

MODERNIZATION OF NUCLEAR WEAPONS: HOW IT INFLUENCES STRATEGIC STABILITY



Evaluation of the impact of modernization of nuclear arsenals on strategic stability depends, first and foremost, on the definition of strategic stability. During the Cold War, strategic stability was synonymous to stability of mutual nuclear deterrence; the latter guaranteed the absence of any direct military confrontation because such confrontation, by default, involved a nuclear exchange.

If one assesses strategic stability in that, traditional manner – as the ability to inflict unacceptable damage in response to first strike of the opponent, – then the ongoing nuclear modernization programs will have minimal impact on strategic stability in the near- to medium-term future and most likely no impact at all. An important variable, of course, is the estimate of unacceptable damage. While all attempts to quantify it have (not surprisingly) failed, it is clear that the level of unacceptable damage is very low – measured perhaps in single delivered warheads or, at most, a few dozen. In this sense, the term “tailored” (or similar Russian term, “заданный,” or “predetermined”) damage would appear more appropriate, even though that term has not been used in the United States since the George W. Bush administration.

Overall, the modernization program that is being pursued by Russia, by and large, does not undermine strategic stability and, it could be said, even perhaps helps strengthen it by enhancing the survivability of the strategic triad as well as the ability of delivery vehicles to penetrate possible future missile defense. The contours of the US program are still unclear as it remains at a very early stage, but the ongoing debates do not suggest something out of the ordinary and there are no reasons to expect that it will have a negative impact on strategic stability.

Certainly, there are elements of both programs that may cause concern, for example the reported capability of the Russian *Sarmat* ICBM to reach targets via the so-called “southern route” or the precision capability of B-61-12 in the United States. Although these and similar innovations should be watched and assessed, their potential impact on strategic stability will likely remain limited and will hardly require a revision of the conclusion above.

Missile defense is a wild card. In the near future (perhaps in mid-term) it cannot affect strategic stability: not only interceptors are few, they cannot reliably intercept incoming missiles, especially advanced ones designed to penetrate missile defense. A bigger problem is the lack of predictability with regard to the future of missile defense – the United States could eventually deploy more capable interceptors in large numbers and then the situation will change.

It is well known that Russia also works on missile defense systems. Its future S-500 could theoretically intercept strategic missiles as well and if deployed in significant numbers could affect US capability to inflict unacceptable (or tailored) damage. Surprisingly, few in the United States pay attention to that possibility, but once Washington wakes up to that prospect we will likely witness the same kind of political reaction that we see today in Moscow.

Overall, predictability is increasingly becoming a problem. Today, transparency and predictability of the strategic relationship hinges on New START, whose future beyond expiration is still uncertain. Whether the parties can negotiate a new treaty is even less certain. There is no transparency and predictability with regard to tactical nuclear weapons and, as noted above, missile defense. The impending collapse of the INF Treaty adds to the already bleak picture: although it

is not obvious that the United States and Russia will deploy significant numbers of intermediate-range missiles in the near future, the absence of legally binding limits makes the security situation in Europe and East Asia uncertain. In the end, the lack of predictability could seriously undermine strategic stability because each party will feel less and less sure about the capabilities of the other side; uncertainty usually favors planning based on worst-case scenarios (the Cold War supplies plenty of examples) and this, in turn, will increasingly drive modernization programs further exacerbating mutual concerns.

Predictability is not a short-term challenge. It is sufficient, although not perfect and could be improved. But if the parties do not take care about the future, it will continue to diminish. There appears little appetite for any form or degree of arms control and this is troubling.

Today, however, strategic stability cannot be reduced to the stability of mutual nuclear deterrence. It should encompass other variables, first and foremost the rapidly developing long-range conventional weapons. Unlike nuclear weapons, these are usable and enjoy significant attention by both parties.

The United States has had them for several decades and enjoyed a virtual monopoly on these until recently, when Russia demonstrated comparable capability in the context of the war in Syria (the conventional version of the Soviet nuclear ALCM Kh-55, known as Kh-555, was developed by the late 1990s, but was never used in combat and apparently has not been produced in significant quantity). Although the United States for a long time appeared to give preference to conventional cruise missiles, both air- and sea-launched, recently the US has inaugurated a new nuclear-capable ALCM, which will probably have dual capability.

There are two ways in which long-range conventional weapons may affect strategic stability.

The first is the emergence of a mixed nuclear-conventional balance. The Soviet Union and then Russia have often claimed that conventional cruise missiles could be used to take out strategic weapons launchers thus upsetting the nuclear balance (a similar claim has been made by China). Although capacity of these weapons against the majority of targets, which have been usually assigned to nuclear weapons, appears limited, they could, in theory, negatively impact perceived strategic balance by facilitating worst-case planning in time of crisis.

The related challenge presented by this category of weapons is the risk of misidentification of conventionally armed strategic weapons, including those launched by the United States at targets in Eurasia: most trajectories are either in the vicinity or over Russia and the former Soviet Union, and even when such missiles are targeted elsewhere, these two countries could mischaracterize the launches as nuclear weapons directed at them. While the risk appears considerable, it should also be kept in mind that it was factored into US military posture planning as early as last decade and was the main reason for decision not to pursue conventionally armed ICBMs or SLBMs. There is little doubt that the risk of mischaracterization will be present in case the United States decided to employ such weapons in manner that could cause concern in Russia or China.

The second way long-range conventional weapons may affect strategic balance is the escalation path. During the Cold War, the United States and the Soviet Union carefully refrained from any, even accidental clash between their militaries or quickly addressed it to exclude even the faintest risk of escalation: since any military conflict was bound to become nuclear almost instantly, great care was taken to avoid any risks whatsoever.

The emergence of usable weapons that theoretically allow for a reasonably limited, but nonetheless decisive conflict may change the picture by reducing the propensity to avoid conflict or deescalate it. In the current strained atmosphere between the United States and Russia (as well as between NATO and Russia) direct low-level clash could happen almost any day, for example such as

between aircraft or ships in the Baltic Sea, the Black Sea, or the Middle East. Unlike during the Cold War, however, the availability of non-nuclear assets may prompt one or the other side to engage in brinkmanship behavior, including through threat or, in more extreme situations, actual use, on a limited scale, of long-range conventional weapons. Eventually, escalation could graduate to nuclear use. The imbalance in modern conventional capability helps increase the risks of crossing the nuclear threshold.

The prospect of hypersonic weapons with extremely short warning times could make use of long-range non-nuclear even more attractive and escalation more likely. Possible – perhaps, even likely – deployment of dual-capable or even just conventional intermediate-range missiles in Europe once the INF Treaty is ended, represents a particularly dangerous development. Even traditional, sub-sonic missiles have very short flight time leaving little chance to verify initial signals from early warning systems and to contact the other side to clarify the situation; if hypersonic missiles are deployed, traditional safeguards against launch based on incomplete or inadequate information will all but disappear.

In other words, availability of high-precision long-range conventional has made the escalation ladder significantly smoother than was the case during the Cold War. That is, stability of nuclear deterrence no longer assures the absence of war – a particularly dangerous development given the weaknesses of conflict prevention, management, and de-escalation mechanisms.

This memo is prepared as part of the activities of the [Working Group](#) on Strategic Stability and De-escalation in U.S.-Russian Relations.