

Defense Industries and Global Dependency

by Stephanie G. Neuman

Stephanie G. Neuman (sgn1@columbia.edu) is a senior research scholar at Columbia University's Saltzman Institute of War and Peace Studies and co-author of *Warfare and the Third World* (Palgrave MacMillan, 2001). This article is based on a paper she delivered at the BESA Center, Bar Ilan University Conference on Israel's Strategic Agenda held July 4–6, 2005.

Abstract: The global defense industrial sector is a remarkably accurate indicator of the distribution of power in the post–Cold War international system. However, the defense industrial sector as a policy tool has received relatively little scrutiny, even though it not only reflects the international order, but also provides the United States with the ability to influence the foreign policy behavior of other states. The defense industrial sector is a powerful, if undervalued, diplomatic tool in the United States' political arsenal.

The global defense industrial sector is a remarkably accurate indicator of the stratification of power in the post–Cold War international system. As in the overall system, the United States plays the dominant role in this sector, and U.S. policymakers use their comparative advantage to influence foreign affairs. However, as a policy tool, this sector has hitherto received relatively little scrutiny, even though it not only reflects the international order but also provides the United States with the ability to encourage states to cooperate, reward compliance, and punish non-cooperation. The defense industrial sector is a powerful, if undervalued, diplomatic tool in the United States' political arsenal.

The Restructuring of the World's Defense Industrial Sector

Contraction and Globalization of Defense Industries

As the perceived conventional threat diminished with the end of the Cold War, defense budgets were reduced and major weapons programs slowed down in the main arms-producing countries. In many countries, Western and non-Western alike, military industrial production was drastically cut and some production lines shut down. Since the mid-1990s, through a process of mergers, acquisitions, and rationalization, the world's

defense industrial sector has become increasingly concentrated, particularly in the United States, where the number of independent prime contractors fell from twenty to four.¹ These changes have been accompanied by a rapid globalization of the defense export sector and the emergence of transnational defense companies, especially at the subcontractor level, in the West.

There is some question, however, as to the actual character and extent of globalization. The Stockholm International Peace Research Institute (SIPRI) contends that the U.S. defense industrial sector has opted for certain kinds of global and transnational initiatives while avoiding others. Whereas the United States is eager to exploit foreign sources of technology, it simultaneously seeks to protect itself from becoming too dependent upon foreign suppliers. In fact, studies conducted by the U.S. Department of Defense found that dependence upon foreign weapons sources is limited: imports have a negligible impact on the readiness of the military or the U.S. defense industrial base. Only about 4 percent (\$7 billion) of total Pentagon procurement (\$171 billion) during FY02 was for overseas contracts, and of that less than 1 percent was for military hardware.² It is, SIPRI contends, a policy of moving both towards and away from defense industrial globalization.

The term “globalization” as applied to Europe’s defense industries is equally problematic, since intra-European collaboration has been far more extensive than transatlantic collaboration. But even within Europe, transnational collaboration has not been vigorous. As Javier Solana, the EU representative for the Common Foreign and Security Policy and head of the European Defense Agency, observed, “There is enormous fragmentation in both supply and demand and almost no international cooperation between member states.” Less than 5 percent of Europe’s research and development budget is spent collaboratively. Solana cites the 23 separate national programs for armored fighting vehicles currently running or about to start, with almost no cooperation among EU members.³ Less is known about the participation of non-Western defense industries, suggesting that, with few exceptions, they are only marginally involved in the globalization process.

The weapons manufacturing industry’s perception of future markets, however, has indisputably globalized. As armies continue to downsize and domestic military markets shrink, arms producers worldwide are looking

¹David Kirkpatrick, “Trends in the Costs of Weapon Systems and the Consequences,” *Defense and Peace Economics*, June 2004, p. 271.

²U.S. DoD, Office of the Deputy Under Secretary of Defense for Industrial Policy, “Study on Impact of Foreign Sourcing of Systems,” January 2004, pp. 33–35.

³Elizabeth Skoens, Sibylle Bauer, Eamon Surry, “Arms Production,” *SIPRI Yearbook 2004*, (Oxford, 2004), pp. 405–10; James Murphy, “EU Calls for Closer Coordination of Defense Projects,” *Jane’s Defense Weekly*, June 1, 2005.

abroad to achieve economies of scale for their products. With the possible exception of the United States, in the coming years domestic defense industries may consider their own military as less important customers than foreign markets. This may have already occurred in France and Israel. In both countries, export revenues are far higher than domestic sales. In France, the military has expressed concern that export demand, rather than the needs of the armed forces, drives arms production. In Israel, the military has become a secondary customer for almost all Israeli defense industries, and exports now account for almost 80 percent of their revenues—the reverse of the U.S. market.⁴

Transformation

Another factor contributing to defense industrial restructuring is the transformation of the U.S. defense doctrine.⁵ In response to perceived new security threats and technological innovations, this new doctrine is designed to enable the U.S. armed forces to better address small, complex, non-traditional contingencies. It aims to expand communication among military units and to achieve greater real-time target acquisition, longer-range projection capabilities, increased unit mobility, and improved weapon accuracy and lethality. Central to the goal of transformation is the concept of network-centric warfare, which links sensors, communication systems, and weapon systems in an interconnected grid designed to provide an integrated picture of the battlefield to all levels of command and control down to the individual soldier.⁶

This concept of full connectivity depends on a host of sophisticated electronic and information technologies, as well as specialized services and technical support that have generated a sizable demand from both the civil defense and military sectors. As the line between traditional defense and internal security becomes increasingly blurred, demand by Homeland Security for many of these same systems has grown, increasing the market for these new dual-use technologies.⁷

⁴Keith Hayward, “‘I Have Seen the Future and It Works’: The U.S. Defense Industry Transformation: Lessons for the UK Defense Industrial Base,” *Defense and Peace Economics*, April 2005, p. 127; Sharon Sadeh, “Israel’s Defense Industry in the 21st Century: Challenges and Opportunities,” *Strategic Assessment*, December 2004; Pierre Tran, “Fewer Rafales? France Plans to Trim Order, Put Money into Plane’s Export Appeal,” *Defense News*, Jan. 23, 2006.

⁵See Frank G. Hoffman, “Complex Irregular Warfare: The New Revolution in Military Affairs,” in this issue of *Orbis*.

⁶Nancy J. Wesensten, Gregory Belenky, Thomas J. Balkin, “Cognitive Readiness in Network-Centric Operations,” *Parameters*, Spring 2005, p. 94; Lawrence Freedman, “The Revolution in Strategic Affairs,” *Adelphi Paper* 318 (Oxford, 1998), p. 110.

⁷E.g., a number of traditional defense companies are offering missile protection suites for military and civil airlines. See David Mulholland, “Homeland Defense Market Grows,” *Jane’s Defense Weekly*, Aug. 25, 2004.

Economic pressures combined with a changing, more complex threat environment have led other governments to downsize and modernize their military and defense industries. They, too, seek similar dual-use systems to bolster their armed forces and domestic defense. In East Asia, for example, Japan, South Korea, Singapore, Taiwan, and, to a lesser extent China, have integrated advanced computers, communications equipment, and sensors with precision-guided weapons in an effort to transform their militaries. East Asian defense industries are also consolidating, privatizing, and internationalizing. But despite their efforts to become less dependent on Western suppliers, they still find themselves reliant on Western technology.⁸

Rising Costs

Rising costs across successive generations of weapons are inevitable. During the Cold War, the average cost of weapons grew between 5 and 10 percent annually. According to one study, this rate of increase has remained stable, with the unit production cost of military weapons continuing to rise an average 5 to 10 percent per year since 1989.⁹ However, compared to the price of mature systems, such as rifles and machine guns, which increase more slowly, the rate of growth for new technologies is much faster.¹⁰ This is due not only to rising manufacturing costs, but also to the military's requirement for more extensive R&D and more complicated operating and maintenance procedures that require more highly trained personnel and more expensive spare parts. Despite the use of less expensive, off-the-shelf commercial components instead of those designed specifically for the military, the cost of new weapons and military technologies continues to rise. As the price of sophisticated weapons has escalated and defense budgets have fallen, few countries can afford the many new technologies associated with network-centric warfare.

The economics of transformation, then, is a major dilemma for defense planners, who recognize that the number of weapon systems in inventory is no longer a reliable indicator of military power or effectiveness. Today, an electronic network of sensors and communications systems is estimated to multiply the utility of individual weapon systems ten-fold, by providing broader coverage of the battlefield, allowing a more efficient allocation of forces, enhancing the timing of their operations, and reducing fratricide.¹¹ But

⁸ Susan Willett, "East Asia's Changing Defense Industry," *Survival*, Autumn 1997.

⁹ David Kirkpatrick, cited in "Controlling Costs in Tactical Aircraft Programs: CDI Congressional Testimony on the FA-22," p. 6.

¹⁰ Kirkpatrick suggests that this cost "increased by about three orders of magnitude between the general purpose 'dumb' bomb and the stand-off air-to-ground guided missile." Kirkpatrick, "Trends in the Cost of Weapons Systems," p. 263.

¹¹ *Ibid.*, p. 268.

the cost of building and maintaining such a network is substantial, and few countries can afford it.

Commercialization/Privatization

In the past, there were dramatic differences between technologies used in commercial and military systems; that is now changing. As the pace of scientific innovation in the civilian economy has increased, military organizations in most major arms producing countries¹² have turned to the commercial sector, domestic and foreign, for dual-use technologies and breakthrough scientific discoveries. Doing so is also a response to post-Cold War political pressure to economize by lowering military expenditures. Jacques Gansler, then U.S. undersecretary of defense for acquisition, technology and logistics, made this point at a 2000 conference promoting the DoD's Dual-Use Science and Technology (S&T) Program.¹³ He emphasized that the U.S. military needs to take advantage of the efficiencies, innovation, reduced cycle time and lower cost technologies in the commercial world in order to create economies of scale that can have important cost-cutting benefits. Other countries, such as the UK, have introduced similar incentives to encourage cooperation between the military and the private sector. The UK Ministry of Defense takes the position "that while the defense industry may continue to lead in some selective military applications . . . most future technological innovations will originate in the commercial sector."¹⁴

New entities are now also being created to satisfy the military's demand for outsourcing to private firms for other kinds of goods and services. In the United States, many traditional defense contractors have, through acquisitions or partnerships, gained a foothold in this market, although large numbers of other commercial companies are actively participating as well.¹⁵ The services offered by private firms generally range widely, from providing repair services, training, and logistical management to sending soldiers into war zones, and from administrative support for defense departments and

¹² According to SIPRI, the overwhelming share of defense industrial production (dollar value) takes place in China, Europe, Russia, and the U.S. See Sköns, et al., *SIPRI Yearbook 2004*, p. 389.

¹³ The Dual-Use S&T Program provides incentives to encourage commercial contractors to cooperate with the military services and integrate their requirements into a commercial product. Each project is funded by the Pentagon (25%), the services (25%), and the commercial participants 50%. See DoD Press Release, Defense Science and Technology Seminar on Emerging Technologies, Dual-Use Technology, Arlington, Va., Mar. 10, 2000.

¹⁴ Hayward, "I Have Seen the Future and It Works," p. 138.

¹⁵ IBM and Boeing, for example, formed a partnership that won a \$300 million contract to develop military satellite communication technologies. See Gopal Ratnam, "IBM Positions Itself for Defense Work," *Defense News*, Dec. 6, 2004.

ministries, to the supply, integration, maintenance, or operation of military systems.

Two factors driving the U.S. military's growing reliance on private companies, particularly for services, are the Pentagon's belief that it is less expensive to use civilian rather than uniformed personnel and the armed forces' insufficient human resources. Downsizing, which began in the 1990s, has produced a military that often does not have enough uniformed manpower to carry out all its assigned missions, much less enough personnel trained to operate and maintain leading-edge commercially designed technology. Private companies are now needed to provide a multitude of skills to fill these gaps. For 2005, \$208 billion—half of the U.S. defense budget—went to private firms, a number that does not include supplementary spending for the war in Iraq.¹⁶

The integration of private companies into Europe's military sector is proceeding slowly and unevenly. In the UK, for example, the role of private contractors as service providers to the military is expanding. By 2003, the MoD had reportedly signed contracts with 47 private firms valued at more than \$4 billion. Germany, however, has lagged behind in outsourcing military functions although it, too, is now following the example of the United States and the UK by trying to bring in the private sector.¹⁷

Among non-Western countries the pace is even slower and more disparate. In India, despite the government's good intentions, private sector participation remains only 7 percent per year of defense research and production.¹⁸ In Russia, all but one (Irkut) of the major arms-producing companies are government owned.¹⁹ For Israel, with 67 percent of its defense industry in government hands, privatization decisions have proven to be especially difficult. Most private sector executives, along with Israel's Ministry of Defense, agree that the best way to slim down Israel's bloated defense industrial base is to privatize and allow Israeli defense firms to compete in the open market. According to Ministry Director-General Amos Yaron, the Israeli defense budget of \$8.3 billion cannot sustain the 45,000 or so workers currently employed by government-owned defense companies. Nevertheless, the government has been reluctant to privatize, citing security concerns.²⁰ Even so, privately owned

¹⁶ William Matthews, "Pentagon Spends Less on Goods Than Services," *Defense News*, Oct. 4, 2004.

¹⁷ Andrew Chuter, "UK MoD Turns Increasingly to Partnerships," *Defense News*, Apr. 12, 2004; David Mulholland, "Briefing - German Industry - Feeling the Squeeze," *Jane's Defense Weekly*, Mar. 30, 2005.

¹⁸ "Indian Defense and Security - Industry-Forces and Future Trends," *Jane's Special Report*, July 14, 2000.

¹⁹ Elizabeth Sköns and Eamon Surry, "Arms Production," *SIPRI Yearbook 2005*, Oxford, 2005, p. 401.

²⁰ Barbara Opall-Rome, "Israeli Moves Pit Private Against State-Owned Firms," *Defense News*, Jan. 3, 2005.

companies comprise approximately a third of the Israeli defense industry base, and a process of industry consolidation through mergers and acquisitions is now under way.²¹ Although commercialization and privatization are proceeding more slowly in some countries than in others, they are gathering momentum. According to analyst P. W. Singer, total revenue for the world's private defense companies was about \$100 billion in 2003 and continues to grow rapidly.²²

The entry of new commercial firms into the defense sector is raising hard questions about what differentiates defense industries from their commercial counterparts. How is military technology to be defined in today's diversified market? How can governments guarantee their own source of military equipment and services during times of crisis? How will governments control the proliferation of commercial technologies that have military applications? These questions have important implications not only for defense industrial production and procurement, but also for arms-control regimes and for military effectiveness and readiness in the future. To date, governments have provided few answers to these questions.

Arms Exports

Since the end of the Cold War, falling defense budgets have created a significantly smaller global arms market. The total value of arms deliveries worldwide declined by 28 percent between the periods 1997–2000 and 2001–04. The United States accounts for more than 40 percent of the world's military exports, dominating the arms trade. The second and third largest suppliers during 2001–04, Russia and the UK, each accounted for 13 percent of total world deliveries of military equipment and services.²³

U.S. Dominance

Collectively these trends underscore the dominance of the United States in the world's defense industrial sector. U.S. defense spending in 2003 was more than six times that of its nearest competitor, Russia, and dwarfed that of the rest of the world (see [Table 1](#)). The U.S. defense industry, compared to that of any other nation, is overwhelming. Not only does it produce a vast array of defense systems, it is the world leader in advanced systems integration and leading-edge technologies. In 2002, U.S. military R&D spending was more than four times that of the whole EU, and since then

²¹ Sadeh, "Israel's Defense Industry in the 21st Century."

²² P. W. Singer, "The Dogs of War Go Corporate," *London News Review*, Mar. 19, 2004.

²³ Richard F. Grimmett, *Conventional Arms Transfers to Developing Nations, 1997–2004*, Congressional Research Service Report for Congress, Aug. 29, 2005, Table 9A, p. 80.

Table 1. States with Defense Expenditures in Excess of \$10 Million (current US\$ million)

Country	Total Defense Expenditures	As % of 2003 U.S. Expenditures
Australia	11,758	2.90
Canada	10,118	2.50
China	55,948	13.82
France	45,695	11.28
Germany	35,145	8.68
India	15,508	3.83
Israel	10,325	2.55
Italy	27,751	6.85
Japan	42,835	10.58
Korea, South	14,632	3.61
Russia	65,200	16.10
Saudi Arabia	18,747	4.63
Turkey	11,649	2.88
United Kingdom	42,782	10.57
United States	404,920	100.00

Source: The Military Balance 2004–2005 (London: IISS, 2004), Table 38, pp. 353–57.

the gap has grown larger.²⁴ In 2005, a French government report found that “spending on military hardware in the EU is equal to only a third of the Pentagon’s equipment budget, and research spending Europe-wide totals only a fifth of U.S. outlays.”²⁵

Moreover, as the largest exporter of military equipment, the United States is paradoxically the least dependent on foreign exports. Because its domestic procurement budget is so large, the dollar value of its exports amounts to only about 20 percent of the arms the Pentagon buys.²⁶ In addition, the dollar value of U.S. arms imports is less than 5 percent of the dollar value of its exports, by far the lowest percentage of any other arms producer (see Table 2). Given this comparative economic and technological advantage over any major power or combination of powers, the United States’ preponderant position in the world’s

²⁴ See Table 11A-2. “Expenditures on military equipment and military R&D in Western Europe and the USA, 1991–2002,” *SIPRI Yearbook 2003*, Oxford, 2003, p. 405. A French Ministry of Defense report on the growing disparity complained that it was now “tantamount to technological disarmament for Europe, with already perceptible consequences.” See J. A. C. Lewis, “France: Europe faces R&D crisis,” *Jane’s Defense Weekly*, Apr. 23, 2003.

²⁵ Peter Spiegel, “French to warn EU it lags US on defense,” *Financial Times*, June 6, 2005. According to another source, the 25 EU countries’ collective defense budget totals about \$180 billion per year, in contrast to the \$445.6 billion the U.S. spent in defense and supplemental expenses in 2005. See Brooks Tigner, “EU Threatens to Build Own Defense Market,” *Defense News*, Jan. 24, 2005.

²⁶ Kenneth Flamm, ‘U.S. Defense Industry in the Post–Cold War: Economic Pressures and Security Dilemmas’, in Judith Reppy (ed.), *The Place of the Defense Industry in National Systems of Innovation*, Occasional Paper, No. 25, Ithaca, April 2000.

Table 2. Arms Imports as % of Arms Exports for the 35 Largest Arms-Producing Countries

Country (*Western)	Arms Imports as % of Arms Exports
USA*	4.8
United Kingdom*	50.0
France*	27.6
Japan	15000.0
Germany*	68.4
Russia	15.6
Italy*	184.2
Canada*	181.8
South Korea	1100.0
Israel	400.0
Australia*	200.0
China	210.9
India	7000.0
The Netherlands*	553.57
South Africa	166.6
Spain*	1071.43
Sweden*	34.07
Switzerland*	2200.0
Taiwan	13000.0
Turkey	4571.0
Austria*	100.0
Belgium*	1166.67
Denmark*	2900.0
Finland*	800.0
Greece*	2111.12
Norway*	2400.0
Portugal*	Imported (\$60 million) but did not export arms
Czech Republic	275.0
Poland	133.3
North Korea	21.4
Pakistan	10000.0
Singapore	4750.0
Egypt	Imported (\$700 million) but did not export arms
Iran	1500.0
Brazil	900.0

Sources: Country rankings derived from *SIPRI Yearbook 1999*, Table 10.7, pp. 408–9 (ranked by 1996 data, in descending order); import-to-export ratios derived from U.S. Department of State, *World Military Expenditures and Arms Transfers, 1999–2000*, Table II (1999 data), pp. 103–53.

military industrial sector presents significant dependency problems for the rest of the world.

Economic, Political, and Military Dependency

There are few ways for smaller producers to avoid increasing economic, military, and political dependence upon the United States. The escalating costs of defense technologies alone present military planners

everywhere with the dilemma of choosing between greater military effectiveness and necessary budgetary constraint. As the price of weapons continues to rise faster than defense budgets, governments are less able to afford the new defense systems. Those governments unwilling to equip forces with second-rate weapons are choosing to downsize the military, buy the most advanced weapon systems they can afford in fewer numbers, and forego some classes of weapons altogether.

Europe

The dilemma is no less acute in the major industrialized countries of Europe. The UK, for example, has made clear that it cannot realistically pursue the wholesale transformation of its forces. Instead, it has adopted a policy of network-enabled capability²⁷ that selectively and incrementally transforms the capabilities of its military in those areas “most likely to improve the effectiveness of British armed forces in a context of coalition warfare.”²⁸ France is pursuing a similar policy.

The dark side of this decision is greater military and industrial dependency. As some analysts warn, forgoing the production of one or more classes of weapons means the military can no longer initiate a full range of military operations except as part of an alliance or coalition. Defense industrial autonomy becomes equally elusive. Maintaining an industry that designs and produces only small numbers of weapons for a downsized military will yield products that are prohibitive in cost. The UK government has acknowledged that the design, development, and production of network-centric technologies “will inevitably be led by the U.S.”²⁹

Trade figures support this assessment. Most arms producers are already importing more military technology than they are exporting. In 1999, even the larger European producers such as the UK, France, Germany, and Russia imported between three and 14 times more defense equipment than the United States as a percentage of their exports, a trend that is likely to continue (see Table 2). Moreover, economies of scale considerations will mean that small- and medium-size arms producers will become increasingly dependent on export sales for their own products to those countries that can afford to buy them. In a contracted market, the prospects for exports are not great. Inevitably, for these governments, the large U.S. defense market will be the most attractive target. The problem will be finding a niche for their products within it.

²⁷ See Min (DP) Speech, “Network Enabled Capability,” Intellect Defense Briefing Group Christmas Lunch, Dec. 15, 2003, at www.ams.mod.uk. See also UK Ministry of Defense, Network Enabled Capability, JSP 777 Edn 1, also at www.mod.uk; and Andrew Chuter, “UK White Paper Will Describe Policy, Not Cuts,” *Defense News*, Dec. 1, 2003.

²⁸ Andrew D. James, “European Military Capabilities, the Defense Industry and the Future Shape of Armaments Co-operation,” *Defense and Security Analysis*, Mar. 2005.

²⁹ James, “European Military Capabilities,” p. 11.

For European arms producers, then, entrance into the U.S. military market for sales and collaborative programs is critical for both the economic viability of their defense industries and the technological sophistication of their armed forces. However, it entails a Hobson's choice: accepting U.S. technology-transfer constraints. Unwilling to lose control over the destination and use of its exported technologies, services, and technical data, the United States requires that even close allies agree to retransfer/end-user restrictions and conform to key U.S. export controls. From the perspective of other governments, the cost of entry to the U.S. market is increased dependence for them and greater political leverage for the United States.

Non-Western Countries

Statistical information on arms production for most countries is often unavailable and unreliable. Most countries provide no information about their defense industries. Those that do often use differing definitions of "arms production" and therefore include different data in published documents. This is particularly true for most non-Western countries.

But even rough estimates of comparative arms production capabilities depict in sharp relief the extent of concentration in the global arms-production system. Dependency on foreign inputs is even greater in non-Western countries than in Europe, and the range of technical capabilities varies more widely, with few countries approaching Europe's production levels, and then only in some categories. Arms production in non-Western countries includes at least three levels of manufacturing capability: the construction of military platforms; the manufacture of the weapons to be mounted on the platform; and the production of the necessary modules and subcomponents. Some non-Western countries can assemble or disassemble military systems but are unable to design and produce their own. Others are advanced at producing platforms, such as armored vehicles, aircraft, or naval vessels, but remain dependent upon imports for their weapons, subunits, and electronic components. A few are proficient in producing some but not all of the advanced weapons and components.³⁰ India, Israel, and South Korea, for example, have developed extensive arms production capabilities in a number of areas. None, however, are completely self-reliant, and they remain heavily dependent upon defense imports.

In 1999, the latest date for which arms import/export information is available, all three countries—India, Israel, and South Korea, —imported many times more defense items than they exported. The same is true for

³⁰Jurgen Brauer, "The Arms Industry in Developing Nations," paper presented at the conference on Military Expenditures in Developing and Emerging Nations, Middlesex University, London, Mar. 13, 1998, p. 4.

all other non-Western arms producers, with the exception of North Korea.³¹ Together the 17 major non-Western arms producers (including Russia) accounted for about 13–25 percent of global defense production. In contrast, the United States alone accounted for approximately 46–49 percent. The closest competitors were the UK and France, with 9–10 percent each.³² Moreover, the United States imported only a fraction—4.8 percent—of the value of its arms exports. In the new global defense industrial order, the various levels of industrial capability previously associated with a defense production hierarchy are now becoming more fluid and less distinct as even major producers begin to forego earlier industrial competencies out of economic necessity.

Faced with shrinking defense budgets and downsized militaries, many national industries' long-term viability is now in doubt. With the exception of the United States, none of the major arms producers—France, Germany, Italy and the UK—have been able to reduce their reliance on foreign imports. Even these industrial economies suffer from insufficient defense R&D, and an inadequate scientific and technical infrastructure.³³ As the pace of technological innovation continues to increase and the gap between the United States and other countries widens, the ability of most defense industries to keep up is diminishing. The disparity in R&D and production capabilities between the United States and other arms producers will soon be reflected in a widening gap between the qualities and capabilities of the United States' and other nations' weapons systems, increasing the latter's dependency on U.S. military resources.

The Emerging Defense Industrial System: Options and Strategies

The emerging global defense industrial sector, then, is an interconnected and complex global system, its shape resembling less the traditional hierarchical pyramid than what Bitzinger calls a hub-and-spoke system.³⁴ In it, the distinctions between the arms production tiers are eroding as the world's major defense industries formally subordinate themselves to the United States through subcontracting and similar relationships. What strategies will other countries adopt in order to maneuver in this environment? The alternatives

³¹ Prior to 1994, North Korea's arms imports exceeded its arms exports. Since then, because of the country's deteriorating economic circumstances, its arms exports have been greater than its imports.

³² See SIPRI Yearbook 1999, Table 10.7, p. 408.

³³ See Richard Bitzinger, "Problems and Prospects Facing Second-Tier Arms-Producing States in the Post-Cold War Era: A Comparative Assessment," Council on Foreign Relations Study Group on the Arms Trade and the Transnationalization of the Defense Industry: Economic Versus Security Drivers, November 2000, p. 1.

³⁴ Bitzinger, p. 3.

available to governments and industries for the foreseeable future are limited, but they are pursuing various options in an effort to cope with changing global defense trends.

Dropping Out and Scaling Back

Economic and political pressures are forcing some states to abandon some, if not all, of their military industries. Brazil, Argentina, and Indonesia, for example, have dramatically cut back their defense production and are opting to buy foreign military equipment off the shelf instead.³⁵ Brazil, after canceling its ambitious *Program X* fighter program in early 2005, is now negotiating with U.S. companies to purchase used aircraft to use as an interim fighter. By the mid-1990s Argentina, too, had cancelled all of its defense production programs and sold its state-owned aerospace company to a U.S. firm. The government-owned Indonesian aircraft industry PT Dirgantara, which in its heyday produced turbo-prop tactical military transports, commuter aircraft, helicopters, and components for European and U.S. aircraft companies, had virtually ceased aircraft production by the late 1990s. By 2006, the company was dependent for revenues largely on sales of existing stocks and assembly subcontracts from foreign aerospace manufacturers.³⁶

The Israeli case is particularly interesting. Israel's defense industries were established in the difficult political environment of the 1970s and 1980s in an effort to achieve self-sufficiency. But the end of the Cold War and Israel's economic downturn in the early 1990s delivered major blows to the country's defense industries. Strapped for funds, the Israeli Defense Forces opted to buy U.S. equipment paid for by the U.S. Foreign Military Financing (FMF) program. But buying off the U.S. shelf has increased Israel's dependence on the United States to finance the purchase of new air and naval platforms and undercut domestic arms production. Some 20 percent of Israel's FMF funding is spent on equipment from Israeli suppliers. However, each purchase is subject to U.S. consent. Since 1999, the IDF has diverted an ever increasing amount of its local spending—including low-tech products like footwear, uniforms, and

³⁵ This is generally the military's favored procurement option. The armed forces in most countries prefer to purchase the most advanced systems they can operate and afford. South Korea's military, for example, argues that, given its vulnerable security situation, it requires the most sophisticated weapons systems that incorporate the latest technology. It views foreign purchases as more reliable and up to date than locally produced systems. See "China and Northeast Asia: Defense Production and R&D, Korea, South," *Jane's Sentinel Security Assessment*, April 19, 2005. The Israeli armed forces, too, have always preferred to buy off the shelf and objected to the costly investment in programs funded by the defense budget which, in their view, were dated by the time they arrived from production.

³⁶ Christopher P. Cavas, "Lack of Strategy Plagues Brazil's Industry," *Defense News*, Apr. 25, 2005; Bitzinger, note 21; "Southeast Asia: Defense Production and R&D," *Jane's Sentinel Security Assessment*, Apr. 5, 2005; "PT Dirgantara reports buoyant sales," *Jakarta Post*, Feb. 10, 2006; "PT Dirgantara Indonesia claims production of 484 planes," *Indahnesia.com*, Jan. 3, 2006.

rations—to equipment made in the United States because it can be paid for by U.S. funds. Industry executives warn that the Israeli industrial base will be dangerously compromised if the government continues to circumvent local industry because of its need to buy U.S. products with U.S. aid.³⁷

Although dropping out and scaling back are options of last resort for most arms-producing countries, it may become necessary for many others in the future. Germany's industry, for example, is struggling to sustain its technological edge in the face of deep cuts in defense spending and the reduction of Germany's armed forces by 17 percent. Its defense expenditure as a percentage of GDP is expected to drop below 1 percent, the lowest in NATO. As one German industry official gloomily predicted, "If there is no change, companies will slowly either get out of defense, as Siemens did, or out of Germany." Sweden's defense spending cuts in 2005 and the shrinking of its military are having an equally negative effect on Swedish defense industries.³⁸

A Common Market

Europeans have advanced the idea of constructing a consolidated defense equipment market through cooperation in defense spending and procurement. It is conceived as a common defense market large and powerful enough to compete with that of the United States. To date, attempts to create a unified market and to end costly industrial duplication have foundered on concerns about national sovereignty, the security of supply, and the conflicting strategic interests of Europe's small and large countries.³⁹ It is, nevertheless, a goal to which many of Europe's governments still aspire.

In November 2005, after a year's deliberation, the EU's European Defense Agency completed development of a new code of conduct. The goal is to create a single, competitive defense market among the EU countries, transforming the procurement of military equipment into a more transparent process by curbing the use of Article 296 of the EU treaty. Article 296 allows governments to invoke national security to shield defense procurements from foreign bidders, and it has been regularly used since the creation of the constitution in 1957. As a result, redundant defense products are manufactured throughout Europe, and much of the countries' defense procurement takes place outside EU internal market rules.

Because the new code is voluntary and non-binding, and includes no mechanism for punishing non-observant members, it cannot prevent a

³⁷ Robin Hughes and Ilan Ostfeld, "Israeli Defense Industry: In the Lion's Den," *Jane's Defense Weekly*, Feb. 26, 2003.

³⁸ David Mulholland, "German Industry: Export Drive," *Jane's Defense Weekly*, Oct. 29, 2003; Joris Janssen Lok, "Swedish Defense Industry Warms to Exports as Domestic Markets Cool," *International Defense Review*, May 1, 2005.

³⁹ See Burkard Schmitt, "Armaments Cooperation in Europe," Institute of Security Studies, January 2005, pp. 6–10, at www.iss-eu.org.

government from invoking Article 296. Moreover, certain items, such as nuclear weapons and propulsion systems, cryptographic equipment, and chemical, bacteriological, and radiological goods are exempted completely. For those EU countries that look to the U.S. defense sector for sales and profit, a common defense market that excludes the United States will be very costly. François Lureau, chief executive of the Délégation Générale pour l'Armement, commented, the new code "does not intend to close the European defense market. It is open to non-European companies. . . . Today, France is buying three to four times more armaments from the United States than the other way around." As of this writing, the Code's goal of creating a common defense market remains a hope rather than a plan.⁴⁰

Preserving Core Competencies

An increasing number of governments and industries are pursuing a third option—namely, a core competency strategy. Facing the prospect of long-term stagnant domestic growth, arms producers are seeking a niche position in the global defense market by promoting their main comparative strengths—manufacturing skills, lower-cost labor, investment funds, or extended defense markets—as a means of retaining some of their production capabilities and increasing their exports abroad. For many, this means serving as suppliers of specialized items to the U.S. military or as sub-suppliers to U.S. industry-led projects through teaming arrangements, joint ventures, and foreign direct investment. As an official of the Swedish Defense Materiel Administration (FMV) concluded, "We all want to develop European capabilities, but you cannot neglect the main technology drivers in the field of defense—the U.S. armed forces and U.S. industry. FMV is not in favor of building the 'fortress Europe.'"⁴¹

The American Option: Subcontracting, Joint Ventures, Acquisitions, and Buy-Outs

Most foreign defense companies therefore have been pursuing the American option. Almost all of Europe's leading defense firms are seeking U.S. military and civil business. They are buying U.S. companies, establishing subsidiaries in the United States, or teaming with American firms to acquire new markets and fortify core strengths. European Aeronautic Defense and Space (EADS), the largest defense company in Europe, is trying aggressively to

⁴⁰ "The Code of Conduct on Defense Procurement of the EU Member States Participating in the European Defense Agency," Nov. 21, 2005, at www.eda.eu.int. See also Brooks Tigner, "EU Tears Down Protectionist Walls, But New Rules Only Help European Companies," *Defense News*, Nov. 21, 2005. Quote in Pierre Tran, "Paris Works to Calm US Export Fears," *Defense News*, Nov. 14, 2005.

⁴¹ Lok, "Swedish Defense Industry Warms to Exports."

enter the U.S. defense market because of cuts in Europe's military forces and budgets. Last year, it formed an American subsidiary, Eurocopter USA, based in Grand Prairie, Texas, which recently opened a large new factory in Columbus, Mississippi. It has found a partner in the NorthropGrumman Corporation to strengthen its bid to supply aerial refuelling planes to the Pentagon. Similarly, Anglo-Italian helicopter manufacturer AugustaWestland established new headquarters in Virginia as part of its contract to build a fleet of presidential helicopters. Thales Communication (TCI), a four-year-old subsidiary of French-based electronics company Thales, makes military communications equipment at its plant in Maryland, including radios for U.S. troops in Iraq and Afghanistan. The U.S. subsidiary of the German company, Heckler & Koch, began construction in 2003 for a \$20 million plant in Columbus, Georgia, so that its SMB lightweight assault rifle could have a better chance of winning the bid to replace the U.S. Army's current rifle, the M-16. Following its acquisition of the U.S. company United Defense, BAE Systems (UK) is now the sixth largest supplier to the U.S. Department of Defense and has about 25,000 U.S. employees on its payroll. Similarly, Smiths Group, PLC, of London acquired five defense-related companies in the United States and now receives 57 percent of its earnings from the United States.⁴²

Non-European industries are also actively engaged in the U.S. defense sector. Brazil's Embraer, teamed with Lockheed Martin, won a contract to provide the U.S. Army with its *ERJ-145* jet surveillance plane. The plane will be assembled in a plant that Embraer constructed in Jacksonville, Florida.⁴³ Major Israeli firms, too, such as Israel Aircraft Industries (IAI), Elbit Systems, and Electro-Optics Industries (El-Op) have purchased controlling stakes in U.S. firms and formed new subsidiaries. And these are only a few examples of the increasing number of states seeking a profitable niche for their core competencies in the world's largest defense market.

The pace of mergers, acquisitions, joint ventures, and buyouts continues to rise in both directions, as U.S. companies also search for investment opportunities abroad. In 2005, the volume of international or cross-border transactions in which the buyers, sellers, or both were non-U.S. entities were expected to exceed the record levels of 2004. The total announced international transactions in aerospace, defense, and government sectors numbered

⁴² Jonathan Karp and Andy Pastor, "Northrop, EADS to link up for Bid," *Wall Street Journal*, June 8, 2005; William Matthews, "Who Wins When Foreign Firms Build Factories?" *Defense News*, Jan. 10, 2005; William Hawkins, "Preserve American Defense Production," *Defense News*, Sept. 22, 2003; Joshua Kucera, "Mark Ronald - BAE Systems North America Chief Executive Officer," *Jane's Defense Weekly*, July 6, 2005; Matthew Swibel, "UK: Cutting a larger slice of the Sticky US Defense Pie," *CorpWatch*, Apr. 29, 2005; and Jerry Grossman, "Market Watch: International Transactions Fuel Rise in M&A Volume," *Washington Technology*, Oct. 8, 2005.

⁴³ Megan Scully, Christopher Cavas, Gopal Ratnam, "Brazil Breaks Into US Market," *Defense News*, Aug. 9, 2004; Matthews, "Who Wins?"

72 and 87 in 2003 and 2004 respectively; as of August 2005, they already numbered 51. Of these, U.S. companies were involved in 24, half of them as the buyer and half as seller. For the most part, U.S. buyers targeted small companies with strong niche capabilities. Seventy percent of these U.S. acquisitions were in Europe. In 2005, however, the aggregate value of U.S. businesses sold to non-U.S. buyers was roughly ten times the value of foreign companies bought by U.S. domestic companies.⁴⁴ Europe, too, has seen a surge in cross-border acquisitions and partnerships, not only transatlantic but intra-European as well. In some countries, foreign ownership has grown so large that their military industries can no longer be considered domestic entities. In fact, most of Sweden's defense industry is now foreign owned, largely by U.S., German, and UK companies.

Although defense industries consider this wave of transnational transactions a strategy for survival, the question of national security has become a sensitive issue for many governments. A report by a British union of skilled workers and engineers points out the potential dangers for the UK defense industrial base if the trend continues. Many of Britain's larger companies, such as BAE-Systems, Rolls-Royce, and Smiths Industries, now employ as many workers in the United States as they do in the UK. The report warns that the Ministry of Defense will be reliant on military systems designed and built outside the UK and in the future will be unable to buy necessary equipment within the UK.⁴⁵ Germany, facing a similar threat, passed a law in 2003 requiring government approval of any foreign company's buying a 25-percent or larger share in a German defense company. The law's stated intent is to "protect the industry from foreign predation"; in practice, however, analysts believe the law is unlikely to be used in European consolidation buyouts, but "will be used to counter attempts by U.S. companies to buy their way into Germany."⁴⁶

Loyal Ally

Establishing a close political/military relationship with the United States is a fifth and closely related industrial policy option. U.S. friends and allies have come to hope and expect that political cooperation will be rewarded with economic and technological benefits, particularly in the defense sector.

Italian defense companies, for example, argue that Italy has supported America in Afghanistan and has had more troops in Iraq than any other country except Britain and the United States. As Finmeccanica's chief executive, Pier Francesco Guarguaglini, asserted, "As allies we collaborate, but we must also

⁴⁴ See Grossman, "Market Watch."

⁴⁵ "Maintaining a Critical Mass for UK Defense," June 19, 2005, at www.amicustheunion.org.

⁴⁶ Mulholland, "German Industry: Export Drive."

be considered allies when it comes to accessing the U.S. market.” The Italian government has aggressively supported these claims, calling for greater technology transfers from the United States.⁴⁷

Britain, too, is lobbying to have the United States waive licensing requirements on military technology transfers to the UK. Frustrated by the reluctance of the U.S. Congress to do so, Britain’s Defense Committee Chairman Bruce Georges said, “It seems to me truly absurd for a country like the United Kingdom, which has proved itself to be by far and away the most loyal ally to the United States, to be in the position of almost grovelling to the United States and saying, ‘Please will you give us the [technical] information we require.’”⁴⁸

Countries choosing this option raise difficult issues for the United States. To pursue its foreign policy agenda, the United States solicits the cooperation of allies and friends. But there is a growing gap between what foreign governments hope to receive in compensation and how much the United States is willing to share its industrial “crown jewels.” To date, the urgency of its allies’ economic needs has given the United States the luxury of political leverage without the need to decide the issue.

The five policy options described above are, of course, not mutually exclusive. Different combinations are often pursued simultaneously depending on the players involved and their objectives. Governments may declare a chosen strategy but, in practice, there is often variety in the options they choose. Even France, a vocal advocate of creating a competing European defense market as a means of avoiding dependence on the United States, is now also in favor of more defense industrial collaboration with the United States. A recent French government study calls for increased transatlantic partnerships and urges French government officials to “overcome the past to work more closely with the U.S.”⁴⁹

Political Implications: An Instrument of Leverage

This radical concentration of the world’s defense industrial sector allows the United States a powerful role within the broader international system. During the Cold War, U.S. influence was constrained by the bipolar structure of the system. Within the Western alliance, major collaborative programs that helped European arms industries recover from World War II were successfully completed. The “two-way street” policy of arms cooperation between Europe and the U.S. was introduced later in order to reduce

⁴⁷ Tom Kington and Gopal Ratnam, “Italy Turns War Support into US Work,” *Defense News*, Nov. 8, 2004.

⁴⁸ Tony Skinner, “UK steps up arms accord pressure on US,” *Jane’s Defense Weekly*, Feb. 23, 2005.

⁴⁹ Tigner, “EU Threatens to Build Own Defense Market.”

duplication in defense research and development. Its stated goals were not very different from those of today: greater standardization and interoperability, the improved defense posture of the NATO alliance, and savings in defense spending. Over time, however, differences arose over the purpose and extent of technology transfers. From the European perspective, access to U.S. technologies and markets was seen in terms of the economic benefits that would accrue to Europe's national defense industries. But the United States, focused on the Cold War, insisted upon strict technology transfer restrictions to control the diffusion of American military technology to its enemies⁵⁰—policies that became a contentious issue in U.S. bilateral relations with its allies.

By the late 1980s, however, new opportunities emerged for the United States to revise and reinforce its foreign policy strategies. Foreign governments struggling with heightened economic and strategic insecurities—even those governments once hostile to the United States—were now more receptive and vulnerable to U.S. initiatives. The United States now could wield its comparative military and industrial advantage more freely as an instrument of persuasion. The sheer size and sophistication of the U.S. defense production sector provided U.S. policymakers with a wide variety of policy options from which to choose. Gradually, a broad and overlapping range of incentives, rewards, and sanctions evolved that the U.S. government now uses to encourage cooperative behavior from other states.

Incentives and Rewards

The array of incentives and rewards the United States has to offer for cooperation is quite broad. It includes the offer of military credits, offset arrangements, technology transfers, loans, economic aid, joint ventures, different forms of military assistance, and the removal of penalties—whether they are arms embargoes, technology transfer restrictions, onerous export regulations, or high transaction costs. In particular, as Haass and O'Sullivan maintain, entry into the global economic arena now ranks as one of the most potent incentives in today's global market.⁵¹

As early as 1987, the idea of creating a category of “major non-NATO ally” (MNNA) had taken hold in U.S. government circles. Conceived as an incentive and reward for cooperation, MNNA status afforded non-NATO countries such as Pakistan many of the collaborative and technology transfer advantages provided to full NATO members. Today, MNNA partners in the U.S.-led war on terrorism also receive up to \$3 million annually in

⁵⁰ See Wilfred Von Zastrow, “The Two-Way Street: US/European Armaments Cooperation Within NATO,” National War College Strategic Studies Project, Washington, D.C., 1985.

⁵¹ Richard Haass and Meghan O'Sullivan, eds., *Honey and Vinegar: Incentives, Sanctions, and Foreign Policy* (Washington, D.C.: Brookings Institution, 2000), p. 5, footnote 13.

anti-terrorism assistance and the Department of State introduced special procedures to expedite military exports to U.S. partners in Afghanistan and Iraq. In addition, the Bush administration made it clear that the \$87 billion in reconstruction work for Iraq would go only to those countries with troops in Iraq.⁵²

Avoiding prospective penalties also is frequently the incentive for policy change, moderation, or compromise. The U.S.-EU controversy over EU government subsidies for the Airbus-A350 is one example. In May 2005, the United States filed suit in the World Trade Organization, charging that risk-free EU loans to Airbus for “new start” aircraft violate global trade rules. The EU countersued that Boeing receives similar loans. In response, the United States maintains that Boeing’s loans are commercial loans that must be repaid and therefore fall within WTO rules. To encourage the EU to end these subsidies, the United States shaped a policy strategy that included both incentives and disincentives. According to Richard Aboulafia, an American aerospace analyst, the incentive is continued access to the U.S. defense market at a time when European companies increasingly “tie their growth to U.S. revenues.” The threat is the potential for the WTO to rule in favor of the United States or issue findings that worsen transatlantic trade relations to the point that the United State adopts protectionist policies Paul Nisbet, another defense analyst, agreed. “It is very risky to be seeking launch aid when you are trying to land billions of dollars of tanker business with the U.S. Air Force. The two don’t mix very well.”⁵³

By October 2005, the EU was sending signals that it was eager to defuse the dispute and the chief executive of Airbus stated that direct aid for the A350 could be jettisoned in favor of the kinds of aid the United States provides Boeing.⁵⁴ While the dispute remains before the WTO, the prospect of losing U.S. defense revenues has clearly influenced the EU’s policymakers on this issue.

Threats and Sanctions

U.S. policymakers also use the military sector in connection with a whole host of embargoes, restrictions, denials, and penalties that are invoked to encourage other states to comply on various issues. Recently, the issue of military exports to China became a key irritant in U.S.-Israeli and U.S.-European relations and a litmus test of U.S. influence.

⁵² See “Major Non-NATO Ally’ (MNNA) Status,” *Just the Facts*, Sept. 2, 2003, at www.ciponline.org; U.S. Department of State, “Department of State to Expedite Export Licenses for Iraq Coalition Partners,” *Media Note*, Mar. 26, 2003; and Joshua Kucera, “U.S. Extends Training of Georgian Armed Forces,” *Jane’s Defense Weekly*, Apr. 13, 2005.

⁵³ Paul Meller and Elizabeth Decker, Europe Strikes Back in Plane Dispute,” *New York Times*, June 1, 2005. Michael Sirak, “EU faces tough choice over aircraft subsidies,” *Jane’s Defense Weekly*, June 8, 2005.

⁵⁴ “Strategy Seen on Airbus Aid,” *International Herald Tribune*, Oct. 6, 2005; and James Kanter, “Airbus Chief Says Subsidy is Negotiable,” *New York Times*, Oct. 8, 2005.

Israel and China. Israel, which receives about \$3 billion annually in U.S. foreign aid and actively collaborates in U.S. defense industrial projects, has followed a strategy of close political/military alliance with the United States. But Israeli-U.S. differences over Israel's exports to China have periodically soured that relationship. In 2005, Israel's reported secret sales of upgrades for the Harpy radar-killing drones to China elicited a strong response and severe sanctions from the United States. These included halting Israeli-U.S. collaborative programs (including the Joint Strike Fighter), ending Israel's role in upgrades to the Joint Direct Attack Munitions Initiative, banning Israeli contributions to the U.S. Army's Future Combat Systems, freezing exchanges of information on the development of an attack drone, and stopping the sale of U.S. night-vision equipment to Israel.⁵⁵ Moreover, U.S. suppliers of materials and components to Israel experienced inordinate delays in what were once routine U.S. State Department license approvals. Reportedly, the standard review process that used to take at most two months began dragging out to eight months or more. The head of the Defense Security Cooperation Agency, which manages the Pentagon's foreign sales, declared that the U.S. government would not consider any new defense sales to Israel until the dispute over Israel's sales to China was resolved.⁵⁶

In an effort to end the costly dispute, Israel initiated several policy changes and agreed to others. It prohibited local firms from visiting, discussing or in any way generating new business with China without written permission from the defense ministry. The prohibition extends not only to defense sales but to dual-use items that the United States might perceive as benefiting the Chinese military. The foreign minister publicly apologized for having "damaged U.S. interests," and the director-general of the Israeli Ministry of Defense resigned under U.S. pressure. Israel also agreed to restructure its agencies regulating defense exports and, it is rumored, acceded to a U.S. demand to report not just exports to China but from Israel to other countries as well. As one senior Israeli defense source observed, "If the United States, which provides Israel with \$2 billion in annual military aid, demands that we will not sell anything to China—then we won't. If the Americans decide we should not be selling arms to other countries as well—Israel will have no choice but to comply."⁵⁷

Europe and China. Exports to China have disrupted U.S.-European relations, as well. In early 2005, the EU considered lifting its 16-year-old arms

⁵⁵ Zeev Schiff, "US to Israel: Tighten Arms Export Supervision," *Haaretz*, June 12, 2005.

⁵⁶ Opall-Rome, "Israel Restricts Firms' Contact with China" and "New Technology Transfers to China On Hold, Pentagon Official Confirms," *Defense Daily*, June 16, 2005.

⁵⁷ "Israeli Moves Pit Private Against State-Owned Firms"; "Israeli FM Regrets China Arms Sale Could Have Damaged US Interests," *Defense News*, June 20, 2005; Alon Ben-David, "Israel-US Crisis Eases," *Jane's Defense Weekly*, June 2, 2005, and "Israeli contractors concerned over US export request," *Jane's Defense Weekly*, June 22, 2005; "Israel, External Affairs," *Jane's Sentinel Security Assessment*, May 19, 2005.

embargo on China, which had been imposed in 1989 because of the Chinese government's violent suppression of the Tiananmen Square protest. The United States requested that the arms embargo not be lifted and issued a series of public statements to emphasize its request. In March 2005, a Senate resolution declared that lifting the embargo "would potentially adversely affect transatlantic defense cooperation, including future transfers of United States military technology, services, and equipment to European Union countries." Some days later, a senior U.S. official warned, "If the EU does lift its arms embargo against China, it is going to have a significant negative impact on transatlantic defense cooperation."⁵⁸

The incentives for selling to China are very high for Europe. China Southern Airlines, for example, recently placed an order for five Airbus-A380s. EADS and BAE Systems jointly own Airbus and according to defense analysts, additional Chinese orders are crucial to the plane's commercial success. But it is China's ongoing military modernization efforts (and huge civilian market) that beckon most. By 2040, China's annual demand for military hardware is likely to reach \$295 billion in current dollars, a compound annual growth rate of 2.63 percent a year over today's base of \$120 billion, according to a September 2005 report. The United States will remain the largest defense market (\$101 trillion in 2040, accounting for 36 percent of global demand), but China will be the fastest growing single nation.⁵⁹

In spite of the great incentive to export military technology to China, however, antagonizing the United States may be a higher risk. According to defense analyst Loren Thompson, most of the European defense companies that do business with the Pentagon stand to lose more than they gain from selling to China. BAE Systems, Britain's largest military contractor, sells more than \$5 billion a year to the U.S. military, making it the Pentagon's 12th largest supplier. "America is where we're looking for growth," a company spokesman said. "If that becomes mutually exclusive with doing business in China, then we will go with the United States."⁶⁰ In April 2005, the European Parliament voted 431-85, with 31 abstentions, in favor of urging the EU not to end the embargo. To date the EU has postponed a final decision.

Conclusion

The structure of the international system is a major determinant of a state's foreign policy. Using as a case study the Argentine government's decision to abandon the development and production of the *Condor II* missile,

⁵⁸ Mulholland, "Briefing: German Industry."

⁵⁹ Gopal Ratnam, "For Defense Market Success, Go East: Goldman Sachs Sees High Demand in Asia for Next 3 Decades," *Defense News*, Oct. 3, 2005.

⁶⁰ Mark Lauder, "Europe Wants China Sales But Not Just of Weapons," *New York Times*, Feb. 24, 2005.

Carlos Escudé argues that there are three types of functionally differentiated states in the international system: states that command; states that obey (the majority of the interstate community); and rebel states—a small number of third-world regimes that challenge the right of great powers to dominate. States, in his view, can only challenge dominant powers by sacrificing the interests of their citizens. Most states, therefore, have little choice but to accept the existing international hierarchy if they want to develop or foster their own political and economic systems. Although a state can resist if it can tolerate the price of doing so, in the present world order the costs are so high that most states will not risk bearing them.⁶¹

The current unipolar structure of the global defense industrial system imposes major constraints on the policy choices of most states. Arms producing countries, regardless of their former position in the defense industrial hierarchy, have become increasingly dependent upon the United States for sales, technological innovation, and the advanced technologies needed to modernize their own militaries and defense industries. This growing dependency has granted the United States considerable direct and indirect political leverage. From the perspective of non-U.S. governments, the price of entering the U.S. market is increasing U.S. influence over the direction of their technological development, the stability of their military industries, and the autonomy of their foreign policy decisions.

This is not to say that the United States has full control over the global military industrial system or the shaping and reshaping of the national industries within it. Clearly the impact of the United States is variable, both in intensity and in content, depending on the policy issues at stake and the degree of U.S. interest involved. Furthermore, profound effects on the world's defense industries may occur as the unintended consequence of U.S. domestic decisions. The size and sophistication of the U.S. economy and its defense industrial capabilities make this inevitable. By the same token, however, the U.S. defense sector provides American policymakers with a potent foreign-policy tool with which to penalize uncooperative behavior, reward cooperation, promote stability, and pursue U.S. foreign policy interests. Given the prevailing structure of the global military industrial sector, most arms producing countries have few options other than to accede to U.S. preferences.



⁶¹ Carlos Escudé, “An Introduction to Peripheral Realism and Its Implications for the Interstate System: Argentina and the Condor II Missile Project,” in Stephanie G. Neuman, ed., *International Relations Theory and the Third World*, New York, 1995.