with a day-to-day force posture that maximizes a larger number of available warheads and platforms at the upper end of the estimates in Approach 1. The result is roughly 700 deliverable warheads for

China (under the New START-like counting rules) sometime after 2027.[36]

Analysis and Results

The results from applying this analytical framework are briefly summarized below for each approach.

Approach 1 “Bilateral strategic arms limitations”

This approach presents one of the more politically feasible paths and maintains strategic stability with Russia as currently understood, assuming a continuation or return to strategic dialogues, regardless of how the Russian attack against Ukraine concludes. As designed, it would thus have a potentially positive impact on Strategic Stability. However, continued adherence to a New START-like paradigm fails to address other important trends related to non-nuclear strategic technologies, multi-domain escalation, and China’s expanding and modernizing arsenal. These shortcomings result in mixed results for Extended Deterrence with a likely negative, or, a best-case neutral, rating. This rating encompasses the likelihood that positive impacts from additional measures on Russian nuclear forces would be undermined from unaddressed escalation pathways in other domains in Europe. There would also be negative impacts from the lack of risk reduction measures – outside of direct competition – with China thus possibly undermining U.S. extended security guarantees to allies in East Asia. This negative outlook is further substantiated by the accelerating pace of China’s nuclear modernization and force posture increases as presented in official U.S. estimates. These factors – unchecked competition and ambiguity in key non-nuclear domains along with a new third competitor in China racing to parity – similarly could negatively impact U.S. competitive advantage. Proliferation issues would remain in a similar state as today, with China’s larger forces potentially prompting build-ups from India and then (in response) Pakistan. This Approach would continue to field a modernized U.S. triad under the currently budgeted programs, resulting in no projected cost impacts.

Approach 2 “Long-term multilateral reductions”

On the surface, Approach 2 is not feasible without a major breakthrough in international relations, the likelihood of which is particularly low, given Russia’s recent military escalation against Ukraine. However, the proposed two-step process provides one potential pathway that could unfold over several years. Without assuming the appearance of the more benign security environment required to make this approach a reality, however, the resulting arms control outcomes would result in cross-cutting pressures with potentially negative changes across evaluated criteria. On the surface, the major cuts would lock in a similar, relative level of strategic nuclear parity not unlike New START; along with the attendant inspection regime, this would lead to at least neutral Strategic Stability changes. Considering that U.S.

Strategic Command has consistently referenced the importance of a built-in “margin” over both competitors at New START levels, though, these vast reductions in U.S. nuclear forces could conversely negatively impact this criterion.[37] These reduced margins could also leave Russia or the United States even more vulnerable to a decapitating first strike, especially considering trends in BMD, conventional prompt-strike capabilities, and hypersonics, adding additional risks to the level of Strategic Stability witnessed today. These effects could hypothetically undermine allied assurance in U.S. Extended Deterrence, leading to negative lower bounds in these categories. This multilateral treaty regime would strengthen NPT commitments and possibly improve global Proliferation compared to today, but such improvements would be undermined by additional pressures stemming from reduced Extended Deterrence that could prompt latent powers to proliferate and pursue their own deterrent. For Proliferation, then, these cross-cutting outcomes lead to a neutral analysis result. The focus on nuclear arsenals may not adequately address new technologies in a way that positively affects U.S. Competitive Advantage, registering a neutral impact in that category as well. Conversely, the cost savings could provide additional resources to shore up competition in other arenas, prompting a partial positive rating.

Turning more attention to the cost impacts from Approach 2, the Congressional Budget Office (CBO) estimates that ICBM fleet reductions would save roughly \$500M annually in the mid-2020s, growing to \$4.4B later in the decade (even without reducing planned GBSB purchases at that time).[38] Around this same time, Washington could also cancel the last two planned Columbia SSBN purchases, saving an additional \$21B, spread over several years.[39] In the second phase of this approach (after 2031), these savings would increase as ICBMs continue to be retired and savings from operating and sustaining a smaller triad are realized. CBO predictions of annual costs – reported according to operations, sustainment, and modernization – can be scaled by these reductions to reveal additional savings, approximately \$800M annually for SSBNs and \$1.1B annually for ICBMs.[40] By that point, the GBSB purchases would also be curtailed; applying the average unit costs of \$53M per missile against a decrease of roughly 450 planned purchases saves another \$23.8B over the early 2030s.[41]

The CBO estimated total nuclear budget over the two phases considered in this study is approximately \$240B (2026-2031) and \$254B (2031-2036). Combining all the savings outlined above, the total over the entire 10-year period is roughly \$80B, or just over 16% of the \$494B total. Although these rough estimates indicate a positive cost impact for Approach 2, Washington could instead be forced to dramatically increase spending on conventional forces to make up for any instability resulting from nuclear force reductions. The budget impacts in this regard are difficult to estimate but could offset any cost savings for a lower bound neutral rating.

Approach 3 “Bilateral non-ratified frameworks”

This approach would side-step some of the political obstacles to a fully ratified treaty. Transparency would support mutual restraint on strategic nuclear forces while also expanding dialogues on non-nuclear technologies. This improved communication could address significant issues that are not typically covered under more orthodox strategic stability frameworks. Risks abound without the backing of a legally binding regime, but these could be somewhat offset by the flexibility U.S. leaders would enjoy to respond, in terms of new weapons systems and force postures, to address new threat developments from Russia or China.

The flexibility in Approach 3 is also intended to finally bring China into bilateral discussions with the United States, further reducing tensions that could otherwise affect both regional and strategic stability. Given that the United States has never had to concurrently deter two near-peer nuclear rivals, any sort of opening to build discussion channels or actual arms control agreements with China could prove to be positive developments for Strategic Stability, Extended Deterrence, and possibly Competitive Advantage. Overall, the impacts from Approach 3 are more ambiguous to estimate through more traditional strategic stability considerations as used in this paper, but the continued dialogues with Russia, expanded relations with China, and flexibility to respond to any major changes in the strategic landscape imply this approach would do no worse than maintaining today’s status quo for a neutral rating while offering benefits that could prove positive as well. These ratings are noted with a relative “asterisk” to acknowledge the assumptions regarding mutual U.S.-Russian restraint around New START levels, which though plausible, go beyond specific assumptions from the other approaches. Cost impacts could vary, but would be unlikely to lead to any major cost savings while increased demand for intelligence assets to make up for less stringent verification regimes would negatively impact both defense and intelligence budgets.

Approach 4 “Pursue nuclear superiority”

If geopolitical tensions deteriorate and obstacles to a ratified treaty remain, the augmented strategic competition as described in Approach 4 could become politically feasible. However, there would still be strong domestic pressures and a push from certain allies against abandoning arms control, indicating such a policy is somewhere between less likely and unlikely. The case that national security considerations like strategic stability and extended deterrence would be improved by these larger force postures is difficult to defend based on projected forces. These forces highlight that U.S. advantages are easily offset by Russian forces, and still further if Russia’s NSNW arsenal enters the equation. Unmoored by arms control restraints, new force postures would negatively impact Strategic Stability, Extended Deterrence and Non-Proliferation. The one potential exception to these negative trends is in the context of China. Approach 4 is unique in providing improved

margins against the nation identified as today's "pacing threat." Yet, given the relatively degraded posture against a resurgent Russia and potentially exacerbated arms racing globally in this scenario, it is difficult to see how this one benefit vis-à-vis China would outweigh other significant risks. The outcome regarding U.S. Competitive Advantage would likely be negative as well due the combined pressure of expanding nuclear and missile defense needs while continuing to attend to competition in other strategic arenas. Proliferation pressures would likely be exacerbated in this more competitive landscape, especially as resumed nuclear superpower posturing degraded the NPT treaty regime.

Looking more closely at budget needs, the CBO estimates that expanding U.S. forces by maximizing deployed delivery systems and warhead uploading would not increase DoD costs relative to current plans.[42] However, the lack of a clear advantage could prompt more expensive pursuits, such as a return to START II-like levels (with \$100M in one-time costs and an additional \$5B in annual operating costs over the time frame considered for this study)[43] or START I-like levels at "nearly triple" current DoD modernization plans.[44] Missile defense costs would also likely grow, given that these systems would potentially have a much more important role in helping the United States compete against great power rivals in a world where nuclear superiority was a top priority. The increased BMD plans currently included in Approach 4 (adding 20 silos to Ft. Greely, installing a new ground-based interceptor base in Ft. Drum, fielding four additional THAAD systems total in Europe and Asia) would increase the missile defense budget by roughly \$12B in procurement costs and another \$1B in operating costs through 2036.[45]

These steps could be complemented by more technologically challenging and costly programs, encompassing anything from a new air-launched boost-phase interceptor (with or without dedicated aircraft for varying degrees of patrol coverage) to a space-based boost-phase interceptor supported by anywhere from 24 to 960 satellites.[46] The cost excursions along this spectrum of options are significant as the CBO summarizes, increasing from tens of billions to hundreds of billions of dollars over the next twenty years. At the lower end, such programs would be under the 15% increase to planned budgets, which aligns with a neutral cost impact yet could scale much higher for a solid negative rating. In Table 1, below, analytical results from all four approaches to arms control as a tool of national security appear side-by-side for comprehensive comparison.

| Approach | Strategic Stability | Extended Deterrence | Proliferation | Cost | Competitive Advantage | Political Feasibility |
|--|----------------------|---------------------|--------------------|--------------------|-----------------------|------------------------|
| Approach 1: Bilateral strategic arms limitations | Positive | Neutral | Neutral | Neutral | Neutral / Negative | Likely |
| Approach 2: Long term multi-lateral reductions | Neutral / Negative | Negative | Neutral | Positive / Neutral | Positive / Neutral | Unlikely |
| Approach 3: Bilateral non-ratified frameworks | Positive* / Neutral* | Positive / Neutral | Neutral / Negative | Neutral / Negative | Positive / Neutral | Likely / Less Likely |
| Approach 4: Pursue nuclear superiority | Negative | Negative | Negative | Neutral / Negative | Negative | Less Likely / Unlikely |

Table 1: Comparative Analysis of Arms Control for National Security

Conclusion

After analyzing potential impacts from all four proposed approaches, Approach 2 (“long-term multilateral”) and Approach 4 (“nuclear superiority”) yield the most negative theorized impacts. As previously discussed, Approach 2 results in negative impacts for Stability and Extended Deterrence based on a comparison using the contemporary geopolitical context. However, a global security paradigm marked by the type of cooperation required for the leading nuclear powers to agree to major reductions would have to be more stable and feature less competition than today. In such a benign environment, the potentially negative repercussions that a reduced U.S. strategic posture could have on Strategic Stability and Extended Deterrence would be mitigated with Cost and Competitive Advantage benefits preserved. A constructivist lens applied to multilateral arms control and disarmament would add that material arms reductions might cultivate a social-psychological feedback loop and bring a more favorable international environment into being. Dynamic cooperation between nuclear powers in this manner could be initiated from reduced international tensions while catalyzing these same trends to reduce global risks, reduce nuclear program costs, and help channel competition into other non-nuclear areas.

The negative changes resulting from Approach 4 are more attributable to the approach itself rather than any underlying assumptions. No major hypothetical assertions are required to project how aggressive nuclear posture changes from the United States or Russia would have negative political reverberations in an increasingly tense international security environment. However, this analysis ignored

the potential for overt pursuit of nuclear superiority to auger an improved arms control agreement. Echoing NATO's Dual Track efforts in the 1980s, many of the negative projected impacts from Approach 4 could be turned to positives if done in conjunction with persuasive arguments to foster an improved bilateral or multilateral arms control agreement. Again, history shows that multilateral engagement is key to such an undertaking. Without buy-in from NATO or Asian allies, who would be directly affected by a dual-track approach, its chances of success would be limited. Domestic or constitutional fitness factors for each competitor in such a scenario would play a significant role as well, considering how the moribund Soviet economy proved crucial to the ultimate success of the arms race-arms control dynamic of the 1980s.[47]

Even assuming a united front for the United States and its allies and weaknesses in Russia's domestic economic or political foundation, today's geopolitical context indicates Approach 4 is unlikely to repeat the Dual Track success. Projected force postures under "nuclear superiority" do not point to a clear enough asymmetry that would motivate Russia to seek a new bargain. Statements by Putin indicate the opposite case is true and that Russia's leaders feel their pursuit of destabilizing new systems like the Status-6 Poseidon autonomous submarine or Avangard hypersonic glide vehicle put Washington at a disadvantage.[48] This thinking by Russian leaders may have contributed to the decision to invade Ukraine in early 2022. Even more distressing, Moscow could choose to employ a large fraction of its NSNWs with intermediate or short-range systems, rapidly increasing its leverage while directly threatening NATO allies. Similarly, although Approach 4 indicates the U.S. could maintain improved force margins against a steady-growth Chinese competitor in a strictly bilateral sense, there is no guarantee Beijing would not "double down" in the nuclear arena and exacerbate this arms race. China could do so by transitioning planned "demonstration" fissile material re-processing plants into full operations.[49]

Turning attention to Approach 1 and Approach 3 ("bilateral strategic" + "bilateral non-ratified"), the analysis indicates how these paradigms should be considered in tandem to make the most of their competing strengths and weaknesses. Extending the current New START-like regime provides a feasible approach to maintain strategic bilateral stability, for example, but fails to address potentially destabilizing trends related to non-nuclear strategic technologies and China's modernizing forces. Approach 3 provides necessary flexibility to make some headway on these issues, offering pathways for dialogue on a broad range of topics that could reduce multi-domain risks or strengthen stability beyond the purview of a more traditional bilateral regime. Admittedly, the best paths to address exquisite and diffuse technologies leveraging space, cyberspace, or artificial intelligence are not clear, but clarifying norms or "red lines" in these areas under something like Approach 3 could be a valuable start.[50] This flexible norms-based approach has its own

shortcomings as well, grounded in the lack of ratified legal backing and tenuous maintenance of strategic parity through mutual restraint.

Notably, Approach 1 and Approach 3 were forced to be disparate by definition in this paper to enable distinct analysis. The shortcomings for Approach 1 in addressing China and non-nuclear technologies could be addressed by combining a more traditional arms control agreement with the broader terms captured in this paper under Approach 3. Taking best elements of each in practice illustrates a fruitful path forward. The ratified nature of a New START-like regime, with accompanying verification measures, provides traditional strategic stability and keeps extended deterrence guarantees and proliferation pressures at least at levels they are at today. Meanwhile, the additional topics addressed through separate bilateral measures aimed at Russia and China provide pathways to ameliorate other important risks. Indeed, the advantages of keeping New START while working to improve it by adding further topics to independent bilateral agendas with Russia and China appear to be animating the arms control agenda for the recently inaugurated Biden administration.[51] The analysis in this paper supports the logic behind such a course of action. The more “extreme” arms control scenarios pursuing major reductions (Approach 2) or abandoning controls to achieve nuclear superiority (Approach 4) frame creative thinking in a relative sweet spot described by combined Approaches 1 & 3 (bilateral agreement supplemented with informal confidence building).

Abstracted policy categories, or approaches, and the qualitative cost-benefit methodology employed in this study can also augment contemporary deterrence analysis. For the past several years, USSTRATCOM leaders indicated their command has been integrating considerations across domains and capabilities for a broader strategic deterrence posture.[52] More recently, USSTRATCOM emphasized additional analytical tools to assess “Risks of Strategic Deterrence Failure” (ROSDF) for better-informed deterrence thinking.[53] Although the details of this revised assessment process are not publicly available, there is likely some utility in pairing the type of qualitative analysis from this study with ROSDF considerations to shape options for both arms control and deterrence. Doing so could help maximize the utility of arms control in protecting and advancing national security interests.

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Directions for Great Power Nuclear Arms Control

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