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**International Dynamics of U.S. National Defense  
Acquisition and Budgetary Policy**

**Marc DeVore, European University Institute  
Lawrence Jones, Naval Postgraduate School**

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NPS Acquisition Research Program  
Attn: James B. Greene, RADM, USN, (Ret.)  
Acquisition Chair  
Graduate School of Business and Public Policy  
Naval Postgraduate School  
Monterey, CA 93943-5103  
Tel: (831) 656-2092  
Fax: (831) 656-2253  
E-mail: [jbgreene@nps.edu](mailto:jbgreene@nps.edu)

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# Preface & Acknowledgements

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Welcome to our Ninth Annual Acquisition Research Symposium! This event is the highlight of the year for the Acquisition Research Program (ARP) here at the Naval Postgraduate School (NPS) because it showcases the findings of recently completed research projects—and that research activity has been prolific! Since the ARP's founding in 2003, over 800 original research reports have been added to the acquisition body of knowledge. We continue to add to that library, located online at [www.acquisitionresearch.net](http://www.acquisitionresearch.net), at a rate of roughly 140 reports per year. This activity has engaged researchers at over 60 universities and other institutions, greatly enhancing the diversity of thought brought to bear on the business activities of the DoD.

We generate this level of activity in three ways. First, we solicit research topics from academia and other institutions through an annual Broad Agency Announcement, sponsored by the USD(AT&L). Second, we issue an annual internal call for proposals to seek NPS faculty research supporting the interests of our program sponsors. Finally, we serve as a “broker” to market specific research topics identified by our sponsors to NPS graduate students. This three-pronged approach provides for a rich and broad diversity of scholarly rigor mixed with a good blend of practitioner experience in the field of acquisition. We are grateful to those of you who have contributed to our research program in the past and hope this symposium will spark even more participation.

We encourage you to be active participants at the symposium. Indeed, active participation has been the hallmark of previous symposia. We purposely limit attendance to 350 people to encourage just that. In addition, this forum is unique in its effort to bring scholars and practitioners together around acquisition research that is both relevant in application and rigorous in method. Seldom will you get the opportunity to interact with so many top DoD acquisition officials and acquisition researchers. We encourage dialogue both in the formal panel sessions and in the many opportunities we make available at meals, breaks, and the day-ending socials. Many of our researchers use these occasions to establish new teaming arrangements for future research work. In the words of one senior government official, “I would not miss this symposium for the world as it is the best forum I've found for catching up on acquisition issues and learning from the great presenters.”

We expect affordability to be a major focus at this year's event. It is a central tenet of the DoD's Better Buying Power initiatives, and budget projections indicate it will continue to be important as the nation works its way out of the recession. This suggests that research with a focus on affordability will be of great interest to the DoD leadership in the year to come. Whether you're a practitioner or scholar, we invite you to participate in that research.

We gratefully acknowledge the ongoing support and leadership of our sponsors, whose foresight and vision have assured the continuing success of the ARP:

- Office of the Under Secretary of Defense (Acquisition, Technology, & Logistics)
- Director, Acquisition Career Management, ASN (RD&A)
- Program Executive Officer, SHIPS
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James B. Greene Jr.  
Rear Admiral, U.S. Navy (Ret.)

Keith F. Snider, PhD  
Associate Professor



## Panel 19. Emerging Models for Acquisition and Financial Management in Allied Nations

Thursday, May 17, 2012	
11:15 a.m. – 12:45 p.m.	<p><b>Chair: Al Volkman</b>, Director, International Cooperation, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics</p> <p><b>Discussant: Bernard Udis</b>, Professor Emeritus, University of Colorado at Boulder</p> <p><b><i>International Dynamics of U.S. National Defense Acquisition and Budgetary Policy</i></b></p> <p>Marc DeVore, <i>European University Institute</i> Lawrence Jones, <i>Naval Postgraduate School</i></p> <p><b><i>Implications for the U.S. of Anglo-French Defense Cooperation</i></b></p> <p>Peter Ito, David M. Moore, Peter Antill, Stuart Young, and Kevin Burgess <i>Cranfield University</i></p>

**Al Volkman**—Mr. Volkman is the director of the International Cooperation for the Under Secretary of Defense (Acquisition, Technology, and Logistics). He is responsible for establishing international armaments cooperation policy, ensuring that policy is properly implemented, and engaging with U.S. allies and friends around the world to achieve closer cooperation.

Mr. Volkman has a long history in international cooperation beginning in the late 1970s when he negotiated the initial agreements with the United Kingdom that resulted in the cooperative development of the AV-8B Harrier Aircraft. In the early 1980s he served on the NATO Air Command and Control Systems team in Brussels, Belgium, where he was instrumental in shaping the international acquisition strategy for that program. Mr. Volkman has served in a variety of international staff positions for both the Department of the Navy and the Office of the Secretary of Defense.

Mr. Volkman has extensive acquisition experience. He began his civilian career as a contracting specialist and contracting officer with the Naval Air Systems Command and has served as both the director of contract policy and administration and the director of foreign contracting in the Office of the Secretary of Defense.

Mr. Volkman has a Bachelor of Arts degree from Valparaiso University and a Master of Business Administration from George Washington University. He served as an officer in the United States Army from 1966 to 1969. His service included one year with the Military Assistance Command, Vietnam. He has received numerous awards and medals for distinguished performance throughout his military and civilian service.

Mr. Volkman is married and has three adult children.

**Bernard Udis**—Udis, PhD, is a professor emeritus of economics at the University of Colorado at Boulder and a visiting research professor at the Naval Postgraduate School. His distinguished academic career also included visiting appointments at the Air Force Academy, U.S. Arms Control & Disarmament Agency, and a NATO research fellowship. Professor Udis' published work includes three books and numerous articles in scholarly journals on defense industries and military power. A number of his works are considered classics in defense economics. Professor Udis' current research focuses on competition and cooperation in the aerospace industries of the U.S. and the EU. [Bernard.Udis@colorado.edu]



# International Dynamics of U.S. National Defense Acquisition and Budgetary Policy

**Marc DeVore**—Dr. DeVore is a Jean Monnet Fellow (Global Governance Programme) at the European University Institute. He holds a PhD in political science from the Massachusetts Institute of Technology (MIT), an MA specializing in European integration from Strasbourg's Institut d'Etudes Politiques and a BA in international relations/economics from Claremont McKenna College. Previously Dr. DeVore was a lecturer/senior research fellow at the University of St. Gallen, Switzerland; served as national security advisor to the president of the Central African Republic; and was a visiting research fellow at King's College London's Department of War Studies and Sciences Po, Paris. He has received Fulbright, Truman, and Chateaubriand Scholarships, as well as grants from Harvard's Center of European Studies and MIT's Department of Political Science. Dr. DeVore's research interests include globalization and defense industries, European armaments cooperation, the political economy of the arms industry, the European Union's Common Foreign and Security Policy (CFSP), and insurgency and counterinsurgency. [Marc.Devore@EUI.eu]

**Lawrence Jones**—Jones holds a PhD and is a distinguished professor and the George F. A. Wagner Chair of Public Management at the Graduate School of Business and Public Policy, Naval Postgraduate School, Monterey, CA. [lrjones@nps.edu]

## Abstract

Although domestic laws, rules, and norms shape defense acquisition in the United States (U.S.), budgeting and financial management policy and practice decisions made in the executive and legislative branches of the U.S. government regarding how to spend defense financial resources have a powerful impact on the international security environment and the strategic choices of other nations. Understanding the interaction effects between U.S. defense weapons and weapons system planning, acquisition and execution and related budgeting/fiscal policy, and the reactions of other nations to it all is vital if U.S. defense management processes are to succeed in achieving the objective of preparing U.S. armed forces to fulfill the U.S. government's national, international, and foreign policy goals. This report examines U.S. defense weapons acquisition and budgeting from an international perspective. Within this context, answers are sought to the following questions. First, what are the effects of U.S. defense acquisition, defense assets, and budgets on the international development and diffusion of new military technologies? Second, what factors drive U.S. arms export decisions? Third, how do U.S. policies shape the international market for armaments? Finally, do U.S. decisions about how much to spend on national defense drive those of other nations through arms races and burden-sharing? This report addresses a number of policy and process issues related to these questions and provides a summary and conclusions of findings.

## U.S. Defense Policy and Relationships With Other Nations

Although domestic laws, rules, and norms shape defense acquisition in the United States, budgeting and financial management policy and practice decisions made in the executive and legislative branches of the U.S. government regarding how to spend defense financial resources have a powerful impact on the international security environment and the strategic choices of other nations. Understanding the interaction effects between U.S. defense weapons and weapons system planning, acquisition and execution and related budgeting/fiscal policy, and the reactions of other nations to it all is vital if U.S. defense management processes are to succeed in achieving the objective of preparing the U.S. armed forces to fulfill the U.S. government's foreign policy goals. This paper examines U.S.



defense weapons acquisition and budgeting from an international perspective.<sup>1</sup> Within this context, answers are sought to the following questions:

1. What are the effects of U.S. defense acquisition, defense assets, and budgets on the international development and diffusion of new military technologies?
2. What factors drive U.S. arms export decisions?
3. How do U.S. policies shape the international market for armaments?
4. Do U.S. decisions about how many resources to devote to national defense drive those of other nations through arms racing and/or burden-sharing?

At base, the U.S.'s role as the world's largest investor in defense has led to its preponderant role in the world in the development of new military technologies. This situation relegates most other nations to the position of selective imitators insofar as they observe the U.S. Department of Defense's (DoD) decisions attentively and emulate practices and technologies that appear successful. In principle, although this dynamic confers military advantages on the U.S. because it generally fields innovative weaponry before other nations, it also confers economic benefits on nations that accept the status of technological second-movers. They can dispense with many of the risks and inevitable economic losses inherent in striving for innovation. In their efforts to appropriate U.S. military technologies in an economic and timely manner, allies actively seek technology transfers from the U.S. When permitted, such transfers can be unilateral, reciprocal, or commercial in nature. Denied these opportunities, potential rivals of the U.S. have, in some cases, turned to espionage or have attempted to acquire U.S. technology via third parties.

Besides granting the U.S. a preponderant role in the development and diffusion of new military technology, the U.S.'s large defense expenditures also shape the international arms trade. Because the U.S. procures sizeable quantities of weaponry for its armed forces, its defense industries benefit from the scale and learning economies generated by the world's largest internal defense market. When combined with the effects of high defense research and development (R&D) budgets, this enables U.S. defense industries to, as a rule, offer weapons that are more innovative and cost effective than the competition's weapons. For this reason, U.S. arms manufacturers win a large proportion of the contracts for which they compete. However, despite the economic advantages of exporting weaponry, there are strong countervailing reasons for not selling specific weapons systems to certain nations. Injudicious defense exports can compromise sensitive technologies, strengthen potential adversaries, and fuel regional arms races.

To weigh the merits of a given arms sale, the U.S. has developed procedures that incorporate a plurality of interest groups and government actors into a (comparatively) transparent process. Within this context, the White House, Congress, the State Department, and the DoD all contribute to decisions about what weapons to export and to whom. Overall, although the U.S. arms export decision-making process may appear balanced from the point of view of U.S. domestic politics and foreign relations, would-be importers perceive it as restrictive, unpredictable, and unreliable. As a consequence, foreign nations frequently face a dilemma as to whether they should adopt an efficient course of importing cost-effective U.S. weaponry or pay considerable premiums in terms of more expensive weapons and foregone military capabilities to achieve a greater degree of defense-industrial autonomy.

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<sup>1</sup> The data in this report were derived from the defense spending and export data sets compiled by the Stockholm International Peace Research Institute (SIPRI, 2011).





In their efforts to compromise between the competing goals of efficiency and autonomy, many nations purchase weapons from multiple suppliers, manufacture U.S.-designed weapons under license, or develop indigenous weapons based on U.S. technology. Because arms export statistics ignore licensed production and many subsystem exports, the fact that U.S. companies account for approximately 35% of international arms export contracts (by value) understates the U.S.'s critical role in the international transfer of military capabilities (SIPRI, 2011). For nations that seek the highest level of defense-industrial autonomy attainable through the indigenous development and production of weaponry, a combination of unrestrained arms sales and generous export subsidies is a sine qua non for achieving the volumes of export sales needed to sustain an independent defense-industrial base.

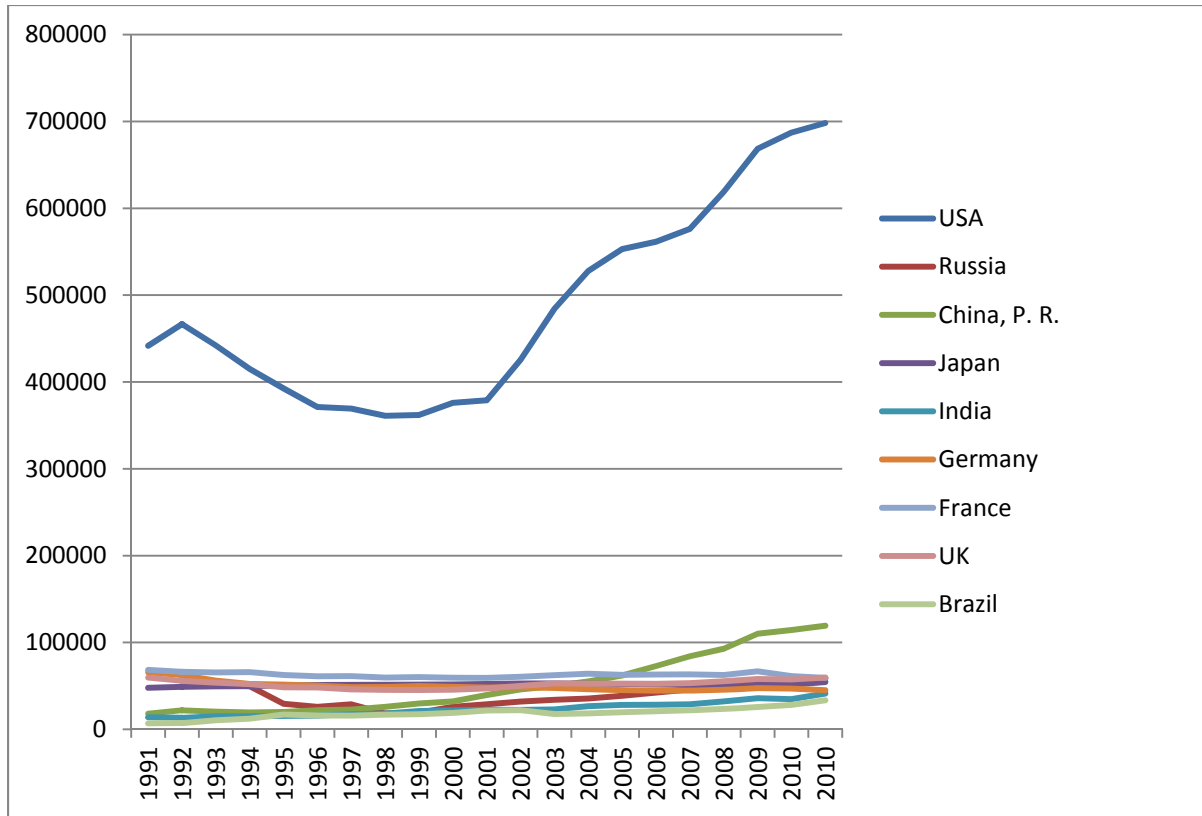
Although the U.S.'s defense budgeting plays a crucial role in shaping how weaponry is developed, produced, and diffused across the globe, the impact of U.S. defense budgets on other nations' decisions about how many resources to dedicate to defense appears comparatively modest. Despite the historic importance of arms racing amongst rival great powers and burden-sharing amongst allied nations, there exists no convincing evidence that either rivals or allies are basing their decisions about how much to spend on defense on U.S. defense budgeting trends. Ironically, the reasons for the disconnectedness of the U.S.'s defense expenditures with those of other nations, whether allied or not, with the U.S. at a high level of U.S. expenditures, need to be explored. Thus, although virtually all potential rivals accept as economically counterproductive any attempt to imitate U.S. trends in defense expenditure and weapons and weapons system acquisition, the U.S.'s allies are more willing to free ride, in economic terms, on the U.S.'s provision of security than to share the economic burden of providing for mutual defense.

### **U.S. Defense Acquisition, Budgeting, and Military Innovation**

Any analysis of the impact of the U.S.'s defense budget, and what it buys in terms of weaponry and weapons systems, on other nations needs to begin with an examination of the predominance of the U.S. investment in defense. No other nation has attempted to match the U.S.'s defense spending since the U.S. implemented substantial increases to its defense budget in the early 1980s (SIPRI, 1979, 1987). At that time, Soviet policy-makers accepted that their already-over-taxed economy could not afford to dedicate more resources than the 15–40% of its GDP that was already dedicated to defense (Strayer, 1998; Odom, 1998). Since the dissolution of the Soviet Union in 1991, few nations' defense budgets have even approached the same order of magnitude as the U.S.'s. Figure 1 illustrates the gap between the U.S. defense budget and those of the world's other principal military powers (e.g., Brazil, China, India, Japan, Russia, and Western Europe's four largest nations; SIPRI, 2010).







**Figure 1. U.S. Defense Spending Compared to Other Nations**  
(SIPRI, 2010)

In domains crucial to a nation’s future military power, such as defense R&D and procurement expenditures, the gap between the U.S. and other great powers is even more significant. On an annual basis, the U.S. spends six times as much on defense R&D as all 27 member nations of the European Union combined (\$79 billion versus \$12 billion for Europe). However, Europe is not a unified nation state, and U.S. defense R&D expenditures exceed those of the largest European nations (France and the United Kingdom) by a factor of 15 (European Defence Agency [EDA], 2009). Even China, whose defense R&D budget has grown rapidly to a figure of \$4 billion to \$6 billion per annum, spends less than a tenth as much as the U.S. (Henrotin, 2010, p. 56; Bitzinger, 2011, p. 447). Meanwhile, Asia’s other major arms producers, India, Japan, and South Korea, each spend approximately \$1.5 billion annually on defense R&D, which is barely one-fiftieth of the U.S.’s investment (Bitzinger, 2011, p. 445). In short, the U.S. defense R&D effort dwarfs those of any other nation and exceeds that of the rest of the world combined. Moreover, the dimensions of the U.S.’s force structure and the scope of its infrastructure for conducting large-scale operational experiments (i.e., the combined land areas of the Air Force’s Nevada Test and Training Range and the Army’s National Training Center are larger than Belgium) render it possible to realistically test potential innovations in unique ways. For example, few nations can convert brigade-sized units to an unproved table of organization—as the U.S. did to develop the airmobile concept in the 1960s or the network-centric light-armored concept in the 1990s—for the purpose of examining a potentially innovative idea (Tolson, 1973; Stanton, 1987; Jones & Thompson, 2007).

As a result of its comparatively large expenditures, the U.S. has consistently led other powers in introducing new technologies. From stealth aircraft to satellite navigation,



electronic flight control systems and network-centric warfare, the U.S. has been the first to field many of the technologies shaping contemporary warfare. The development of new technologies is an inherently risky process—one reason the high U.S. research and procurement budgets have produced innovation is that they are large enough to absorb failures. Alongside those U.S. projects that have produced genuinely helpful new products, many others failed to live up to expectations.

Because nations wait in many instances for the U.S. to prove the value of an innovation before pursuing it themselves, they naturally also dedicate substantial efforts to understanding the nature and results of U.S. investments in new military capabilities. Much information is transferred more or less voluntarily to U.S. allies through joint exercises, alliance institutions, and bilateral agreements. However, the mechanisms whereby individual allies receive U.S. technology differ. Israel has principally received unilateral technology transfers (Clarke, 1995), while a range of Anglo-American technological exchange agreements facilitate reciprocal transfers between the U.S. and the United Kingdom. Finally, Japan, South Korea, and Taiwan have been permitted to acquire certain technologies commercially from U.S. defense contractors (Lorell, 1995; Bitzinger & Kim, 2005). As a consequence of these different transfer mechanisms, Israeli Python missiles, British Astute-class submarines, Japanese F-2 fighters, South Korea's T-50 training/strike aircraft, and Taiwan's F-CK-1 fighters all bear a notable U.S. technological paternity.

Aside from formal technology transfers, allies emulate many of the promising U.S. projects and organizational innovations they are exposed to. Since they dedicate far fewer resources than the U.S. to developing and experimenting with new military capabilities, most allies wait for the U.S. to prove the value of an approach before investing their own resources in it. For example, the U.S. drive for military transformation—based on the thorough exploitation of digital networks—inspired similar, albeit smaller, programs in France, Germany, and the United Kingdom (Lungu, 2004). In addition, the British Army has followed the U.S.'s lead (Blakeman et al., 2010) in launching a project to equip its expeditionary forces with Mine Resistant Ambush Protected (MRAP) vehicles, while France emulated the U.S.'s Special Operations Command with its own Commandement des Opérations Spéciales in 1992 (Micheletti, 1999; National Audit Office [NAO], 2009). However, the fact that allies selectively adopt U.S. innovations should not be misconstrued as blind emulation. In general, they adapt U.S. concepts to suit their own budgets, needs, and doctrine. One example of this is the British and Canadian embrace of network-enabled operations as a more conservative and less costly version of network-centric warfare, as is advocated by the U.S.

Nations that are not allied with the U.S. have historically scrutinized the U.S.'s defense budget and military operations for what lessons they may convey while also seeking to appropriate U.S. technologies by whatever means possible. For example, many of China's dramatic reforms of both its armed forces and defense-industrial base can be traced to an exhaustive Chinese study of U.S. military operations during the 1991 Gulf War (Pollpeter, 2010). Since then, China has attempted to acquire additional insights into U.S. weaponry by purchasing Israeli weapons that incorporate U.S. technology, buying debris from U.S. weapons recovered over South Asia, and technologically exploiting what they obtained from the 2001 Hainan Island Incident, when a SIGINT EP-3 aircraft was briefly interned on the island (Clarke, 1995; Fisher, 2007, p. 145; Hewson, 2008; Migdalovitz, 2008, pp. 29–33). Sometimes, other great powers' efforts to understand the implications of U.S. military developments have resulted in analyses superior to those conducted in the U.S. itself. Indeed, the roots of contemporary U.S. debates on the revolution in military affairs (RMA) and in military transformation can be traced to Soviet studies from the 1980s on



trends in U.S. military power (DeVore, 2010; Gareev, 1998; Krepinevich, 1992; Salmonov, 1988).

One indirect, yet consequential, effect of the U.S.'s preponderant investment in innovation is its role in setting international standards for military interoperability. Through organizations such as the NATO Standardization Organization (NSO) and Partnership for Peace (PfP), a large number of nations are exposed on a regular basis to U.S. technological standards. More often than not, U.S. standards become either the de facto or de jure international standards because these organizations strive to improve interoperability amongst partner nations and because U.S. standards are frequently the first on the table (Ferrari, 1995, pp. 33–35; Hartley, 1997, p. 23; Mërtl, 1998, pp. 113–115). The difficulty of engaging in international peacekeeping or exporting weapons to a world market has obliged even nations not formally aligned with the U.S. to adopt U.S. standards. For example, Swedish Gripen fighters are now built to U.S. digital communications standards (Link 16), and even Russia and China have been obliged to develop variants of their major weapons systems to NATO standards for export (Keijsper, 2003).

As a cautionary note, the U.S.'s advantage in developing and fielding new military technologies will not always necessarily translate into commensurate battlefield successes. Because victory or defeat in warfare hinges on factors such as doctrine, force structure, training, and strategy, the U.S. is frequently not the first nation to introduce an innovation that reaps the fruit of its capabilities. Thus, although the United Kingdom introduced both the tank and aircraft carrier, Germany became the principal strategic beneficiary of the former invention during World War II while Japan and the U.S. realized the potential of the latter. In both cases, the key to the successful exploitation of new technologies lay in new force structures (e.g., the combined arms panzer division and the integrated aircraft carrier battle group) and doctrines (e.g., deep armored exploitation into an enemy's rear and the launching of air strikes beyond visual range), rather than the production of new weapons per se.

Moreover, past experience also demonstrates that parochial considerations can lead military organizations to neglect existing low-tech challenges. For example, even though the U.S. pursued the objective of building a 600-ship Navy during the Reagan administration, virtually no resources were dedicated to the mundane task of sweeping naval mines. As a result, the U.S. Navy possessed only three Korean War-era minesweepers in service during the late 1980s and would have, therefore, been incapable of escorting Kuwaiti oil tankers in 1987–1988 or conducting operations in the northern Persian Gulf in 1991 had European allies not assisted with their more comprehensive minesweeping capabilities (Craig, 1995, pp. 168–254; DeVore, 2009). In short, despite the U.S.'s advantages in developing and fielding new military technologies, it is in the organizational and conceptual domains of defense budgeting that the U.S.'s armed forces are liable to be strategically surprised.

### **U.S. Arms Export Processes: Why the U.S. Has a Comparative Advantage**

Although the U.S.'s investments in defense R&D favor the precocious fielding of new military technologies, the scale of its procurement spending generates cost advantages for U.S. defense contractors competing in international markets. As with R&D, U.S. spending on the procurement of weapons systems dwarfs that of other nations. The U.S. invests \$140 billion per year on defense procurement. By way of comparison, other great powers spend between one-fifth (China) and one-twentieth (Germany) as much as the U.S. For example, China spends \$26 billion; Russia, \$16 billion; the United Kingdom, \$11 billion; France, \$10 billion; Japan, \$9 billion; and Germany, \$7 billion on defense procurement (Bitzinger, 2011; EDA, 2009). All 27 members of the European Union collectively spend only \$43 billion, which amounts to less than a third of U.S. procurement expenditures (EDA, 2009).



Moreover, a combination of genuine comparative advantages and protectionist laws (the Buy American Act and congressional politics) ensures that a larger proportion of U.S. procurement spending goes to domestic defense industries than is the case in many other nations (Neuman, 2009, p. 72).

In addition to providing the U.S.'s armed forces with the wherewithal to accomplish their missions, this level of procurement spending provides U.S. arms manufacturers with substantial competitive advantages over foreign firms. Two distinct economic phenomena, learning economies and scale economies, explain why high domestic spending sustains international competitiveness. Since the 1950s, research has demonstrated that the ability of a labor force to build complex weapons systems increases with experience (Asher, 1956). This phenomenon of "learning by doing" means that the average cost of a product decreases as the cumulative number of units produced increases. Current research suggests that the man-hours needed to produce major weapons systems can decline by 20–25% for each doubling of output. Overall, learning economies have been demonstrated to result in 10% decreases in the production price of weapons over long orders (Hartley & Martin, 1993, pp. 178–179).

Whereas learning economies are a product of cumulative production, economies of scale are a function of production rates. When larger volumes of a weapon are produced, it becomes possible to organize the manufacturing process more efficiently and amortize the fixed overhead of production facilities over more units. Although data on the scale economies of major weapons systems are limited, a British government study argues that a 10% decrease in the unitary cost of a product may be achieved with each doubling of output (NAO, 2001, p. 17). Although there is theoretically a point where increased output ceases to generate economies of scale and may even produce increased per-unit production prices (i.e., diseconomies of scale), the production runs of defense goods are rarely, if ever, large enough to produce this effect (Hale, 1987). As a consequence, it is a general rule that the more units produced, the lower will be the unitary production prices of a defense product.

Together, learning and scale economies promise substantial savings on the unitary costs of weapons. If two nations manufactured identical weapons systems during a certain number of years, yet one nation produced twice as many units as the other, then that nation could theoretically achieve a 20% reduction in unitary production costs. In practice, U.S. production runs are frequently more than twice as large as those of other great powers. For example, although U.S. combat aircraft may be produced at a rate of 12–15 units per month, national British or French programs can at best achieve a monthly cadence of two to five (Hartley & Martin, 1993, pp. 178–79; Hébert, 1995, pp. 76–78). As a result of these larger production runs, U.S. defense corporations can generally sell weapons abroad at cheaper prices than foreign companies marketing equivalent products.

The U.S.'s advantages in competing for export markets pose a major challenge to the viability of other nations' defense-industrial bases. In effect, U.S. defense manufacturers possess cost advantages in international markets because the U.S.'s domestic market is so large. Even though the U.S. is the world's largest arms seller and annually exports nearly \$15 billion (prices in current dollars) in weapons, exports constitute less than 10% of U.S. defense industries' output (SIPRI, 2011). In other words, approximately 90% of U.S.-produced weapons end up in the hands of the U.S.'s armed services. As a consequence, although arms exports are desirable for U.S. corporations and can yield certain benefits even for the nation, they are not essential to the viability of the U.S.'s defense-industrial base. Insofar as the U.S. is highly capable of winning export orders, yet not dependent on doing so, it occupies a virtually unique position in the international market.



Compared with the U.S., most nations depend on arms exports for the maintenance of a defense-industrial base, yet have fewer competitive advantages for achieving them. To compensate for insufficient domestic production runs, many arms-producing nations must export a substantial proportion of the arms they produce in order to achieve adequate economies of scale and avoid the necessity of closing production lines between national orders, which both generates unemployment and results in the loss of vital skills. To take an extreme example, the survival of Israel's defense-industrial base structurally depends on exporting three-quarters of the arms produced in that nation (Hughes, 2003). For other arms producers, the imperative to export is only slightly less onerous. Russia, for example, seeks to export roughly half its total output, and Europe's largest arms producers appear to be aiming to export one-third of their production (Bitzinger, 2003, pp. 53–55; Kalinina & Kozyulin, 2010, 34–39; Smith, 2010). Given the apparent conundrum of many nations needing to export a large proportion of their defense output for domestic arms production to remain viable, yet being unable to achieve the cost effectiveness of U.S. contractors, certain scholars have argued that the U.S. could acquire a de facto monopoly over the international arms market (Caverley, 2007; Kapstein, 1994).

The case for arms exports has economic, military, and foreign policy components. Because the U.S. government has already borne the substantial sunk costs needed to develop a weapons system, export orders are a cost-free (for U.S. taxpayers) means of securing a greater degree of profitability for U.S. firms and providing jobs for U.S. workers. Considering the sizeable proportion of the U.S.'s national investment in high technology R&D dedicated to armaments, it would arguably be economically counterproductive to not vigorously export armaments. Besides being advantageous for the U.S. economy as a whole, arms exports can also improve the ability of the U.S. defense-industrial bases to cost effectively support the armed services.

By expanding production runs, exports can result in lower acquisition costs for the U.S. armed services. Such a dynamic is apparent in the F-16 program; 4,300 aircraft have been procured from the program by 24 countries, and it provides a primary rationale for current efforts to involve large numbers of nations in the F-35 program (Kapstein, 2004; Sorenson, 2009, pp. 130–131). In certain cases, such as the development of the F-16 Block 60 for the United Arab Emirates, foreign clients have borne many of the R&D costs of improving and/or upgrading U.S. weapons (Steuer et al., 2011, pp. 19–20). By lengthening production runs, exports can also sustain production lines during periods when a dearth of domestic orders would normally lead to their closure (Kemp, 1994, p. 155). For example, exports have at times kept assembly lines for F-15, F-16, and C-130 aircraft open when DoD contracts would not have. In the recent past, exports have been advanced as a means of keeping the C-17 and F-22 production lines open (Sorenson, 2009, pp. 131–132).

In addition to the economic arguments for arms sales, several political arguments have been made for why selling arms can improve the U.S.'s security and influence. One of the longest standing arguments in favor of arms sales has been a desire to strengthen the U.S.'s friends and allies. In important respects, the arms given, sold, or leased to U.S. allies facilitated the U.S.'s victories during both world wars and the Cold War. Without U.S. military goods, it is uncertain whether the Entente could have repulsed the German spring offensives of 1918; whether the Soviet Red Army would have triumphed on the Eastern Front in 1943; or whether Greece, Turkey, and Iran could have withstood communist pressures during the early Cold War (Overy, 1995, pp. 180–244; Soutou, 1989). More recently, a desire to provide U.S. allies with qualitative advantages over their opponents has underscored debates about arms exports to Israel, Saudi Arabia, and Taiwan. Part and parcel to calls to strengthen the U.S.'s friends and allies have been arguments that the U.S.





needs to improve its ability to militarily operate alongside potential military partners. Because the U.S.'s largest military interventions have all involved international coalitions, it is evident that interoperability can, at times, be critical to military effectiveness. In principle at least, a liberal arms export policy would enhance military interoperability by ensuring a greater degree of equipment commonality between allies (Wolf & Leebaert, 1978).

Although powerful arguments can be made in favor of arms exports, equally compelling considerations are frequently advanced for a restrictive arms export policy. For a country that invests so much in military innovation, any U.S. arms exports risk placing valuable military technologies in the hands of competitors capable of reverse engineering or otherwise imitating U.S. products. China has reportedly acquired much U.S. military technology through unauthorized re-transfers of U.S. weapons or designs. It allegedly acquired blueprints for Aegis air defense systems from a Japanese officer, an example of the F-16 fighter from a variety of U.S. military technologies from Israel (Cheung, 2009, pp. 137–42; Clarke, 1995; Fisher, 2007, p. 145; Hewson, 2008; Sorenson, 2009, p. 134).

Besides potentially compromising U.S. technology, the introduction of new or qualitatively superior weapons into sensitive regions can fuel arms races and create windows of opportunity for aggression. For example, Egypt's unprecedented September 1955 arms deal with the Soviet Union (ostensibly Czechoslovakia) prompted Israel to attack in October 1956, before the Egyptian armed forces could assimilate the new weaponry (Kyle, 1991/2011, pp. 62–85). To prevent situations such as this from arising, the U.S. has (imperfectly) followed a policy, enshrined in a presidential directive from 1977, of not being the first nation to export new categories of armaments to a region (Kemp, 1994, p. 154; Le Roy, 2002; Sampson, 1977, pp. 184–185).

### **International Views of the U.S. Arms Export Policy and Processes**

Although the U.S. arms export decision-making process may appear balanced from the point of view of both the U.S.'s domestic policies and its foreign relations, the process is all too frequently perceived to be unpredictable, unreliable, and, at times, incompatible with importing nations' desires to be seen as fully sovereign powers. Because of the diverse interests represented and the variegated channels of influence embedded in the U.S.'s decision-making process, there is an unpredictability in U.S. arms exports that confounds nations' ability to rely, in the long term, on acquiring weapons from the U.S. The diverse examples drawn from the experiences of Pakistan, Saudi Arabia, Japan, and the United Kingdom will suffice to illustrate the dilemma that many nations face in deciding whether or not to buy U.S. weapons.

As far back as the 1950s, Pakistan was considered an important partner of the U.S. and could, therefore, import a wide range of U.S. arms. By 1979, however, concerns about Pakistan's nuclear weapons aspirations and the human rights record of its military regime prompted the U.S. State Department to ban new arms export contracts with Pakistan. Two years later, the new administration of President Ronald Reagan liberalized arms exports to Pakistan to an exceptional degree in order to strengthen that nation as a regional counterweight to the Soviet Union. At this time (1981), the U.S. agreed to sell Pakistan F-16 fighters, which represented, at the time, the technological cutting edge (Kemp, 1994, p. 151). From 1985 onwards, Congress steadily applied pressure on the executive branch, via the Pressler amendment, to link continued arms exports to Pakistan's abandonment of its nuclear program. In 1990, these pressures culminated, under the new administration of George H. W. Bush, in a fresh arms embargo on Pakistan. Most galling for Pakistan, this embargo extended even to products that had already been bought and paid for, including 28 F-16 fighters purchased the preceding year (Grimmett, 2009).



More than a decade later, President George W. Bush lifted the embargo on Pakistan after the September 11, 2001, terrorist attacks on the U.S. As a powerful display of its willingness to sell Pakistan weapons, in 2006, the U.S. negotiated \$3.5 billion in arms export agreements with Pakistan, rendering that country the largest customer of U.S. arms at that time (Grimmett, 2009). Thus, in little more than two decades, the U.S. twice embargoed Pakistan and twice lifted its embargos. Throughout this period, Pakistan's government has shown remarkable continuity in its commitment to a nuclear capability and in its connections with extremist groups and problems with democratic governance. From this point of view, changes in the U.S.'s arms export policies towards Pakistan have been driven more by changing perceptions and politics in the U.S. than any actions on Pakistan's part.

Although Pakistan may be a uniquely complex case, even long-standing allies of the U.S. have been subjected to the vagaries of its arms export process. Congress, for example, has repeatedly thwarted efforts by the executive branch to export arms to Saudi Arabia. In 1984–1985, the executive branch sought to sell \$2.8 billion worth of F-15 fighters to Saudi Arabia. However, congressional opposition was such that the administration informed the Saudis it could not conclude the deal (Miller, 1990). The following year, in 1986, Congress threatened to block the sale of 2,400 Sidewinder, Harpoon, and Stinger missiles to Saudi Arabia and, thereby, obliged the executive branch to withdraw all 600 Stinger missiles from the proposed sale. Later, in 1990, congressional opposition to a proposed \$20 billion arms deal with Saudi Arabia prompted the executive branch to settle for a more modest package of \$7 billion worth of armaments (Grimmett, 2010, p. 6). Thus, although Saudi Arabia was able to import a steady flow of arms from the U.S., it was never able to purchase all of the products it most desired. In each of these cases, the executive branch's goals of strengthening a U.S. ally and winning lucrative contracts clashed with congressional fears that Saudi Arabia could use new high technology weapons against Israel.

Frequently, even when the U.S. approves arms exports, it imposes strict conditions on what the purchasing country can do with the products they acquire. In certain cases, conditionality is specific to a product, while in others, it applies to a nation. An example of product-specific conditionality is the U.S.'s regulations on Stinger missiles. When the U.S. sells Stinger missiles to any nation, it requires that the purchasing nation physically inventory the missiles on a monthly basis, regularly update the U.S. government on the whereabouts of all its missiles, and accept visits by U.S. inspectors on an annual basis. The U.S. also reserves the right to review the purchasing nation's security procedures to make certain that they conform to U.S. standards (Schroeder, 2005, p. 31). An example of client-specific conditionality can be found in the U.S.'s sale of AMRAAM air-to-air missiles to Taiwan. Although the U.S. agreed to sell Taiwan AMRAAM missiles in 2000, it decreed that the AMRAAMs would not actually be delivered *until* it was proven that China possessed an equivalent air-to-air missile (i.e., the Russian AA-12). Thus, Taiwan was essentially free to purchase missiles that would sit in U.S. warehouses until the U.S. government decided to export them (Kan, 2002, p. 10). No doubt, conditions such as those that the U.S. imposed for the sale of Stingers and AMRAAMs constitute severe constraints on the ability of nations to freely use the arms they purchase in pursuit of their own foreign policy objectives.

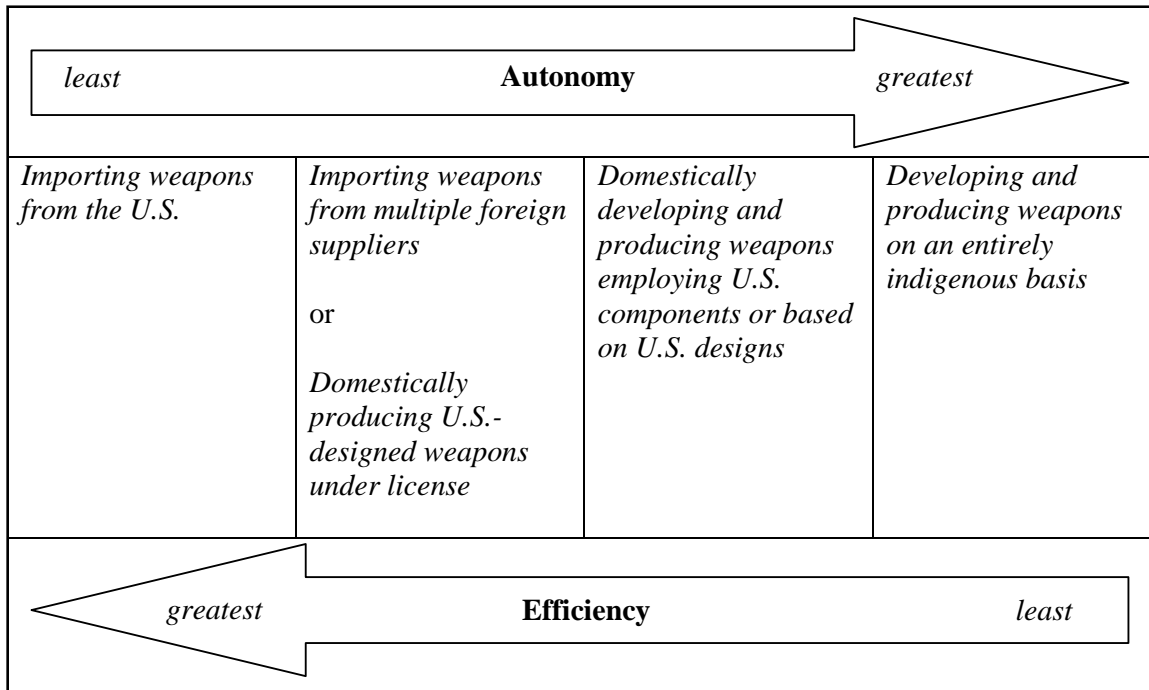
Because of the restrictive, unpredictable, and conditional elements inherent in the U.S.'s arms export process, nations are forced to weigh the superior cost effectiveness of U.S. weaponry against the risks of depending overmuch on the U.S. Put simply, the trade-off facing nations allied to or enjoying cordial relations with the U.S. is one between procurement efficiency and autonomy (Moravcsik, 1992). In general, the most efficient policy a nation can adopt would be purchasing those weapons systems providing the greatest





value for the money that can be obtained on the world market. However, because a disproportionate number of these weapons would inevitably come from the U.S., a foreign nation would thereby become vulnerable to coercion, manipulation, or punishment at the hands of any U.S. government willing to leverage its position in the arms market for foreign policy ends. Conversely, a nation can obviate the risks of being blackmailed by arms suppliers (notably, the U.S.) by pursuing a policy of complete defense-industrial autonomy, which would entail designing and building all of its weapons systems within its sovereign territory. However, such a course of action would be ruinously expensive for the vast majority of nations, which lack the budgetary, scientific, and industrial resources to autonomously produce armaments with any degree of efficiency.

In actual fact, although complete defense-industrial autonomy is virtually unheard of amongst the U.S.'s allies and friends, most of these nations are willing to pay considerable premiums in terms of more expensive weapons systems and forgone military capabilities in order to lessen their degree of defense-industrial dependence on the U.S. Within this context, the autonomy-efficiency trade-off that nations face is not one between two opposing policy alternatives but rather one where a whole range of intermediary courses of action are available to nations. However, the underlying logic is such that each additional increment of defense-industrial autonomy that a nation wants to obtain can be bought only at the price of reducing its efficiency in arms procurement (and vice-versa; Moravcsik, 1992, p. 23). Figure 2 illustrates the different efficiency-autonomy trade-offs that exist between the maximum degree of efficiency provided by an economically liberal import policy and the maximum degree of autonomy provided by the entirely indigenous development of armaments.



**Figure 2. The Autonomy-Efficiency Trade-Off in Arms Procurement**

The development of indigenous weapons systems based on U.S. technology has proven both significantly more costly than mere licensed production and much less valuable from a defense-industrial perspective than building completely indigenous weapons systems. Because projects based on U.S. technology involve designing new weapons systems, nations must bear the economic burdens and technical risks inherent in defense-

industrial R&D. However, because the U.S. government reserves the right to prohibit the export of products based on its technology, it is difficult for these nations to utilize arms exports to amortize their R&D expenditures adequately over longer production runs. As a consequence, the indigenous production of armaments based on U.S. technology frequently results in weapons whose per-unit program costs markedly exceed those of either direct imports or licensed production. For example, Japan's F-2 fighter, which is based on the U.S.'s F-16, reportedly provides only marginally better performance than its cheaper U.S. counterpart and costs Japanese taxpayers three times more per unit than if Japan had bought the latest models of F-16s directly from U.S. production lines (Chinworth, 2000; Steuer et al., 2011, p. 98).

Because of the disadvantages inherent in designing weapons based on U.S. technological inputs, many nations consider it necessary to design and produce weapons systems on an entirely indigenous basis. The principal advantage of developing weapons indigenously lies in the superior degree of defense-industrial autonomy it confers. A nation that is self-sufficient when it comes to the production of modern weaponry is (1) not subject to the shifting policies of arms exporters, (2) comparatively immune to arms embargos, and (3) capable of exporting its wares to whomever it pleases (Krause, 1992). Because of these perceived benefits, the indigenous production of armaments remains a goal cherished by many nations. It receives additional support in certain nations because of the "techno-nationalist" identities held by their political elites and populations alike (Samuels, 1994). As a consequence, in addition to China and Russia, which cannot reliably import U.S. weapons, nations as diverse as France, India, Israel, Italy, and the United Kingdom strive to develop and produce at least some entirely indigenous weapons systems.

Through its decisions about what weapons to develop and whom to export them to, the U.S. government plays a crucial role in structuring both the international arms market and the defense-industrial policies of other nations. The reason for the U.S.'s overseas defense-industrial impact lies in its unrivaled domestic expenditures on defense R&D and procurement, which enables U.S. arms manufactures to offer new technologies for export earlier and more cost effectively than other suppliers. However, although the U.S. is the world's largest arms exporter and accounts for 27–58% of the world market, its market share understates its true impact on the international arms market and defense industries worldwide.

Unlike most other nations, the U.S.'s arms export decision-making process frequently denies, for humanitarian or political reasons, sales to nations capable of paying the full cost of weapons. Because the U.S. is perceived as a restrictive and unreliable exporter, other nations are frequently willing to sacrifice much in terms of the economic efficiency of their procurement activities in order to achieve a greater degree of autonomy from U.S. imports. Diversified purchasing, manufacturing U.S. weapons under license, and domestically developing weapons based on U.S. technology are all common, yet costly, responses to U.S. arms export policies. Since the latter two policies involve substantial U.S. inputs, which are not generally included in arms export statistics, the U.S.'s true share of the international production of armaments is far greater than export statistics suggest.

Ultimately, the fact that U.S. products possess decisive advantages in terms of cost and performance renders the path difficult for those nations that attempt to leverage arms exports as a means of sustaining autonomous defense-industrial bases. In general, only through comparatively unrestrained arms exports and a range of indirect export subsidies can most nations achieve the sales volumes needed to sustain the indigenous development and production of major weapons systems. However, although necessary, such policies cannot guarantee the success of an export-driven domestic defense-industrial base. Relying



on exports to achieve adequate production runs is intrinsically risky because it involves achieving a volume of sales that is both large and predictable in a market that is highly competitive and where demand is extremely volatile.

Throughout the second half of the 20th century, Europe became the focus of the U.S.'s longest and most intense peacetime security commitment ever. In effect, through the creation of NATO, the U.S. assumed the military leadership of a coalition of Western European nations dedicated to containing the Soviet Union. Compared to alliances preceding it, NATO achieved an unprecedented degree of political and military integration, which has contributed to the alliance's remarkable longevity. As a consequence, this transatlantic alliance enabled the U.S., Western Europe, and Canada to achieve a reasonable level of security relative to the Warsaw Pact at a political and economic cost that was acceptable to modern democratic nations (Kaplan, 1999). Because of Europe's past centrality to U.S. security, as both a source of committed allies and significant threats, many observers expect Europe to continue to be the region where arms races with rivals and burden-sharing amongst allies will be most common.

### **U.S. Defense Policies and European Defense Acquisition and Budgets**

In terms of arms races, certain journalists and policy analysts alike have recently highlighted Russia's authoritarian political system, willingness to use force, and conflicting interests with the West as proof that a new cold war is in the offing (Brzezinski, 2007; Lucas, 2008; McLaughlin & Mock, 2009). To make matters worse, Russia's leaders have repeatedly threatened that a new arms race or cold war would ensue if NATO did not acquiesce to Russia's policies in the Caucasus or accommodate it in terms of ballistic missile defense (Blomfield & McElroy, 2008; Harding, 2007). Given a combination of this posturing and Russia's suspension since 2007 of its participation in the Conventional Forces in Europe (CFE) Treaty, it is natural to examine both whether Russia's current defense budgeting decisions are driven by a desire to compete with the U.S. and whether the U.S.'s decisions are still motivated by the need to contain Russia.

Although some observers believe that Russia could spark an arms race in Europe, others view NATO's European members as partners in sharing the defense burden needed to render the world secure for the U.S. and Europe alike. Believers in the reality of transatlantic burden-sharing can point to NATO's remarkable resilience since the end of the Cold War. In effect, far from dissolving after the collapse of the Soviet menace it was designed to combat, NATO has expanded both its membership and missions. In terms of membership, the alliance has grown from 15 member nations in 1989 to 28 today—an accomplishment that largely consisted of incorporating into NATO nations that had belonged to NATO's former rival, the Warsaw Pact (DeHart, 2008). In terms of mission, NATO has gradually transitioned from an organization dedicated to the defense of its members' territory to an organization with a broader agenda of peacekeeping and crisis management (North Atlantic Council, 1999). Over the course of successive interventions in Bosnia-Herzegovina (1995), Kosovo (1999), Afghanistan (2001), and Libya (2011), NATO has demonstrated its capacity to undertake new missions.

In certain respects, NATO appears more solid today than at any time in the past. Within this context, experts have observed a notable convergence in the published national strategies and defense policies of NATO member nations (Serfaty & Biscop, 2009). One of the most notable developments has been Germany's slow emergence from the pacifist shell it forged after World War II to play a more active role in NATO's foreign interventions. Progressing incrementally from providing medical aid in Bosnia to conducting counterinsurgency operations in Afghanistan while increasing the professional component of its armed forces, Germany has gradually become a full partner in NATO's new missions



(Kümmel, 2006; Noetzel, 2010). Likewise, by choosing to rejoin NATO's integrated force structure in 2008, France's government put an end to the diffident stance that President Charles de Gaulle adopted towards NATO in 1966 and, thereby, re-incorporated one of Europe's premier armed forces into this U.S.-led alliance (Cameron & Maulny, 2009; de Russé, 2010). As a sign of the growing strategic concord between the U.S. and its European allies, NATO's heads of government adopted a new joint strategic concept (i.e., Active Engagement: Modern Defense), highlighting their agreement on key strategic issues (North Atlantic Council, 2010).

A detailed analysis of how Russia is spending its defense budgets further proves the absence of a present-day Russo-U.S. arms race. After a decade of chaotic defense budgeting following the Soviet Union's collapse, the bulk of Russia's growing defense budget is now dedicated to reestablishing Russia's status as the preeminent power within the regions its leaders consider Russia's historic sphere of influence. Within this context, maintaining credible military options for the Caucasus, Central Asia, and the Soviet Union's former European possessions (e.g., Belarus, Moldova, and Ukraine) constitutes Russian defense planners' primary objective (Rukshin, 2005). Although it may be debated whether Russia has any right to hegemony in its self-described "near abroad," preserving this state of affairs is a modest ambition and one compatible with the maintenance, rather than modification, of the international status quo. Those resources that have not been dedicated to reasserting Russian preeminence in these regions have been allocated to the urgent task of re-capitalizing a defense-industrial base that was starved of resources for over a decade (Bjelakovic, 2008).

In parallel with these prosaic, albeit needed, investments, Russia's attitude towards strategic weapons, which drove the Cold War arms race, has been remarkable for its restraint. In fact, Russia has proven far more proactive than the U.S. in pushing for further Russo-U.S. arms control agreements. Thus, it was the U.S. Senate rather than the Russian Duma that prevented the implementation of the second Strategic Arms Reduction Treaty (START II) by refusing to ratify an addendum to the agreement (Woolf, 2010a). After the collapse of START II, it was Russia rather than the U.S. that pushed for additional talks and proposed a dramatic reduction of nuclear forces to a level of 1,550 warheads per nation (Woolf, 2010b). Compared with these initiatives, the U.S.'s own actions, such as its 2002 release of an offensive Nuclear Posture Review and withdrawal from the Anti-Ballistic Missile (ABM) Treaty, have been far less conducive to the continued reduction of Russian and U.S. nuclear forces (Evstafiev, 2007; Hildreth & Woolf, 2010). Nevertheless, Russia has not responded to its arms control disappointments by embarking on an arms race but has rather proceeded with a modest modernization of its nuclear forces through the slow introduction of Topol-M (SS-27) ICBMs and Project 955 ballistic missile submarines (SSBN; Podvig, 2004).

In sum, no direct relationship is apparent between U.S. and European decisions about how many resources societies should expend on their armed forces. Within this context, U.S. allies have made no discernible effort to share the larger defense burden that the U.S. has imposed upon itself since September 2001, and the only regional great power not aligned with the U.S.—Russia—has not attempted to either match or counter U.S. investments in military power. Given the absence of either arms racing or burden-sharing in Europe, U.S. and European decisions about how much to spend on defense appear to be fundamentally unconnected to one another.

### **U.S. and Asian Acquisition and Budget Policy Comparisons and Issues**

If U.S. decisions about how many resources to dedicate to defense are not linked to those of European great powers through either arms racing or burden-sharing, does the



same hold true for Asia? Although U.S. policy-makers long considered Europe the most important region for the U.S.'s security, more U.S. military personnel have fought and been killed in Asia since 1945 than on any other continent. Given this legacy of U.S. military engagement—spanning the Korean, Vietnam, and Afghan Wars—it is only natural to examine whether the U.S.'s defense budgeting decisions may be linked more closely to those of significant Asian, rather than European, nations.

In many respects, a comparison of international relations in Europe and Asia provides additional reasons to suspect that the latter region may witness a greater degree of arms racing and burden-sharing than the former. Unlike Europe, which has benefited from a pacifying process of regional integration culminating in the formation of the European Union and a common currency, Asia is still subject to traditional great power rivalries and unbridled nationalism. Because Asia has also recently experienced rapid economic growth, its nations both possess greater resources for waging war and face greater needs for natural resources than was hitherto the case. For these reasons, numerous scholars have argued that Asia will, in the future, likely endure dynamics of inter-nation conflict equivalent to those that Europe experienced prior to 1945 (Friedburg, 2000; Mearshimer, 2001).

Given this state of affairs, incidents since the end of the Cold War highlight the potential for great power conflict in Asia. These include China's occupation of Mischief Reef in the disputed Spratley Islands (1994); provocative Chinese missile tests into the waters surrounding Taiwan (the so-called Third Taiwan Straits Crisis of 1995–96); the Kargil War between India and Pakistan (1999); Japan's sinking of a North Korean spy ship in its territorial waters (2001); provocative North Korean missiles tests into the Sea of Japan (2005 and 2007); North Korean nuclear tests (2006 and 2009); and artillery duels between the two Koreas over Yeonpyeong Island (2010). If Asia is more conflict-prone today than Europe, then one might expect both a significant degree of arms racing between the U.S. and its potential Asian rivals and an elevated level of burden-sharing between the U.S. and allies eager to collectively achieve a high degree of security.

Scholars and policy-makers alike focus on China as the nation most likely to engage the U.S. in an arms race. Having experienced rapid economic growth over the course of three decades, China today possesses both the world's second largest economy and second largest defense budget. However, along with these resources, China is also a nation which many scholars characterize as dissatisfied with its current position in international affairs. Resentful of the "unequal treaties" foisted upon it during the 19th century, frustrated with the province of Formosa's (Taiwan) escaping Beijing's control since the communist victory of 1949, possessing 22,000 kilometers of disputed borders, and ruled by an undemocratic elite dependent on nationalism to compensate for its lack of other forms of legitimacy, China allegedly possesses powerful motivations for challenging the status quo in Asia (Buzan, 2010; Hongyi, 2009; Wan, 2005). Because of the U.S.'s alliances with many of the nations surrounding China (e.g., Japan, South Korea, the Philippines, and Taiwan), many observers predict that China's rise will result in an intense Sino-U.S. military competition, if not war (Mearshimer, 2010).

As if to emphasize this possibility, China's biannual defense white papers single out the U.S. for criticism and obliquely state that the Chinese armed forces' principal challenge is preparing to fight a high technology war with the U.S. (People's Republic of China 2004, 2007, 2009, 2011). For its part, the U.S.'s 2002 National Security Strategy (Office of the President, 2002) condemned China's pursuit of advanced military capabilities and its 2008 National Military Strategy (DoD, 2008) characterized China as an "ascendant nation with the potential for competing with the United States" (p. 3). To meet this challenge, the latter document emphasized the "need to hedge against China's growing military modernization





and the impact of its strategic choices upon international security” (DoD, 2008). Given the fact that U.S. and Chinese armed forces acknowledge one another as potential adversaries, the question should be posed as to whether the two nations’ defense budgeting decisions are linked by an arms-racing dynamic.

A Sino-U.S. arms race is one way that the defense budgeting decisions of the U.S. and Asian nations might be linked and burden-sharing between the U.S. and its allies in the Asia-Pacific region constitutes another. As already mentioned, the U.S. is connected to Australia, Japan, the Philippines, South Korea, Taiwan, and Thailand through bilateral security agreements. Faced with China’s growing power and the danger posed by a nuclear-armed North Korea, many of these nations have sought to reaffirm their ties with the U.S. in recent years. The U.S.’s most powerful Asian ally, Japan, has collaborated with the U.S. on ballistic missile defenses since 1998; participated in an ongoing security dialogue with the U.S. since 2002; deployed troops to Iraq in 2003; and embarked in 2005 on a process designed to improve the ability of U.S. and Japanese armed forces to operate together as an integrated fighting force. As part of deepening its strategic partnership with the U.S., Japan has also committed itself to supporting the U.S. in the event of fighting in either Korea or the Taiwan Straits (Samuels, 2007).

Although Japan is exemplary in its pursuit of more robust security options in conjunction with the U.S., the U.S.’s other regional partners have also expressed their growing appreciation for the value of their long-standing alliances with the U.S. Australia, for instance, prioritized improving interoperability with the U.S. armed forces in its 1997 Strategic Policy (Australian Department of Defence, 1997) and declared its objective to remain “a highly valued ally of the United States” in its 1998 Defense Review (Australian Department of Defence, 1998a). Since then, it has contributed credible contingents to U.S.-led coalitions in Iraq and Afghanistan, announced plans to expand its high technology naval and air forces, and reaffirmed in its 2009 defence white paper the U.S.’s centrality to Australian security (Australian Department of Defence, 2008b; Ayson, 2010).

South Korea, too, has reaffirmed and expanded its security ties with the U.S., gradually transforming the two nations’ alliance from a pact designed exclusively to protect against North Korea into a strategic partnership with broader ramifications. This process became apparent in 2000 when U.S. and South Korean leaders declared that their alliance “will serve to maintain peace and stability in Northeast Asia and the Asia-Pacific region as a whole” (Suh, 2009, p. 127). In 2003, South Korea committed itself to transforming its own military forces to remain interoperable with the U.S., contributed forces to the U.S.’s wars in Afghanistan and Iraq, and has worked with the Pentagon to develop new mechanisms for coordinating how the two nations will militarily respond to crises (Chang-hee, 2007; Suh, 2009). Given the value that certain Asian nations ostensibly place in their alliances with the U.S., it is worth examining whether they are also sharing the additional defense burden that the U.S. has assumed.

China has sought to develop counters to U.S. capabilities that are both asymmetric and affordable, rather than attempting to compete more directly with U.S. advantages in conventional high technology warfare. It is within this context that China is developing anti-satellite weapons; “cyber-war” capabilities; a large submarine force; anti-ship ballistic missiles; and a substantial conventionally armed medium-range ballistic missile force (Cliff, 2011; Cole, 2007; Lipicki, 2011; Scobell, 2010). However, this concentration on so-called “anti-access/area-denial” capabilities must be recognized as one of leveraging a fixed budget to improve China’s ability to deter and, if necessary, fight a war with the U.S. in the Taiwan Straits or Korean Peninsula, rather than an attempt to achieve any form of across-the-board military advantage. That China’s current and planned measures are probably



insufficient even for this limited objective is openly acknowledged in the pages of Chinese military publications, as is the fact that it will take several decades of uninterrupted economic growth before China can confidently engage in an arms race with the U.S. (Lai, 2010, pp. 8–11).

In summary, there is no direct relationship between U.S. and Asian decisions about how many resources societies should expend on their armed forces. Although the U.S.'s allies in the Asia-Pacific region have made no additional effort since 2002 to share the larger defense burden that the U.S. has imposed upon itself, the two regional great powers not aligned with the U.S.—China and India—have not drawn more deeply on their national resources to match U.S. investments in military power.

## Conclusions

As this paper demonstrates, defense budgeting, acquisition, and financial management processes in the U.S. are a product of several distinct, oftentimes conflicting, imperatives. Because the U.S.'s political system is based on the separation of power amongst different branches of government and civilian control of the armed forces, U.S. defense budgeting procedures should accord adequate voice to a plurality of political and bureaucratic actors. However, since the ultimate purpose of defense budgeting is to provide the military with the capabilities—generated by a combination of weapons systems and the trained personnel to operate them—needed to keep the U.S. safe, the defense budgeting process must also produce outcomes that are both efficient and well integrated with the country's foreign policy. Finally, because U.S. weapons acquisition and arms transfer policies exercise a powerful impact on the military opportunities and constraints facing other nations, the U.S. government should approach procurement and export decisions with an understanding of all the direct and indirect effects that their actions might have. Having evolved gradually since the 1960s, the U.S. PPBES system and arms transfer procedures are sophisticated, albeit imperfect, responses to all of these conflicting demands.

Within this context, it is in their effects on international relations that the impact of the U.S.'s defense budgeting is probably least understood. This paper attempts to fill this analytical void so as to provide future managers of U.S. defense budgetary and acquisition policy with useful insights as to how their actions affect global politics in the broadest sense. To this end, this report has successively examined issues such as the U.S.'s impact on the development and diffusion of new military technologies; the pros and cons of arms exports; the U.S. impact on the international arms trade; the question of burden-sharing amongst allies; and the presence or likelihood of arms races. As has already been shown, the impact of U.S. defense budgeting and arms transfer decisions is significant, complex, and, at times, counterintuitive.

Because of the scale and nature of its defense budgets, the U.S. plays a crucial role in the development and diffusion of new military technologies. However, the U.S. pays a heavy premium, in terms of higher R&D budgets and numerous failed projects, to generate this level of innovation. Other arms producers, by way of contrast, achieve substantial economies through *sub-optimization*, which means relying only on proven technologies and pursuing more moderate performance goals in the development of new weapons systems. Although the U.S.'s across-the-board drive for innovation was essential during the Cold War when the Soviet Union contested the U.S.'s technological lead, is it still necessary today at a time when no other nation is either pushing the technological frontier in weapon design or engaging in an arms race with the U.S.? Or might the U.S. itself sub-optimize on some future weapons systems? The fact that the U.S. is the originator of much of the world's new military technology should draw fresh attention to the U.S.'s technology transfer policies. To economically develop their own military capabilities, the U.S.'s allies and rivals alike seek to





access its military technology. By transferring such technology to allies, the U.S. can strengthen nations whose security is, to some degree, interdependent with that of the U.S. However, every transfer of U.S. technology to a friend or ally comports a risk that the technology will be retransferred to potential rivals. Given a historic record that has witnessed even such close allies as Israel and the United Kingdom (deliberately or inadvertently) transferring U.S. technology to the Soviet Union and China, it can never be known for certain that the intended recipient of a technology transfer will also be its final recipient. Within this context, if technological superiority is so important to U.S. security that its citizens should pay a heavy premium for military innovation, then should not the U.S. government restrict to a maximum *any* nation's access to its recently developed military technology?

Although national security concerns militate against arms sales or defense technology transfers, the very scope of the U.S.'s defense-industrial effort creates powerful incentives for an economically liberal approach towards the sale and licensed production of armaments. Not only does the size of U.S. production runs provide its arms producers with cost advantages when it comes to competing for export markets, but the U.S.'s defense R&D effort represents a sizeable diversion of human and financial resources away from the civilian economy. At present, over half of the federal government funding for technological R&D is devoted to defense and defense contractors employ a sizeable proportion of U.S. engineering talent (Lockheed Martin, for example, is the U.S.'s largest recruiter of graduating engineers; Congressional Budget Office [CBO], 2007; Denney, 2011). Given the concentration of science and engineering resources on defense, the U.S. should logically maximize its economic return on this defense-industrial investment through a liberal arms export policy. Moreover, partisans of arms exports make the oftentimes correct argument that U.S. export restrictions only serve to create commercial opportunities for other producers, which, in certain cases, are geopolitical rivals of the U.S.

In keeping with the U.S.'s pluralistic political system, the task of striking the proper balance between the security arguments against exports and the economic reasons for arms sales is not entrusted to any single body. Rather, both the executive and legislative branches of government, as well as a multiplicity of officials at the State and Defense Departments, determine the merits of each sales requirement on a case-by-case basis. Because the U.S.'s arms export decision-making process is comparatively restrictive and can produce unpredictable results, foreign nations are willing to sacrifice much in terms of the economic efficiency of their procurement activities in order to achieve a greater degree of defense-industrial autonomy from the U.S. Within this context, diversified purchasing from multiple exporters, manufacturing U.S.-designed weapons under license, and developing indigenous weapons based on U.S. technologies all represent different forms of foreign hedging against unpredictable interruptions in U.S. arms sales. Motivated, in part, by uncertain access to U.S. defense technologies, certain nations elect to maintain the highest possible degree of defense-industrial autonomy, which consists of the indigenous development and production of weapons systems. Unlike the U.S., the survival of these nations' domestic defense-industrial bases depends largely on their ability to export a large proportion of the arms they produce. However, the cost and performance advantages of U.S.-produced armaments render this task fundamentally difficult in those markets where U.S. defense contractors compete for sales. As a consequence, the world's other armaments producers have a powerful incentive to cater to markets that the U.S. has embargoed, regardless of the political or humanitarian concerns that such sales might generate. When foreign arms producers are obliged to compete directly with the U.S. for export markets, they must rely on subsidies, a generous provision of financing, and a greater flexibility in meeting clients' delivery requirements to compensate for the superior cost effectiveness of U.S. contractors. Thus, the U.S. government's decisions about when



and where to export armaments shapes other arms producers' ability (or lack thereof) to achieve the sales volumes needed to sustain domestic defense-industrial bases.

Although the U.S.'s allies covet its defense technologies and frequently import a large proportion of their armaments from the U.S., they have systematically resisted calls to follow the U.S.'s example in consecrating a larger proportion of their national wealth to defense. Because the security provided by a military alliance is a collective good whose benefits are shared by all members, a unilateral decision by one nation to increase its investment in defense creates opportunities for its partners to reduce their contributions, provided that the aggregate amount of security generated by the alliance is still considered sufficient. It is within this context that the U.S.'s post-9/11 military buildup has encouraged its allies to free ride (or "cheap ride") on its provision of security, rather than increase their own contributions as a form of burden-sharing. Thus, many of the U.S.'s allies have cut their defense budgets, either in real terms or as a proportion of GNP, even as the U.S. has spent more. This has resulted in such seemingly paradoxical situations as Taiwan reducing its defense effort even as the U.S. implemented budget increases designed, in part, to contain Chinese ambitions in Asia. Likewise, even as the U.S. invested significant sums in fighting terrorism across the globe, two allies whom immigration has rendered more potentially vulnerable to Salafi terrorism—Germany and Spain—cut their defense budgets.

The current prevalence of free riding on the part of many U.S. allies has counterintuitive implications for U.S. defense budgeting. Because any cut in U.S. defense budgets reduces its allies' ability to free ride, lower levels of defense spending in the U.S. will not necessarily generate a commensurate decline in national security. Thus, the degree of burden-sharing between the U.S. and its allies will always likely be a function of both the scale of U.S. defense spending and the level of strategic concord prevailing between its allies and itself.

Although high levels of U.S. defense spending currently encourage allies to free ride on its provision of security, they also appear to have dissuaded potential rivals from engaging in an arms race. Although China and Russia view the U.S.'s global presence as a challenge to their own regional ambitions, the U.S.'s existing military advantages and the magnitude of its defense spending are such as to deter either nation from increasing the proportion of its national resources dedicated to defense in a vain effort to compete with the U.S.. Within this context, today's great powers appear to have learned the lesson of the Cold War's arms race, which is that it is counterproductive to engage in an open-ended defense-industrial competition with a nation far wealthier than one's own. As a result, neither contemporary Russia nor post-Maoist China is likely to replicate the Soviet Union's mistakes. Rather, both are keeping their defense expenditures within reasonable limits and are striving to acquire the best mixtures of military capabilities commensurate with their budgets and foreign policy ambitions. In theory, arms races should only reemerge as a characteristic of the U.S.'s relations with other great powers once economic growth and/or a decline in U.S. defense spending permits other nations to compete with the U.S. Considering the many ramifications of U.S. budgetary choices on the international system, defense budgeting should no longer be viewed as a purely domestic process for funding the equipment, training, and high level of operational readiness needed for the U.S.'s armed forces to effectively enact the government's foreign policy. Rather, U.S. budgeting and arms transfer policies have direct and indirect effects on other nations' decisions about how many resources to dedicate to their armed forces; what types of capabilities they should develop; and whether they should import weapons, build them under license, or attempt to develop them domestically. At a more fundamental level, U.S. defense budgeting and transfer decisions shape how the international market for armaments functions as well as how new



military technologies are developed and diffused throughout the international system. Only by adapting U.S. defense budgeting, acquisition, and financial management policies and processes to take into account these frequently unanticipated, or at least underappreciated, effects of the U.S.'s actions can the nation achieve the foreign policy outcomes desired by its government and citizens.

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