9. Arms production

ELISABETH SKÖNS and EAMON SURRY

I. Introduction

Arms sales by the 100 largest arms-producing companies (the 'SIPRI Top 100') continued to increase in 2005, although the increase was smaller than in 2004. Companies in the United States and Western Europe dominate the list, together accounting for 92 per cent of the arms sales of the Top 100 in 2005. At the same time, the concentration of the arms industry continued, resulting in further growth of the large companies at the top of the list and a declining number of competitors. This raises the issue of monopolistic tendencies in arms production, which presents governments with the challenge of how to maintain control over costs and production schedules in arms procurement.

The concentration process is partly a response to the high and rising fixed costs of advanced weapon systems. This has been a major factor behind the developments in the arms industry since the end of World War II and continues to shape the industry.[1] Mergers and acquisitions allow companies to achieve economies of scale but also lead to reduced competition, and therefore fewer incentives to keep prices down and innovation up. This tension between the benefits of scale and of competition has been the central dilemma for governments in arms procurement and defence industrial policy for the past 40 years.[2]

Rather than trying to stem the increase in sophistication of weapon systems, government strategies to deal with this economic dilemma include international collaboration and arms exports to extend production runs, increasing use of commercial technology in weapon systems, as well as outsourcing, privatization and partnerships with the private sector. However, rising unit costs continue to drive developments in arms procurement, resulting in a long-term decline in the number of weapons that can be purchased. The implication is that choices have to be made in defence policies and arms procurement with

[1] This was expressed in its sharpest form by Norman Augustine, who predicted in the 1970s that the cost growth in major weapon systems would eventually lead to a situation in which even the major military spenders could only afford 'one plane, one tank, one ship'. Augustine, N. R., 'One plane, one tank, one ship: trend for the future?', *Defense Management Journal*, vol. 11, no, 2 (Apr. 1975), pp. 34–40.

[2] The main trends and drivers in the arms industry during the past 40 years are described in Dunne, J. P. and Surry, E., 'Arms production', *SIPRI Yearbook 2006: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2006), pp. 387–418; and Dunne, P., 'Sector futures: defence industry', European Foundation for the Improvement of Living and Working Conditions, European Monitoring Centre on Change (EMCC), May 2006, URL <http://eurofound.europa.eu/emcc/content/source/eu06019a.html>.

inevitable consequences in terms of further consolidation and downsizing of the arms industry.

Simultaneously, ongoing transformation of the armed forces—to adapt to current military requirements and to meet future uncertainties—has important implications for the arms industry. While the ultimate goals, as well as the economic and political limitations, of military transformation differ between countries—including between the USA and European countries—the transformation processes are associated with the same type of technological developments in information and communications technology. Current transformation processes focus on enabling the supply of detailed, accurate and real-time data to all participants in complex military operations, a basic idea variously expressed as 'network-centric warfare', 'network-generated capabilities', 'network-enabled capabilities', 'networked operations' and 'network-based defence'. These developments may involve less emphasis on major platforms and more emphasis on their networking capabilities. However, the squeeze between rising costs and budget constraints looks set to continue and governments will still need to choose which indigenous industrial capabilities to keep, while relying on imports for the capabilities not retained.

In 2006 the need for military transformation became a political issue in the USA, whose high level of weapon procurements to a large extent drives developments in the global arms industry. One main objective of the 2006 Quadrennial Defense Review was to speed up military transformation towards small, high-technology forces and to be prepared for effective network-centric warfare.[3] However, the review also reflected experience from the war in Iraq in that it emphasized the need for more capabilities for asymmetric warfare, with more emphasis on military manpower and less on high-tech systems. This suggests that, rather than focusing on one type of strategy and military technology, these two agendas will exist side by side.

While the arms industry is adapting to shifts in military requirements, it is also seeing opportunities in the expanding demand for domestic, or homeland, security systems. As a result, many military electronics companies are diversifying into homeland security markets and some arms-producing companies are being transformed into 'defence and security' companies.

Section II of this chapter describes the level of and trends in the arms sales of the SIPRI Top 100 companies in 2005. It identifies the companies that experienced the largest increases in their arms sales in 2005 and the reasons for these increases. Section III describes some of the developments in the US arms industry, outlining the pattern of domestic acquisitions in 2006, the impact of the US Administration's post-September 2001 policies, and the implementation of US Department of Defense (DOD) policy to shape the US defence industrial base. Section IV describes some of the developments in the West European arms industry, similarly outlining the pattern of intra-European and transatlantic acquisitions during 2006. It also reviews the debate

[3] US Department of Defense, 'Quadrennial Defense Review Report', Washington, DC, 6 Feb. 2006, URL <http://www.defenselink.mil/qdr/>. For an analysis of the review see chapter 1 in this volume.

during 2006 in the United Kingdom on its new defence industrial strategy, which aims to provide tools for the implementation of the British defence industrial policy, and summarizes developments in 2006 in European Union-wide policies and policy implementation affecting the European arms industry. Section V presents the conclusions. Appendices 9A and 9B include tables of the Top 100 arms-producing companies in 2005 and major acquisitions in the North American and West European arms industry in 2006.

II. The SIPRI Top 100 arms-producing companies

The value of the combined arms sales of the 100 largest arms-producing companies in the world apart from China in 2005 was $290 billion, compared with $266 billion for the same companies in 2004 (see table 9.1).[4] The SIPRI Top 100 is dominated by companies based in the USA, with 40 US companies making 63 per cent of the Top 100's arms sales in 2005, while 32 West European companies accounted for 29 per cent and 9 Russian companies for 2 per cent. Companies based in Japan, Israel and India, in that order, accounted for most of the remaining 6 per cent.

The companies in the Top 100 for 2005 increased their combined arms sales by 9 per cent in nominal terms and 6 per cent in real terms over the previous year. Compared with the arms sales of the companies in the Top 100 for 2004, the increase was smaller—6 per cent in nominal terms and 3 per cent in real terms (see table 9.2). Over the period 2002–2005, the arms sales of the Top 100 for each year have increased by 38 per cent in nominal terms and by 18 per cent in real terms.

Companies that increased their arms sales the most in 2005

Some companies continue to have tremendous increases in arms sales. While in 1995 there was only one company with an annual arms sales increase of more than $1 billion and 11 companies with increases of more than 30 per cent,[5] in 2005 there were 6 companies in the first category and 19 companies in the second category (see table 9.3). Most of these high increases were the result of acquisitions rather than of organic growth.

The six companies with an increase in arms sales in 2005 greater than $1 billion are all in the top 10 of the Top 100 for 2005. The other four companies in the top 10 group are Boeing, Lockheed Martin, EADS and Thales. After a number of setbacks in the early 2000s,[6] Boeing increased its arms sales in 2005 by $550 million and in 2006 had a backlog of $80 billion in military

[4] Chinese companies are not included because comparable data do not exist.

[5] Sköns, E. and Cooper, J., 'Arms production', *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), table 8.2, p. 241.

[6] In 2001 Boeing lost the competition for the Joint Strike Fighter contract, with potential revenues of $200 billion, and in 2004 the US Air Force cancelled its plan to lease 100 tanker aircraft from Boeing. Sköns, E. et al., 'Military expenditure', *SIPRI Yearbook 2004: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2004), pp. 317–19.

Table 9.1. Regional and national shares of arms sales for the SIPRI Top 100 arms-producing companies in the world excluding China,[a] 2005 compared to 2004

Arms sales figures are in US$ b., at current prices and exchange rates. Figures do not always add up to totals because of the conventions of rounding.

Number of companies	Region/ country	Arms sales[b] ($ b.)		Change in arms sales, 2004–05 (%)		Share of total Top 100 arms sales, 2005 (%)
		2004[c]	2005	Nominal[d]	Real[e]	
41	**North America**	**167.3**	**183.0**	***9***	***6***	***63.1***
40	USA	166.8	182.5	*9*	*6*	*62.9*
1	Canada	0.5	0.4	*–4*	*–13*	*0.2*
32	**Western Europe**	**78.4**	**85.3**	***9***	***7***	***29.4***
10	UK	31.7	34.2	*8*	*6*	*11.8*
6	France	18.8	19.9	*6*	*4*	*6.9*
1	Trans-European[f]	9.5	9.6	*1*	*–1*	*3.3*
3	Italy	8.3	10.9	*33*	*30*	*3.8*
7	Germany	5.6	6.0	*8*	*6*	*2.1*
1	Sweden	1.9	2.1	*9*	*11*	*0.7*
2	Spain	1.7	1.6	*–4*	*–7*	*0.6*
1	Switzerland	0.6	0.6	*–6*	*–7*	*0.2*
1	Norway	0.4	0.4	*–8*	*–13*	*0.1*
9	**Eastern Europe**	**4.6**	**5.4**	***18***	***3***	***1.9***
9	Russia[g]	4.6	5.4	*18*	*3*	*1.9*
9	**Other OECD**	**7.8**	**8.3**	***6***	***5***	***2.9***
6	Japan[h]	6.1	6.2	*2*	*4*	*2.1*
2	Korea, South[i]	1.3	1.6	*25*	*9*	*0.6*
1	Australia	0.4	0.5	*14*	*7*	*0.2*
9	**Other non-OECD**	**7.4**	**8.0**	***9***	***4***	***2.8***
4	Israel	3.5	3.7	*7*	*6*	*1.3*
3	India	2.7	3.0	*10*	*3*	*1.0*
1	Singapore	0.9	0.9	*9*	*7*	*0.3*
1	Brazil	0.4	0.4	*8*	*–16*	*0.1*
100	**Total**	**265.5**	**290.1**	***9***	***6***	***100.0***

OECD = Organisation for Economic Co-operation and Development.

[a] Chinese companies are not included because comparable data do not exist. Other countries that could possibly have companies that are large enough to appear in the SIPRI Top 100 list had data been available include Kazakhstan, Pakistan and Ukraine.

[b] Arms sales include all company arms sales, both domestic and export.

[c] Arms sales figures for 2004 refer to companies in the SIPRI Top 100 for 2005, and not to companies in the Top 100 for 2004.

[d] This column gives the change in arms sales 2004–2005 in current dollars.

[e] This column gives the change in arms sales 2004–2005 in constant (2005) dollars. In some cases, although the national economy experienced inflation in 2004–2005, the movement in exchange rates means that the real change is higher than the nominal change after conversion to US dollars.

[f] The company classified as trans-European is EADS, which is based in three countries—France, Germany and Spain—and registered in the Netherlands.

[g] The figure for the combined arms sales of the 9 Russian companies in 2004 includes a rough estimate for 1 of these.

[h] Arms sales data for Japanese companies represent new military contracts awarded by the Japan Defense Agency, rather than actual arms sales for the year.

[i] Figures for South Korean companies are uncertain.

Source: Appendix 9A, table 9A.1.

contracts.[7] The other three companies had roughly constant arms sales in 2005 but have had significant increases in recent years.

The $2.7 billion increase in arms sales by Finmeccanica is attributable primarily to a number of acquisitions. Most significantly, in a deal worth €1.5 billion ($2.0 billion) at the end of 2004, the company acquired GKN's 50 per cent share in the previous joint venture AgustaWestland, one of the largest producers of helicopters in the world.[8] During 2005 Finmeccanica completed two other major transactions. First, as part of the deal dissolving AMS, a previous joint venture in defence electronics with BAE Systems, Finmeccanica resumed full control of AMS's Italian assets (renamed Selex Sistemi Integrati), acquired BAE Systems' secure communications operations (renamed Selex Communications), and obtained a 75 per cent share in AMS's avionics business (renamed Selex Sensors and Airborne Systems). All of these were integrated into Finmeccanica's defence electronics division.[9] Second, the company acquired a 52.7 per cent stake in Datamat, an Italian information technology company with a substantial defence and space division.[10] These acquisitions, accounting for $3.5 billion in annual revenues, represented a major phase in Finmeccanica's restructuring plan to focus its activities on aerospace, defence and security while reducing its civil activities in response to political pressure.[11] In March 2006 the company completed its stock market flotation of Ansaldo STS, its signalling, railway and subway operation, although it retained a 40 per cent stake. This transaction gave Finmeccanica €520 million ($625 million) to help fund further acquisitions and investments in the aerospace and defence sector, primarily in the USA.[12]

Many of the other companies that appear in table 9.3 are Russian and many are information technology (IT) companies.

[7] Ratnam, G., 'Turbulent flight for Boeing: analysts question setbacks in high-profile programs', *Defense News*, 10 July 2006.

[8] Finmeccanica, 'Finmeccanica: closing with GKN of the acquisition of 100% of AgustaWestland', Press release, Rome, 30 Nov. 2004, URL <http://www.finmeccanica.it/Holding/EN/Corporate/Sala_stampa/Comunicati_stampa/>.

[9] Finmeccanica, 'Selex venture boosts Finmeccanica's defence electronics business', Press release, Rome, 18 May 2005, URL <http://www.finmeccanica.it/Holding/EN/Corporate/Sala_stampa/Comunicati_stampa/>.

[10] Anderson, G., 'Finmeccanica acquisitions prompt upswing in orders and revenues', *Jane's Defence Industry*, Nov. 2005, p. 12.

[11] Nativi, A., 'Finmeccanica remains hungry for growth through acquisitions', *Aviation Week and Space Technology*, 11 Apr. 2005; and Kington, T., 'Divestiture difficulties: political shackles complicate moves by Italy's Finmeccanica', *Defense News*, 1 Aug. 2005.

[12] Kington, T., 'Finmeccanica shifts 520M euros to A&D', *Defense News*, 3 Apr. 2006.

Table 9.2. Trends in arms sales of companies in the SIPRI Top 100 arms-producing companies in the world excluding China, 2002–2005

	2002	2003	2004	2005	2002–2005
Arms sales at current prices and exchange rates					
Total ($ b.)	210.1	234.2	272.6	290.1	
Change (%)		*11.5*	*16.4*	*6.4*	*38.1*
Arms sales at constant (2005) prices and exchange rates					
Total ($ b.)	246.0	256.7	280.9	290.1	
Change (%)		*4.4*	*9.5*	*3.2*	*17.9*

Note: The data in this table refer to the companies in the SIPRI Top 100 in each year, which means that they refer to a different set of companies each year, as ranked from a consistent set of data. The figure for 2004 is thus different from the figure for 2004 in table 9.1.

Source: Appendix 9A.

Russian companies

Four Russian companies were among those that increased their arms sales by more than 30 per cent in 2005: Admiralteiskie Verfi, Almaz-Antei, Severnaya Verf and TRV Corporation.[13] Russian companies have only been included in the SIPRI Top 100 list since 2002, when data availability first allowed it.[14] However, the estimates based on this information are somewhat uncertain and it is difficult to find information explaining the level and trend in Russian companies' arms sales.[15]

The increase in the arms sales of Almaz-Antei, which makes it the Russian company with the largest arms sales in 2005, can be partly attributed to domestic sales of up to $530 million and the export of missile systems to China and Viet Nam.[16] The company, which develops and manufactures air defence systems, was formed in 2002 as part of the Russian military industrial strategy to form large integrated structures in leading industry sectors.[17] In October 2005 it obtained the right to independently—that is, without going through the state export company Rosoboronexport—export spare parts and provide maintenance services for Russian military equipment used by foreign

[13] TRV (Takticheskoe Raketnoe Vooruzhenie, tactical missile armament) Corporation is also known in English as the Tactical Missiles Corporation.

[14] On transparency in the Russian arms industry see Surry, E., *Transparency in the Arms Industry*, SIPRI Policy Paper no. 12 (SIPRI: Stockholm, Jan. 2006), URL <http://www.sipri.org/>.

[15] SIPRI estimates the arms sales of most Russian companies on the basis of data on their total sales, a proportion of which is then attributed to arms sales based on data published by the Centre for Analysis of Strategies and Technologies, Moscow.

[16] Makienko, K., '2005 rating of Russia's largest defence companies', *Moscow Defense Brief*, no. 6 (2006); and Vasiliev, D., 'Russia's arms trade with foreign states in 2005', *Moscow Defense Brief*, no. 5 (2006).

[17] See e.g. Cooper, J., 'Developments in the Russian arms industry', *SIPRI Yearbook 2006* (note 2), pp. 431–48.

customers.[18] There is a high demand for Russian air defence systems: in 2006 the value of Rosoboronexport orders for air defence systems amounted to $3.5 billion.[19]

The increase in arms sales for the two Russian shipbuilding companies in table 9.3 was the result primarily of the export in 2005 to China of three Kilo Class (Project 636M) conventional submarines by Admiralteiskie Verfi and one Sovremenny Class (Project 956EM) destroyer by Severnaya Verf.[20] A second such destroyer was delivered by Severnaya Verf in 2006.[21] A complete picture of Admiralteiskie Verfi's activities is difficult to obtain because it makes little information publicly available, citing state secrecy as the justification.[22] More information is available on Severnaya Verf. In addition to exports, Severnaya Verf also has a major domestic order for four 20380 series corvettes, the first of which was launched in 2005, while two more are under construction.[23] In late 2005 the company also won a domestic contract for a new class of frigates to be completed over a 15-year period.[24] In August 2005 Severnaya Verf was merged with Baltiysky Zavod under the control of United Industrial Corporation, after Mezhprombank (International Industrial Bank) became the majority shareholder in both shipyards. These two shipyards, both located in St Petersburg, are among the largest and most technically advanced in the Russian naval shipbuilding sector. In the long term, Rosprom, the Russian federal agency for industry, plans to concentrate the naval shipbuilding industry into two state-controlled management companies: the Centre for Subsurface Shipbuilding and the Centre for Surface Shipbuilding. However, further consolidation of the Russian shipbuilding industry is expected to be complicated, since some of these shipyards are privately owned.[25]

Overall, the Russian shipbuilding companies experienced a marked rise in total sales as well as in arms sales in 2005, making them the leading sector in the Russian arms industry for the first time since systematic data on Russian arms-producing companies became available, in 2001. While one of the main

[18] Interfax–AVN, 'Almaz-Antei granted right to conduct foreign economic activity', Moscow, 5 Oct. 2005. Systems manufactured by Almaz-Antei are in service with *c.* 50 armed forces abroad. Interfax–AVN, 'Almaz-Antei consortium's air defense system exports to total $5–6 billion in near future', Moscow, 9 Dec. 2005.

[19] Abdullaev, N., 'Orders flood some Russian arms makers', *Defense News*, 24 July 2006. See also chapter 10 in this volume.

[20] In addition, Krasnoye Sormovo exported 1 and Sevmash 2 Kilo Class submarines to China. Lantratov, K., 'Russia shares state secret with UN', *Kommersant*, 20 June 2006, URL <http://www.kommersant.com/p683546/>.

[21] Novichkov, N., 'China accepts final Sovremenny', *Jane's Defence Weekly*, 11 Oct. 2006, p. 16; and Abdullaev, N., 'Russia sends 4th destroyer to China', *Defense News*, 9 Oct. 2006. See also chapter 10 in this volume.

[22] Pronini, L., 'Russian firms to display upgrades, training gear', *Defense News*, 13 June 2005.

[23] Severnaya Verf, 'The keel-laying of the corvette for Russian Navy took place at JCS Shipbuilding plant «Severnaya Verf»', News item, 10 Nov. 2006, URL <http://www.nordsy.spb.ru/sv2/news_eng.php?id=46>; and 'Russia launches new ship', *Defense News*, 22 May 2006.

[24] Scott, R., 'Severnaya Verf secures Russian frigate contract', *Jane's Defence Weekly*, 2 Nov. 2005, p. 12.

[25] Makienko, K., 'Consolidation and restructuring of the Russian shipbuilding sector during 2005', *Moscow Defense Brief*, no. 5 (2006).

Table 9.3. Companies in the SIPRI Top 100 with the largest increase in arms sales in 2005

Figures are in US$ m., at current prices and exchange rates. Figures in italics are percentages.

Rank 2005	Company	Country	Sector[a]	Arms sales ($ m.) 2004	2005	Change 2004–05 $ m.	%
Companies with the largest absolute increase in arms sales (by more than $1 b.)							
4	BAE Systems	UK	A Ac El Mi MV SA/A Sh	19 840	23 230	3 390	*17*
9	L-3 Communications	USA	El	5 970	8 970	3 000	*50*
7	Finmeccanica	Italy	A Ac El Mi SA/A	7 130	9 800	2 670	*37*
5	Raytheon	USA	El Mi	17 150	19 800	2 650	*16*
2	Northrop Grumman	USA	Ac El Mi Sh	25 970	27 590	1 620	*6*
6	General Dynamics	USA	A El MV Sh	15 150	16 570	1 420	*9*
Companies with the largest relative increase in arms sales (by more than 30 %)							
91	Severnaya Verf[b]	Russia	Sh	20	440	420	*2 100*
97	Universal Shipbuilding Corp.[b, c]	Japan	Sh	100	360	260	*260*
40	Armor Holdings	USA	Comp (MV Oth)	610	1 190	580	*95*
98	TRV Corporation	Russia	Mi	220	350	180	*95*
65	Admiralteiskie Verfi[b]	Russia	Sh	340	660	320	*94*
32	EDS	USA	Comp (Oth)	990	1 570	580	*59*
41	CACI International	USA	Comp (Oth)	770	1 190	420	*55*
49	AM General	USA	MV	690	1 050	360	*52*
9	L-3 Communications	USA	El	5 970	8 970	3 000	*50*
27	Textron	USA	Ac El Eng MV	1 300	1 800	500	*39*
47	Oshkosh Truck	USA	MV	770	1 060	290	*38*
7	Finmeccanica	Italy	A Ac El Mi SA/A	7 130	9 800	2 670	*37*
31	Almaz-Antei	Russia	Mi	1 190	1 590	400	*34*
39	Thyssen Krupp[b]	Germany	Sh	930	1 240	310	*33*
86	United Industrial	USA	Ac	360	480	120	*33*
16	ITT Industries	USA	El	2 410	3 190	780	*32*
21	Dassault Aviation	France	Ac	1 670	2 210	540	*32*
30	DRS Technologies	USA	El	1 280	1 680	400	*31*
48	Samsung[d]	S. Korea	A MV SA/A	800	1 050	250	*31*

[a] A = artillery, Ac = aircraft, El = electronics, Eng = engines, Mi = missiles, MV = military vehicles, SA/A = small arms/ammunition, Sh = ships and Oth = other. Comp (. . .) = components, services or anything less than final systems in the sectors in the parentheses.

[b] Shipbuilding companies often have bulky arms sales that do not accurately reflect the continuous activities of the company and may therefore be misleading.

[c] Arms sales data for Japanese companies represent new military contracts awarded by the Japan Defense Agency rather than actual arms sales for the year.

[d] Data for Samsung arms sales are uncertain. The SIPRI figure is the sum of an estimated approximate arms sales figure for Samsung Techwin and 50% of the 2004 arms sales of Samsung Thales.

Source: Appendix 9A.

characteristics of the Russian arms industry continues to be its export orientation,[26] exports as a share of total sales declined to 62 per cent in 2005, compared with 68 per cent in 2004, as a result of increased domestic procurement.[27] The decision in January 2007 that Rosoboronexport, the Russian state export corporation, will once more have the monopoly on export sales of final systems is likely to have an impact on the Russian arms industry in 2007.[28]

The increase in the arms sales of TRV Corporation is a consequence of the government programme to reform and develop the Russian arms industry during the period 2002–2006. TRV was established in 2002 by combining six companies specializing in tactical missiles, as one of the sectors to be integrated into larger structures. In 2004 a presidential decree was signed aiming at further development of TRV, and since then eight arms-producing companies have been added.[29]

Although these four Russian companies have made significant increases in their arms sales in 2005, the general assessment is that further contraction of the Russian arms industry is almost inevitable because it lacks resources and has structural problems.[30]

Information technology companies

Several of the large increases in arms sales in 2005 were as a result of increased sales of information technology and services, such as development of advanced communications networks, integration of technology systems and analytical services. Companies that increased their arms sales in these areas in 2005 include EDS, CACI International, L-3 Communications, ITT Industries and DRS Technologies (see table 9.3).

EDS is an example of the type of primarily civil-focused IT company without which governments would be unable to go to war or modernize their armed forces. EDS provides IT services and solutions to a broad range of clients, and its arms sales, primarily by its business segment Defence Industry Solutions, accounted for only 8 per cent of its total revenues in 2005. Like many other companies that specialize in IT services, EDS has positioned itself as a supplier of network-centric capabilities and as a way for governments to outsource the modernization of a variety of military support functions.[31] In

[26] Makienko, K., 'Evolution of Russia's defense industry in 2005', *Moscow Defense Brief*, no. 5 (2006). See also Cooper (note 17).

[27] Lantratov, K. and Safronov, I., 'Shipbuilding overtakes aviation', *Kommersant*, 13 June 2006, URL <http://kommersant.com/page.asp?id=681459>.

[28] The Presidential Decree on several issues concerning military-technical cooperation between the Russian Federation and foreign states, Decree no. 54, was signed on 18 Jan. 2007. The text of the decree is available at URL <http://document.kremlin.ru/doc.asp?ID=037563> (in Russian). See also chapter 10 in this volume.

[29] TRV Corporation, 'Tactical Missiles Corporation JSC history', URL <http://eng.ktrv.ru/about_eng/history_eng/>, p. 10.

[30] Cooper (note 17).

[31] EDS also argues that it seeks to capitalize on financial pressures on governments to do 'more with less' with their military forces: 'Defense departments worldwide are seeking to deliver greater military capability with lower expenditure. EDS . . . can help these departments manage and exploit information to meet their military objectives with reduced costs.' EDS, 'Defense', EDS website, URL <http://www.

2000 the company signed a contract worth $7 billion to build the world's largest intranet for the US Navy. Despite public criticism of the company's implementation of the project, in 2006 the contract was extended for 3 years and by $3 billion, making it the company's largest ever military contract.[32] Not withstanding the controversies, in March 2005 the British Ministry of Defence (MOD) awarded EDS (as consortium leader) a contract worth £2.3 billion ($4 billion) over 10 years to consolidate defence information networks under the MOD's Defence Information Infrastructure (Future) project.[33] Revenues from this project can partly account for the company's greatly increased arms sales in 2005.[34] Through its British subsidiary, EDS is also seeking more military work of this type in Western Europe by exploiting the relationships it has built through its extensive non-defence work for governments.[35]

The increase in the 2005 arms sales of CACI International, a company that provides IT solutions and services to the US Department of Defense, is a result of acquisitions.[36] The company bought four companies during 2004, including American Management Systems' Defence and Intelligence Group.[37] The proportion of its annual revenues from US DOD contracts increased markedly, from 67 per cent in financial year (FY) 2004 to 73 per cent in FY 2005.[38]

The increase in the arms sales of L-3 Communications is also primarily attributable to a long series of acquisitions,[39] but according to the company there has also been some organic growth.[40] L-3 has had a clear strategy in recent years of acquiring small- to medium-sized companies that specialize in

eds.com/industries/defense/>. On the broader trend towards outsourcing of military services and functions by contracting to the private sector see Sköns, E. and Weidacher, R., 'Arms production', *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2002), pp. 341–46.

[32] E.g. Onley, D., 'Hanlon on NMCI: "EDS was not prepared"', *Government Computer News*, 22 June 2004; and Webb, C. L., 'Navy–Marine Corps intranet project takes fresh flak', *Washington Post*, 24 June 2004. On the contract extension see EDS, 'EDS signs NMCI contract extension to 2010', News release, Plano, Tex., 24 Mar. 2006, URL <http://www.eds.com/news/releases/2905/>.

[33] EDS, 'EDS-Led consortium signs contract with UK Ministry of Defence for Defence Information Infrastructure project: approximately $4 billion contract is largest win since 2002', News release, Plano, Tex., 22 Mar. 2005, URL <http://www.eds.com/news/releases/2282/>.

[34] EDS, *2005 Annual Report* (EDS: Plano, Tex., 2006), URL <http://www.eds.com/investor/annual/2005/>, p. AR-11.

[35] Felstead, P., 'EDS looks to strengthen its presence in European defence markets', *Jane's Defence Weekly*, 14 Sep. 2005.

[36] CACI conducted interrogations for the US Army in Iraq in 2003–2005. After one of its employees was implicated in the Abu Ghraib prison abuse scandal, the company decided to withdraw from the interrogation business when the contract expired in Sep. 2005. McCarthy, E., 'CACI plans to drop interrogation work; firm was entangled in Abu Ghraib', *Washington Post*, 15 Sep. 2005, p. D04.

[37] See Surry, E., 'Table of acquisitions, 2005', *SIPRI Yearbook 2006* (note 2), pp. 428–30.

[38] CACI International, 'Form 10-K annual report under Section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended June 30, 2005', Arlington, Va., 13 Sep. 2005, URL <http://www.sec.gov/edgar.shtml>.

[39] See e.g. appendix 9B; Surry (note 37); and Surry, E., 'Table of acquisitions, 2004', *SIPRI Yearbook 2005: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2005), pp. 414–16.

[40] Ratnam, G., 'Frank Lanza, Chairman, Chief Executive, L-3 Communications', *Defense News*, 16 Jan. 2006.

the provision of high-tech products and services to the US DOD and other—primarily intelligence—government agencies. In 2005 L-3 acquired the Titan Corporation for $2.65 billion.[41] L-3 is one of several companies in the arms industry that seek to exploit their expertise in the growing market for domestic (homeland) security products and services (see section III below).[42]

ITT Industries and DRS Technologies both provide military electronics, communications and technology support services to the US DOD and have recently made acquisitions that augment their defence operations.[43] These companies operate in the niche market for highly specialized dual-use goods in which products and services have been in high demand in recent years.[44] For example, ITT manufactures global positioning system (GPS) satellite navigation equipment which is bought by both military and commercial customers.[45] Such IT and services companies frequently perform work that may not always be classified as military, but it is clear that armed forces cannot operate or service their highly complex systems without them.

The increases in the military sales of these IT companies is a continuation of the trend for the nature of the arms industry to change.[46] This takes place both as a result of a new type of company moving into the arms industry, as some of the above examples illustrate, and of major arms-producing companies buying IT companies, as illustrated by some of the acquisitions that took place in 2006 (see appendix 9B).

III. The United States

In the United States, the wisdom of spending large sums of money on network-centric warfare capabilities was increasingly questioned in 2006, and advocates of low-technology warfare made some progress. There were two

[41] L-3 Communications, 'L-3 announces agreement to acquire the Titan Corporation', Press release, New York, N.Y., 3 June 2005, URL <http://www.l-3com.com/news-events/pressrelease.aspx>.

[42] Murphy, J., 'L-3 outlines avenues for growth', *Jane's Defence Industry*, June 2006, p. 12; and L-3 Communications, 'L-3 Communications acquires two leaders in threat detection for military and homeland security applications', Press release, New York, N.Y., 21 Mar. 2006, URL <http://www.l-3com.com/news-events/pressreleases.aspx>.

[43] In 2004 ITT Industries bought the Remote Sensing Systems unit of Eastman Kodak for $725 million. ITT Industries, 'ITT Industries to acquire Kodak's Remote Sensing Systems (RSS)', Press release, White Plains, N.Y., 9 Feb. 2004. In Jan. 2006 DRS Technologies completed the acquisition of Engineered Support Systems for $1.97 billion. DRS Technologies, 'DRS Technologies completes acquisition of Engineered Support Systems', Press release, Parsippany, N.J., 31 Jan. 2006, URL <http://www.drs.com/press/archivelist.cfm>.

[44] DRS Technologies focuses on 'several key areas of importance to the U.S. [DOD], such as intelligence, surveillance, reconnaissance, power management, advanced communications and network systems'. DRS Technologies, 'Form 10-k annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended March 31, 2006', Parsippany, N.J.,, 12 June 2006, URL <http://www.sec.gov/edgar.shtml>.

[45] Ratnam, G., 'Diverse ITT holds onto defense', *Defense News*, 17 May 2005. Approximately 44% of the sales in ITT's Defense Electronics and Services division are generated through contracts for technical and support services which the company provides for the military and other government agencies. ITT, 'Business & products: Defense Electronics & Services', ITT website, URL <http://www.itt.com/business/prof-defn.asp>.

[46] Dunne and Surry (note 2), pp. 412–13.

main reasons: scepticism over whether stated transformation policies were achieving their goals,[47] and budgetary pressures arising partly from the need to prioritize the repair and replacement of military equipment used in the wars in Afghanistan and Iraq.[48] The Quadrennial Defense Review spelled out some success for the 'traditionalists', in that it argued that not only high-tech systems but also military manpower mattered. In November 2006 Donald Rumsfeld, who was seen as a major driving force behind the idea of transformation, left the post of Secretary of Defense. However, early statements from his successor, Robert Gates, indicated that there might be no significant change in the military transformation project.[49]

This section provides an overview of mergers and acquisitions in the US arms industry, the impact of post-September 2001 US policies on the arms industry and developments in US defence industrial policy.

Mergers and acquisitions

After a period of intensive consolidation in the US arms industry between 1993 and 1998, the underlying dynamics and financial magnitude of mergers and acquisitions have been less dramatic. In particular, there have been fewer large-scale mergers. While there is no indication of a decline in the number of mergers and acquisitions, there is clear evidence of a gradual decline in average transaction values. Consolidation continues primarily at the subcontractor level and in particular in the IT and military services sectors.

Because of several years of record profits and an unusually high level of surplus cash, some analysts anticipated that there could be more large-scale acquisitions in 2006.[50] However, there was only one deal with a value in excess of $1 billion in 2006, as compared to three in 2005.[51] This was Boeing's $1.7 billion purchase of Aviall, one of the largest providers of new aviation parts and services in the aerospace industry.[52]

[47] According to Loren Thompson, director of defence studies at the Lexington Institute: 'The [Quadrennial Defense Review] has failed to institutionalize the concepts of transformation that [Defense Secretary Donald] Rumsfeld and his advisers have espoused for the last four years . . . That's partly because of political resistance, but it's partly because of their own incompetence'. Bruno, M., 'Experts: 2005 QDR fails to deliver transformation', *Aviation Week*, 19 Dec. 2005. Another analyst, Richard Aboulafia of the Teal Group, argued that: 'Transformation is basically dead [for] Three reasons: strategic irrelevance, marketing overhype and budgetary impossibility'. Rigby, B., 'US military "transformation" is dead: analysts', *Defense News*, 7 Dec. 2006. See also chapter 1 in this volume.

[48] See chapter 8 in this volume.

[49] US Senate, Armed Services Committee, 'Advance policy questions for Dr. Robert M. Gates, nominee to be Secretary of Defense', 5 Dec. 2006, URL <http://armed-services.senate.gov/testimony.cfm?wit_id=5850&id=2446>.

[50] Wayne, L., 'Cash puts U.S. military contractors in bind', *International Herald Tribune*, 13 May 2005; and Ratnam, G., 'Industry's full pockets: surplus cash, tight U.S. budgets may mean wave of acquisitions', *Defense News*, 16 May 2005. See also Koch, A., 'Acquisition and mergers market looks to remain hot in 2006', *Jane's Defence Weekly*, 4 Jan. 2006, p. 19.

[51] See appendix 9B; and Surry (note 37).

[52] Boeing, 'Boeing to acquire Aviall to enhance its growing services business', Press release, Chicago, Ill., 1 May 2006, URL <http://www.boeing.com/news/releases/>.

Also during 2006, Halliburton began the process of divesting its subsidiary KBR by staging an initial public offering (IPO) of 17 per cent of its shares and announced plans to sell the rest of the company by April 2007.[53] KBR has attracted criticism from the US Congress, watchdog organizations and others, in particular for its work in Iraq.[54] The IPO took place despite British national security concerns arising from KBR's majority stake in the Devonport naval shipyard.[55]

Intra-US acquisitions during 2006 focused on providers with capabilities that companies anticipate will be in great demand in the near future, particularly IT products and services and other types of military services (see appendix 9B). Some of the small companies currently being acquired are highly specialized and operate in niche markets. In particular, as governments try to cut costs by keeping existing equipment in service longer, there is a trend towards the acquisition of companies that provide maintenance and upgrades to existing technology. Acquisitions of small companies are also made for the purpose of entering the expanding homeland security sector. In 2006 L-3 Communications purchased four small US companies, Lockheed Martin five and SAIC four. Raytheon, General Dynamics, EDO and CACI International each made two such acquisitions. The values of these transactions are not always disclosed by the companies involved, but none of these deals was large.

Two examples that typify this trend are L-3 Communications' acquisition of Nova Engineering, which produces communications systems for network-centric warfare and works on several large programmes, including the DOD's Joint Tactical Radio System,[56] and Raytheon's purchase of Houston Associates, a company which develops 'mission-critical networks and network-centric command and control infrastructure applications'.[57]

According to one report, acquisitions of companies that provide systems engineering and technical assistance have more than doubled from 47 in 2001 to 98 in 2005 and the share of services sales in the revenues of the 100 companies with the largest value of contracts with the DOD has increased from 30 per cent in 2000 to 34 per cent in 2005.[58]

Profits in the US defence and aerospace industries are high and growing. The growth in these industries' operating profits exceeded that of the Standard

[53] Halliburton, 'KBR announces pricing of its initial public offering', Press release, Houston, Tex., 15 Nov. 2006, URL <http://www.halliburton.com/news/>; Witte, G., 'KBR shares up 22% on 1st day of trading', *Washington Post*, 17 Nov. 2006, p. D03; and Merle, R., 'Minority stake in KBR will be sold', *Washington Post*, 28 Jan. 2006, p. D01.

[54] For an account of this criticism see the company's entry on the Windfalls of War website at URL <http://www.publicintegrity.org/wow/bio.aspx?act=pro&ddlC=31>; and the Halliburton Watch website, URL <http://www.halliburtonwatch.org/>.

[55] Boxell, J., 'UK demands Halliburton drop KBR float', *Financial Times*, 14 Nov. 2006.

[56] Butterfield, E., 'L-3 gets net-centric with Nova Engineering buy', *Washington Technology*, 14 Aug. 2006, URL <http://www.washingtontechnology.com/news/1_1/29122-1.html>.

[57] Raytheon, 'Raytheon acquires Houston Associates, Inc.', News release, McKinney, Tex., 24 Jan. 2006, URL <http://www.raytheon.com/newsroom/>.

[58] Ratnam, G., 'For DOD, merger decisions get tougher', *Defense News*, 9 Oct. 2006.

& Poor's 500 companies in five of the nine years 1996–2004.[59] As measured by return on invested capital during the period 2002–2004, the profitability of major defence and aerospace companies was greater than in comparable non-defence companies. The combined net profits of the five largest US arms-producing companies in the SIPRI Top 100 for 2005 increased from $5.9 billion in 2004 to $8.1 billion in 2005, an increase of 39 per cent.[60] Not only have the companies benefited from the wars in Afghanistan and Iraq, but so have the chief executive officers (CEOs) of large defence contractors. A 2006 study surveyed the earnings of the CEOs of all publicly listed US companies among the 100 largest defence contractors that derived at least 10 per cent of their revenues from arms sales. It showed that the combined earnings since September 2001 of the 34 highest-earning CEOs amounted to almost $1 billion.[61]

The impact of US post-September 2001 policies on the defence and security industries

Two ways in which the USA's post-September 2001 policies have had an impact on the US arms industry are directly through increased US DOD spending on equipment and services used for the military operations in Afghanistan and Iraq, and indirectly through the impact on arms exports. There has also been an impact on sectors outside the arms industry, through spending by the DOD and other government agencies on security services and reconstruction in Afghanistan and Iraq. Beyond the foreign military operations, post-September 2001 policies have also caused a surge in the demand for goods and services for US homeland security requirements.

Impact on the arms industry

The US arms industry has benefited greatly from the expansion in US spending on arms procurement and research, development, test and evaluation (RDT&E). As a result of the massive funding for military operations in Afghanistan and Iraq,[62] US expenditure on arms procurement has increased in real terms from $62 billion in FY 2001 to $91 billion in FY 2006 and RDT&E expenditure from $46 billion in FY 2001 to $72 billion in FY 2006 (in con-

[59] US Department of Defense (DOD), Office of Under Secretary of Defense Acquisition, Technology & Logistics Industrial Policy, *Annual Industrial Capabilities Report to Congress* (DOD: Washington, DC, Feb. 2006), URL <http://www.acq.osd.mil/ip/ip_products.html>, p. 5. The Standard & Poor's (S&P) 500 are the 500 large publicly listed US companies. Their stocks comprise the S&P 500 Index, which is designed to be an indicator of US equity values.

[60] These companies are Lockheed Martin, General Dynamics, Northrop Grumman, Raytheon and Boeing. Profits are for net income after taxes, as provided in their annual reports.

[61] Anderson, S. et al., *Executive Excess: Defense and Oil Executives Cash in on Conflict*, 13th Annual CEO Compensation Survey (Institute for Policy Studies and United for a Fair Economy: Washington, DC, Aug. 2006), URL <http://www.faireconomy.org/>.

[62] See chapter 8 in this volume.

stant FY 2007 prices).[63] This rate of increase would not have taken place without appropriations under the heading 'global war on terrorism'. However, it is difficult to know the details of how this money has been spent. While information is available on individual DOD contract awards, it requires a major effort to identify and process the information required to form a coherent picture.[64] Another difficulty in tracing the impact of the 'global war on terrorism' on the industry is that war replacement orders are often included in larger contracts.

The war in Iraq has had an impact on the arms sales of several companies in the SIPRI Top 100. At least three companies with major increases in arms sales during 2005 (see table 9.3) have benefited greatly: AM General, Armor Holdings and Oshkosh Truck. These companies provide military vehicles and their upgrades and repair. In mid-2003 the US DOD began a major programme to provide additional armour for light vehicles and trucks in Iraq.[65] AM General is the sole supplier of M-1151 and M-1152 High Mobility Multipurpose Wheeled Vehicles (HMMWV or Humvees), which have been used in great numbers in Iraq, and has on-going contracts totalling $191.9 million for such vehicles.[66] Armor Holdings specializes in fitting armour to a variety of military vehicles, but in particular to HMMWVs, and in 2005 supplied 6684 HMMWVs to US forces abroad and Iraqi forces, in addition to 3945 vehicles in 2004.[67] Oshkosh Truck has received several types of contract related to the war in Iraq, including for high-mobility trucks—such as the Medium Tactical Vehicle Replacement (MTVR)—which support troops in Iraq. However, the main reason for the increase in Oshkosh's arms sales is its provision of logistics services, including maintenance and support functions, with services facilities in Iraq and Kuwait.[68] Some of these increases are likely to be temporary, since they are due to improvements to a stock of vehicles.

The wars in Afghanistan and Iraq have also reinforced the tendency, which emerged well before their start, for outsourcing traditional military functions, such as the maintenance, servicing and repair of military equipment, to the private sector, Thus, in addition to the impact on the traditional arms industry, these wars have also resulted in a flow of contracts to companies in other sectors, primarily those providing security services. However, not all companies gain. The cost of military operations abroad imposes pressure on

[63] US Department of Defense (DOD), Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2007* (DOD: Washington, DC, Mar. 2006), URL <http://www.defenselink.mil/comptroller/defbudget/fy2007/>, table 6 11, p. 133.

[64] A comprehensive list of companies awarded US DOD contracts for work in Iraq has been compiled by the Center for Public Integrity for the period Jan. 2002–June 2004. See the Windfalls of War website at URL <http://www.publicintegrity.org/wow/>. A list of the companies that received most of these contracts is reproduced in Sköns, E. and Surry, E., 'Arms production', *SIPRI Yearbook 2005* (note 39), p. 392.

[65] Goure, D., 'Rolling thunder', *Armed Forces Journal*, May 2005, pp. 24–27.

[66] '$191.9M more to AM General for M1151 & M1152 Humvee Jeeps', *Defense Industry Daily*, 23 Mar. 2006, URL <http://www.defenseindustrydaily.com/2006/03/23/>.

[67] Armor Holdings, *05 Annual Report: Protecting the Future* (Armor Holdings: Jacksonville, Fla., n.d.), p. 10. See also Ratnam, G., 'War in Iraq keeps armor firm busy', *Defense News*, 22 Nov. 2004.

[68] Much, M., 'War in Iraq keeps truck manufacturer busy', *Investor's Business Daily*, 2 May 2005.

Table 9.4. The 10 largest recipients of homeland security contracts from the US Government, 2001–2006

Company (parent company)	DHS contracts 2001–2006 ($ b.)	Type of DHS contract
1. InVision Technologies (General Electric)	15.90	Explosive-detection machines for the TSA
2. IBM	15.50	Digitization of antiquated paper trails used by the CBPA to track US trade information
3. Apptis	9.70	Updating of IT systems infrastructure for the the OCIS and the CBPA
4. L-3 Communications	5.42	Airport bomb screening devices for the TSA
5. Apogen Technologies (QinetiQ)	4.29	IT systems for secret electronic information sharing
6. SAIC	4.06	Infrared scanners for detection of hazardous materials
7. EADS North America	3.60	Helicopters and maintenance services for the Coast Guard and the CBPA
8. Honeywell	2.78	Engineering, communications and surveillance support; special fibres for protection
9. Integrated Coast (Lockheed Martin/ Northrop Grumman)	2.26	Updating of aircraft fleet of the Coast Guard
10. ITS	2.20	IT systems infrastructure for the CBPA and the OCIS
Total, top 10	**61.42**	
Total, all contracts	**130**	

CBPA = Customs and Border Protection Agency; DHS = Department of Homeland Security; IT = Information technology; OCIS = Office of Citizenship and Immigration Services; TSA = Transportation Security Administration.

Note: Contracts are those awarded by the DHS since its formation in 2003 and by the 22 agencies from which it was formed for 2001–2002

Source: Monahan, R. and Beaumont, E. H., 'Big time security', *Forbes*, 3 Aug. 2006, URL <http://www.forbes.com/home/business/2006/08/02/homeland-security-contracts-cx_rm_0803homeland.html>.

procurement in other areas and some companies may lose out because of the shift in procurement spending from long-term programmes to more immediately needed war-fighting capabilities.[69]

The arms industry has also profited more generally from US Government post-September 2001 policies through arms exports.[70] The most significant example of this is the $5.1 billion sale to Pakistan of F-16 combat aircraft,

[69] 'Collateral damage', *The Economist*, 24 Aug. 2006.

[70] Myerscough, R. and Stohl, R., 'Update: U.S. post-Sept. 11 arms trade policy', Center for Defense Information, Washington, DC, 3 Jan. 2007, URL <http://www.cdi.org/program/index.cfm?programid=73>.

which was concluded in September 2006. This transaction has been justified by the US Administration as necessary in the 'global war against terrorism'.[71]

A more indirect impact on export sales comes through the increased attractiveness on the global arms market of weapon systems that have been demonstrated in wars. A war acts as a window display for weapons to potential customers, a fact openly acknowledged by industry as well as governments.[72]

Impact on the homeland security industry

US post-September 2001 policies also cover homeland (i.e. domestic) security, in particular border security and transportation security. For that purpose the US Department of Homeland Security (DHS) was created in January 2003 by bringing together 22 relevant agencies. According to a report by *Forbes*, in FY 2006 the DHS budget amounted to $40.3 billion, an increase from a combined FY 2003 budget of $28.2 billion for the 22 individual agencies.[73] Sales to the DHS have increased greatly since it was formed. According to *Forbes*, the number of companies with contracts from the DHS has increased from 3512 in 2003 to 33 890 in 2005. Since September 2001 the value of contracts awarded by the DHS—and before 2003 the 22 agencies that later joined to form the DHS—to private contractors totals at least $130 billion, of which half has gone to the 10 biggest companies in that industry.[74]

Table 9.4 shows the 10 companies which received the most revenues from US homeland security contracts in the period 2001–2006. Seven of these are, or are owned by, companies in the SIPRI Top 100 arms-producing companies. Although the dynamics of the arms and homeland security industries may be different, this overlap between large companies in the two industries and the trend for companies that started out in the arms industry to win domestic security contracts blur the line between the two industries.[75]

Defence industrial policy

The objective of DOD policies on research, development and procurement and associated policies is to guide and influence the transformation of the US arms industry by spreading market demand across a broad spectrum of industry segments to meet emerging DOD requirements. While the size and type of

[71] Myerscough, R., 'Update: United States and Pakistan break F-16 stalemate, finalizing $5 billion sale', Center for Defense Information, Washington, DC, 4 Oct. 2006, URL <http://www.cdi.org/program/issue/index.cfm?ProgramID=73&issueid=84>. See also chapter 10 in this volume.

[72] International Relations and Security Network, 'War is good for arms business', Center for Security Studies, Zurich, 2 Apr. 2003, URL <http://www.isn.ethz.ch/news/sw/details.cfm?ID=6229>.

[73] Monahan, R. and Beaumont, E. H., 'Big time security', *Forbes*, 3 Aug. 2006, URL <http://www.forbes.com/home/business/2006/08/02/homeland-security-contracts-cx_rm_0803homeland.html>.

[74] Monahan and Beaumont (note 73).

[75] There are many other examples of this trend. E.g. in 2006 Boeing was awarded a contract by the DHS to build a security fence on the US–Mexico border. US Department of Homeland Security, 'DHS announces SBInet contract award to Boeing', Press release, Washington, DC, 21 Sep. 2006, URL <http://www.dhs.gov/xnews/releases/pr_1158876536376.shtm>.

DOD contracts for research, development and procurement shape the technological and programmatic focus of the industry, its decisions on mergers and acquisitions in the arms industry shape the financial and competitive structure of the industry. The DOD incorporates policies on the industrial base into its acquisition regulations and strategies in order to promote competition and innovation, and in specific cases to preserve critical defence industrial capabilities and technologies. This section outlines DOD policies in three areas of concern to the DOD: its dependence on commercial markets for IT, the consolidation of the industry and the impact of foreign acquisitions of companies of importance to the US defence industrial base. This account is based primarily on the 2006 edition of the US DOD *Annual Industrial Capabilities Report to Congress*, which describes the situation in the US defence industrial base and the policy measures the DOD has taken to address concerns regarding technological and industrial capabilities.[76]

Policy on commercial markets

A main concern of the DOD is its increasing reliance on commercial markets, in particular for IT products, since the influence of the DOD over such markets is limited. The 2006 report describes how commercial IT products offer a number of benefits to the DOD: they are the most advanced available; they often offer better performance and are less expensive than technology procured solely for DOD applications, since their development costs are amortized over the broader commercial business base; and there are many competitive suppliers. Therefore, to the extent that the DOD can use commercial IT, it does so.[77]

The reason for DOD concerns is that the IT industry is a global one and so non-US suppliers may offer the best products for certain functions. In a global market, the DOD has limited ability to influence the strategic direction of the market, faces security of supply risks and has to consider the possibility that the product has been tampered with. While US military spending accounts for almost half of global military expenditure,[78] US military spending on IT accounts for only about 1 per cent of the world IT market, according to the DOD.[79] Thus, the US Government's methods for influencing the military market are unlikely to have the same effect in the commercial IT market.

In addition, the DOD argues, the potential exists for more strategic problems, such as a possible loss of intellectual capability in the USA, particularly in microelectronics, as research, development and design work threatens to follow production work to lower-cost foreign facilities. The DOD plans to assess the potential impact of these issues on sensitive military applications in more detail.[80]

[76] US Department of Defense (note 59).
[77] US Department of Defense (note 59), p. 3.
[78] See chapter 8 in this volume.
[79] US Department of Defense (note 59), p. 3.
[80] US Department of Defense (note 59), p. 3.

Policy on mergers and acquisitions

One of the DOD's tasks is to take action to preserve endangered US industrial capabilities. Before any intervention in the defence industrial base, the DOD must 'verify the warfighting utility of the industrial capability, that the industrial capability is unique and at risk, that there are no acceptable alternatives, and that the proposed action is the most cost- and mission-effective'.[81]

US defence industrial policy is based on the view that the competitive pressures of the marketplace are the best mechanism to shape an industrial environment that supports future military strategies. Therefore, the DOD intervenes in the marketplace only when necessary to maintain appropriate competition and develop or preserve industrial and technological capabilities essential to the DOD. It acknowledges the need for companies to merge to create industrial capabilities essential for future warfare. The DOD believes that such flexibility is essential 'if the DOD is to capitalize on the revolutionary technologies of tomorrow'.[82] Overall, the US DOD has no blanket policy on mergers and acquisition but evaluates each proposed transaction on its particular merits in the context of the specific market and the changing dynamics of that market.

The DOD has become increasingly sensitive to the innovative capabilities of small firms and is concerned that acquisitions should neither threaten that innovative value for the military nor lead to future consolidations that would be detrimental to the DOD. The DOD therefore will seek to develop instruments to protect and promote innovation and may seek regulatory support for this.[83]

The DOD's interventions on mergers and acquisitions in the defence industrial base are regulated by several frameworks. The provisions of the 1976 Hart–Scott–Rodino Antitrust Improvement Act allow the DOD to review—as part of the overall merger and acquisition reviews by anti-monopoly agencies—transactions valued at more than $50 million as regards their impacts on national security and defence industrial capabilities.[84] In 2005 the DOD reviewed 23 merger transactions of this type. Of these, only one—BAE Systems' acquisition of United Defense, the only foreign transaction reviewed—was deemed to require a consent order to protect continued competition.[85]

In 2006 the DOD reviewed five cases of mergers liable to produce a monopoly that were being considered by the Federal Trade Commission.[86] One of these was the plan by Boeing and Lockheed to form a joint venture, the United Launch Alliance (ULA), combining Boeing's Delta 4 and Lockheed Martin's Atlas 5 launch operations into a company with annual revenues of the order of

[81] US Department of Defense (note 59), p. 4.

[82] US Department of Defense (note 59), p. 7.

[83] US Department of Defense (note 59), p. 9.

[84] The 1976 Antitrust Improvements Act, US Public Law 94-435, was signed into law on 30 Sep. 1976.

[85] US Department of Defense (note 59), p. 10.

[86] Ratnam (note 58).

$1 billion. While this deal would create a near-monopoly in rocket launches, it was nevertheless supported by the DOD on the basis that the disadvantages were outweighed by its positive effects in ensuring the survival of two options to launch military satellites.[87] This deal shows that monopoly power has become acceptable under some circumstances. Other problematic mergers in 2006 included deals that might produce conflicts of interests or vertically integrated firms that control the assembly, production and distribution of their products. This type of issue is becoming particularly problematic in regard to the acquisition of service companies, a great number of which are now being bought by the large arms-producing companies. One such case was the acquisition by General Dynamics of Anteon, an IT and services company, which had been contracted by the DOD to supervise some of the DOD's contracts with General Dynamics. The deal was only approved after Anteon agreed to sell its programme management division.[88]

Policy on foreign acquisitions

Acquisitions of or mergers with US-based firms by foreign companies are reviewed by the inter-agency Committee on Foreign Investment in the United States (CFIUS), which includes representatives of the DOD. Reviews are made on the basis of the Exon–Florio provisions of the 1988 Omnibus Trade and Competitiveness Act, which amended Section 721 of the 1950 Defense Production Act.[89] The Exon–Florio provisions allow the suspension or blocking of a foreign acquisition of US-based firms when it poses a credible threat to national security.[90]

The objectives of the DOD in assessing foreign acquisitions are to (*a*) 'protect the reliability of supply of goods and services to the Department'; (*b*) 'minimize the risks of unauthorized transfer of classified information and military and dual-use technologies'; and (*c*) ensure that there is 'congruence of strategic interests between the acquiring firm and the DOD'. At the same time, the DOD 'strives to facilitate the development of an integrated defense industrial base among U.S. allies and trading partners in order to increase interoperability in coalition warfare and reduce DOD acquisition costs'. The intelligence community also prepares for the DOD a risk assessment of the acquiring company and country which evaluates: (*a*) their compliance with US and international export control laws and other international regimes which seek to control proliferation of weapons of mass destruction; (*b*) their potential

[87] Lockheed Martin, 'FTC gives clearance to United Launch Alliance', Press release, Bethesda, Md., 3 Oct. 2006, URL <http://www.lockheedmartin.com/wms/findPage.do?dsp=fec&ci=17936&rsbci=0>.

[88] Merle, R., 'General Dynamics wins clearance to buy Anteon', *Washington Post*, 8 June 2006, p. D04.

[89] The 1950 Defense Production Act, US Public Law 81-774, was signed into law on 8 Sep. 1950. Since then it has been regularly reauthorized and amended. The 1988 Omnibus Trade and Competitiveness Act, US Public Law 100-418, was signed into law on 23 Aug. 1988. The Exon–Florio provisions are contained in Section 5021 of the 1988 act, which amended Section 721 of the 1950 act.

[90] US Department of Defense (note 59), p. 11.

reliability as suppliers; and (*c*) their support in fighting international terrorism.[91]

During 2005, 65 CFIUS cases were filed, with a total value of $29.7 billion, of which 12 per cent involved US firms deemed to possess critical technologies and 17 per cent involved US firms that were deemed to be otherwise important to the defence industrial base. In 23 cases the DOD remedied concerns about foreign ownership, control and influence by imposing risk-mitigation measures on the acquiring firms.[92]

IV. Western Europe

In Western Europe, the armed forces and the arms industry have not benefited from the same increase in military expenditure as in the United States.[93] European governments are therefore under greater pressure to cut costs, transform their armed forces and make adjustments to their arms industries. In addition, the continuing development of the European Security and Defence Policy (ESDP) of the European Union (EU) has involved continuing modification of national defence and security policies. There has been a shift in emphasis from territorial defence to military operations outside Europe and transformation of the armed forces to enable them to join multinational operations. The rising costs of equipment as well as of transformation, combined with budget constraints, mean that the number of weapon systems bought will have to decline. Governments have to make decisions about which defence industrial capabilities to retain and which to abandon, while industry has to adapt to a declining and changing domestic market. Under these circumstances, many arms-producing companies in Western Europe are looking towards foreign arms markets, in particular in the USA, while at the same time the European Commission is pressing for greater competition in the arms industry and European companies are being acquired by foreign companies. Different strategies are developed by governments and industry to achieve synergies through the establishment of an open European defence market and integration of the industry. In this context, in 2005–2006 the UK reviewed the implementation of its defence industrial policy.

This section provides an overview of the mergers and acquisitions in the West European arms industry in 2006, reviews the debate in the UK during 2006 following the adoption by its government of a new defence industrial strategy and describes the work of the European Defence Agency (EDA) aimed at strengthening the European defence industrial base.

[91] US Department of Defense (note 59), p. 12.
[92] US Department of Defense (note 59), p. 12.
[93] See chapter 8 in this volume.

Mergers and acquisitions

During 2006 there was no significant case of cross-border integration of the West European arms industry (see appendix 9B). The only major acquisition was a deal between two investment companies: the European investment group Cinven acquired Avio, an Italian engine producer, from the US Carlyle Group for €2.57 billion ($3.4 billion).[94] When Carlyle and Finmeccanica bought Avio in 2003 the purchase price was €1.5 billion ($1.7 billion),[95] illustrating how investment companies use the buying and selling of arms-producing companies to make large profits. Avio is likely to be used once more in this way by its new owner.[96]

Several US investment firms, primarily private equity firms, have acquired West European arms companies in recent years. Such deals include the purchases of MTU Aero Engines (Germany) by Kohlberg Kravis Roberts & Co. (USA) in 2003 for $1.4 billion, Thales Acoustics (UK) by J. F. Lehman (USA) in 2004 and NP Aerospace (UK) by the Carlyle Group in 2005.[97] All three of these US firms already have close connections with the US DOD and are now developing close relations with government officials in Europe as a means of obtaining insight and influence in the European arms industry. The most controversial deal of this type has been Carlyle's acquisition in 2003 of a one-third share and 51 per cent voting rights in QinetiQ, then the main research laboratory of the British Ministry of Defence. After the company was listed on the London stock exchange in February 2006, Carlyle sold stocks worth $281 million, earning four times its initial investment while retaining ownership of stock worth nearly $300 million.[98]

Some European governments, including France and Germany, are trying to legislate to protect their military-related firms from hostile foreign takeovers. In August 2005 the French industry ministry announced a policy of blocking takeover bids—assessed on a case-by-case basis—in 10 key strategic sectors, including armaments and dual civil–military technology, to avoid such assets and technologies falling into foreign hands.[99] However, this policy may be examined by the European Commission. In October 2006 the Commission formally asked France to modify its Decree 2005-1739 of December 2005, establishing an 'authorization procedure for foreign investments in certain sectors of activities that could affect public policy, public security or national

[94] Carlyle Group, 'The Carlyle Group and Finmeccanica agree to sell Avio to Cinven for €2.57 billion', News release, Milan, 7 Aug. 2006, URL <http://www.thecarlylegroup.com/eng/news/>.

[95] Carlyle Group, 'The Carlyle Group and Finmeccanica: agreement for the acquisition of FiatAvio's aerospace business', News release, Milan, 2 July 2003, URL <http://www.thecarlylegroup.com/eng/news/>.

[96] Cinven describes itself as a company 'renowned for [its] exit capabilities'. Cinven, 'Creating value', Cinven website, URL <http://www.cinven.com/firstlevel3.asp?pageid=5>.

[97] See Surry, E. and Baumann, H., 'Table of acquisitions, 2003', *SIPRI Yearbook 2004* (note 6), pp. 429–30; Surry (note 37); and Surry (note 39).

[98] O'Hara, T., 'Carlyle shows it's still tops in defense', *Washington Post*, 13 Feb. 2006, p. D01.

[99] Lewis, J. A. C., 'France moves to protect defence firms', *Jane's Defence Weekly*, 17 Sep. 2005, p. 23.

defence'.[100] The Commission was concerned that some of the provisions of this decree could discourage investment from other EU member states, contradicting EU treaty rules on the free movement of capital and the right of establishment.

The general policy of the French Government is focused on two objectives: to reintroduce the notion of an industrial policy that guarantees the preservation of key defence competencies and to support the development of the defence industrial and technological base at the national as well as European levels.[101] This policy is based on a principle of 'competitive autonomy' of the industrial and technological base, where autonomy refers to security of supply, unrestricted use of procured equipment and the possibility of exporting arms to friendly states and allies. As part of the process of promoting competitiveness in the arms industry as well as European consolidation, the French Government's policy is to proceed with the controlled sale of its holdings in arms-producing companies. Another aim is to develop close ties with the arms industry in order to support French arms-producing companies in the world marketplace, indicating a strong focus on arms exports.[102]

Similarly, in September 2005, the German Cabinet approved a change in the foreign trade law that allows the government to veto a foreign acquisition of a domestic firm 'if it is necessary to safeguard essential security interests'.[103] This was an expansion of the veto rights introduced in 2003 and was in response to the Carlyle Group's interest in buying MTU Friedrichshafen, although the latter was eventually sold to the Swedish investment company EQT in late 2005.

During 2006, the main US acquisitions in the West European arms industry were made by one company, L-3 Communications, which announced its acquisition of four European companies (three in the UK and one in Germany). At the same time, European arms-producing companies continued to seek access to the large US market through the acquisition of US-based companies. However, as in previous years, it was primarily British companies that

[100] European Union, 'Free movement of capital: Commission calls on France to modify its legislation establishing an authorisation procedure for foreign investments in certain sectors of activity', Press Release IP/06/1353, Brussels, 12 Oct. 2006, URL <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1353>. The text of Décret no. 2005-1739 du 30 décembre 2005 réglementant les relations financières avec l'étranger et portant application de l'article L. 151-3 du code monétaire et financier [Decree no. 2005-1739 of 30 December 2005 regulating financial relations with foreign countries and concerning the application of article L. 151-3 of the monetary and financial code] is available at URL <http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=ECOX0508949D> (in French). Previously, in June 2002 the European Court of Justice had restricted government efforts to keep control of privatized industries when it outlawed a golden share that allowed the French Government to veto foreign takeovers of the oil company Elf Aquitaine. The court judged such a veto to be a serious impairment of the fundamental principle of the free movement of capital. *Commission of the European Communities v. French Republic*, Case C-483/99, European Court of Justice, Judgment of the Court of 4 June 2002.

[101] French Ministry of Defence, 'For a competitive autonomy in Europe: the defence procurement policy', Paris, July 2004, URL <http://www.defense.gouv.fr/defense/overview/the_ministry_of_defence/an_introduction_to_french_defence/the_french_defence_policy>, p. VI.

[102] French Ministry of Defence (note 101), p. VII.

[103] Aguera, M., 'Germany tightens rules on foreign ownership', *Defense News*, 19 Sep. 2005.

succeeded in doing so. In 2006 the British companies Rolls Royce, GKN and Meggitt all made small acquisitions in the US arms industry.[104]

Within Europe, there were few cross-border acquisitions in 2006 and most large acquisitions were domestic. These included the acquisition by Thales of the satellite unit of Alcatel (France); Saab's acquisition of the defence operations of Ericsson (Sweden), whereby Ericsson effectively left the arms industry;[105] and the acquisition by VT Group of Lex Vehicle Solutions, a supplier of vehicles and services to the British MOD.

The main event with Europe-wide significance was the sale by BAE Systems of its 20 per cent stake in Airbus, with the result that EADS became the sole owner of that company. This sale reflected BAE Systems' strategy of focusing on its defence operations.[106]

The debate on the British defence industrial strategy

The ongoing debate in the UK following the publication in December 2005 of a new defence industrial strategy provides a good illustration of the challenges confronting the European arms industry. Arms-producing companies face a dilemma arising from changing threat perceptions, technological developments and budget constraints under conditions of rising costs and the simultaneous internationalization of the private arms industry.

In its 2005 Defence Industrial Strategy White Paper, the British MOD provides information about its future military requirements, clarifies its defence industrial policy and identifies those industrial capabilities that it wants to be retained in the UK for defence reasons.[107] It also recognizes that the implementation of this strategy will require changes on the part of both industry and the government and in state–industry relations.

Acknowledging that 'no country outside the US can afford to have a full cradle to grave industry in every sector', the White Paper states that industry will have to adjust to lower production levels once the current major equipment projects have been completed, while retaining the specialist skills and systems engineering capabilities required to manage military capability through the life cycle of weapon systems.[108] This means abandoning indigenous capabilities for the manufacture of basic platforms and instead concentrating on the maintenance and upgrading of platforms in use.[109] According to

[104] See appendix 9B; and Scott, R. et al., 'No pain no gain', *Jane's Defence Weekly*, 5 Apr. 2006, pp. 24–29.

[105] Ericsson, 'Ericsson agrees to sell its defense business to Saab', Press release, 12 Jun. 2006, URL <http://www.ericsson.com/ericsson/press/releases/>.

[106] 'BAE confirms possible Airbus sale', BBC News, 7 Apr. 2006, URL <http://news.bbc.co.uk/2/4886154.stm>.

[107] British Ministry of Defence (MOD), *Defence Industrial Strategy: Defence White Paper*, Cm 6697 (MOD: London, Dec. 2005), URL <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/PolicyStrategyandPlanning/DefenceIndustrialStrategyDefenceWhitePapercm6697.htm>.

[108] British Ministry of Defence (note 107), pp. 2, 7.

[109] Scott et al. (note 104); and Cook, N., 'Preserving innovation', *Jane's Defence Weekly*, 4 Jan. 2006, p. 11.

the White Paper, the criteria to be used in selecting which defence industrial capabilities should be retained are: (*a*) appropriate sovereignty, including operational independence and security of supply; (*b*) through-life cycle capability management, partly through increased military outsourcing; (*c*) maintaining key industrial capabilities; and (*d*) maintaining close customer–supplier relationships.[110]

Sectors to be downsized include warships, fixed-wing manned aircraft, helicopters, missiles and torpedoes. The sectors and capabilities to be retained in the UK include system engineering, submarines, a through-life capability to maintain and upgrade armoured fighting vehicles and fixed-wing aircraft, general munitions, and a few specific industrial C[4]ISTAR (command, control, communication and computers, intelligence, surveillance, target acquisition and reconnaissance) capabilities.[111]

One of the reasons for the need for greater clarity from the MOD on future defence planning was the fact that private arms-producing companies 'now have more choice than ever before about which markets to enter, which secure the best return for shareholders, and where to base their operations'. Thus, the White Paper notes that if the government does not make clear which capabilities need to be retained, industry will make independent decisions and necessary indigenous capabilities may disappear.[112]

The reactions to the White Paper during 2006 were mixed.[113] Industry, which had influenced the proposals in the White Paper, was mostly positive, although BAE Systems continued to argue that industry would go where the market is, and that the USA clearly is the most important market for defence research, technology and procurement.[114] From those outside industry, concerns were raised that the use of partnering arrangements could make the MOD too reliant on monopoly suppliers, in particular on BAE Systems.[115] According to a more fundamental critique, the White Paper showed that the MOD was continuing the drive for ever more sophisticated and expensive military platforms, including a massively costly replacement of the Trident system of submarines, missiles and nuclear warheads, rather than addressing a

[110] British Ministry of Defence (note 107), pp. 17–18.

[111] British Ministry of Defence (note 107), pp. 7–10, 59–127.

[112] British Ministry of Defence (note 107), p. 6. See also Murphy, J., 'Key DIS architect explains timing', *Jane's Defence Weekly*, 5 Apr. 2006, pp. 16, 26–29.

[113] Reactions of the defence industry, trade unions, academics and government officials are presented in British House of Commons, Defence Committee, *The Defence Industrial Strategy*, Seventh Report of Session 2005–06 (Stationery Office: London, May 2006), URL <http://www.parliament.uk/parliamentary_committees/defence_committee.cfm>. For a debate on the inexorable rise of defence equipment costs see Pugh, P. et al., 'Our unaffordable defence policy: what now?', *RUSI Defence Systems*, vol. 9, no. 2 (autumn 2006), pp. 12–17.

[114] Turner, M., BAE Systems Chief Executive, Oral evidence taken before the Defence Committee, 28 Feb. 2006, British House of Commons (note 113), p. Ev 47. See also Scott et al. (note 104).

[115] Chuter, A., 'U.K. MoD, industry await effects of White Paper', *Defense News*, 2 Jan. 2006; and Murphy, J., 'MoD and industry need to "sex up" relationship, says Drayson', *Jane's Defence Weekly*, 15 Feb. 2006, p. 28.

broader global security context and the role that the British manufacturing and technology base could play within it.[116]

The implications of the defence economics problem—that is, rising costs of research and development under budget constraints—and of the White Paper's criteria for selecting those defence industrial capabilities that should be retained were analysed in evidence submitted by Professor Keith Hartley of York University during the parliamentary hearings on the defence industrial strategy.[117] He noted that in the area of procurement policy, the White Paper's commitment to retaining key defence industrial capabilities might mean that competition will not always be possible, and that this was one of the reasons why the White Paper, while continuing to support a competitive procurement policy, also includes a shift towards alternative approaches, especially partnering. However, while offering companies guaranteed markets, partnering agreements will not necessarily lead to cost-efficient outcomes, since firms have little incentive to economize and minimize costs unless there are strong pressures for them to do so.[118] Hartley also observed that the option to use non-competitive contracts and the White Paper's reference to the need to provide industry with adequate incentives to stay in the market present a challenge for the British Defence Procurement Agency (DPA). The DPA will have to formulate appropriate contracts that offer adequate profit incentives to reward risk and innovation in non-competitive markets, while at the same time delivering value for money to the British armed forces and taxpayers.[119]

In the field of industrial policy, Hartley argued that the defence industrial strategy will result in increased MOD dependence on domestic monopolies and in high costs, compared with importing, since industry will require a minimum acceptable return to induce it to remain in the British market. Hartley raised particular concerns about the implications of partnering agreements with BAE Systems, considering its dominance of the British arms industry, which raises the possibility that the company may be able to influence government policy in its favour. In view of this, Hartley suggested that 'consideration might be given to treating BAE as a regulated firm in the same way as the UK regulates its privatised utilities', since there might be lessons to be drawn on pricing, incentives and profitability rules.[120]

[116] Schofield, S., 'The UK defence industrial strategy and alternative approaches', British American Security Information Council (BASIC), BASIC Papers no. 50, Mar. 2006, URL <http://www.basicint.org/pubs/Papers/BP50.htm>. On the replacement of Trident see appendix 12A in this volume.

[117] Hartley, K., Memorandum to the Defence Committee, 2 Feb. 2006, British House of Commons (note 113), pp. Ev 102–105. See also Hartley, K., 'The defence industrial strategy: an economists view', University of York, Centre for Defence Economics, May 2006, URL <http://www.york.ac.uk/depts/econ/research/associated/>.

[118] Hartley, Memorandum (note 117), pp. Ev 102–103.

[119] Hartley, Memorandum (note 117), p. Ev 103.

[120] Hartley, Memorandum (note 117), p. Ev 104.

European Union developments

The process of internationalization of the European arms industry has been driven by industry, while developments at the government level have been slower. With the establishment by the EU of the European Defence Agency in July 2004,[121] political developments have gained some momentum. The tasks of the EDA are closely linked to the implementation of the ESDP and focus in particular on enhancing military capabilities in the sphere of crisis management. The EDA has four directorates with different functions which work towards that goal.[122] The Capabilities Directorate has the task of translating the ESDP's strategic military objectives and politico-military requirements into actual capabilities. The Armaments Directorate promotes European armaments collaboration, based in particular on early identification of common needs, in order to harmonize requirements before national armaments programmes have already assumed a specific shape. It currently focuses on cooperation in two fields: the A-400M transport aircraft and armoured fighting vehicles. The Research and Technology (R&T) Directorate promotes European collaboration in R&T and the development of policies and strategies to strengthen military technology in Europe, for example by establishing agreed European R&T priorities and increasing synergies between military and security research.

A major task of the Industry and Market Directorate is to promote the development of a European defence equipment market through efforts to harmonize existing rules and regulations on arms procurement. During 2006 the EDA introduced measures designed to encourage competition and transparency in European arms procurement. A new voluntary mechanism, based on the 2005 Code of Conduct for Defence Procurement, was implemented on 1 July 2006.[123] The mechanism calls on member states to open up their defence procurement to cross-border competition and covers contracts with a value greater than €1 million. A new publicly accessible electronic bulletin

[121] Council of the European Union, Joint Action 2004/551/CFSP of 12 July 2004 on the establishment of the European Defence Agency, Brussels, 12 July 2004, URL <http://europa.eu/scadplus/leg/en/lvb/r00002.htm>. For the states participating in the EDA see the glossary in this volume.

[122] European Defence Agency, 'Background', EDA website, 20 Dec. 2006, URL <http://www.eda.europa.eu/background.htm>.

[123] The text of the Code of Conduct on Defence Procurement of the EU Member States Participating in the European Defence Agency, approved on 21 Nov. 2005, is available at <http://www.eda.europa.eu/reference/eda/EDA - Code of Conduct - European Defence Equipment Market.htm>. See also European Defence Agency, 'EU governments agree voluntary code for cross-border competition in defence equipment market', Press release, Brussels, 21 Nov. 2005, URL <http://www.eda.europa.eu/news/2005-11-21-1.htm>. Hungary and Spain did not commit themselves to the Code of Conduct, while Denmark does not participate in the EDA. The new mechanism is underpinned by the Code of Best Practice in the Supply Chain, agreed on 15 May 2006, the text of which is available at URL <http://www.eda.europa.eu/reference/eda/eda - code of best practice in the supply chain - european defence equipment market.htm>. See also European Defence Agency, 'Birth of European defence equipment market with launch of code of conduct', Press release, Brussels, 30 June 2006, URL <http://www.eda.europa.eu/news/2006-06-30-0.htm>.

board was also established, allowing tender information to be made available online.[124]

In parallel with the activities of the EDA, in December 2006 the European Commission issued its interpretation of how Article 296 of the Treaty of Rome should be applied by member states, in order 'to prevent possible misinterpretation and misuse'.[125] It mentions in particular the controversial issue of offsets in the arms trade, stating that Article 296 should not allow member states to derogate from EU rules on public procurement regarding the use of indirect non-military offsets, since these serve economic interests with no direct link to the imported equipment nor national security interests.[126]

While the EDA's work is based on a stated recognition that European defence budgets will not increase significantly in the near future, concerns have nevertheless been raised, especially among non-governmental organizations, that current developments in the ESDP signal a return to a renewed build-up of military forces and armaments, and the development of a European military–industrial complex or even security–industrial complex, in a manner that will not be conducive to the EU's declared security strategy.[127] These concerns have been reinforced by the role of the arms industry in the EU policy development process and its lobbying for stronger government support to make European companies competitive relative to the US arms industry. One of the questions raised is whether peace missions under the ESDP require the same type of advanced networking military technologies as war-fighting operations under the US national security doctrine.[128]

V. Conclusions

The trend of increasing arms sales in the SIPRI Top 100 arms-producing companies continued during 2005, spurred in particular by the growth in the arms

[124] The EDA's Electronic Bulletin Board is at URL <http://www.eda.europa.eu/ebbweb/>. See also Tigner, B., 'Inching toward a common market: electronic tender form is first step for EDA, EU', *Defense News*, 6 Feb. 2006.

[125] European Commission, 'Interpretative Communication on the application of Article 296 of the Treaty in the field of defence procurement', COM(2006) 779 final, Brussels, 7 Dec. 2006, URL <http://ec.europa.eu/internal_market/publicprocurement/dpp_en.htm>. Article 296 of the 1957 Treaty Establishing the European Community (Treaty of Rome, as amended by the 1997 Treaty of Amsterdam) permits EU member states to derogate from the rules of the single market in the case of public procurement when this is necessary for the protection of their 'essential security interests'. The text of the current version of the Treaty of Rome is available at URL <http://europa.eu.int/eur-lex/en/treaties/dat/EC_consol.html>.

[126] On offsets in the arms trade see Brauer, J. and Dunne, J. P. (eds), *Arms Trade and Economic Development: Theory, Policy and Cases in Arms Trade Offsets* (Routledge: London, 2004).

[127] Slijper, F., *The Emerging EU Military–Industrial Complex: Arms Industry Lobbying in Brussels*, TNI Briefing Series no. 2005/1 (Transnational Institute: Amsterdam, May 2005), URL <http://www.tni.org/reports/militarism/eumilitary.htm>; and Hayes, B., *Arming Big Brother: The EU's Security Research Programme*, TNI Briefing Series no. 1/2006 (Transnational Institute: Amsterdam, Apr. 2006), URL <http://www.tni.org/reports/militarism/bigbrother.htm>.

[128] Broek, M. and de Vries, W., *The Arms Industry and the EU Constitution* (European Network Against Arms Trade: London, Jan. 2006), URL <http://www.enaat.org/publications/>.

sales of US companies, which account for a major share—63 per cent—of the Top 100 companies' arms sales.

Six companies increased their arms sales by more than $1 billion in 2005: two European companies—BAE Systems and Finmeccanica—and four US companies—L-3 Communications, Raytheon, Northrop Grumman and General Dynamics. Four Russian companies were among the companies with the largest relative increases in arms sales—by 30 per cent or more—reflecting their increased export sales and in one case the consolidation of several companies into one. Also among the companies with the largest relative increases were several with increased sales in information technology and services. This growth was achieved primarily through acquisitions of smaller companies or units. Some of these acquiring companies are traditional, large arms-producers, while others are relatively new entrants in the Top 100 list. This phenomenon contributed to the continuing process of concentration in both the West European and the US arms industries, although at a slower rate than in previous years.

Two ways in which the United States' post-September 2001 policies have affected the US arms industry are through the increase in demand from the DOD generated by the massive increase in military expenditure to finance the military operations in Afghanistan and Iraq, and through their impact on arms exports. These policies have also led to a strong growth in expenditure on homeland security, thereby increasing demand in the broader security industry.

In Western Europe there has not been a strong increase in the demand for military equipment. The West European governments have therefore been under pressure to achieve cost savings, one of the main tasks of the European Defence Agency. The EDA is trying to achieve this primarily by promoting European collaboration in arms production and research as well as by developing joint policies to strengthen military technology in Europe. However, although it is assumed that the development of the ESDP will not require increased European military expenditure, there are concerns that current developments in the European Security and Defence Policy and the armaments required for that purpose will involve a renewed military build-up in the European Union.