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Department of Defense Budgeting
The Unrecognized National Security Threat

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Perhaps the most unrecognized national security threat is the slowness and lack of agility of our defense budgeting process, which may be the last vestige of the Cold War and unchanged from a half century ago. Many of the national security risks we recognize today are a result of renewed great-power competition combined with our ongoing counterterrorism needs. However, the threat environment is even more complex today when we include transnational risks like climate change and two new threat domains: space and cyberspace. Still, another national security concern is the internal divisiveness within our own country, which undermines our government and might make external enemies question our resolve. One extant threat that is all but forgotten today is the record size of our national debt—now 100 percent of our GDP—a level that likely inhibits us from spending more on defense in a time of higher interest rates. These are difficult challenges without easy answers *except* for the first one—the self-inflicted wounds of a lethargic and rigid defense budgeting process designed in large part by Defense Secretary Robert McNamara during the Kennedy administration.

It is little surprise that a process designed in the early 1960s—when the United States had a single and fairly predictable adversary, the Soviet Union—does not serve us well in a world of more and increasingly complex threats and when the future is anything but predictable. The current basis for defense budgeting—the programming, planning, budgeting, and execution

process—assumes that if we take longer to plan and think of defense as a large systems-engineering problem, we achieve better outcomes. While no one believes this logic today, we continue to budget this same way year in and year out because we have not focused on improving the process that affects both *what* we buy and *how rapidly* we buy new technologies and capabilities. Authoritarian regimes stand ready to exploit weaknesses in our democratic system, which is slow and lacks agility in how we modernize our forces. It is a monumental weakness.

The fundamental problems with our defense budgeting process are that we take two and a half years (thirty months) to program each dollar we spend, and once constructed, there is too little flexibility in the budget to adapt to changing circumstances. Today's defense budget contains approximately three thousand line-item appropriations (or silos) where money must be spent and where money may not be moved.[1] Worse, the feedback from Congress through such a cumbersome and disjointed budgeting process means there is very little strategic direction given to Department of Defense (DoD) leaders, who are left to guess intentions. We should, therefore, change this process to focus first on the strategic outcomes Congress would like the DoD to achieve, make these outcomes the focus of hearings on the Hill, and construct a new process that is only a year long and allows for flexibility across all portfolios of DoD programs. Such a reformed process would

- enable Congress to collaborate with the DoD in developing strategic direction and desired outcomes;
- speed up the DoD's responses to emerging threats and its ability to leverage new technologies (which are not possible when money must be programmed two to three years in advance); and
- improve the DoD's agility to allocate resources where they are needed most.

Three Recommendations for Defense Budgeting Reform
1. Congress Develops Strategic Direction and Outcomes with DoD
Today's National Defense Authorization Act (NDAA) contains one thousand sections, calls for 720 reports, and contains three thousand line items, or silos, of accompanying appropriations money, which are not necessarily rationalized holistically.[2] The NDAA provides direction in a piecemeal fashion with too little explanation of Congress's intentions and with very little discretion left to senior defense leadership (both civilian and military) to

achieve desired outcomes. Unelected staffers to Congress's appropriations committees in the House and Senate are making the major trade-offs in program budgets and determining what our commanders go to war with in a manner that balances national security with preserving jobs in congressional districts. This resulting complexity ensures that the DoD has neither speed nor agility relative to adversaries.

Instead, Congress could adopt the model of a corporate board of directors to set direction and outcomes rather than micromanaging budget line items. Far more beneficial for national security would be a set of outcomes that Congress would like the Pentagon to achieve, such as the ability to defend Taiwan rather than directing how many F-35s should be built. The Pentagon should be tasked with executing a strategy that matches the outcomes specified and the budget appropriated. To accomplish this, Congress would have to reimagine its own processes to focus on a shorter NDAA with consensus on the strategic outcomes for our military rather than so many congressional members' individual priorities.

2. Speed: Budget in One Year without a Continuing Resolution

Congress should ensure that the budget process does not take longer than a year from the time the Pentagon planning process begins until the Office of Management and Budget (OMB) approves the budget. This would include the hearings and discussions on the Hill. No corporation, no matter its size and complexity, takes more than a year for a budgeting process, because companies know that the future is unpredictable and more time planning does not result in a better outcome. A one-year budget cycle is not possible today due to the complexity of thousands of fragmented line items in the budget. To move at speed, the process must be reimagined with reduced complexity at a higher level of abstraction that allows for agreement on strategic outcomes. Congress could focus on one hundred line items for *portfolios of capabilities* in the budget rather than thousands of highly granular line items. For example, in the 1960s, there was a single line item for tactical aircraft in the budget, and the US Air Force could decide how to best allocate that budget among various aircraft models.[3] Today, Congress decides the budget for each aircraft type and specifies procurement of aircraft that the US Air Force explicitly does not want or need. A portfolio approach would let the DoD make the trade-offs regarding how many of which type of aircraft would be best and how soon to retire older models and replace them with newer models.

Congress must also trim the half year that occurred in nine of the past ten years of a "continuing resolution." This is both wasteful of taxpayer dollars and difficult to manage for those within the DoD and its vendors. In a nutshell, the "continuing resolution" means that the DoD has the authority to spend a fraction (say, 80 percent) of what it spent the previous year and is unable to begin any new programs. This delays programs that incorporate new vendors and new technologies and creates additional pressure within the DoD to spend most of the year's budget in the second half of the fiscal year after the appropriations bill passes. If there is a new program or a budget increase to an existing program, all of that must be executed in the remaining half of the fiscal year, which leads to inefficiencies and waste. From FY1977 to FY2023 (almost fifty years), Congress passed the defense budget on time for the start of the fiscal year only five times. During three of those years, there was a lapse in funding, precipitating a full government shutdown.[4] In testifying to Congress about this year's continuing resolution, Air Force chief of staff General C. Q. Brown summed it up well: "All the money in the world cannot buy more time; time is irrecoverable, and when you are working to keep pace against well-resourced and focused competitors, time matters."[5]

3. Flexibility to Allocate Funds across Boundaries of Fiscal Year, Color, and Program Elements

The reduction in line items and consideration of portfolios of capabilities would enable more flexibility in spending and an improved ability to respond to urgent threats and leverage new technologies. The current lack of flexibility stems from several long-standing practices that should be changed or eliminated.

- *Five-Year Defense Budget Plan* These plans, called Future Years Defense Program (FYDP), anchor budgets with input created four years earlier and heavily favor the status quo. Their use ensures some stability for long-term programs but significantly hinders new programs or dynamic allocations of funds to more urgent priorities. Instead, FYDP should be eliminated, and the DoD should move to two-year budgets (current year and next year).
- *Budget Appropriations* Appropriations currently do not cross fiscal year boundaries and just result in the "use it or lose it" wasteful spending that occurs throughout the federal government.

- *Colors of Money* Specifying various categories of appropriations (so-called "colors of money," of which there are five) attempts to match appropriations precisely with uses. This approach discourages leadership initiative and judgment, eliminating the ability to reallocate funds to a more urgent need today relative to what was planned three years ago when the budget planning cycle began. In practice, the colors of money approach creates artificial boundaries, leading to wasted management time due to operating within these constraints. Instead, money should come in a single color and have no expiration date.
- *Program Elements* Over time, managed "program elements" within the defense budget have become so granular that there is little flexibility to move money to more urgent needs. With thousands of line items, senior leadership has so little discretion that trade-offs are managed by congressional staffers rather than those responsible for executing the military strategy. Program elements should be managed as much higher-level portfolios, such as all fighter aircraft or all hypersonic research. This was how we appropriated funds in the 1960s for aircraft. In the FY2022 budget, Congress instructed the DoD to buy major weapons platforms it did not want or need, such as A-10 Warthogs, B-1 bombers, RQ-4 Global Hawks, KC-135 and KC-10 refueling tankers, C-130Hs, E-8s, and some F-15s and F-16s.[6]
- *Reprogramming as a Solution* Reprogramming can take up to a year for the required congressional approvals. It is almost as cumbersome and time-consuming as the budgeting process itself and is therefore rarely used. The amount of management time for reprogramming discourages flexibility and initiative. The dollar threshold should be raised for reprogramming (allowing for the DoD to do more reprogramming without congressional approval), and the reprogramming process should be streamlined to enable faster decisions with fewer approvals. DoD senior leadership should have some flexibility to move funds across portfolios, e.g., up to 10 percent of the budget, to respond to urgent threats and eliminate the need for reprogramming.

Of course, it is Congress's job to oversee the DoD and how well the department spends the money appropriated. However, the question is whether this oversight is handled better by managing macro-level goals or micromanaging

thousands of budget line items. The experience of the corporate world makes clear that using metrics to understand progress on a fewer number of high-level goals is not only more effective but more pragmatic than managing thousands of items. When Congress attempts to micromanage DoD programs, there is conformity to the law but tremendous inefficiencies result. Former deputy secretary of defense Bob Work said recently, "Over the last ten years, Congress has moved beyond measured oversight and into micromanagement, as indicated by the length of the NDAA and the amount of directives—we want you to split AT&L [Acquisition, Technology, and Logistics], we want you to stand up a CMO [Chief Management Office]. . . . Oops, we fooled you, we don't really want you to stand up a CMO."[7]

Peter Levine, who recently wrote the book *Defense Management Reform*, added, "The way that you show that you're an effective member of Congress or an effective staffer is you draft legislation. So you identify a problem and you draft legislation. . . . The fact that the NDAA is one of the few pieces of legislation that's still passed puts much more weight on the NDAA. Everybody wants to get a provision in it, and if everybody has to have a provision in it with 535 members of Congress, that's a lot of provisions."[8]

The three recommendations outlined above for defense budget reform are revolutionary given how we develop the budget today and will not be easy to implement against a backdrop of the two-party system, institutionalized processes, and entrenched interests, but they are critical for our national security. As John F. Kennedy reminded us in his call to send a man to the moon, if the goal is important, we should not be any less resolute just because the task is hard. Naturally, revolutionary changes would require those in the DoD and Congress to bring a different mindset to a reimagined process. However, this simplified process would also be easier to manage, require less manpower, and save taxpayer dollars because much of the analysis to develop three thousand line items today is done by hand by staff at the DoD and in Congress. When the NDAA and appropriations bills are passed, hundreds of people across the DoD (not to mention the suppliers, press, and think tanks) are reading through thousands of pages of text to find the relevant direction and budget items that affect them.

Why Is It Important to Create a Budget with More Speed and More Agility?

In a single word, the answer is China. With what the National Defense Strategy calls our "pacing threat," how can we live with a thirty-month process that

creates an automatic eighteen-month delay relative to China? If China can budget for the People's Liberation Army (PLA) in a year, then our process ensures we remain eighteen months behind in implementing our best strategy, acquiring our best capabilities, and getting those capabilities to our warfighters. As a society, China has prioritized technology development and uses all instruments of its national power to acquire or steal foreign technology while developing technology indigenously. As an example, Made in China 2025 is a massive import substitution plan to ensure that China develops its own design and manufacturing capabilities for the industries of the future, such as semiconductors, satellites, advanced computing, synthetic biology, and artificial intelligence (AI). China is now at work on China Standards 2035, seeking to set global standards for its national champion firms, such as Huawei, in advanced telecommunications.

Further, civil-military fusion ensures that each commercial innovation in China is available to the PLA for exploitation. Finally, the Belt and Road Initiative expands global markets for Chinese goods, services, and technology standards. This global network includes physical ports, roads, and pipelines, among other assets, all of which can be exploited for military advantage. While China has its own bureaucracy to manage, the government's intent is quite clear through its well-articulated industrial strategy and policies focused on technological progress and the development of national capabilities.

In contrast, not only is the US government's intent quite muddled, but the impact of the slow and nonagile budgeting process has real national security implications, lengthening the time to adopt leading-edge technology for our military. Our defense budget cycle is longer than the average commercial technology product cycle, so our current process ensures we never buy the latest technology for warfighters. For example, the US Army program of record to buy small drones is the Short Range Reconnaissance program. This program took ten years to field a drone from an American vendor and imposed additional costs to customize the drone for military missions. During this time, the Chinese competitor with leading global market share, Da Jiang Innovations (better known as DJI), introduced new models every twelve to eighteen months at less than 10 percent of the cost of the Army drone. The budget cycle is partially responsible for the long cycle times to field this new technology. This is one example of a trend occurring throughout the DoD where the commercial sector is innovating rapidly.

The length of the budget cycle also discourages new vendors from competing to support the DoD because of the long and sustained investment

required to sell to the US government. The leading-edge technology for eleven of the fourteen technologies that the Pentagon's chief technology officer says are important for national security, including AI and cyber tools, are developed by the private sector—not the defense establishment.[9] As a result, we need more leading technology providers to want to supply and successfully sell to the US government. Without improving the speed of our budgeting process, the DoD continues to discourage the very vendors we need in leading-edge technology areas from doing business with us.

Hedge Strategy: Lots of Small Things

These budget reforms are even more important when we consider that to modernize our forces today, we need to complement what we buy with different capabilities in the future. Our post–Cold War defense strategy has relied more on traditional platforms such as planes, tanks, and aircraft, complemented by counterterrorism capabilities. Our current budget process, with its multiyear planning and focus on large-weapons platforms—because these are the most expensive and create the most jobs—will naturally favor large platforms and those companies who can afford lobbying efforts for these programs. The resulting budget crowds out newer capabilities, especially those that are smaller, less expensive, and likely more resilient: the defense budget greatly prioritizes building new aircraft carriers over fielding swarms of small drones. The Ukraine conflict shows the importance of new technologies on the battlefield, such as drones, missiles, and capabilities based in space (Starlink and sensors in low Earth orbit), when fighting a large, industrialized force. Traditional large-weapons platforms take decades to field and provide stable targets for adversaries to understand, copy, and develop strategies against. In a technology environment that is changing more rapidly and is more global than ever before, the United States must consider that such rapid, distributed technological change presents an opportunity for adversaries and a heightened risk from asymmetric advantage or strategic surprise. By contrast, the US mastery of new technologies provides that advantage to our forces.

The director of naval research, Rear Admiral Lorin Selby, and I have described this as a *hedge strategy*, since new capabilities provide a hedge to our current traditional platforms, which are now more vulnerable than in previous eras due to peer or near-peer adversary capabilities.[10] We do not want to find ourselves in the next conflict with the equivalent of relying on battleships

during a Pearl Harbor–style attack. The US Navy was better prepared after Pearl Harbor because it had invested in its own hedge at the time—the aircraft carrier, which proved decisive just a year later at Midway. Much of what we need in the future will be "lots of small things" in addition to the few big things.[11] Additionally, the resilience of "lots of small things" allows for the geographical dispersal of capabilities, which is also called for in the US Marine Corps's Force Redesign 2030. The Marines recognize that with peer adversaries, the United States may not have air superiority; therefore, the concentration of manpower and large platforms makes our forces vulnerable, just as it did at Pearl Harbor in 1941. Finally, lots of small things rely more heavily on the commercial market, which can deliver new capabilities much faster—in two to three years rather than the current seventeen-year average it takes to bring larger capabilities to the Pentagon.[12] Of course, developing next-generation fighter aircraft and buying small drones are not equivalent capabilities, but the critical point is that we need both. However, the only short-term means to augment the capability of our military is to complement the large weapons platforms with new technologies from the commercial sector.

This hedge strategy encompasses three ideas. The first involves maintaining and enhancing relationships across the private sector to leverage emerging commercial technologies to field alternative concepts and capabilities at scale to both complement and provide a hedge to our existing, exquisite (meaning costly, dominant, massive, and few) weapons system platforms. The hedge addresses the inevitable vulnerabilities to these exquisite platforms from new, often inexpensive emerging capabilities such as AI-powered antiballistic missiles.

The second idea combines existing commercial solutions with a sense of urgency and places a premium on speed. This enables the fielding of these capabilities at scale within the next few years (not decades). Moving rapidly provides additional deterrence and an element of unpredictability for adversaries who, for years, have focused on US platforms and how we use them.

The third idea is that hedge-strategy architecture should encompass small and low-cost, unmanned, many, and smarter capabilities. These are referred to as SUMS:

- *Small and low-cost* ensures we can field many resilient, attritable systems with diverse capabilities at an affordable cost that can overwhelm and confuse our adversaries.

- *Unmanned* extends the operational reach and efficacy of warfighters, which also mitigates the need for larger manned forces and potentially saves lives.
- *Many*, because the quantity will be an important deterrent and provide an asymmetric advantage relative to exquisite platforms, especially in survivability.
- *Smarter*, because software is the key to enhanced functionality of all hardware and because AI, machine learning, and cyber can provide new capabilities as teams of smaller systems are combined. Additionally, software capabilities can be updated in real time.

These capabilities can be combined in new ways, evolving over time more agilely than the large platforms that are still in use and have been mostly unchanged for decades.[13] Agility today means platforms that can be agile in function, of course, but also agile in mission adjustment and software upgrades on short timelines.

Note that such a strategy is incompatible with today's defense budgeting process, since it will be impossible to specify the relevant commercial technologies thirty months before they are in use, as they may not have been invented yet. Further, the lack of flexibility in the budget will not allow for substitutions of more desirable capabilities than what was specified in an appropriations bill. The current system of setting requirements, acquisition, and budgeting was more appropriate to a time when the United States was the dominant military superpower and technology leader than it is to the present, when commercial technology is both software led and far outpaces the US military in both investment and the speed of product cycles. Over the past half century, codified processes at the DoD often resist change and optimize for procuring more of "what we have" instead of developing "what we need" for the next conflict. Buying what we have is what the Pentagon does well. It ensures predictable revenue streams to predictable locations across the existing industrial base.

Current incentives for those in program offices at the DoD, and even those in Congress, are aligned with the status quo, which, unfortunately, may be the equivalent of buying many more battleships on the eve of Pearl Harbor. The defense budgeting process, in particular, will continue to commit trillions of dollars to more tanks, ships, planes, and nuclear weapons at the expense of fielding alternative concepts and capabilities, investing at the right level in new domains like space and cyber, or investing to support an industrial base

in new technologies like small drones or commercial satellites. The result is a less flexible and hardware-centric force focused on our large platforms. What we need is a faster and more flexible budgeting process to complement our large weapons platforms with new capabilities that may be just now available and can scale quickly because they are commercially based. While there are a great many advantages to a hedge strategy in terms of saving taxpayer dollars and the ability to scale quickly with a broader vendor base, the primary advantage is a better military capability made possible through the elements of surprise and resiliency. Accompanying our major platforms with complementary hedge capabilities means we are fielding concepts that our enemies may not have seen before and with the resilience that comes from higher volumes of attritable assets.

How Can We Buy More Commercial Solutions Better?

Not having an effective approach to rapidly adopting commercial technology is a glaring weakness in modernizing the DoD. Technologies such as advanced communications, AI software, small drones, synthetic aperture radar (SAR) satellite imagery, and many others can be rapidly purchased from credible commercial vendors to deliver novel capabilities at a fraction of the cost of dedicated defense technologies. Thus, we need a better way to buy lots of small things.

To modernize faster, the DoD requires an order-of-magnitude increase in its adoption of commercial technologies, which are the new technologies the Pentagon's chief technology officer has called for—AI, cyber, space-based sensors, autonomous systems, etc. However, the DoD is not leveraging the commercial sector broadly enough or fast enough in its modernization efforts because it lacks a process to buy commercial technologies that address the differences between commercial and purpose-built defense solutions. Commercial technologies have nontrivial differences when compared to strictly defense technologies. First, commercial technologies are supplied in massive unit volumes—sometimes in the millions—often led by the consumer, as is the case with small drones. Second, in addition to larger volumes, commercial technologies evolve much faster than defense technologies, with products refreshed on twelve-to-eighteen-month cycles instead of decades. As a result, the DoD needs to move much faster in assessing and fielding these technologies. Third, commercial technologies such as AI software or commercial satellite imagery are not service specific. We do not need special versions for the navy or the air force (even though at the DoD, we often try to

create these). Creating special versions by service makes it more difficult and costly for commercial suppliers to do business with the DoD. Fourth, since the DoD does not control the global diffusion of these technologies, slowly adopting these creates an asymmetric disadvantage if our adversaries adopt them more rapidly.

These differences are extremely relevant for conflicts we may face in the next decade where our adversaries effectively employ commercial technologies. For example, when US troops were stationed in Iraq, the Islamic State of Iraq and Syria (ISIS) sent small drones, like those that can be purchased on e-commerce platforms like Amazon, with grenades to kill American soldiers in Mosul, Iraq. Countries such as Azerbaijan and Ukraine are quickly adapting commercial technology in new ways to gain an edge on the battlefield. Azerbaijan decisively won the Nagorno-Karabakh conflict against Armenia due to its use of commercial drones, and more recently, the Ukrainians are effectively employing small drones called Switchblades to destroy Russian trucks and tanks. The DoD must add new capabilities like these in the next two years rather than the next two decades. The DoD must reform its sequential requirements, acquisition, and budgeting methods for these commercial technologies to adapt to an environment where the commercial industry leads technology development and prioritizes speed. The current sequential process lags commercial product cycles and delivers technology that is several generations behind and overpriced, which would be the equivalent of supplying flip phones and fax machines to our warfighters.

In other words, the DoD must become a "fast follower" to gain rapid access to these technologies to maintain at least technological parity with adversaries. This requires rethinking three interrelated Pentagon processes: requirements, acquisition, and budgeting. When it comes to buying commercial technology, we don't need to tell the commercial market what is required for them to build solutions they have already created. Similarly, some new adaptive acquisition frameworks (for urgent capability or middle tier) can be easily adapted for commercial technology to simplify the buying process. The cycle time for budgeting needs to be realigned to match the rate of introducing commercial solutions.

There has been much reform of acquisition practices in the past few decades, but almost no reform of either the requirements or the budgeting processes. These processes now hinder commercial technology from modernizing the DoD. Therefore, key tenets of a *fast-follower strategy* include the following:[14]

1. **Designate organizations for commercial capabilities with a consistent budget.** DoD needs to establish designated organizations for each of the commercial technologies (e.g., drones and counter-drones, digital wearables, and satellite imagery), which are not and do not need to be service specific. Today, it is not clear where in the DoD these non-service-specific technologies, like small drones, should be assessed and procured. Along with clarity for where this technology can be assessed and purchased, these designated organizations also need a stable budget for that capability. This is different from a "program of record," which reflects a rigid requirement and often a single vendor. This is a "capability of record," where the need for the capability and budget is ongoing, such as for small drones. With that ongoing budget, the DoD can continuously assess capability, choose the best vendor at a point in time, and refresh that capability with a frequency that matches commercial product cycles. Assigning an ongoing capability budget to these organizations also signals demand to private industry and avoids duplication across the DoD. This allows the DoD to adapt to rapidly evolving threats and procure solutions that were not even available when the DoD's budget was created more than two years earlier.

2. **Eliminate the requirements process** for these commercial technologies and replace this with a much more rapid validation of needs. Again, we do not need to develop detailed specifications for products the commercial market already builds; these specifications will limit both creative problem solving and the number of competitors.

3. **Apply the best practices of commercial procurement** by applying nonconsortia Other Transaction Authority through Commercial Solutions Openings more widely, which will help maximize competition while minimizing the opportunity costs of participating vendors. If a vendor successfully prototypes a solution, a re-compete should not be required at the end of the prototyping period, and the DoD should immediately scale the solution. If Congress budgets for "capabilities of record," then we avoid asking successful vendors to wait for the budget cycle to catch up, which can take up to two years and cause the death of a small company reliant on cash flow for survival.

4. **Coordinate with allies** by sourcing commercial technology from allies and selling proven solutions to allied militaries. For the United States to prevail in the competition with China, it must collaborate

more with allies and partners. The easiest form is with commercial technologies, which are unclassified and therefore more easily shareable, and which present excellent export opportunities for vendors.

This fast-follower strategy has several key benefits: maximizing competition through open assessments of solutions from multiple vendors; reducing costs by leveraging higher volumes of the commercial market; increasing speed and transparency of the acquisition process; and minimizing the opportunity cost for vendors to encourage participation in future competitions. The fast-follower strategy is simply a common-sense adaptation of how technology is adopted in the commercial world.

The Defense Innovation Unit, which I led for four years, successfully employed the fast-follower strategy to execute rapid competitions among multiple vendors for capabilities as varied as small drones, unmanned maritime vehicles supporting the US Navy's Task Force 59, digital wearable technologies as an early warning detection for COVID-19, and algorithms to predict aircraft parts failures to improve air squadron readiness.

The importance of applying a fast-follower strategy can be seen in Ukraine and as a possible deterrent to China for a conflict over Taiwan. An example would be commercial space-based sensors using different modalities such as electro-optical, synthetic aperture radar, infrared, and radio frequencies. Combining what we see in multiple modalities ensures that adversaries can be more closely watched in near-real time and are unable to surprise us. These capabilities provided the US intelligence community with unprecedented information about what Putin was doing on the Ukrainian border. Because it was commercial technology (rather than from classified sources), this information could be shared with Ukraine, allies, partners, and the media.

Another example would be commercial communications capability, such as the Starlink terminals provided by SpaceX, which enabled communications by the military, the government, and Ukrainian citizens in the face of Russian attacks on cellular infrastructure. The more current and resilient technologies we can employ, the better capabilities we have for deterrence or warfighting. A fast-follower strategy enables the fielding of more current and resilient capabilities.

Conclusion

We must reform our defense budgeting process now because the long and nonagile process we perpetuate is more suited to the Cold War than to the

complex threat environment we face today. The United States needs to develop a hedge strategy to complement our large traditional platforms and execute a better means for buying commercial solutions for the military. China will exploit the weakness inherent in our slow process with the aim of a more agile PLA adopting more commercial technology more quickly as part of its civil-military fusion strategy. Moreover, as the US industrial base for defense continues to shrink, we will need to invest both in traditional defense-only products like energetics (propellants and explosives that power missiles) and those that have dual use, such as space-based sensors, small drones, air taxis, alternative fuels, and the like. The commercial, dual-use vendors we want to attract will be motivated to support the DoD if we can change the budget cycle to twelve months and procure more commercial capabilities through hedge and fast-follower strategies. Additionally, the DoD's support for emerging commercial technologies will create whole new industries in areas such as biotechnology, resilient and greener energy, and the construction of a space superhighway of satellites, space logistics, manufacturing, and multiorbit transportation. Otherwise, we cede to China not only a military advantage but the economic prosperity that comes with these new industries.

To address the only national security threat that is truly self-inflicted—our defense budgeting process—we need decisive change to field the right capabilities for our warfighters rather than prepare for the last war. The question is whether we can act before we are in wartime; we are not on the wrong end of a Pearl Harbor–style attack—*yet*.

If we act with urgency—to develop a hedge strategy, reimagine how we buy commercial solutions through a fast-follower strategy, and reform our defense budgeting process to be rapid (one year from plan to appropriation) and agile (allowing for the flexibility to adapt to changing conditions)—we deter our adversaries and ensure we can maintain peace through increased strength. As President Ronald Reagan reminded us, "We know only too well that war comes not when the forces of freedom are strong, but when they are weak. It is then that tyrants are tempted."[15]

Notes

1. Senate Armed Services Committee Funding Tables for the FY23 National Defense Authorization Act (NDAA), https://www.armed-services.senate.gov/imo/media/doc/fy23_ndaa_funding_tables.pdf.

2. National Defense Authorization Act (NDAA) for FY2023, House of Representatives Bill 7900—117th Congress (2021–22), https://www.congress.gov/bill/117th-congress/house-bill/7900.

3. William C. Greenwalt and Dan Patt, "Competing in Time: Ensuring Capability Advantage and Mission Success through Adaptable Resource Allocation," Hudson Institute, February 2021.

4. Jeff Arkin, "What Is a Continuing Resolution and How Does It Affect Government Operations?" Government Accountability Office, November 3, 2022.

5. Quoted in Elaine McCusker, "Another Round of Continuing Resolutions—Who Loses?" *The Hill*, September 8, 2022.

6. Stephen Losey, "Air Force Would Cut 150 Aircraft, Including A-10s, Buy Fewer F-35s in 2023 Budget," *Defense News*, March 28, 2022.

7. Eric Lofgren, "Has Congress Descended from Oversight to Micromanagement?" *Acquisition Talk* (blog), August 2, 2022.

8. Lofgren, "Has Congress Descended."

9. "Department of Defense Technology Vision for an Era of Competition," US Department of Defense, press release, February 3, 2022, https://www.defense.gov/News/Releases/Release/Article/2921482/department-of-defense-technology-vision-for-an-era-of-competition.

10. Heather Wishart-Smith, "A Strategic Hedge for National Security with the Small, the Agile, and the Many," *Forbes*, October 11, 2022.

11. James Timbie and Admiral James O. Ellis Jr., "A Large Number of Small Things: A Porcupine Strategy for Taiwan," *Texas National Security Review* 5, no. 1 (Winter 2021–22): 83–93.

12. There are two cycle times referred to in this paper: (1) the cycle time to prepare the defense budget, which is 30 months (2.5 years) with a recommendation of 12 months; and (2) the cycle time to adopt new weapons technologies, which is 9 to 26 years (17 on average); with commercial vendors and technology available today, this cycle can be shortened to 1–2 years for capabilities we buy commercially. See Greenwalt and Patt, "Competing in Time."

13. Of course, there are upgrades in both hardware and software that occur in major weapons platforms such as the F-35, but because these platforms are designed as integrated hardware-software platforms from a single vendor, the upgrades in hardware and software do not happen independently and these upgrades occur on a much longer cycle of time than those of commercial products, especially the software upgrades.

14. Michael Brown and Pavneet Singh, "Fast Follower Strategy," white paper written for the Defense Innovation Unit, US Department of Defense, 2022. Presented at the Aspen Security Forum in Washington in November 2021 and available to view at https://acquisitiontalk.com/2021/12/commercial-tech-fast-follower-strategies-and-a-framework-for-rapid-acquisition.

15. Ronald Reagan, speech at the Republican National Convention, July 17, 1980.