

4. Military expenditure and arms production

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I. Introduction

World military expenditure reached the lowest point of the post-cold war period in 1998. Since then it has increased by 5 per cent in real terms. In 2000 it amounted to roughly \$798 billion in current dollars,¹ a world average of around \$130 per capita.² As a share of world gross domestic product (GDP), military expenditure accounted for 2.5 per cent in 2000.³

World and regional trends in military expenditure during the 10-year period 1991–2000 are summarized in section II, based on the data in table 4A.1. This section also provides accounts of the trends in one item of military expenditure—military research and development (R&D). Although no comprehensive, consistent data are available on subcategories of military expenditure, it is at least possible to get a general understanding of the broad trends. Section III analyses recent trends in US military expenditure and summarizes existing background information on the costs involved in the critical defence decisions to be made by the US Government in 2001, on national missile defence, on its military doctrine and on procurement funding. The United States is by far the major spender, with 37 per cent of total military expenditure in 2000, which reflects its current position as the only superpower. Sections IV–VIII describe recent developments in military expenditure by region and the final section summarizes the main findings of the chapter.

Appendix 4A provides the SIPRI data on military expenditure for 159 countries for the period 1991–2000. Country data are provided: (a) in their original form, in local currency and current prices (table 4A.2); (b) in constant US dollars as calculated by SIPRI to establish changes in military expenditure in real terms, that is, after adjusting for inflation (table 4A.3); and (c) as a share of GDP, which is a rough measure of the economic burden of military expenditure (table 4A.4). Appendix 4B provides data on expenditure on personnel and military equipment by the NATO countries. Appendix 4C presents the sources and methods for SIPRI's military expenditure data. It includes a table showing countries' responses to requests by SIPRI and the UN

¹ This estimate in current dollars is derived by applying the US inflation rate between 1998 and 2000 (5.6% over 2 years) to the world figure of \$756 billion at constant (1998) prices and exchange rates.

² Total world population was 6.1 billion in 2000, as estimated by the United Nations Population Division and provided in *World Population Prospects: The 2000 Revision, Executive Summary*, URL <<http://www.un.org/esa/population/wpp2000h.pdf>>.

³ This share is based on an estimate for world GDP in 2000 of \$31 780 billion as provided by the International Monetary Fund in *World Economic Outlook*, no. 9 (2000) (IMF: Washington, DC, 2000), table 1.

for data on military expenditure which illustrates the poor availability of standardized data.

Appendix 4D provides financial and employment data for the 100 largest arms-producing companies in the member states of the Organisation for Economic Co-operation and Development (OECD) and developing countries except China in 1999, and a short analysis of new developments in the arms industry during 2000. The combined arms sales of the 100 largest arms-producing companies was \$157 billion in 1999. This was an increase of \$16 billion, or 11 per cent in nominal terms, over the combined arms sales of the same companies in 1998. The increase was almost entirely due to a growth in arms sales of the larger companies because of their acquisition of other arms-producing units rather than to any great increase in total arms sales in this group of countries. Appendix 4E analyses the change in trend since 1998 in the military expenditure and arms production of the Russian Federation and discusses recent developments in the Russian military budgeting process and defence industrial policy.

II. World and regional trends and patterns

Trends in military expenditure

The post-cold war reductions in world military expenditure ended in 1998. In both 1999 and 2000 there have been significant real increases. Preliminary figures show an increase of 3.1 per cent in real terms during 2000 and a total increase of 5 per cent since 1998. The totals for 2000 are estimates based on data for only 94 countries out of the total of 159 countries in the SIPRI database for that year.⁴ For two regions—Central America and Central Asia—it has not been possible to make a regional estimate at all for 2000 due to the lack of data.

Looking at the global trend over a longer period, world military expenditure reached a high plateau in the years 1985–88. After its peak in 1987 there was a period of consistent annual reductions in real terms until 1996. The first post-cold war increase was in 1997. In 1998 it declined again—to its hitherto lowest point—primarily because of the sharp cut in Russian military expenditure in that year. By 2000 world military expenditure was roughly 40 per cent lower in real terms than it was in 1987. However, 1987 marked the end of a period of extraordinary military build-up, particularly in the USA during the administration of President Ronald Reagan, but also in the Soviet Union and in the states belonging to the military alliances of the two superpowers. When the time frame is extended to a 25-year period the current trend is set in a different perspective. In spite of an 11-year period (1988–98) of almost consis-

⁴ These 94 countries account for the major part of world military expenditure—97% in 2000.

tent reductions, world military expenditure in 2000 was only slightly lower, by roughly 15 per cent, than it was in 1975.⁵

Between 1992 and 2000, total world military expenditure declined by 11 per cent in real terms (table 4.1). There was a decline in three of the five regions—the Americas, Europe and the Middle East—while there was an increase in the other two—Africa and Asia (table 4.1). However, most of the increase in Africa has occurred during the two most recent years, 1999 and 2000. Only Asia has had a consistent increase in regional military expenditure during the 1990s.

The increase in world military expenditure during the two years 1999 and 2000 is the result of increases in all the regions. The region with the steepest increase is Africa, where military expenditure increased by over one-third in real terms over these two years. A few major spenders have a great impact on the trend: Algeria and South Africa, which together accounted for roughly one-third of the African total in 2000, raised their military budgets by 21 and 11 per cent, respectively, over these two years. Ethiopia, Sudan and Zimbabwe, although at a lower level, had very large increases in their military budgets. The increases in Kenya and Tanzania were smaller but still significant. For several countries no figures at all were available for 2000 (table 4A.2). Military expenditure in Africa is likely to continue to grow, since the wealthier countries are pursuing or are in the process of starting costly procurement programmes and others are engaged in schemes for the reform of their armed forces, which at least in the short term will require additional resources (see section VI).

The regional total for the American continent, including North, Central and South America, increased by 3 per cent in real terms in 1998–2000. The increase is significantly influenced by US military expenditure, which accounts for 88 per cent of the continent's total and showed a 2 per cent increase in 2000. It is also the result of a strongly rising trend for South America, which, however, is not certain to remain, since some of these figures may be revised downwards considerably when data for budgeted allocations are replaced with actual expenditure data (see section VIII).

The long-term increase in Asian military expenditure continued through 2000 and accelerated in South Asia, where combined defence budgets for 2000 were 23 per cent higher in real terms than military expenditure in 1998. In East Asia, where military expenditure stagnated in 1999 as a result of the cuts in the countries affected by the 1997–98 Asian financial crisis, there was an increase of 1.5 per cent in 2000. This was the result primarily of the continued increase in China, which accounts for one-quarter of the regional total, while the total for other East Asian countries was roughly constant. In Oceania there was a sharp reduction in military expenditure for 2000, mainly because of cuts in Australia. However, Australian defence plans announced during

⁵ Based on SIPRI's estimate of world military expenditure in 1975 in 'Tables of world military expenditure 1975–84', *SIPRI Yearbook 1985: World Armaments and Disarmament* (Taylor & Francis: London and Philadelphia, 1985), p. 270.

Table 4.1. World and regional military expenditure estimates, 1991–2000

Figures are in US \$b., at constant 1998 prices and exchange rates. Figures in italics are percentages. Figures do not always add up to totals because of the conventions of rounding.

Region ^a	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	% change 1991–2000
Africa	11.6	10.5	9.9	10.6	10.1	10.3	10.9	10.1	13.3	13.8	+20
North	2.3	2.7	2.8	3.3	3.1	3.2	3.5	3.6	3.6	4.0	+74
Sub-Saharan	9.3	7.8	7.1	7.3	7.0	7.1	7.4	6.5	9.7	9.8	+6
Americas	364	383	367	348	333	314	315	308	308	318	–13
North	345	364	345	326	307	290	288	282	283	288	–16
Central	2.2	2.4	2.5	3.0	2.7	2.8	2.8	2.8	2.9	..	+29 ^b
South	16.5	16.9	19.3	19.1	22.9	21.1	23.8	22.7	22.0	26.3	+59
Asia and Oceania	97.9	105	108	109	112	115	117	118	120	123	+26
Central	..	2.0	2.0	1.6	1.7	1.9	2.2	2.1	2.4	..	+21 ^c
East	79.4	84.5	85.6	87.6	90.2	92.8	93.9	94.6	94.7	96.1	+21
South	11.3	11.3	12.3	12.3	12.9	13.1	13.7	13.8	15.0	17.0	+50
Oceania	7.2	7.5	7.8	7.7	7.5	7.4	7.5	7.9	7.8	7.3	+2
Europe	..	296	278	275	239	235	238	227	235	240	–19^d
Central and Eastern	..	95.3	84.5	86.5	60.4	55.3	58.8	47.2	53.5	60.4	–37 ^d
Western	211	201	194	189	179	180	179	180	182	180	–15
Middle East	[70.7]	[52.2]	51.0	50.9	47.9	48.9	53.5	57.3	56.2	60.9	–14
World	..	847	814	794	742	723	734	720	733	756	–11^d
Change (%)	..	..	–3.9	–2.3	–6.5	–2.6	+1.5	–1.9	+1.8	+3.1	–1.4^e

^a For the country coverage of the regions, see appendix 4A, table 4A.1. Some countries are excluded because of lack of consistent time-series data. Africa excludes Congo (Republic of), Congo (Democratic Republic of the, DRC), Libya and Somalia; Asia excludes Afghanistan; Europe excludes Yugoslavia; and the Middle East excludes Iraq. World totals exclude all these countries.

^b Change over the period 1991–99.

^c Change over the period 1992–99.

^d Change over the period 1992–2000.

^e Annual average.

Source: Appendix 4A, tables 4A.1 and 4A.3.

2000 show an annual growth rate of 3 per cent for the next 10-year period (see section V).

The increase in Europe during 1999–2000, of 6 per cent in real terms, is due entirely to the trend in Central and Eastern Europe (CEE), which in turn is heavily influenced by the trend in the Russian Federation. While Russia's military expenditure fell dramatically from 1992 (its first year of existence as a sovereign state) until 1998—by more than 60 per cent in real terms—the trend has been reversed since 1999 as a result of changes in government policy and a stronger economy (see appendix 4E). In 1999 Russian military expenditure increased by 24 per cent in real terms. Provisional figures for actual Russian military expenditure in 2000 indicated a growth by roughly 16 per cent in real terms. Preliminary data for the other newly independent states in Europe belonging to the Commonwealth of Independent States (CIS) indicate an increase of 15 per cent in real terms in their aggregate military expenditure for 2000. This is due entirely to a 14 per cent increase in the defence budget of Ukraine for 2000, a figure which is likely to be revised slightly downward as a result of the fact that the budget adopted is not expected to be fully implemented.

For other CEE countries—the Baltic states, other former Warsaw Pact countries and the Balkan countries except Yugoslavia (for lack of data)—military expenditure fell by about 5 per cent during 1999–2000. This was due primarily to the sharp reductions in Croatia and Romania, while most of the other CEE countries raised their military budgets or kept them roughly constant (see section IV).

West European military expenditure has been constant since 1995. These countries' commitments to increase their military capabilities within the context of the NATO Defence Capabilities Initiative (DCI) and the European Union (EU) rapid reaction force will require significant real increases in their military budgets if implemented in full. While there is a general reluctance, particularly among the general public, to devote more public funds to military purposes, some countries have already decided to do so, and pressure on the others to increase their military budgets is strong.

In the Middle East military expenditure fell slightly in 1999 but increased again in 2000 to a level 6 per cent higher than in 1998. Iran has the greatest impact on this trend, with a 25 per cent increase over these two years. Israel and its Arab neighbour countries also raised their military budgets, while those of most Persian Gulf countries have more or less stagnated, with the clear exception of Kuwait (see section VII).

Trends in expenditure on military equipment

Expenditure on military equipment is an important part of military budgets, both because it accounts for a significant and variable share of the total and because of its industrial and economic aspects. Although the terminology differs between countries, 'equipment expenditure' usually refers to the financial resources devoted to the acquisition of military equipment, by procurement

Table 4.2. Expenditure on military equipment, select NATO countries,^a 1987–2000
 Figures in italics are percentages, based on figures in US\$ at constant 1998 prices and exchange rates.

	Change (%)						2000 (US \$m.)
	1987–90	1990–95	1995–2000	1999	2000	1987–2000	
Germany	– 8.1	– 52.1	+ 18.4	+ 6.0	+ 5.8	– 47.9	4 723
Greece	+ 24.7	– 11.5	+ 23.2	– 1.4	– 2.4	+ 41.6	1 157
Italy	– 12.5	– 24.5	+ 0.7	– 2.0	+ 4.2	– 33.4	2 973
Netherlands	– 1.8	– 27.5	– 9.6	+ 16.2	– 20.0	– 35.6	972
Spain	– 53.4	– 2.7	– 5.2	– 1.7	+ 12.6	– 57.0	1 000
Turkey	+ 16.7	+ 73.2	+ 65.9	+ 36.7	+ 43.2	+ 235.2	3 540
UK	– 32.3	– 1.3	+ 16.3	+ 0.3	+ 0.4	– 22.2	9 936
USA	– 13.5	– 12.8	– 21.2	– 2.3	– 4.9	– 40.5	65 104
NATO W. Europe^b	– 20.2	– 24.2	+ 11.2	+ 1.2	+ 1.6	– 32.8	22 273
Total NATO^b	– 15.1	– 14.5	– 13.1	– 0.3	– 2.0	– 36.9	92 411
France ^c	..	– 26.0 ^d	– 5.9	– 0.4	+ 6.4	..	12 386

Notes: The NATO definition of expenditure on equipment (procurement and R&D) differs significantly from the national definition in many NATO countries, and so therefore do the value and the trend. For example, US equipment expenditure in fiscal year (FY) 2000 according to the NATO definition was about 20% less than outlays on procurement and R&D according to the definition in the US defence budget.

^a The NATO countries with equipment expenditure ≥ \$1000 million (at base year 1998) in 1999 or 2000.

^b Totals exclude France, which is not included in NATO standardized data. NATO Western Europe also excludes Turkey, which is included in the Middle East, and the Czech Republic, Hungary and Poland, for which there are no data prior to 1999.

^c Data for France are not comparable with those for other NATO countries (see appendix 4B).

^d 1991–95.

Sources: Appendix 4B; and George, P. *et al.*, *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), appendix 6A, pp. 185–87.

from domestic production and through imports. As such it also includes expenditure on military R&D.⁶

The share of equipment expenditure in the defence budget varies considerably between countries. Industrial countries with relatively low costs for capital goods often have more capital-intensive armed forces and tend to spend a significant share of the defence budget on equipment—on average 20 per cent

⁶ There is a great range of terminology in national defence budgets for expenditure on military equipment. This is partly due to differences in definition and thus coverage of the terms. In some countries, the term ‘arms procurement’ is used for total expenditures for new military equipment (including arms imports) from the research stage to final delivery of the produced items together with support and services. In other countries it covers only the production stage, and expenditure for research, development, testing and evaluation (RDT&E) is shown separately.

in the NATO countries.⁷ Developing countries, especially the least developed, with a less favourable capital:labour ratio, tend to spend a smaller share of their defence budgets on military equipment and much more on personnel, although there are many exceptions to this generalization.

Consistent data on equipment expenditure are easily available only for NATO countries, most of which belong to the small group which procure a significant part of their military equipment from domestic production. They reduced their equipment expenditure significantly in the late 1980s and the first half of the 1990s (table 4.2). During the second half of the 1990s total NATO equipment expenditure was still declining but at a slower rate. The decline was due to the continued fall in US equipment expenditure—by 21 per cent since 1995 according to the NATO definition.⁸ In Western Europe equipment expenditure has increased significantly—by 11 per cent—since 1995.

Other major countries which procure weapons primarily from domestic production are China, Japan and Russia. All three have announced equipment plans during 2000 which will mean significant expenditure increases. (For China and Japan, see section V; for Russia see appendix 4E.)

Most countries depend primarily on imports for their purchases of military equipment. Therefore, in the absence of actual expenditure figures, data on arms imports provide a rough approximation for the equipment expenditure of these countries. SIPRI data on imports of major weapon systems show that, following a decline during the period 1987–94, the volume of world arms imports was relatively stable during 1994–99.⁹

Data on the trends in equipment expenditure for the NATO countries with the largest equipment budgets show great variation in the scale and timing of post-cold war reductions (table 4.2). The countries which cut their procurement budgets most over the period 1987–2000 are Spain, Germany and the USA—all three by more than 40 per cent. While Spain implemented these cuts in the late 1980s and since then has made much smaller reductions, Germany's equipment expenditure was cut in the first half of the 1990s—by no less than 52 per cent—but has been increasing significantly since 1998. The fall in US equipment expenditure was sharpest during the latter half of the 1990s, in particular during 1995 and 1996 (see appendix 4B). While the decline continued through 2000, a strong increase in US equipment expenditure is imminent as a result of the decision in 1999 to raise the level of budget authority on arms procurement significantly (to the politically important level of \$60 billion: see section III).

Italy, the Netherlands and the UK cut their equipment expenditure—by 33, 36 and 22 per cent, respectively—over the period 1987–2000. The greater part of the Italian and Dutch cuts were made in the first half of the 1990s. The

⁷ Data on equipment shares for NATO countries are provided in NATO, *Financial and Economic Data Relating to NATO Defence: Defence Expenditures of NATO Countries (1980–2000)*, Press release M–DPC–2 (2000)107, 5 Dec. 2000. See also appendix 4B.

⁸ Trends in US equipment expenditure according to the US national defence budget categories are different: the combined procurement and R&D expenditure of the USA declined by only 11% in real terms during the same period. See section III.

⁹ See appendix 5A in this volume.

British Government made sharp cuts in the late 1980s, followed by small reductions in the first half of the 1990s and significant growth during the second half of the decade. The defence plan announced in 2000 shows a continued growth rate for arms procurement (see section IV). Greece and Turkey are exceptional in that they have increased their equipment expenditure strongly in the post-cold war period, Greece by 42 per cent in real terms and Turkey by 235 per cent. Both countries are also currently involved in major procurement programmes for their armed forces.

In sum, the end of the cold war brought reductions not only in total military expenditure but also in expenditure on military equipment in most parts of the world, although to different extents and with different timing. However, by the end of the 1990s this reduction had come to an end in most countries, and in others defence plans had been approved which imply increased expenditure in the near future.

Military research and development

Military R&D accounts for a relatively small share of military expenditure on a global scale. Expenditure by governments on military R&D—approximately \$60 billion in 1998 (at 1998 prices and exchange rates)—accounts for roughly 8 per cent of world military expenditure. Trends in expenditure on military R&D and its relative share in military expenditure can have important implications for future military stability as well as for conversion of resources from military to civil use.¹⁰ This section gives an overview of current trends and patterns of expenditure on military research, development, testing and evaluation (RDT&E) of military equipment—hereafter referred to as military research and development (R&D).

There is a strong concentration of military R&D activities in a small number of major arms-producing countries which are dominant in the design and development of military equipment. The five major countries in terms of government military R&D expenditure—the USA, the UK, France, China and Germany—accounted for roughly 84 per cent of the world total in 1998 and the USA alone for two-thirds.¹¹ In these largest spender countries government expenditure on military R&D consumes a relatively high share of military expenditure and of total (civilian and military) government expenditure on R&D.

The share of military R&D in total military expenditure reflects the importance of indigenous design and production in the respective countries. It is an

¹⁰ Reppy, J., 'Levels and trends in international spending for military R&D', eds J. Reppy *et al.*, *Conversion of Military R&D* (Macmillan: Basingstoke, 1998), chapter 1.

¹¹ This comparison is made using market exchange rates rather than purchasing power parity (PPP) rates in order to allow comparison with the statistics on military expenditures in appendix 4A. See also appendix 4C on sources and methods. The OECD recommends the use of PPP rates in international comparisons of financial resources devoted to R&D. OECD, *Proposed Standard Practice for Surveys of Research and Experimental Development, Frascati Manual 1993* (OECD: Paris, 1994), p. 23. The use of PPP rates would reduce the relative share of the USA and other industrialized countries and increase the share of developing countries, such as China and India, and of countries in transition, such as Russia.

indication at least of the resources devoted to achieving some degree of self-reliance in the procurement of military equipment, although not of the success in achieving this goal. There is a great variation in this share between countries. The number of countries which devote a significant share of their military expenditure to R&D is small. Data for countries with an annual military R&D budget of \$50 million or more in 1998 are given in tables 4.3 and 4.4—for 12 OECD countries (the OECD produces standardized data on government military R&D expenditure for its member countries) in table 4.3, and for 7 other countries in table 4.4, drawing on data from other sources, primarily national statistics. Of those countries, four spent 10 per cent or more of their total military expenditure on R&D in 1998—Russia, the USA, Spain and the UK—while France, China, India and Germany spent 5–9 per cent. All other countries listed in these tables spent less than 5 per cent of their total military expenditures on R&D in 1998.

Military R&D also consumes an extraordinarily large share of total government support for technology and innovation in the major spender countries, and this share is not much lower today than it was before the military build-up. The priority given to military R&D in the innovation and industrial policies of the major spender countries seems to persist strongly. In the OECD countries on aggregate roughly 31 per cent of total government R&D expenditure was devoted to military purposes in 1998. While this is a significant reduction compared to the 1987 share of 44 per cent, the fall is not so great in comparison with the 1981 share of 36 per cent (table 4.3). The USA has a great impact on the OECD average, since it accounts for roughly three-quarters of OECD total military R&D. Military R&D has played an important role in US science policy throughout the post-World War II period, and this has resulted in an exceptionally high share of military R&D in total US government R&D allocations, peaking at 69 per cent in 1986–87. The administration of President Bill Clinton tried to change this, stating in 1992 the aim to reduce military R&D to half the total R&D budget by 1998,¹² but not until fiscal year (FY) 2001 were US government allocations for military and civilian R&D projected to account for roughly equal shares.

Estimates suggest that Russia devoted 72 per cent of total government R&D funding to military purposes in 1998, an increase from roughly 55 per cent in 1994.¹³ For other major non-OECD countries, such as China, India and South Korea, there are no data available on the share of military R&D in total government R&D expenditure.

¹² Shapley, D., 'Clintonizing science policy', *Bulletin of the Atomic Scientists*, vol. 49, no. 10 (Dec. 1993), p. 39.

¹³ For estimates of Russian military R&D expenditure as provided by Julian Cooper, see Sköns, E. *et al.*, 'Military expenditure', *SIPRI Yearbook 2000: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2000), table 5.9, pp. 250–51. Estimates for total Russian government R&D expenditures are the sum of R&D expenditures within the Ministry of Defence budget plus the budget on science.

Table 4.3. Government expenditure on military R&D: select OECD countries, 1981–98^a

Figures are in US\$, at constant 1998 prices and exchange rates. Figures in italics are percentages.

Country ^b	Gov. exp. on military R&D				Change (%)			Share of	Share of	
	1981	1987	1995	1998	1981–87	1987–95	1995–98	R&D in mil. exp.	mil. R&D in gov. R&D	
In US\$ m.										
USA	33 050	56 200	39 870	39 800	+ 70	– 21	± 0	15	55	54
UK	5 670	5 320	3 730	[3 890] ^c	– 6	– 30	[+ 4]	10	46	[39] ^c
France	5 010	5 750	4 570	3 550	+ 15	– 21	– 22	9	38	25
Germany	1 360	2 110	1 710	1 560	+ 55	– 19	– 9	5	9	9
Japan	..	..	1 210	1 110	..	..	– 8	3	..	5
Spain	50	130	270	950	+160	+ 107	+ 252	13	5	29
Italy	290	490	300	180	+ 69	– 39	– 40	1	7	3
Australia	170	170	180	150	± 0	+ 6	+17	2	10	7
Sweden	310	650	520	140	+ 110	– 20	– 73	3	15	7
Canada	140	220	150	130	+57	– 32	– 13	2	6	6
Netherlands	80	80	90	110	± 0	+ 13	+ 22	2	3	3
Norway	50	80	60	60	+ 60	– 25	± 0	2	7	6
In US\$ b.										
Total^d	46.2	71.2	51.4	50.5	+ 54	– 28	– 2	11	40	37
OECD	[46.7]	[72.1]	52.7	51.3	+ 54	– 27	– 3	10	36	31
West Europe	12.8	14.6	11.3	10.4	+ 14	– 23	– 8	7	25	17

^a Includes OECD countries with government expenditure on military R&D of \$50 million or more in 1998. Poland and South Korea are not included because comparable statistics are not available for them. For these 2 countries, see table 4.4.

^b Countries are ranked according to the dollar value of their military R&D expenditure in 1998.

^c Estimates for 1998 and 1999 are not from OECD but from the source below.

^d The total excludes Japan, for which data exist only for 1995 and 1998.

Sources: **Government expenditure on R&D:** OECD, *Main Science and Technology Indicators*, database, May 2000; except **UK estimates for 1998:** British Department of Trade and Industry, Office of Science and Technology, *Science, Engineering and Technology Statistics 1999* (Her Majesty's Stationery Office: London, Aug. 1999), Cm 4409, tables 3.1 and 3.2, pp. 20–21; **Military expenditure:** appendix 4A.

Trends are difficult to establish because of the lack of comparability across time in available statistics.¹⁴ The level of military R&D is currently higher than it was before the largely US-driven military build-up of the 1980s, at least in OECD countries. Aggregate OECD military R&D expenditure increased by roughly 10 per cent in real terms over the 18-year period 1981–98. Within this

¹⁴ Comparability over time is limited by conceptual problems. In the USA R&D funds are increasingly used to update military equipment through the continued incorporation of new technologies into existing weapon systems. Thus, current R&D expenditure could have been considered production expenditure 10 years ago. US National Science Board, *Science and Engineering Indicators 2000*, NSB–00–1 (National Science Foundation: Arlington, Va., 2000), p. 2–52.

Table 4.4. Government expenditure on military R&D: select countries, 1990–98^a

Figures are in US \$m., at constant 1998 prices and exchange rates. Figures in italics are percentages.

Country ^b	Gov. exp. on military R&D				Change (%)			Share of R&D in mil. exp.	Share of mil. R&D in gov. R&D	
	1981	1987	1995	1998	1981–87	1987–95	1995–98		1981	1998
China ^c	..	[770]	[1 210]	[1 620]	..	[+57]	[+34]	[9]	..	..
Russia ^d	[1 470]	[1 500]	..	..	[+2]	[17]	..	[72]
India ^e	440	560	..	..	+27	6	..	..
South Korea	..	160	280	340	..	+75	+21	4	..	..
Brazil	50	140	..	..	+180	1	..	..
Poland	90	..	..	..	3	..	..
South Africa	110 ^f	310	130	70	+ 180	– 57	– 46	4	..	..

^a Includes those countries with government expenditure on military R&D of \$50 million or more in 1998 which are not included in table 4.3 and for which statistics from other sources are available.

^b Countries are ranked according to the dollar value of their military R&D expenditure in 1998.

^c Data for China are estimates. The official Chinese defence budget does not cover the costs of RDT&E on new weapons and equipment but only an unknown sum for ‘scientific research’. The data in table 4.4 includes an estimate of the former but not the latter.

^d Data for Russia are not actual expenditure figures but estimates for budgeted amounts.

^e Data for India are for military R&D expenditures of the Ministry of Defence Department of Defence Research and Development. In addition, there is an unknown amount of military R&D in the Department of Atomic Energy.

^f Data are for 1980.

Sources: **Brazil, Poland and South Africa** since 1997: SIPRI questionnaires; **South Africa 1990–95:** Batchelor, P. and Willett, S., SIPRI, *Disarmament and Industrial Adjustment in South Africa* (Oxford University Press: Oxford, 1998) **Russia:** Cooper, J., in Sköns, E. *et al.*, ‘Military expenditure’, *SIPRI Yearbook 2000* (Oxford University Press: Oxford, 2000), pp. 250–51, table 5.9; **China:** Wang, S., ‘The military expenditure of China, 1989–98’, *SIPRI Yearbook 1999* (Oxford University Press: Oxford, 1999), pp. 334–49; **India:** Indian Ministry of Defence, *Annual Report*, various years; **South Korea:** Ministry of Defence White Paper, URL <http://www.mnd.go.kr/mnden/sub_menu/w_book/1999/index.html>.

overall trend there was first a sharp increase between 1981 and 1987 and then a reduction. Since 1995 the rate of decline in their combined expenditures on military R&D has slowed (table 4.3).

This aggregate trend is dominated by developments in the USA, where the peak in military R&D expenditure occurred in 1986–87, declined in the 1990s and has bottomed out since then, according to OECD data. If R&D funding for classified programmes is added, as in statistics compiled by the American Association for the Advancement of Science (AAAS), US military R&D

expenditure shows an increase of roughly 7 per cent since FY 1996.¹⁵ Government funding of basic and applied military research, which explore and develop new technologies and their potential for military applications over long periods of time, 'appears to be on a sustained upswing'.¹⁶

In Western Europe the countries with the highest levels of expenditure on military R&D in 1998 are the UK, France, Germany, Spain, Italy, Sweden, the Netherlands and Norway (table 4.3). Their combined government expenditure on military R&D has fallen by around 35 per cent in real terms from a peak in 1990. Over the entire period 1981–98 the reduction was 19 per cent. One reason for the reduction is the decline in development expenditures since the mid-1990s for major West European aircraft programmes because these have entered the production phase.¹⁷ For the near future a number of new and costly weapon programmes will keep military R&D expenditure high. These include the French M-51 missile programmes, the European A400M transport aircraft,¹⁸ and the British, and planned Italian, participation in the development of the (predominantly US) Joint Strike Fighter (JSF) programme.

Two European countries have not followed the general trend in government expenditure on military R&D—Spain and, until 1996, Sweden. In Spain there was extraordinary growth in government funding of military R&D between 1981 and 1999—a 25-fold increase. Since 1997 the Ministry of Industry has funded an increasing share of military R&D, roughly 76 per cent in 2000, primarily to prepare for production of the Eurofighter and the F100 frigate programme.¹⁹ In Sweden government military R&D expenditure was very high during the 1990s, accounting for more than 10 per cent of military expenditure—a share comparable to those of the major arms-producing countries, the USA, Russia, the UK and France. This was primarily a result of the long-standing Swedish policy of self-reliance in military technology. The R&D programme for the JAS-39 Gripen combat aircraft, which began in 1982, has accounted for a large part of the Swedish military R&D.²⁰ In the late 1990s, when the JAS-39 Gripen entered full production, Swedish military R&D expenditure fell by roughly 75 per cent, to only 3 per cent of military expenditure in 1998.²¹

¹⁵ Koizumi, K. *et al.*, 'Congressional action on research and development in the FY 2001 budget', American Association for the Advancement of Science (AAAS) R&D Budget and Policy Program, 29 Dec. 2000, URL <<http://www.aaas.org/spp/dspp/rd/ca01.pdf>>.

¹⁶ Koizumi (note 15).

¹⁷ These are the Eurofighter, the EH-101, the JAS-39 Gripen, the NH-90, the Rafale and the Tiger/Tigre.

¹⁸ The 8 customer countries are Belgium, France, Germany, Italy, Luxembourg, Spain, Turkey and the UK.

¹⁹ C  tedra UNESCO sobre Paz y Derechos Humanos de la Universidad Aut  noma de Barcelona, Press release, 19 Oct. 1999. See also Arnett, E., 'Military research and development', *SIPRI Yearbook 1999: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1999), p. 368.

²⁰ Arnett, E., 'Military research and development', *SIPRI Yearbook 1996: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1996), pp. 403–408.

²¹ Swedish Armed Forces, 'F  rsvarsmaktens budgetunderlag f  r   r 2001 och s  rskilda redovisningar' [The armed forces budgetary basis for year 2001 and specific statements of accounts], 1 Mar. 2000, URL <http://www.mil.se/publik/bu/huvuddok_bu_01.pdf>.

Trends over time for China and Russia, two of the major spenders on military R&D, are difficult to establish with certainty because data are estimated. Estimates for China indicate an increasing trend throughout the 1990s. Estimates for budgeted Russian military R&D show a roughly constant trend over the period 1995–98 (table 4.4). However, Russian military R&D allocations are planned to increase during the period from 2001 to 2008–2010, when large-scale production of military hardware is planned to begin, according to Deputy Prime Minister Ilya Klebanov.²² In India, Japan (until 1997) and South Korea military R&D expenditure increased during the 1990s, in contrast to the overall decline in most other major arms-producing countries.

Total world military R&D expenditure funded by governments can be roughly estimated on the basis of data for the limited number of countries which have a major military R&D activity, since these account for the overwhelming part of the world total. The combined government expenditure on military R&D of the 19 countries in tables 4.3 and 4.4 amounted to \$56 billion in 1998. Three other countries—Iran, Israel and Taiwan—are believed to have government military R&D expenditure at this level but the amount of military R&D expenditure by other countries is small.²³ The total amount of government expenditure on military R&D is therefore not likely to exceed \$60 billion.

While military R&D is funded primarily by governments, a smaller part is financed by private industry and, most often, recouped retroactively by being included in the sales price of the resulting military equipment. However, there is little information on company-funded military R&D. OECD data cover only government-funded R&D, and national statistics on company-funded military R&D are available only for the UK and the USA. In the UK, companies account for a significant share of total military R&D funding—between 18 and 24 per cent in the period 1989–97.²⁴ In the USA, private company funding of military R&D (termed independent research and development, IR&D) accounts for a much smaller share—14 per cent at its peak level in 1984 and 6 per cent in 1998, when it amounted to almost \$3 billion. This share fell by more than 40 per cent in real terms during the 1990s, faster than government military R&D expenditure.²⁵

²² 'During this period 40–45 per cent of all funds under the government defense contract will go to R&D programs.' 'Russian armed forces to begin large-scale arms purchases in 2008–2010', Interfax, 16 Jan. 2001, URL <<http://www.interfax-news.com/index.html>>.

²³ Arnett (note 20), p. 352.

²⁴ Of total British gross R&D spending for military purposes in 1997, around 62% was funded by the government and around 22% by national private companies, with the remaining 16% funded from abroad. British Department of Trade and Industry, Office of Science and Technology, *Science, Engineering and Technology Statistics 1999* (Her Majesty's Stationery Office: London, Aug. 1999), Cm 4409.

²⁵ US Department of Defense, *Annual Industrial Capabilities Report to Congress, January 2001*, Department of Defense, 2001, URL <http://www.acq.osd.mil/ia/docs/report_to_congress_2001.pdf>. See also US National Science Board (note 14), p. 2–17, and appendix table 2–43. IR&D is conducted by private companies on their own initiative. In the USA companies recoup c. 50% of IR&D spending as an indirect cost under defence contracts.

III. The United States

After a period of consistent annual reductions during the post-cold war period, US military expenditure has been increasing again since FY 1998. The decision announced by the Clinton Administration in February 2000 to raise the level of budget authority for arms procurement to over \$60 billion from FY 2001 will result in continued increases in future actual outlays.²⁶ Still, both main candidates in the presidential election campaign during 2000 advocated an even higher level of US military expenditure. The first indications by the new administration of President George W. Bush, installed in January 2001, pointed towards an unchanged defence budget for FY 2002. Any significant increases would have to await the results of a force structure review launched by the new administration and subsequently, in the autumn of 2001, of the more comprehensive Quadrennial Defense Review (QDR)—the blueprint for US military strategy. While large increases in the defence budget may be difficult to reconcile with other expensive election pledges, such as significant tax cuts, it is most likely that the commitment to improved conditions for military personnel, a so-called ‘generation jump’ in military technology and not least an expanded version of a missile defence system, will result in continued increases in US military expenditure. With majority support in both houses of Congress and with a strong pro-defence sentiment also in the opposition party, the administration is not likely to face strong domestic political barriers to the implementation of these commitments.

Past trends

The post-cold war reduction in US military expenditure has been significant—about one-quarter in real terms over FYs 1990–2000. Still, its level in FY 2000 was roughly the same as in 1980, before the beginning of the military build-up of the Reagan Administration, and 3–5 per cent higher in real terms than in FY 1975, depending on which data are used (table 4.5). However, a major change has taken place over the two decades since 1980 in that there has been a radical shift in the structure of US military expenditure. While expenditure on military personnel has been reduced by 29 per cent in real terms since FY 1980, expenditure on military R&D has risen by 47 per cent, reflecting the emphasis in US policy on staying ahead in military technology. Procurement expenditure has fluctuated greatly, increasing by 130 per cent from FY 1975 to the peak in FY 1987. Since then procurement has been cut by more than half. By the late 1990s the level of arms procurement was roughly the same as in FY 1975 in real terms. The procurement boom in the first half of the 1980s resulted in an enlarged inventory of weapon systems that required a much higher level of operations and maintenance (O&M) expenditure, and this level has remained high throughout the 1990s.

²⁶ It takes several years for budget authority to translate into actual outlays. Budget authority is the authorization to obligate funds, while outlays are funds being spent in a given year.

The defence budget for FY 2001

The defence budget for FY 2001 (beginning 1 October 2000), as proposed by the Clinton Administration on 7 February 2000, requested \$305.4 billion in budget authority for national defence, representing real growth of 1.3 per cent compared to actual authorizations for the previous year. For the next five years the Clinton Administration plan was for a flat trend in military expenditure. The main items of the defence budget request, as highlighted by the Department of Defense (DOD), were a pay rise for military personnel of 3.7 per cent; achievement of the \$60 billion per year target for procurement expenditure; and concentration on completing existing equipment programmes rather than new programmes.²⁷ Significant amounts were requested for only a few new weapon programmes, among them the F-22 Stealth fighter aircraft. Among the main issues in the congressional debate on the defence budget for FY 2001 were the ballistic missile defence programmes, the tactical fighter aircraft programmes, and the adequacy of long-term defence budget levels for an appropriate pace of weapons modernization.

Ballistic missile defence programmes

The defence budget request for FY 2001 included \$4.5 billion in budget authority for the two types of ballistic missile defence programme: the programme for national missile defence (NMD) against a ballistic missile attack against US territory, and the theatre missile defence (TMD) programme for regional coverage—systems ‘to protect forward-deployed US forces and the forces of US allies and friends’ (table 4.6).²⁸ Congress increased this allocation by \$264 million.

For the entire five-year period FYs 2001–2005, the budget request allocated \$10.4 billion for NMD systems, a level of funding aimed at the achievement by 2005 of an initial capability of a limited system of 20 interceptor missiles.

The Clinton Administration estimated the total cost of an initial limited NMD system, consisting of 100 land-based interceptor missiles based in Alaska, to be \$26 billion (at FY 2000 prices), including the one-time costs for deployment and operational costs for the period FY 2005–15.²⁹ This estimate was challenged in a review by the Congressional Budget Office (CBO) released in April 2000, which projected the total cost for the initial system (called Expanded Capability 1) to be about \$29.5 billion.³⁰ The CBO estimated that the administration’s option for an enlarged (so-called Capability 3) system, consisting of up to 250 land-based interceptor missiles and a second launch site, would cost \$48.8 billion; this would rise to \$59.4 billion if the

²⁷ US Department of Defense, ‘Department of Defense budget for FY2001’, News release, 7 Feb. 2000, URL <<http://www.dtic.comptroller/fy2001/budget/>>.

²⁸ See also chapter 6 in this volume.

²⁹ US Congressional Budget Office (CBO), ‘Budgetary and technical implications of the administration’s plan for national missile defence’, Apr. 2000, URL <<http://www.cbo.gov/showdoc.cfm?index=1984&sequence=0&from=1#pt4>>.

³⁰ CBO (note 29).

Table 4.5. US military expenditure, FYs 1975–2000

Figures are actual expenditures, in US \$b. at constant prices. Figures in italics are percentages.

	Fiscal year (FY) ^a								Change (%)	
	1975	1980	1985	1990	1995	1998	1999	2000	1980–2000	1990–2000
<i>Department of Defense (DOD) outlays, in US \$b. at constant (FY 2001) prices</i>										
Personnel ^b	109.7	107.3	111.7	108.0	86.3	76.3	74.7	75.9	– 29	– 30
O&M ^c	81.6	88.5	114.3	119.2	104.8	100.3	101.8	107.7	+ 22	– 10
Procurement	52.4	62.7	102.6	100.0	59.4	49.8	50.1	48.7	– 22	– 51
RDT&E ^d	26.5	25.8	40.1	46.7	38.0	38.9	38.5	38.0	+ 47	– 19
Construction	4.3	4.8	6.4	6.4	7.4	6.3	5.7	4.8	± 0	– 25
Family housing	3.4	3.2	3.8	4.4	3.8	4.0	3.8	3.8	+ 19	– 14
Other ^e	– 0.3	– 1.8	1.2	– 1.5	– 2.3	– 1.9	– 0.1	6.3	..	..
Total DOD	277.6	290.5	380.1	383.1	297.5	273.8	274.5	285.3	– 2	– 26
<i>Military expenditure according to NATO data, in US \$b. at constant (1998) prices^f</i>										
Total	268.0	273.3	391.2	382.3	298.2	274.3	275.0	280.6	+ 3	– 27

^a The US fiscal year runs from 1 Oct. of the previous year to 30 Sep. of the named year.^b Includes pensions.^c Operations and maintenance.^d Research, development, testing and evaluation.^e Includes revolving and management funds, revenues and intra-government receipts.^f NATO data, as used by SIPRI, can diverge significant from national budget data because of differences in definition.

Source: **DOD outlays:** US Department of Defense, 'National defence budget estimates for FY 2001', Office of the Under Secretary of Defense (Comptroller), Mar. 2000, table 6.11: 'Department of Defense Outlays by Title'; **NATO data:** the SIPRI military expenditure database; and appendix 4A.

costs of a new low-earth orbit satellite tracking system were included.³¹ However, experience from the past two decades shows that missile defence programmes have encountered abnormal cost growth, much higher than the ordinary 20–30 per cent rate of increase in the costs of strategic missile and space programmes.³² Thus, it is likely that actual costs will exceed these cost estimates by a wide margin.

The cost of the missile defence system that is ultimately chosen will depend on its configuration. Before his election, President Bush advocated a multi-layered NMD system architecture that would include sea-, air- and space-based elements. While details had yet to be settled at the end of 2000, the more comprehensive system favoured by the Bush Administration is likely to cost significantly more than the system proposed during the previous administration.

³¹ CBO (note 29), table 1.³² Mosher, D. E., 'Understanding the extraordinary cost growth of missile defence', *Arms Control Today*, pp. 9–15. Mosher has worked at the CBO for 10 years analysing nuclear weapons, arms control and missile defence policies and programmes

Table 4.6. Funding of ballistic missile defence programmes, FY 2001^a

Figures are for budget authority, in US \$m. at constant (FY 2001) prices.

	RDT&E	Procurement	Construction	Total
Total NMD	1 740.2	74.5	—	1 814.7
<i>TMD systems</i>				
Upper-tier theatre missile defence	932.6	0.0	—	932.6
THAAD	549.9	0.0		
Navy Theater Wide	382.7	0.0		
Lower-tier theatre missile defence	418.4	365.5	—	783.9
Patriot PAC-3	81.0	365.5		
Navy Area Defence	274.2	—		
MEADS	63.2	—		
Total TMD systems	1 351.0	365.5	—	1 716.5
Support technologies and operations	852.0	4.0	—	856.0
Military construction	—	—	103.5	103.5
Total	3 943.2	444.0	103.5	4 490.6

MEADS = Medium Extended Air Defense System; THAAD = Theater High Altitude Area Defense; TMD = Theater missile defense

^a Figures are for the defence budget request of Feb. 2000. Congress increased this allocation to a total of \$4.8 billion in its defence authorization bill of Oct. 2000.

Source: Daggett, S., 'Appropriations for FY 2001: Defense', Report CRS 35, Congressional Research Service, Washington, DC, updated 11 Aug. 2000, table A4, p. CRS-35.

In September 2000 the Clinton Administration decided to defer the decision on deployment of this system until after the presidential election in November 2000, so that there would be a renewed debate about the configuration and the cost of the system. This did not mean that all NMD activities were deferred: development and testing would continue, and in December 2000 the DOD Ballistic Missile Defense Organization (BMDO) awarded Boeing, the prime contractor for the NMD system, a follow-on contract with a potential value of \$6 billion for continued development work.³³

The TMD programmes have also experienced cost growth. They include upper-tier long-range systems for defence against short- to intermediate-range missiles and lower-tier systems for defence against shorter-range missiles. Upper-tier systems include the Theater High Altitude Area Defense (THAAD) system and the Navy Theater Wide (NTW) system. The costs of the Patriot Advanced Capability-3 (PAC-3) system have increased dramatically, by \$3 billion, or 77 per cent, according to the Government Accounting Office (GAO).³⁴ The DOD tried during 2000 to restructure the programme to cut the cost. Lower-tier systems include the PAC-3 and Navy Area Defence systems. The Medium Extended Air Defense System (MEADS) programme, set up in 1995 to provide protection against short-range tactical ballistic missiles, cruise

³³ 'Boeing wins \$6b. contract for further NMD research', *Jane's Defence Weekly*, 10 Jan. 2001, p. 3.

³⁴ 'US missile defenses to undergo greater scrutiny', *Aviation Week & Space Technology*, 1 June 2001.

missiles and unmanned aerial vehicles, is a cooperative transatlantic project together with Germany and Italy to develop missile defence capabilities, using PAC-3 launchers. It has not, however, been a high priority for the US Government and some congressional committees have been doubtful about its long-term affordability. In 1999 it was reduced to a technology demonstration programme with a scaled-down funding level.³⁵

Long-term defence budget levels

When the Clinton Administration presented its budget proposal for FY 2001 in February 2000, much attention was given to the achievement of the \$60 billion target for arms procurement. Achieving this target had become the litmus test of support for a strong defence, as it had been set as the minimum level from FY 1998 onwards in order to fund weapon requirements as set out in the 1997 QDR. In successive budgets the Clinton Administration had raised funding levels for arms procurement, as projected in the Future Years Defense Programs (FYDPs). The most extreme rise was in 1999, when the FYDP for the FY 2000 budget was increased by \$112 billion. The increase in the FYDP for the FY 2001 defence budget was smaller but still significant. Projecting a total of \$1450 billion in defence budget authority for the five-year period FYs 2001–2005, it was an increase of \$15.8 billion over the projections made one year earlier for the same period.³⁶ It included a rise in the projected level of arms procurement to \$70.7 billion in FY 2005.

Congress finally decided on \$63.2 billion for arms procurement in FY 2001 in its defence authorization bill of October 2000. This was the sixth consecutive year that Congress had augmented the Clinton Administration budget request for weapons modernization.³⁷

By 2000, however, \$60 billion was already being seen by many as wholly inadequate. In the congressional defence debate during 2000 the issue was rather how far short of required levels the budget remained, with answers ranging from \$20–30 billion to \$100 billion annually.³⁸ The debate about future funding levels for arms procurement has to a great extent been shaped by a 1999 study entitled *Averting the Defense Train Wreck in the New Millennium*,³⁹ according to which the cost of fully supporting the defence force as adopted in the 1997 QDR is grossly underestimated by the administration,

³⁵ Beach, H. (Gen.), 'Theatre missile defence: deployment prospects and impact on Europe', International Security Information Service, Briefing on Ballistic Missile Defence, no. 2 (Sep. 2000).

³⁶ US General Accounting Office (GAO), 'Future Years Defense Program', GAO/NSIAD-00-179, Washington, DC, June 2000.

³⁷ 'Gaping weapons shortfall apt to persist 'til 2010', *Aviation Week & Space Technology*, 16 Oct. 2000; and 'Conferees reach agreement on fiscal year 2001 defense bill', House Armed Services Committee, 6 Oct. 2000, URL <<http://www.defense-aerospace.com/data/features/data/fe128/index.htm>>.

³⁸ Daggett, S., 'Appropriations for FY 2001: Defense', Report CRS 35, Congressional Research Service, Washington, DC, updated 11 Aug. 2000. This source provides a detailed account of the congressional defence budget debate up until Aug. 2000.

³⁹ Gouré, D. and Ranney, J. M., *Averting the Defense Train Wreck in the New Millennium* (Center for Strategic and International Studies: Washington, DC, 1999). For a summary of these ideas see Gouré, D., 'The resource gap: the mismatch between US forces' requirements and available resources renders the two-war strategy irrelevant', *Armed Forces Journal International*, May 2000, pp. 38–42.

most of it for weapon acquisitions. Although their assessment that the actual cost of the QDR force is likely to exceed available funding levels by \$220 billion a year over the next 20 years has been seriously questioned—primarily regarding replacement dates and cost growth—this study nevertheless set the stage for the debate.⁴⁰

Several less extreme estimates also showed a significant funding shortfall for procurement.⁴¹ A study by the CBO, presented in September 2000, estimated the annual cost of supporting and maintaining the current US forces to be \$340 billion (in FY 2000 dollars), of which \$90 billion for procurement.⁴² As the CBO stresses, however, this estimate is purely theoretical, based on the current US national security strategy and on the assumption of a one-for-one replacement rate for every item in the DOD's inventory at an annual rate consistent with the items' service life. With another national security strategy and another force structure, the costs would be different.

The current size and structure of the US armed forces are determined in particular by the requirement that sufficient forces should be maintained to fight and win two major theatre wars almost simultaneously, as spelled out in the 1997 QDR. In addition, since 1997 US national security strategy has been expanded to include new tasks and forces in the form of peace-support operations, which have added to operating costs in peacetime and increased the demands on military personnel. Another factor with significant cost implications, according to the CBO, is the desire of US decision makers to minimize casualties for US forces, which may affect the preference for air forces rather than ground forces and the numbers of US forces, the latter because superiority can reduce US casualties. Finally, the CBO cost estimates are influenced by plans for the development and procurement of new weapons, justified by the need to prepare for more vague demands of the future, such as 'the evolution of military technology, the proliferation of more sophisticated weapons . . . and the possible emergence in the future of a nation with military capabilities that rival those of the United States'.⁴³

The Bush Administration began its term by updating the 1997 QDR, the new QDR being due in September 2001. It did not have a well-defined position on the size of the defence budget. While few details were available, the Bush platform included three main issues with implications for the future trend in US military expenditure: (a) improved pay and housing conditions for military personnel; (b) a major modernization scheme for US forces, sometimes expressed as the introduction of next-generation technology by skipping one generation of weapons; and (c) an expanded system for NMD.⁴⁴ No cost

⁴⁰ Kosiak, S., 'CSIS train wreck analysis is off track', Center for Strategic and Budgetary Assessment, Washington, D.C., 28 Mar. 2000, available at URL <[http://www.csbaonline.org/4Publications/Archive/B.20000328.CSIS_Train_Wreck_/](http://www.csbaonline.org/4Publications/Archive/B.20000328.CSIS_Train_Wreck_/>)>.

⁴¹ 'Analysts sceptical of US procurement increase', *Defense News*, 14 Feb. 2000.

⁴² Congressional Budget Office (CBO), 'Budgeting for defense: maintaining today's forces', Study prepared for the Senate Committee on the Budget, Sep. 2000, table 3. URL <<http://www.cbo.gov/showdoc.cfm?index=2398&sequence=1>>.

⁴³ CBO (note 42).

⁴⁴ 'Transformation director: Bush offers blueprint to reshape US military', *Defense News*, 28 Aug. 2000; and Aldinger, G., Reuters, 'Bush will face money questions on US military', 28 Nov. 2000.

estimates were provided for these major items, only a general pledge to increase defence funding by a total of \$45 billion over the next 10 years, of which at least \$20 billion over a five-year period would be for R&D. In early February 2001 the administration announced its decision to submit a defence budget for FY 2002 which, at \$310 billion, meant no significant increase over that proposed by the previous administration.⁴⁵ Any major shift in military planning and budgeting was to come after the results of the force structure review which the administration had launched soon after its installation to provide a basis, ahead of the conclusions of the QDR, for settling the size of the defence budget.⁴⁶

IV. Europe

Military expenditure in Europe has been increasing since 1998. According to SIPRI estimates, it increased by about 6 per cent in real terms between 1998 and 2000. This was the effect of a 44 per cent real increase in Russian expenditure⁴⁷ combined with a slight decline in the aggregate military expenditure of all other countries in Central and Eastern Europe and a roughly constant level in Western Europe (table 4.7). In spite of the strong increase in Russian military expenditure since 1998, its level in 2000 was still only about half of what it was in 1992. In the rest of Europe the post-cold war decline in military spending has been smaller. Military expenditure in Western Europe fell by 15 per cent in real terms over the 10 years 1991–2000.

The entire reduction in *West European* military expenditure occurred during the first half of the decade. Since 1995 the trend in Western Europe has been roughly flat. The military expenditure of the West European NATO countries, which accounts for over 90 per cent of West European military expenditure, declined until 1996 and has since then increased by 3 per cent in real terms. In contrast, the non-NATO countries in Western Europe have not, as a group, reduced their military expenditure after the end of the cold war, but have maintained it at a roughly constant level over the entire decade (table 4.7).

Whether the flat trend since 1995 will continue into the next decade depends on a number of military, political, industrial and economic factors. First, there are increasing demands to replace ageing military equipment because the size and structure of the armed forces have not been sufficiently adapted to the cuts in military expenditure during the first half of the 1990s and are therefore still oversized compared to financial allocations. Second, there are a number of long-term major weapon programmes initiated during the cold war which

⁴⁵ Agence France-Presse, 'Bush to stick to Clinton defense budget for now: official', 7 Feb. 2001, URL <<http://www.defense-aerospace.com/afp/defense/010208011111.iytschhj.html>>; and Kagan, R., 'Surprise: Bush decides against an increase in military spending', *International Herald Tribune*, 8 Feb. 2001, p. 8.

⁴⁶ 'Surprise spending review slows Pentagon's ambitions', *International Herald Tribune*, 6 Feb. 2001, p. 3; and 'Budget must wait on defense review', American Forces Information Service, 9 Feb. 2001, URL <http://www.defenselink.mil/news/Feb2001/n02092001_200102093.htm>. This review has become known as the Andrew Marshall Review.

⁴⁷ Based on provisional figures. See appendix 4A, tables 4A.2 and 4A.3, and appendix 4E.

continue to absorb a significant part of procurement budgets. Once large sums of money have been invested in design and production programmes, such as fighter aircraft programmes, these take on an economic and industrial inertia which makes them difficult to cancel or reduce. Third, new military commitments are emerging under the rubric of peace-support operations within both NATO and the EU. Fourth, on the political level, there is a pressure to increase military expenditure in order to support this combination of old and new commitments. At the same time there is strong resistance to significant increases in defence budgets, for reasons of economic and fiscal policy and because there is no clearly identifiable security threat in the region.

The main vehicle for increasing European military expenditure is the NATO DCI. In addition, the decision in 1999 to create an EU rapid reaction force will reinforce the requirement for additional military capabilities in Western Europe. Although no firm cost assessments have yet been made, full implementation of the commitments already made for these two purposes will require significant additional budget allocations for defence in the near future. A third 'push' on West European defence budgets is the gap in military technology between the USA and Europe, a factor which was highlighted by the NATO air campaign in Yugoslavia over Kosovo in 1999 but which dates much further back than this.

It is not clear how the European countries will respond to the requirements generated by these three factors—the DCI, the creation of the EU rapid reaction force and the US–European technology gap. How far and in what way these commitments and plans are implemented will depend to a great extent on the willingness of taxpayers to devote more money to military purposes in the post-cold war security environment. It is unlikely that new developments in arms production and trade in the Euro-Atlantic area will make it possible to reduce equipment costs substantially.⁴⁸ A change from flat to rising military expenditure would require a major shift in public opinion in most West European countries, a factor which has already been identified by the proponents of increased defence budgets.

The NATO Defence Capabilities Initiative

The improvements in military capabilities required by NATO member countries are formulated in the NATO DCI, which was launched at the NATO summit meeting in Washington in April 1999. The main purpose of the DCI is to 'better prepare the Alliance to meet its security obligations', as outlined in its updated Strategic Concept which was also approved at the summit meeting, and to 'bring a more rapid solution to closing the capabilities gap' between the USA and NATO Europe.⁴⁹

⁴⁸ See chapter 5 in this volume.

⁴⁹ NATO, 'The Alliance's Strategic Concept approved by the Heads of States and Government participating in the meeting of the North Atlantic Council in Washington, DC, 23–24 Apr. 1999', Press Release NAC-S(99)65, 24 Apr. 1999. See also Rotfeld, A. D., 'Europe: the new transatlantic agenda',

Table 4.7. Military expenditure in Europe, 1991–2000

Figures are in US \$b., at constant 1998 prices and exchange rates. Figures do not always add up to totals because of the conventions of rounding.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Europe	..	296	278	275	239	235	238	227	235	240
Western	211	201	194	189	179	180	179	180	182	180
Central and Eastern	..	95.3	84.6	86.5	60.4	55.3	58.8	47.2	53.5	60.4
CIS Europe	..	85.0	75.9	78.0	51.6	47.0	50.5	38.6	45.2	52.2
Russia	..	80.4	70.9	68.6	43.4	39.5	42.2	30.6	37.9	43.9
Other CIS Europe	..	4.6	5.0	9.4	8.1	7.5	8.3	8.0	7.3	8.3
Other CEE	8.9	10.3	8.7	8.5	8.9	8.3	8.3	8.6	8.3	8.2
EU	194	184	178	172	172	173	172	173	175	173
NATO Europe	197	187	180	175	167	168	166	166	174	172
Non-NATO Europe	..	110	98	100	73	67	72	60	61	68
Non-NATO W. Europe	14	14	13	13	12	12	13	13	13	13
Total NATO	548	557	533	508	481	466	462	457	467	471

CIS Europe = European member states of the Commonwealth of Independent States—Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine; CEE = Central and Eastern Europe. All totals exclude Yugoslavia.

Source: Appendix 4A, table 4A.1. SIPRI data for NATO member states are based on data produced by NATO. Exceptions are the new NATO members, the Czech Republic, Hungary and Poland, for which SIPRI uses data provided by these countries in order to ensure consistency with the period before they joined NATO. Military expenditure as defined by NATO may diverge significantly from nationally defined defence budgets.

The 1999 Strategic Concept emphasizes NATO's new role in conflict prevention and crisis management, including crisis response operations. It provides, as one politician put it, 'an opportunity to articulate a vision for an alliance without an adversary'.⁵⁰ Instead of 'large-scale conventional aggression' against NATO countries it lists a number of smaller, more short-term threats, such as the proliferation of nuclear, biological and chemical weapons, terrorism, organized crime and 'disruption of the flow of vital resources'.

The task of the allies according to the 1999 Strategic Concept is to maintain forces capable both of deterrence and of defence against any potential 'aggression against it', according to Article 5 of the 1949 North Atlantic Treaty, and of contributing to conflict prevention and other peace-support operations which arise from consultations under Article 4.⁵¹ The capabilities needed to fulfil these new tasks concern primarily power projection and mobility. The DCI calls for improvements in five areas: (a) deployability and mobility (air lift, sea lift and rail transport capability); (b) sustainability and

SIPRI Yearbook 2000 (note 13), pp. 188–89; and NATO, 'Defence Capabilities Initiative', Press release NAC-S(99)69, 25 Apr. 1999.

⁵⁰ NATO Parliamentary Assembly, Giovanni Forcieri (rapporteur, Italy), *Interim Report: The Defence Capabilities Initiative and NATO's Strategic Concept*, Report of the Sub-Committee on Future Security and Defence Capabilities, Committee on Defence and Security, Nov. 2000.

⁵¹ 'The Alliance's Strategic Concept, 1999' (note 49).

logistics (supply of basic provisions of food, water, shelter and equipment in the field); (c) effective engagement (adequate firepower to defeat an enemy); (d) survivability of forces and infrastructure (including defence against weapons of mass destruction); and (e) command and control information systems.⁵²

The rationale for the capability requirements listed in the DCI often refers to non-Article 5 tasks, and in particular to the experience of NATO forces in operations in Bosnia and Herzegovina and Yugoslavia. However, to a great extent the DCI addresses the same long-term efforts within NATO towards standardization and interoperability and for maintaining its military technological lead as it did throughout the cold war. 'While NATO officials were already aware of capability shortfalls, they say that DCI provided visibility for the need to solve long-standing problems.'⁵³

The European rapid reaction force

During 2000 it was a priority of the EU to develop and introduce the civil and military resources and capabilities required to enable it to take and implement decisions on the full range of conflict prevention and crisis management missions known as the Petersberg tasks.⁵⁴ At the Helsinki European Council meeting in December 1999, EU members set themselves the 'headline goal' of being able, by 2003, to deploy within 60 days and sustain for at least one year military forces up to corps level, that is, 60 000 persons.⁵⁵ They also decided to rapidly develop a collective capability, particularly in the field of command and control, intelligence and strategic transport.⁵⁶ This was confirmed at the European Council meeting in Santa Maria da Feira in June 2000, when the EU also encouraged the countries which have applied for EU membership and the European members of NATO which are not in the EU to contribute to improving Europe's capabilities. The resource foundation for the new military capability was laid at the Capabilities Commitment Conference of EU military and political leaders in Brussels on 20 November 2000, when the member states pledged contributions, on a voluntary basis, to the rapid reaction capabilities identified at the December 1999 meeting of the European Council in Helsinki.⁵⁷ These voluntary commitments, set out in what is known as the Force Catalogue, add up to a pool of more than 100 000 ground troops, around

⁵² 'Defence Capabilities Initiative' (note 49).

⁵³ NATO Parliamentary Assembly (note 50).

⁵⁴ The Petersberg tasks cover humanitarian and rescue tasks, peacekeeping and crisis management including peacemaking. These are explicitly mentioned as aspects of the EU's security and defence policy (ESDP) as reformulated in the 1997 Treaty of Amsterdam. See also chapter 3 in this volume. For a full and recent account of the history of the EU's integration efforts in the field of defence see Howarth, J., *European Integration and Defence: The Ultimate Challenge?*, Chaillot Papers no. 43 (WEU Institute for Security Studies: Paris, Nov. 2000).

⁵⁵ See also chapter 3 in this volume.

⁵⁶ European Union, Helsinki European Council, Presidency Conclusions, 10–11 Dec. 1999, reproduced in *SIPRI Yearbook 2000* (note 13), pp. 226–28.

⁵⁷ Council of the European Union—General Affairs/Defense, 'Military capabilities commitment declaration', Press release no. 13427/2/00, Brussels, 20 Nov. 2000, URL <<http://ue.eu.int/newsroom/LoadDoc.cfm?MAX=1&DOC=!!!&BID=75&DID=63995&GRP=2957&LANG=1>>.

400 combat aircraft and 100 ships, with crews.⁵⁸ While no official EU document has listed the individual national contributions, some countries have released information on their minimum commitments.

Spending implications

While NATO has not released any official cost estimates of the capability improvements listed in the DCI, a rough assessment has been made by an independent researcher and presented to a committee of the NATO Parliamentary Assembly. According to this estimate, the combined cost of the development by the 17 European NATO member states of a power projection capability half the size of the USA's would amount to roughly \$50–75 billion over 10 years.⁵⁹ This corresponds to an increase in total military spending in NATO Europe by \$5–7.5 billion per year over the current level of \$165 billion in current prices, or an increase of 3–4 per cent.

Calculations of European requirements based on comparisons with the USA are striking but often oversimplified. While it is true that the level of military expenditure in Europe—whether NATO Europe or EU countries—is only roughly 60 per cent of that of the USA (table 4.7), it is also true that there is a difference in doctrines and that different doctrines require different military technologies. In Europe, several analysts claim, the current level of military spending 'should be more than enough to deal with contingencies inside and along the periphery of Europe'.⁶⁰

Several NATO member states have committed themselves to increased military capabilities. At the NATO defence ministerial meeting on 5 December 2000 it was noted that 'this year, more Allies project real increases in defence expenditure than was the case last year' and that greater emphasis was being put on improvements in the management of defence resources and the potential benefits of multinational, joint and common funding projects as ways to ensure greater cost-effectiveness in providing the military capabilities the alliance needs.⁶¹ At the same time it was observed that this was not sufficient but that 'additional funds appear necessary to achieve the required capability improvements set out in the DCI'.⁶² US Secretary of Defense William Cohen noted in December 2000 that it will not be possible to achieve the goals of the DCI through savings alone: there has to be a commitment to defence spending and increases in that spending. Furthermore, he identified the main barrier to

⁵⁸ 'EU leaders to close capabilities gap', *Defense News*, 4 Dec. 2000, pp. 1, 2.

⁵⁹ Estimate produced by Michael O'Hanlon, a senior fellow at the Brookings Institution, Washington, DC, and presented to a committee of the NATO Parliamentary Assembly in Feb. 2000, cited in NATO Parliamentary Assembly (note 50), para. 18.

⁶⁰ Heisbourg, F., 'European defence takes a leap forward', *NATO Review*, spring/summer 2000, p. 9.

⁶¹ NATO, 'Final Communiqué, Ministerial Meeting of the Defence Planning Committee and the Nuclear Planning Group on 5 December 2000', Press Communiqué M-DPC/NPG-2(2000)115, 5 Dec. 2000, URL <<http://www.nato.int/docu/pr/2000/p00-115e.htm>>, para. 3.

⁶² 'Final Communiqué, Ministerial Meeting' (note 61), para. 3.

increased defence spending—public opinion. ‘We need to remind our constituents and our people that the threats are real.’⁶³

The cost of the EU rapid reaction force will depend mainly on two factors: (a) the extent to which new units are created for the force; and (b) the extent to which it relies on NATO’s defence planning machinery. While it appears that the troops already pledged for NATO will be designated also for the EU force, at least in countries which are members of both organizations, it was not quite clear by the end of 2000 whether NATO defence planning capacities will also be used for EU-led operations. At the meeting of NATO foreign ministers in Brussels on 14–15 December, Turkey blocked NATO approval of the so-called permanent arrangements for assured access for EU countries to NATO’s operational planning capabilities for large-scale crisis management operations.⁶⁴ At the meeting between foreign ministers of NATO and EU member states on 15 December 2000, the ‘historic meeting of the 23’, therefore, no compromise could be reached.⁶⁵

Western Europe

West European defence planning, financing and debate in the early 2000s will to a great extent focus on the implementation of the DCI. During 2000, a committee of the NATO Parliamentary Assembly visited a number of NATO countries to gather information about their new commitments. It concluded that there was an unconditional will in Europe to fulfil the conditions required to implement the 1999 Strategic Concept.

There have also been various types of measure to achieve savings in defence in the interests of these new commitments. Two important measures are the practice of outsourcing military functions to private companies and the agreements made during 2000 for joint multinational financing of some national procurement programmes in exchange for the countries providing the finance being allowed to use the system. Co-funding and sharing of national military assets were used in several cases during 2000, including the government-to-government agreement in September 2000 that the Netherlands would contribute \$80 million to help Germany pay for its \$5.7 billion order of 73 Airbus

⁶³ Secretary of Defense William S. Cohen, DOD News Briefing, Tuesday, 5 Dec. 2000, at a Press Conference at NATO Headquarters, Brussels, published by the Office of the Assistant Secretary of Defense, Washington, DC.

⁶⁴ ‘NATO Council of Foreign Ministers: No agreement on NATO–EU cooperation’, *Atlantic News*, 16 Dec. 2000, pp. 1–2. The communiqué issued after the meeting only stated that the allies welcomed proposals by the EU on the ‘permanent arrangements’ and noted that NATO intends to ‘put in place arrangements for assured EU access to NATO planning capabilities . . . ; the presumption of availability to the EU of pre-identified NATO capabilities . . . ; the identification of a range of European command options for EU-led operations, further developing the role of DSACEUR’. ‘Ministerial meeting of the North Atlantic Council held at NATO Headquarters, Brussels, on 14 and 15 December 2000, Final Communiqué’, *Atlantic News*, 21 Dec. 2000, Annex.

⁶⁵ ‘NATO/Meeting of foreign ministers: no agreement on EU access to NATO assets but arrangements for consultation’, *Atlantic News*, 19 Dec. 2000, pp. 2–3. The 23 states are the 15 EU member states and the 8 NATO member states that are not members of the EU.

A400M transport aircraft. In return the Dutch armed forces will have guaranteed access to these aircraft.⁶⁶

Defence planning in *the United Kingdom* is based on its 1998 Strategic Defence Review (SDR). The British defence strategy emphasizes power projection with the motivation that 'while there is no major threat of war, there are security challenges, and British forces will have to be able to "go to the crisis"'.⁶⁷ The British armed forces are therefore being restructured away from a cold war configuration of territorial defence to mobile, flexible-response units that can be deployed in a range of operations. Military expenditure is set to increase after a 10-year period of cuts. The defence plan announced by the government on 18 July 2000 includes an increase from £22.97 billion (\$34 billion) in FY 2000/2001 to £24.97 billion in FY 2003/2004.⁶⁸

France is close to completing a seven-year (1996–2002) restructuring programme for its armed forces. Mandatory conscription will be abandoned by 2002. Over the period 1996–2002 the size of the armed forces will be reduced from 236 000 to 138 000, of which 100 000 can be deployed outside France. As a result of professionalization, wages and associated costs have risen by 15 per cent in real terms to FFr 84.7 billion (\$70 billion) in the 2001 budget, a higher cost than originally estimated.⁶⁹

The proposed defence budget for 2001, as reviewed by parliament in November 2000, at FFr 244.7 billion (\$210 billion) including military pensions (FFr 188.9 billion excluding pensions), represents a slight increase in nominal terms over 2000 but in real terms a small reduction.⁷⁰ Although the procurement budget was also cut slightly in real terms, all major weapon programmes were preserved and some new ones initiated.⁷¹ However, funds for procurement will in effect increase by 1.3 per cent because of a reduction in value added tax and a cut in the defence ministry's contribution to civilian R&D.

In *Germany* the conflict between economic targets and defence policy aims is the most evident. Germany is an active participant in the DCI but at the same time gives high priority to measures for economic recovery and stability. Plans for a radical restructuring of the armed forces, possibly to be implemented from April 2001, have been developed but no firm decision had been taken by the end of 2000. Existing plans aim to reduce the overall size of the Bundeswehr while increasing the number of professional soldiers prepared for rapid intervention. In June 2000 the German Cabinet adopted a plan to reduce force levels from 340 000 to 282 000 by 2006, including a cut in conscript numbers from 135 000 to 80 000 and an increase in the number of professional

⁶⁶ 'Europeans eye cross-border defense subsidies', *Defense News*, 16 Oct. 2000, pp. 1 and 28; and 'Europe's stronger assets', *Defense News*, 9 Oct. 2000, p. 30.

⁶⁷ Clarke, M. (Director, Centre for Defence Studies, King's College, London), in NATO Parliamentary Assembly (note 50), para. 24.

⁶⁸ 'UK to boost defence spending', *Defense News*, 31 July 2000.

⁶⁹ 'France's budget draft buys Rafales, Leclercs', *Defense News*, 16 Oct. 2000.

⁷⁰ 'Paris Daily on 2001 defense budget', *Paris Le Monde* (Internet edn, in French), 8 Nov. 2000, in Foreign Broadcast Information Service, *Daily Report–West Europe (FBIS–WEU)*, FBIS–WEU-2000-1108, 13 Nov. 2000.

⁷¹ 'France budgets to keep all its major projects', *Jane's Defence Weekly*, 27 Sep. 2000.

soldiers to 200 000, of whom 150 000 would be eligible for deployment outside Germany as part of rapid reaction forces.⁷²

The strict expenditure targets approved by the German Government in June 2000 as part of a long-term plan to balance its budget by 2006 still allowed for an increase in the defence budget for 2001, primarily to meet its international commitments and to begin the restructuring of its armed forces.⁷³ In addition, the ministry of defence was allowed to keep most of the savings (80 per cent) gained through its programme of improvements in efficiency, including reform of the procurement process and an ambitious scheme for outsourcing.⁷⁴ The 2001 defence budget shows an increase of 2.3 per cent in real terms while the budget plan for the five-year period 2001–2005 shows a continued decline for defence between 2001 and 2003 but a slight real growth thereafter.⁷⁵ In November 2000 the defence ministry announced a major sale of military property in order to further strengthen its defence budget. The sale of up to one-fifth of the ministry's real estate portfolio could raise DM 20 billion (\$8.6 billion) according to Defence Minister Rudolf Scharping.⁷⁶ This corresponds to almost half of the current defence budget.

Italy had also launched a major restructuring programme before the formal adoption of the DCI. Conscription is being suspended entirely and replaced by an all-volunteer professional force of 190 000 troops. In terms of projection capability, the reform will increase Italy's capability to deploy and sustain troops outside Italy from the current 8000–10 000 troops to at least three times as many in the future. The proposed defence budget for 2001 shows an increase by 6 per cent (at current prices).⁷⁷

While all European defence ministries face economic constraints, they are gradually moving from declining military expenditure into plans for real growth. The main exception, Germany, is trying to achieve the same by savings and increasing the revenues of the defence ministry.

Central and Eastern Europe

In Central and Eastern Europe excluding the CIS countries, combined military expenditure fell by about 2 per cent in real terms in 2000 and by 8 per cent between 1991 and 2000 (table 4.7). There was some fluctuation over the 1990s. The sharp rise in 1995 was mainly due to strong increases in Bosnia and Herzegovina, Croatia and Slovakia, and the increase in 1998 was the effect mainly of raised military expenditure in the Czech Republic, Hungary and Poland.

⁷² 'Interview with Rudolf Scharping, German Minister of Defence', *Jane's Defence Weekly*, 8 Nov. 2000, p. 32, also available at URL <<http://www.janes.com>>.

⁷³ 'Berlin approves tough targets for spending', *Financial Times*, 22 June 2000.

⁷⁴ 'Bundeswehr embraces defence reform', *Armed Forces Journal*, 1 July 2000.

⁷⁵ *Air Letter*, July/Aug. 2000, p. 6.

⁷⁶ 'Germany plans sell-off to find funds for armed forces', *Financial Times*, 24 Nov. 2000, p. 2.

⁷⁷ Italian Ministry of Defence, 'Nota aggiuntiva allo stato di previsione per la difesa per l'anno 2001: Presentata al Parlamento dal Ministro della Difesa On. Sergio Mattarella' [Additional notes to the defence plan for year 2001: presented to Parliament by the Defence Minister Hon. Sergio Mattarella], Oct. 2000, URL <<http://www.difesa.it/>>.

Table 4.8. Military and procurement expenditure for seven NATO aspirant Central and East European countries, 1998–2000^a

All figures are percentages.

	1998	1999	2000	Year for 2% target ^b
<i>Bulgaria</i>				
Procurement as % of total military expenditure	2.9	4.1	4.4	
Military expenditure as % of GDP	2.5	1.6	2.6	..
<i>Estonia</i>				
Procurement as % of total military expenditure	25.7	9.0	8.7	
Military expenditure as % of GDP	1.2	1.4	1.6	2004
<i>Latvia</i>				
Procurement as % of total military expenditure	3.2	6.6	5.3	
Military expenditure as % of GDP	0.7	0.9	1.1	2005
<i>Lithuania</i>				
Procurement as % of total military expenditure	18.8	4.2	7.5	
Military expenditure as % of GDP	1.2	1.0	1.4	2000
<i>Romania</i>				
Procurement as % of total military expenditure	24.4	26.9	..	
Military expenditure as % of GDP	2.0	1.6	1.6	..
<i>Slovakia</i>				
Procurement as % of total military expenditure	5.1	4.8	1.3	
Military expenditure as % of GDP	1.9	1.7	1.7	..
<i>Slovenia</i>				
Procurement as % of total military expenditure	23.7	18.4	21.5	
Military expenditure as % of GDP	1.5	1.4	1.5	2001

^a Albania and the Former Yugoslav Republic of Macedonia (FYROM) are not included because of lack of data.

^b All NATO aspirant countries aim to increase their military expenditure to 2% of GDP.

Sources: SIPRI questionnaires submitted by national ministries of defence; SIPRI military expenditure database; and (for final column): **Estonia, Latvia and Lithuania:** Föhrenbach, G., 'Die Sicherheitskonzepte der baltischen Staaten' [Security concepts of the Baltic states], *Österreichische Militärische Zeitschrift*, Jan./Feb. 2000, pp. 139–44; and **Slovenia:** Ribic, M. (Slovenian Secretary of State) *et al.*, 'Defence budget mission and equipment', *NATO's Nations and Partners for Peace*, special issue, Sep. 1999, pp. 14–15.

Questions associated with NATO enlargement abound. Key questions include which states to invite and the timetable for admitting new members. Many questions remain to be resolved before prospective entrants can join, for example, how far the new entrants achieve interoperability and modernization of their armed forces before entry. The three countries that joined NATO in 1999—the Czech Republic, Hungary and Poland—are all aiming to restructure and downsize their armed forces with limited economic resources. The Czech Republic's military expenditure has been roughly constant since 1993. Hungary's austerity programme kept defence expenditure low compared to that of the Czech Republic and Poland. Only Poland, with the largest military

among the new allies, had an increase (about 21 per cent) during the period 1991–2000.

Nine more CEE countries have applied to join NATO—Albania, Bulgaria, Estonia, Latvia, Lithuania, the Former Yugoslav Republic of Macedonia, Romania, Slovakia and Slovenia. All have developed political and institutional strategies designed to meet the objectives of membership of the EU and NATO, as they see integration into these organizations as giving them the necessary protection to continue economic development and allowing them to participate as contributing members to European security. Although NATO has no established criteria for accepting new members, its 1995 study on enlargement provides guidelines for candidate countries, including the establishment of democratic norms, market-oriented economic policies, good-neighbourly relations, civilian control of the military, and a military capability that can operate effectively with the alliance.⁷⁸ Table 4.8 shows the trends in military and procurement expenditure of seven of the countries aspiring to membership of NATO, all in the process of reforming their armed forces.

Despite other pressing economic demands, *the Baltic states* have devoted an increasing share of GDP to military purposes (table 4.8). Between 1996 and 2000 Estonia's military expenditure more than doubled in real terms, Latvia's increased by 66 per cent, and Lithuania's more than tripled (table 4A.3).

The wars in *the Balkan region* make it difficult to assess the reliability of official figures for military expenditure. This is particularly true for Yugoslavia. The new government of Vojislav Kostunica has announced the need for a new defence doctrine and a reorganization of the army has begun, involving a reduction in size and an increase in the level of professionalization. According to Defence Minister Slobodan Krapovic, the size of the army can be cut by 30–40 per cent, with 60 per cent of its reduced comprised of professional soldiers. The proposed defence budget for 2001 amounted to 32.1 billion dinars, a reduction by almost half from original plans because of the harsh economic situation in the country.⁷⁹

Most other countries in the Balkan region cut their military spending over the decade. Croatia nearly halved its military expenditure in real terms in the period 1996–2000. The prospective NATO entrants *Bulgaria, Romania and Slovakia* are all in the process of restructuring their armed forces to ensure interoperability with NATO forces. Because of fiscal pressures their governments are trying to accumulate additional funds from savings and outsourcing. Military installations and trading and service units are subject to either privatization or transfer to other ministries and institutions. Their ministries of defence have also started to get rid of redundant equipment and land. However, for most of the countries listed in table 4.8 the main obstacle to military reform will be their continuing poor economic performance, which may lead

⁷⁸ 'Study on NATO enlargement', NATO Basic Texts, Brussels, Sep. 1995, updated 5 Oct. 2000, URL <<http://www.nato.int/docu/basicxt/enl-9501.htm>>.

⁷⁹ 'FRY defense minister views army funding, need for new 'defense doctrine'', 21 Feb. 2001, in Foreign Broadcast Information Service, *Daily Report-East Europe (FBIS-EEU)*, FBIS-EEU-2001-0222, 23Feb. 2001.

to falls in defence spending despite consistent pledges by all—except for Bulgaria—to raise their military expenditure to 2 per cent of GDP in order to fulfil their financial obligations when they join NATO.⁸⁰ Any replacement of military hardware will place a substantial burden on the already stretched economies of these countries.⁸¹

Slovenia's military expenditure has been relatively stable since 1992, when it became independent. Its high share of procurement in total military expenditure is made possible through the Funding Law for Procurement of Equipment and Development of the Slovenian Armed Forces, introduced in 1992, which provides the armed forces with additional funds for their development and enables them to procure supplementary equipment under the General Long-term Programme of the Equipping and Development of the Slovenian Armed Forces, which covers the period up to 2010.⁸²

The government expenditure of *Bosnia and Herzegovina* at the entity level is characterized by a high military expenditure share.⁸³ There is also a substantial allocation for social benefits to military invalids. Official military expenditure as provided in the consolidated government budget accounted for 5 per cent of GDP in 1999 (table 4.A.4). In addition, there have been substantial foreign grants to the armies in the Federation of Bosnia and Herzegovina which have not been included in the official defence budget.⁸⁴ According to an estimate by the International Monetary Fund (IMF), the Federation's 1998 defence budget (368 million convertible marks, c. \$210 million) covered only half of its military expenditure.⁸⁵ A concrete army reform plan agreed on by all the ethnic groups of Bosnia and Herzegovina is urgently needed if military spending is to be reduced to an affordable level, since the economy is in a poor state, especially in the Republika Srpska, and both entities aim to make the difficult dual transition from a wartime to a peacetime economy and from a

⁸⁰ 'Study on NATO enlargement' (note 78).

⁸¹ Sherman, J., 'Sofia's adventures', interview with Boiko Noev (Bulgarian Defence Minister), *Armed Forces Journal International*, vol. 138, no. 2 (Sep. 2000), pp. 14–16; Clark, C., Interview with Bulgarian Defence Minister Boiko Noev, *Defence News*, 7 Aug. 2000, p. 54; 'US General Garret assesses progress of army reform' 14 Feb. 2000, in FBIS-EEU-2000-0214, 28 Feb. 2000; *Air Letter*, 23 June 2000, p. 5; *Air Letter*, 25 June 2000, p. 5; Kemp, I. *et al.*, "'Members only': Romania, country briefing', *Jane's Defense Weekly*, 1 Nov. 2000, pp. 21–27; and Valasek, T., 'Slow military reform will stall Slovakia's NATO entry', *Jane's Intelligence Review*, Sep. 2000, p. 7.

⁸² Ribic, M. (Slovenian Secretary of State) *et al.*, 'Defence budget: mission and equipment', *NATO's Nations and Partners for Peace*, special issue, 1999, pp. 14–18.

⁸³ In accordance with the General Framework Agreement for Peace in Bosnia and Herzegovina (Dayton Agreement), signed in Dec. 1995, Bosnia and Herzegovina is a single state which consists of 2 independent political entities: the Federation of Bosnia and Herzegovina, comprising the Bosniac (Muslim)- and Croat-majority areas; and the Republika Srpska, comprising the Serb-majority area. In May 1996 agreement was reached to integrate the Bosniac and Croat armed forces into a Federation Army, *Vojska Federacije* (VF).

⁸⁴ The 3-man presidency of Bosnia and Herzegovina has submitted to the OSCE statements confirming that foreign assistance was being received. However, information about the total amounts spent for military purposes is still concealed according to the Deputy Head of the OSCE Mission in Bosnia, Gen. Bjoern Karlsson. 'OSCE told military forces receiving foreign help', 22 June 1999, in FBIS-EEU-1999-0622, 23 June 1999.

⁸⁵ Estimates indicate that adequate support for the current complement of troops in the Federation would amount to at least 1 billion convertible marks (c. \$570 million). International Monetary Fund, *Bosnia and Herzegovina: Selected Issues and Statistical Appendix*, IMF Staff Country Report no. 00/77 (IMF: Washington, DC, June 2000), p. 37.

command to a liberal economic system. According to a 1999 decision by the Standing Military Committee of Bosnia and Herzegovina, the military budgets of both entities should be reduced by 15 per cent each in 2000.⁸⁶ The 2001 defence budget also envisages a reduction, by 5 per cent for each entity, supported by a cut in military personnel of about 30 per cent by the end of 2000.⁸⁷

V. Asia and Oceania

The 2.5 per cent increase in military expenditure in 2000 in Asia and Oceania is due primarily to the continued strong increase in South Asia. In East Asia military expenditure increased more slowly and in Oceania there was a sharp cut in 2000. However, in both these subregions current procurement plans are likely to require future increases in defence budgets. The countries in Central Asia account for a small share of Asian military expenditure—2 per cent in 2000. While little is known about their true allocations for military purposes, it is clear that domestic expenditure on national defence does not cover the full cost of their military activities and forces.⁸⁸

South Asia

South Asia is the region where military expenditure rose most consistently and most rapidly during the 1990s—an overall increase of 50 per cent in real terms over the 10 years 1991–2000. The two major spenders in the region, India and Pakistan, accounted for 75 and 17 per cent, respectively, of total military expenditure for the region.

India's defence budget for FY 2000/2001 was increased by 15 per cent in real terms over actual expenditure for the previous year. The increase is intended primarily for procurement for the army and air force, partly as a response to the findings of the Subrahmanyam Committee, which investigated the Pakistani intrusion into Indian Kashmir in the summer of 1999.⁸⁹ The Indian armed forces still rely heavily on manpower: personnel costs, including

⁸⁶ 'Bosnia to reduce military budget by 15 per cent by 2000', Sarajevo Radio Bosnia-Herzegovina Network (in Serbo-Croat), in FBIS-EEU-1999-0715, 15 July 1999, p. 1.

⁸⁷ International Monetary Fund, 'Bosnia and Herzegovina: fourth and fifth review under the stand-by arrangement', Staff Report and Press Release on the Executive Board Discussion, Country Report, no. 08/01, Washington, DC, Jan. 2001, p. 11; and Kusovac, Z., 'One army for Bosnia? That's the only way forward for three factions who have been fighting each other', *Jane's Defence Weekly*, 14 June 2000, p. 61.

⁸⁸ For the countries in Central Asia SIPRI uses primarily data provided by the IMF in its series of staff country reports. However, both military expenditure data and economic statistics are unreliable for these countries, making the military expenditure trends difficult to assess. For a survey of their military expenditure trends see Eaton, M., 'Major trends in military expenditure and arms acquisitions by the states of the Caspian region', ed. G. Chufrin, SIPRI, *The Security of the Caspian Sea Region* (Oxford University Press: Oxford, forthcoming 2001).

⁸⁹ Ved, M., 'Kargil committee critical of gaps in security set-up', *Times of India*, 8 Jan. 2000 (Internet edn), URL <<http://www.timesofindia.com>>; Aneja, A., 'Army gets lion's share of funds', *The Hindu* (Internet edn), 1 Mar. 2000; and 'Guns versus butter', *The Hindu* (Online edn), 2 Mar. 2000, URL <<http://www.indiaserver.com/thehindu/2000/03/02/stories/05022511.htm>>.

pensions, take up a relatively high share—about 50 per cent of the total.⁹⁰ Expenditure on military R&D has been kept roughly constant in the budget for 2000/2001, accounting for 5.3 per cent of the total.⁹¹ Military R&D expenditure by the Department of Defence Research and Development of the Ministry of Defence has increased by roughly 66 per cent over the period 1993–2000. In addition, the Department of Atomic Energy, which partially funds military R&D activities,⁹² increased its total budget by 24 per cent in real terms over the period 1998/99–2000/01.

While the official 2000 defence budget for *Pakistan* showed a reduction in real terms of 6.9 per cent over the previous year, this reduction was illusory in that a major expenditure component—military pensions, at 26 billion rupees (\$510 million)—had been transferred from the defence budget to the budget for civil administration. If military pensions had stayed in the defence budget for 2000, it would instead have shown a 14.5 per cent increase in real terms.⁹³

After a period of relative calm in guerrilla-controlled territories in northern *Sri Lanka*, in February 2000 the Sri Lankan Government adopted a defence budget at approximately the same level as the outcome in 1999, which would have meant a reduction by 6.6 per cent in real terms. However, in August, following increased guerrilla activities by the Liberation Tigers of Tamil Eelam, the government decided to raise the defence allocations by more than 50 per cent.⁹⁴ As a result of this increase, the 2000 defence budget for Sri Lanka showed an increase of 44 per cent in real terms.

East Asia

There was a slight increase in total East Asian military expenditure in 2000, by an estimated 1.5 per cent in real terms, based on defence budgets. This was the combined effect of a roughly constant level in Japan, which accounts for roughly 40 per cent of total East Asian military expenditure, and a 9 per cent increase in China, which accounts for another 24 per cent, while the combined military budgets of the five countries most affected by the 1997–98 Asian economic crisis—Indonesia, South Korea, Malaysia, the Philippines and Thailand—returned to a level trend in 2000.

The defence budget of *Japan* for FY 2000 (beginning 1 April 2000) was 4.935 trillion yen (\$46 billion, in current prices), an increase of 0.3 per cent over the previous year and in line with the long-term practice that military

⁹⁰ Raghavan, V. R., 'The defence budget', *The Hindu*, 21 Mar. 2000, p. 12, in Foreign Broadcast Information Service, *Daily Report—Near East and South Asia (FBIS-NES)*, FBIS-NES-2000-0321, 21 Mar. 2000.

⁹¹ Association of South-East Asian Nations (ASEAN) Regional Forum, *Annual Security Outlook 2000*, chapter on India, URL <<http://www.asean.or.id/amm/aso-indi.htm>>.

⁹² This was tacitly confirmed for the first time by the Department of Atomic Energy in its Annual Report for 1999/2000. 'India signals willingness to speed nuke program', *Defense News*, 3 July 2000.

⁹³ Bokhari, F., 'Pakistan pledges to press on with tax reform', *Financial Times*, 19 June 2000, p. 5; and 'Optimistic but welcome', *Strategic Digest*, vol. 30, no. 7 (July 2000), p. 933.

⁹⁴ Agence France-Presse, 'Sri Lanka raises defence budget by more than 50 percent', 9 Aug. 2000, URL <<http://www.defense-aerospace.com>>. On the conflict in Sri Lanka see chapter 1, appendix 1A and appendix 5F in this volume.

expenditure should not exceed 1 per cent of GDP.⁹⁵ In mid-December 2000 a new defence plan was approved, the Mid-term Defense Review 2001–2005, amounting to a total of 25.16 trillion yen (\$235 billion) over five years.⁹⁶ The plan includes a number of major procurement programmes, including 4 in-flight refuelling aircraft, 59 combat aircraft, 58 helicopters and 25 ships. This expansive procurement plan, together with the decision to continue cooperative research with the USA on an NTW missile defence system, has caused concern in the region, in particular in China and South Korea, that there will be a shift in Japan's military capability away from its current 'defensive defence' posture towards a more conventional and even offensive defence.⁹⁷

The official 2000 defence budget of *China*, announced in March 2000, was set at 121 billion yuan (\$15 billion) in 2000, an increase of about 10 per cent in real terms. Most of the increase, 5.6 billion yuan, was allocated to the daily operation of the armed forces to compensate for their lost income from commercial activities which were banned in 1998.⁹⁸ Increased allocations were also budgeted for pensions, pay increases and subsidies. A Defence White Paper was published in 2000,⁹⁹ the second Chinese official document providing details of its military expenditure and arms industry. While these reports mark some progress in Chinese transparency, it is still not clear to what extent the official military budget covers the costs of total Chinese military activities. According to the estimates made by SIPRI, the level of China's total military expenditure has consistently been about 70–80 per cent higher than its official defence budget during the 1990s.¹⁰⁰

In many countries in East Asia, procurement budgets are beginning to rise again after a period in which procurement programmes have been postponed or spread over a longer period. At the same time economic constraints have imposed a shift in emphasis from expenditure on personnel towards procurement expenditure. Military reform programmes in Malaysia, Taiwan and Thailand are all aimed at cutting manpower while improving the standard of military equipment.¹⁰¹

⁹⁵ Japanese Ministry of Finance, Budget Bureau, 'The Japanese budget in brief 2000', URL <www.mof.go.jp/english/budget/brief/2000/brief01.htm>. The 1% ceiling for Japan's military expenditure was introduced as a government guideline in 1976. Although lifted in 1987 and exceeded in 1987–89, it has since 1990 prevailed in practice. Ikegami-Andersson, M., *Military Technology and US-Japan Security Relations: A Study of Three Cases of Military R&D Collaboration, 1983–1998*, Report no. 51 (Uppsala University and Stockholm University: Uppsala and Stockholm, 1998).

⁹⁶ *Tokyo Sankei Shinbun* (Internet edn, evening edn), 15 Dec. 2000 in 'Japan article views next defense buildup plan', Foreign Broadcast Information Service, *Daily Report-East Asia (FBIS-EAS)*, FBIS-EAS-2000-1215, 26 Dec. 2000.

⁹⁷ Bickers, C., 'Extending Tokyo's reach', *Far Eastern Economic Review*, 18 Jan. 2001, pp. 26 ff.

⁹⁸ 'Text of Xiang's budget report to NPC', Xinhua (Beijing, in English), 17 Mar 2000, in Foreign Broadcast Information Service, *Daily Report-China (FBIS-CHI)*, FBIS-CHI-2000-0317, 20 Mar 2000.

⁹⁹ Chinese State Council Information Office, *China's National Defense in 2000* (Information Office of the State Council: Beijing, 16 Oct. 2000), URL <<http://www.fas.org/nuke/guide/china/doctrine/cnd0010/china-00106wp.htm>>.

¹⁰⁰ Wang, S., 'The military expenditure of China, 1989–98', *SIPRI Yearbook 1999* (note 21), appendix 7D, p. 349. See also appendix 4A in this volume.

¹⁰¹ Finnegan, P., 'Heavy armor leads Malaysia's 5-year spending program', *Defense News*, 24 Apr. 2000, p. 1; Chang, M., 'Ministry says draft budget meets only 80% of Taiwan's defense needs', Taipei Central News Agency, 10 Aug. 2000, in FBIS-CHI-2000-0810, 10 Aug. 2000; and Finnegan, P., 'Southeast Asian militaries alter roles, spending', *Defense News*, 29 May 2000, p. 35.

For the second consecutive year, *Taiwan* cut its military expenditure in 2000—by 8.5 per cent in real terms—to a level well below that of 1990. A programme aimed at reducing military manpower and improving the technological level of military equipment in the armed forces, the Armed Forces Refining Program, begun in 1993, is being completed.¹⁰² One of its goals has been to reduce the size of the armed forces from 450 000 to 380 000.¹⁰³ It has been government policy to minimize the effect of defence budget cuts on the Armed Forces Refining Program by prioritizing combat-relevant expenditure while postponing some procurement projects and cutting on administration.¹⁰⁴

With gradual economic recovery in Indonesia, South Korea, Malaysia, the Philippines and Thailand, the five countries in the region that were most affected by the 1997–98 economic crisis, arms procurement programmes that were postponed as a result of the crisis are slowly being resumed in some of them, in several cases combined with programmes for armed forces reform.

Following the accession to power of President Abdurrahman Wahid in October 1999, military reforms in *Indonesia* have also gathered momentum. Their prime purpose is to reduce the traditionally strong involvement of the armed forces in government. A host of measures were developed aimed at depriving the powerful army of some of its means of power. First, some of its functions in internal security were transferred to the national police.¹⁰⁵ This was reflected in the high share of total security budgets allocated to the police in 2000 (36 per cent, as compared with the army's 33 per cent).¹⁰⁶ Second, in order to give higher priority to fighting piracy and smuggling, resources within the procurement budget have been shifted from the army to the navy for the purchase of naval helicopters and vessels.¹⁰⁷ A third element, introduced on request from the IMF, was the requirement that the substantial extra-budgetary incomes of the armed forces should be audited.¹⁰⁸

After an increase in military expenditure of about 50 per cent in 1999, the 15.5 per cent cut in 2000 did not prevent *Malaysia* from reactivating its army reform plan, with procurement plans primarily directed towards the ground forces.¹⁰⁹ Despite low funding in 1997 and 1998 a major cut in the armed forces was finalized during the year.¹¹⁰

¹⁰² Taiwanese Ministry of National Defense, *1998 National Defense Report, Republic of China* (Ministry of National Defense: Taipei, 1998), pp. 163–70; and *Republic of China Yearbook 2000*, available on the Internet site of the Government Information Office, URL <<http://www.gio.gov.tw>>.

¹⁰³ Taiwanese Ministry of National Defense, *2000 National Defense Report, Republic of China* (Ministry of National Defense: Taipei, 2000), p. 178.

¹⁰⁴ Taipei Central News Agency, 10 Aug. 2000, in 'Ministry says draft budget meets only 80% of Taiwan's defense needs', FBIS-CHI-2000-0810, 10 Aug. 2000; and *Republic of China Yearbook 2000*, (note 102).

¹⁰⁵ Finnegan, P., 'Southeast Asian militaries alter roles, spending' (note 101), p. 1.

¹⁰⁶ 'Indonesian police to get lion's share of defence budget', URL <www.defense-aerospace.com>, 23 May 2000.

¹⁰⁷ Kingsbury, D., 'The reform of the Indonesian armed forces', *Contemporary Southeast Asia*, 2 Aug. 2000, pp. 302–19; and 'Tight budget for Indonesian military', *Asian-Pacific Defence Reporter*, Apr./May 2000, p. 59.

¹⁰⁸ McCawley, T., 'Threat to Indonesian army reform', *Financial Times*, 19 June 2000, p. 5.

¹⁰⁹ Finnegan, 'Heavy armor leads Malaysia's 5-year spending program' (note 101), p. 1.

¹¹⁰ Finnegan, 'South Asian militaries alter roles, spending' (note 101), pp. 1, 35.

Thailand is pursuing a genuine reduction in its armed forces. Military expenditure was cut by 20 per cent in 1999 and by 7 per cent in 2000. A military reform programme has been introduced with the aim of achieving a more streamlined and efficient force by restructuring command functions, by manpower cuts—by 17 per cent over the period 2000–2007—and by reducing procurement.¹¹¹

South Korea increased its defence budget for 2000 by 2.8 per cent in real terms. Its military procurement programme is being resumed, with plans to buy fighter aircraft, destroyers, helicopters and unmanned aerial vehicles.¹¹² The defence budget for 2000 includes a 2.4 per cent increase in arms procurement and a 6.4 per cent increase in personnel, which is explained by two factors: (a) lack of confidence in North Korea's intentions, in spite of improved relations; and (b) a change in South Korea's threat assessments to encompass also the possibilities of invasion from China or Japan.¹¹³ The government 'intends to invest heavily in the development of high-tech weapons and in securing the ability to develop core technologies suitable for the Korean military environment'.¹¹⁴ South Korea's expenditure on military R&D has increased consistently over the period 1990–98 and there was a sharp increase in 1999 when the Defense Science Technology Plan was launched. The government plans a continued long-term increase in military R&D funding, from roughly 5 per cent of military expenditure in 2000 to 10 per cent by 2015.¹¹⁵

Two neighbouring countries, Cambodia and Viet Nam, are both undergoing military restructuring. *Cambodia* is responding to demands from international donors by cutting its armed forces by more than 25 per cent by 2002 in a first pilot programme. The cost of this programme is estimated at \$47.5 million, to be funded mainly by international donors and hence not included in the defence budget.¹¹⁶ Military expenditure has been on a declining trend since 1994 and was cut by 4.2 per cent in real terms in 2000. This cut was in part due to the transfer of the militias from the Ministry of Defence to the Ministry

¹¹¹ Baker, R. W. and Morrison, C. E. (eds), *Asia Pacific Security Outlook 2000* (Japan Center for International Exchange: Tokyo, 2000), pp. 164–65; and Finnegan, 'Southeast Asian militaries alter roles, spending' (note 101), p. 35.

¹¹² Sherman, J., 'S. Korea again bolsters spending', *Defense News*, 23 Oct. 2000, pp. 1, 90.

¹¹³ South Korean Ministry of National Defense, *Defense White Paper 2000*, Dec. 2000, p. 69; and Wall, R., 'Korea détente no bar to military buys', *Aviation Week & Space Technology*, 18 Sep. 2000, p. 38.

¹¹⁴ South Korean Ministry of National Defense, *White Paper 1999* (Ministry of National Defense: Seoul, 2000), part three, 'Status and tasks of national defense', URL <http://www.mnd.go.kr/mnden/sub_menu/w_book/1999/index.html>.

¹¹⁵ South Korean Ministry of National Defense, *Defense White Paper 2000* (note 113), pp. 159 ff.

¹¹⁶ Marcher, A., 'World Bank denies demob process corrupt', *Phnom Penh Post*, URL <<http://www.phnompenpost.com>>, 24 Nov. 2000; Government of Cambodia, 'Report on working activities of the Royal Government in 1999', no. 02RB.K, Phnom Penh, 3 Feb. 2000, URL <<http://www.camnet.com.kh/ocm>>, p. 12; and International Monetary Fund, 'Cambodia: 2000 Article IV consultation and first review under the Poverty Reduction and Growth Facility—Staff Report; public information notice following consultation; and Statement by Cambodia's representative on IMF Executive Board', IMF Country Staff Report 00/127 (International Monetary Fund: Washington, DC, 2000), p. 11.

of the Interior.¹¹⁷ The 2001 budget for defence and security is 5.1 per cent lower than the 2000 budget, which represents a reduction of its share in total government current expenditure from 34.6 per cent in 2000 to 29.5 per cent in 2001.¹¹⁸

Military restructuring in *Viet Nam* aims to professionalize and modernize the navy and air force, with the overall objective of meeting the perceived threat of Chinese maritime expansion.¹¹⁹ The procurement programme is focused on the procurement of combat aircraft and licensed production of small combat ships.¹²⁰ The financial implications of this programme are not known. Some of it will reportedly be financed by savings from the planned transfer of a large part of the active military to the reserves, the militia and the self-defence forces.

Oceania

The military expenditure plans of *Australia* changed profoundly in 2000. Its 1999 expenditure plans showed a constant trend until FY 2001/2002,¹²¹ but the *Defence White Paper 2000* envisaged significant increases over a 10-year period beginning in FY 2001/2002, when military expenditure is scheduled to grow at the same rate as the overall economy, at 3 per cent per annum. Some of the planned increase is intended for personnel costs but most of it is for a major procurement programme, the Capability Enhancement Plan, at a total cost of A\$16 billion (US\$9.3 billion) for the period 2001/02–2010/2011.¹²² This policy change followed the ‘public discussion’ about the future of Australian defence in early 2000. Since the onset of the Asian financial crisis in 1997, Australia has prioritized high-technology equipment at the expense of military personnel with the aim of building its military advantage on technical superiority.¹²³ In reaction to what is perceived as an increasingly unstable environment and in order to be able to participate in future military intervention, the army was increased from four to six full-time battalions in 1999–2000.¹²⁴

¹¹⁷ Government of Cambodia, ‘Report on working activities of the Royal Government in 1999’, no. 02RB.K, Phnom Penh, 3 Feb. 2000, URL <<http://www.camnet.com.kh/ocm>>, p. 12.

¹¹⁸ *Reaksmei Kampuchea* (Phnom Penh), 14 Dec. 2000 (in Cambodian), in ‘Cambodian Government presents 2001 budget bill to National Assembly’, FBIS-EAS-2000-1220, 14 Dec. 2000.

¹¹⁹ ‘Vietnam and regional security’, *Jane’s Intelligence Digest*, 24 Nov. 2000, available at URL <<http://www.janes.com>>.

¹²⁰ Karniol, R., ‘Vietnam may move on corvette decision’, *Jane’s Defence Weekly*, 15 Dec. 1999, p. 18.

¹²¹ Ferguson, G., ‘Australia cost cutting compensates for flat budget’, *Defense News*, 24 May 1999, p. 22.

¹²² Commonwealth of Australia, *Defence 2000: Our Future Defence Force* (Defence Publishing Service: [Canberra], 2000), pp. 77–97 and 117–18.

¹²³ Baker, R. W. and Morrison, C. E. (eds), *Asia Pacific Security Outlook 2000* (Japan Center for International Exchange: Tokyo, 2000), pp. 21, 24.

¹²⁴ Australian Defence Minister, ‘Media Release from The Hon. John Moore, MP, Minister for Defence’ (MIN 340/99), 23 Nov. 1999, available at URL <<http://minister.defence.gov.au/1999/34099.html>>; and ‘Australia plans sustained rise in defence spending’, *Air Letter*, 23 Oct. 2000, p. 4.

VI. Africa

The general level of military expenditure in Africa continues to reflect the trend in the major spending nations, Algeria, Ethiopia, Nigeria and South Africa, which has been on the increase since 1997. Provisional estimates for the region for 1999 and 2000 show a dramatic increase from the 1998 regional total of \$10.1 billion to \$13.8 billion (at constant 1998 prices) in 2000—an increase in real terms by 37 per cent. Even with this surge in military spending, the overall regional level is still far from being fully captured by the SIPRI figures, which reflect only official figures. Data on the military expenditure of many of the countries at war are not available; if they were, the total military expenditure of the region would be even higher.¹²⁵ The factors affecting military expenditure in the main countries can be summarized under the broad headings war, reform and ‘modernization’. This section describes the cost implications of reform—or lack of it—and the procurement programmes in the countries with the highest military expenditure. Military expenditure on the continent is expected to continue to grow at least during the first half of this decade to reflect the high cost of some of these programmes.

Many African countries’ armed forces have been undergoing different kinds of reform since the early 1990s. The relatively wealthy countries are also beginning to modernize their armed forces. The nature, pattern and necessity of reform have been dictated by the experience of each state. What constitutes reform is therefore country-specific. The term ‘reform’ is used for a broad range of activities which may include one or more of the following inter-related goals: (a) rationalization of force levels (or downsizing); (b) democratic (civil) control of the military; and (c) professionalization of the armed forces. Each country selects its emphasis on the basis of its unique experience. Irrespective of the specific goals or the conditions warranting reform, however, finance is a limiting factor for all of them. The limitation of finance is further confirmed by the fact that modernization programmes are restricted to a few relatively wealthy countries on the continent. Whether these programmes are realistic in view of the resource constraints faced by many African governments, including those embarking on them, is an open question. Nor is it clear that there are threats to these countries which justify major investment in military equipment in the face of severe poverty.

In *Algeria* the goal of reform is the conversion of its current 120 000-strong, 70 per cent conscript armed forces to more professional volunteer forces. According to the Army Chief of Staff General Mohammed Lamari, ‘We do not see the issue in terms of length of national service but in terms of turning the People’s National Army into a professional force . . . we are on the verge of having a professional army’.¹²⁶ While there are no official cost estimates of the programme, local experts have suggested that it will require annual oil

¹²⁵ For the impact of armed conflicts on African military expenditure see Omitoogun, W., ‘Military expenditure in Africa’, *SIPRI Yearbook 2000* (note 13), pp. 291–98.

¹²⁶ ‘Financial constraints threaten army reforms’, *Algeria Interface*, 12 Apr. 2000, URL <<http://www.algeria-interface.com/english/focus/pro120400.htm>>.

export earnings in the region of \$15 billion (or \$23 per barrel) and long-term rescheduling of the country's estimated \$28 billion debt.¹²⁷ The long-term arms contract with Russia signed in November 2000, coupled with other recent imports of arms, suggests that the army is gradually upgrading its equipment. It recently ordered Russian tanks worth about \$120 million while there were reports of others being imported discreetly, perhaps to stem public criticism since the government had rejected a call for public sector workers' salaries to be increased as a result of the increase in oil earnings.¹²⁸ Algeria has also imported arms from South Africa. In 2000 its defence budget was 142 billion Algerian dinars (\$1.9 billion in current prices), the highest in Africa.

In *Nigeria* the downsizing of the armed forces announced by the current civilian administration in May 1999 has been shelved because of the many 'commitments of the armed forces within the country and outside'.¹²⁹ Rationalization of the armed forces was a cardinal part of the programme of reform which the minister of defence promised, as the armed forces were believed to include 'ghost soldiers' whose salaries went into private pockets. The minister therefore suggested a census of the forces' personnel and a reduction in force levels from an estimated 80 000 to 50 000.¹³⁰ After criticism from then Chief of Army Staff General Victor Malu, the government backed down from this plan, possibly also as a result of internal opposition by other members of the armed forces and of the social and economic implications of the plan. The implication of this is that the Nigerian armed forces will continue to spend a disproportionate share (close to 80 per cent) of their budget on personnel, while making further demands for additional funding for their procurement programme. President Olusegun Obasanjo, a former military ruler, has announced a future special request to the National Assembly to provide sufficient funding for the re-equipping of the armed forces so that 'we can have the military we deserve'.¹³¹

Given the reported degree of decay of infrastructure and equipment in the Nigerian armed forces, it is expected that the procurement programme will be a major one. The report of a study commissioned by the government on the state of the armed forces' infrastructure shows that about 75 per cent of the army's equipment is faulty or out of commission, that nearly all the air force's combat aircraft are out of order, and that the navy has only a few primary vessels functioning.¹³² The military has estimated the cost of revamping or

¹²⁷ 'Financial constraints threaten army reforms' (note 126).

¹²⁸ Bey, M., 'Algiers and Moscow step up military cooperation', 21 Dec. 2000, URL <<http://www.algeria-interface.com/english/politics/coopmil211200.htm>>. See also Berramdane, D., 'Algeria splashes out on arms', URL <<http://www.algeria-interface.com/english/politics/armsdeals01100.htm>>.

¹²⁹ Oloja, M. and Elumunor, T., 'Govt drops plan to trim military', Guardian Online, 24 Dec. 2000, URL <<http://ngrguardiannews.com>>.

¹³⁰ Ouorah, M., 'Na'Abba backs downsizing of military', Guardian Online, 16 May, 2000, URL <<http://www.ngrguardiannews.com>>.

¹³¹ Ohwahwa, F., 'Why Danjuma wanted to resign', Guardian Online, 21 Jan. 2001, URL <<http://ngrguardiannews.com>>.

¹³² 'Military makeover', *Africa Confidential*, 13 Oct. 2000, p. 6.

replacing its equipment at \$400 million.¹³³ In 2000 Nigeria's military expenditure was 34 billion naira (\$340 million in current dollars).

In *South Africa*, FY 2000 marked the beginning of the realization of the estimated \$5 billion arms acquisition programme for the navy and air force. The defence budget therefore received a real increase of 16 per cent over the previous year. In spite of this, the South African National Defence Force (SANDF) has called for a budget increase of 3.2–6.3 per cent in a range of options to the government over the next three years to 'save' the armed forces.¹³⁴ This is necessary because the SANDF has had difficulties for political and economic reasons in carrying through its planned force rationalization.¹³⁵ As a result, salaries now take up to 55 per cent of the defence budget, as against the 40 per cent projected in its 1998 Defence Review.¹³⁶ The equipment programme has also been a subject of controversy since 2000.

The implication of the current status of the reform programmes in these key African states is that military expenditure can be expected to continue to rise and dictate the trend for the rest of the continent.

VII. The Middle East

Official military expenditure in the Middle East increased by 8 per cent in real terms in 2000. Compared to the beginning of the decade there has been a decline of 14 per cent in real terms. In 2000, Iran contributed significantly to the overall regional increase with a 31.5 per cent real increase in its official military expenditure. Over the years, however, and especially since 1995, the regional total has been influenced by the continued steady increase in the military budgets of Israel and its immediate Arab neighbours.

In 2000 the official defence budget of *Israel* was 36 billion shekels (\$9 billion). While this represents a 5 per cent increase over the 1999 allocation, the government of Prime Minister Ehud Barak had actually cut the original 2000 budget by the equivalent of \$300 million in order to reduce a cut in the education budget.¹³⁷ However, because of opposition to further cuts by the Israeli Defence Force (IDF) and the escalating violence with the Palestinians, the government indicated in late 2000 that it would be increasing the FY 2001 budget by about \$487 million.¹³⁸ The IDF argued that any further cuts would undermine both the domestic arms industry and the armed forces' multi-year procurement programme, Era 2004. This programme aims to modernize the

¹³³ 'Out of office but still in the picture', *Financial Times*, 30 Mar. 2000.

¹³⁴ Heitman, H., 'SANDF in crisis seeks a "lifeline"', *Jane's Defence Weekly*, 18 Oct. 2000, p. 25.

¹³⁵ 'South Africa: military manoeuvres', *Africa Confidential*, 14 Apr. 2000, p. 1.

¹³⁶ 'South Africa: military manoeuvres' (note 135), p. 1; and '1998/99 defence budget in perspective', *Department of Defence South Africa Bulletin*, 2 June 1998, URL <<http://www.mil.za/Media/Bulletins/02june98.htm>>.

¹³⁷ 'No new taxes, defence cuts deepened', *Tel Aviv Globes* (Internet edn) in FBIS-NES-1999-0901, 1 Sep. 1999.

¹³⁸ Opall-Rome, B., 'Israel's military awaits \$450 million windfall', *Defence News*, 11 Dec. 2000, p. 8.

Israeli Air Force, replace obsolete equipment, reduce the number of armoured units and cut personnel by 3000 over a five-year period.¹³⁹

In *Syria* military expenditure rose by 9 per cent in real terms in 2000. Syria is also involved in modernizing its military equipment, especially for the air force. It has entered into negotiations with Russia for the purchase of a number of S-300 surface-to-air missile systems, at a cost estimated at about \$2 billion, but no conclusions appear to have been reached on this as yet.¹⁴⁰

Military expenditure in the Persian Gulf countries (excluding Iraq, for which no data are available), largely dominated by expenditure in Saudi Arabia and to a lesser extent Kuwait, declined by about 9 per cent in 1999 over the previous year but increased again in 2000, by 4 per cent. It has been moderated by increasing domestic demand for restraint in spending on defence and lack of visible immediate threats to national security. Military expenditure in *Saudi Arabia*, the largest spender in the Middle East, went up by 2.1 per cent in 2000, but this represented an 8 per cent decline over 1998 expenditure. *Kuwait*, on the other hand, which still perceives Iraq as a major threat to its security, increased its military expenditure by about 19 per cent in 2000.¹⁴¹ Although it has completed its post-Gulf War rearmament programme and is believed to have reached its absorptive capacity on major equipment, military expenditure still takes about one-third of its national budget.¹⁴²

Iran's procurement programme is continuing through arms purchases abroad and domestic arms production.¹⁴³ The programme is concentrated on developing offensive missile systems, aircraft and land systems. According to the defence minister, the objective is to attain some level of self-sufficiency in arms production. This goal had already been partly achieved by 2000.¹⁴⁴ The programme will include testing of the medium-range Shahab-3 surface-to-surface missile system and the Al-Sabehat 15 mini-submarine launched in August 2000.¹⁴⁵ Aided by favourable oil prices throughout 2000, Iran's budget estimates for FY 2001 show an increase by another 22 per cent in nominal terms, further attesting to the government's commitment to the military sector.¹⁴⁶

¹³⁹ Rodan, S., 'Israeli Defence Force puts case for budget boost', *Jane's Defence Weekly*, 16 Aug. 2000, p. 12. See also Opall-Rome, B., 'Merkava program at risk in Israeli budget wars', *Defence News*, 28 Aug. 2000, p. 3.

¹⁴⁰ 'Review of Russian-Syrian Military-Technical Cooperation, Future prospects' (translated from Russian), 14 Apr. 2000, in FBIS-NES-2000-0801, 3 Aug. 2000.

¹⁴¹ Ratnam, G., 'Firm prospects of peace in Middle East inspire security about defence funding', *Defence News*, 13 Mar. 2000, p. 8. See also Ben-Zvi, A., 'American Middle East policy under the Bush Administration: the dilemma of linkage', *Tel Aviv Notes*, 28 Feb. 2001.

¹⁴² Finnegan, P., 'Analysts expect slow return to arms markets', *Defence News*, 15 Nov. 1999, p. 14.

¹⁴³ 'Russian arms for Iran', URL <http://www.janes.com/regional_news/africa_middle_east/news/jid/jid001208_1_n.shtml>. See also Jones, S., 'More than nuclear: Iran invests in conventional warfare', *Defence News*, 27 Nov. 2000, p. 15.

¹⁴⁴ 'Iran plans military expansion', *Jane's Intelligence Digest*, 30 Nov. 2000, URL <http://www.janes.com/regional_news/africa_middle_east/news/jid/jid001130_1_n.shtml>.

¹⁴⁵ 'Iran plans military expansion' (note 144); and Jones (note 143).

¹⁴⁶ Dinmore, G., 'Big rise in spending to boost Iran's economy', *Financial Times*, 30 Nov. 2000, p. 7.

VIII. South America

Military expenditure in South America rose during the 1990s. The SIPRI estimate for the region shows an increase of roughly 60 per cent in real terms over the 10-year period 1991–2000, but the actual rate of increase is still uncertain because data for recent years are not available for all countries. There are also several reliability problems with the official figures for military expenditure in some of the South American countries. First, there is a general tendency to underestimate military expenditure; second, the coverage of defence budgets is often narrow, excluding items such as paramilitary forces, military pensions and defence industrial subsidies without giving details of these under other budget headings; and, third, some military activities are financed via extra-budgetary accounts for which no or insufficient information is available.

For the most recent years there is another difficulty: actual expenditures often differ from budgeted allocations because defence budgets are not fully implemented. Thus, SIPRI data for the most recent years, which are budget data, are likely to be significantly revised downwards. Brazil is an extreme example. Its actual military expenditure for 1999 of 12.3 billion reais (\$10.1 billion at constant 1998 prices and exchange rates) was only 69 per cent of the initial defence budget. The defence budget for 2000, at 19.4 billion reais (\$14.9 billion at constant 1998 prices), would represent an increase by 47 per cent in real terms if implemented in full.¹⁴⁷

Under the impetus of democratization and economic liberalization, South American states are increasingly focusing on transnational threats, which have emerged as the greatest danger to regional stability. There is a growing realization that the insurgency and drug-related fighting in Colombia have had a series of spillover effects in the sparsely populated jungle border areas in the northern region, endangering the stability of several nations. Hence, countries along the Colombian border, specially Brazil, Ecuador, Peru and Venezuela, have stepped up their military presence on the Colombian border.¹⁴⁸

Brazil, as the major regional power, has a strong impact on the regional trend, with by far the highest military expenditure and the largest armed forces in the region. With the exception of SIVAM (Sistema de Vigilância de Amazônia, Amazon Region Surveillance System), an ambitious and still uncompleted \$1.4 billion project to monitor the Amazon basin using radars, early-warning aircraft and ground sensors, most expenditure has been on O&M. A major part of Brazil's military expenditure goes to salaries and pensions—73 per cent in 1999.¹⁴⁹ The planned increase in the defence budget for 2000 is intended primarily for an increase in military wages—by an average of 30 per

¹⁴⁷ Figures supplied by the Ministry of Defence, Brazil, and submitted through the Brazilian Embassy, Stockholm, July 2000.

¹⁴⁸ 'South American strategy advances: Cardoso takes further steps towards regional leadership. The Colombian factor', *Latin American Brazil Report*, RB00-08, 12 Sep. 2000, p. 2.

¹⁴⁹ Calculated on the basis of disaggregated figures supplied by the Ministry of Defence, Brazil, July 2000.

cent—and in pensions.¹⁵⁰ During the 1990s the military objectives of the Brazilian armed forces were modified as a result of changes in security policy: Brazil has given up its nuclear weapon option; and Argentina is no longer perceived as the main threat. Instead, a desire for more integration and cooperation has emerged in the region, as demonstrated in the Mercosur (Mercado Común de Sur, Southern Cone Common Market) initiative, and Brazil now regularly consults its Mercosur partners on defence matters.¹⁵¹

Brazil's current defence priorities are focused on the vast northern Amazon region. Although officially neutral to the Colombian civil war, it is concerned about spillover into the Amazon territories in the form of rebel sanctuaries, refugees, drug trafficking and the illicit transfer of weapons.¹⁵² To tighten security in the Amazon basin, the army has redeployed troops to the north, away from the Argentine border, the navy plans to upgrade its fleet of river patrol boats to carry helicopters, and the air force will be re-equipped under an eight-year \$3.5 billion modernization programme which includes the acquisition of new aircraft and helicopters and the upgrading of existing aircraft.¹⁵³ Brazil plans further to spend \$1.2 billion over six years on the Calha Norte project, launched in 1986, aiming to intensify the Brazilian presence in the Amazon border strip through a series of civil and military programmes. Under the project new military infrastructure is to be built in the region.¹⁵⁴

IX. Conclusions

A decade after the end of the cold war the decline in world military spending is changing into growth. It is a paradox that, in spite of an improved security environment in large parts of the world, since 1998 military expenditure has been rising in all regions.

The increase in world military expenditure—5 per cent in real terms between 1998 and 2000—reflects (a) large increases in the USA and Russia, and rapidly increasing military expenditure in Africa and South Asia, and (b) the resumption of procurement programmes in many parts of the world.

The regions which account for most of the increase are Europe (36 per cent of the increase) and the Americas (28 per cent). The USA, which accounts for

¹⁵⁰ 'Commander announces imminent salary hike for army', 5 Oct. 2000, in Foreign Broadcast Information Service, *Daily Report—The Americas (FBIS-LAT)*, FBIS-LAT-2000-1005, 6 Oct. 2000.

¹⁵¹ Mercosur is a customs union formalized in Dec. 1994 in the Ouro Preto Protocol between the members of Argentina, Brazil, Paraguay and Uruguay and established in Jan. 1995.

¹⁵² Wöhlcke, M., *Die Neuorientierung der brasilianischen Sicherheitspolitik* [New orientation of Brazil's security policy], SWP-S429 (Stiftung Wissenschaft und Politik (SWP), Forschungsinstitut für Internationale Politik und Sicherheit: Ebenhausen/Isartal, July 1999), pp. 55–96.

¹⁵³ 'Brazil to announce \$3.5 b plan to buy new fighter', *Air Letter*, 14 July 2000, p. 1; 'Brazil unveils plan to modernize air force', *Air Letter*, 17 July 2000, p. 5; Hoyle, C., 'Brazil approves \$3.8 b funding package for air force re-equipment', *Jane's Defence Weekly*, 19 July 2000, p. 9; and 'US\$3 b. spending plan for air force: eight-year programme will include 24 jet fighters', *Latin American Brazil Report*, RB-00-07, 8 Aug. 2000, p. 3.

¹⁵⁴ The revitalization of the Calha Norte project is due to the effects of Plan Colombia, a \$7.5 billion programme launched in 1989 by Colombian President Andrés Pastrana to combat drug trafficking, and because the Colombian guerrilla groups are accused of having ties with traffickers. See also chapter 1 in this volume

37 per cent of total world military expenditure, raised its military expenditure by 2.3 per cent over the two years 1999–2000, an increase of \$6 billion (at constant 1998 prices). The increase in Europe mainly reflects the extraordinary increase in Russian military expenditure. However, because of the preceding sharp reductions during the 1990s, the current level of Russian military expenditure is now more comparable with that of the main European countries than with that of the United States. According to SIPRI estimates, Russian military expenditure in 2000 was 15 per cent of that of the USA and 6 per cent of the world total.

Three other regions (Africa, Asia and the Middle East) account for 11–14 per cent each of the increase in world military spending in 1999–2000. Their shares in the overall increase are lower partly because their regional military expenditure is lower. The regions with the steepest rise in military expenditure during 1998–2000 are Africa—an increase of 37 per cent in real terms—and South Asia—23 per cent in real terms. The increase in Africa is due primarily to armed conflict in a number of countries in the region. Countries contiguous to conflict countries have also had significant increases in their military expenditure. The fact that a few relatively wealthy countries are now embarking on procurement programmes has added to the steep increase in the regional total.

The year 1998 is likely to remain the low point in post-cold war military expenditure, at least for the near future, because several of the major spenders have adopted defence plans that include future growth or announced equipment plans which imply a change into growth. In NATO the main vehicle for increased equipment expenditure for the future is the DCI which, if implemented, will require substantial additions to NATO countries' procurement budgets over the next 10-year period. While NATO data show that the European NATO countries have already increased their combined equipment expenditures by 11 per cent in real terms over the six-year period 1995–2000, this is perceived as not enough. There is a strong pressure from NATO and the US Government on the governments of the European NATO countries to increase their military budgets in order to live up to their DCI commitments and increase the interoperability of their armed forces with those of the USA. US spending on military equipment continued to decline through 2000 but is expected to begin to rise again when increased authorizations for 1999 and 2000 are translated into actual expenditures. Other major spenders, such as Japan, China and Russia, have also adopted procurement plans which will require increased military budgets in the future. The level of military production in the Russian defence complex almost doubled between 1998 and 2000 to a level corresponding to 18.7 per cent of the level of the Soviet Union's military output in 1991, the last year of its existence.

The arms industry is also pressing for new orders. In spite of a turbulent period of industry consolidation during the 1990s, significant overcapacities reportedly remain. In the United States, the strong rate of concentration in ownership has not been matched by proportionally fast rationalization. It has, however, resulted in reduced competition. The US Government therefore in

2000 adopted changes in its defence industrial policy with the aim of preserving a sufficient level of competition to improve affordability and promote technological innovation. For the same reason the US DOD has promoted the idea of a 'transatlantic industrial bridge', with industrial linkages between European and US companies and technology sharing subject to security safeguards. In Europe, consolidation began in earnest during 1999 and 2000. As a result, three major companies have emerged. At the government level, the signing in July 2000 of the six-nation Framework Agreement¹⁵⁵ marks the first step in efforts to create a more integrated European arms industry.

The expectations during the early years of the post-cold war period of a reduced role for military means of providing security and resolving conflict today appear remote. Military expenditure is rising and arms-producing companies are becoming larger and stronger. The absence of an immediate security threat has been translated into a fear of many diverse types of threat of a more or less unknown nature which could emerge in the future.

¹⁵⁵ Framework Agreement between the French Republic, the Republic of Germany, the Italian Republic, the Kingdom of Spain, the Kingdom of Sweden, and the United Kingdom of Great Britain and Northern Ireland Concerning Measures to Facilitate the Restructuring and Operation of the European Defence Industry, 27 July 2000, URL <<http://projects.sipri.se/expcon/loi/indrest02.htm>>. See also chapters 5 and 9 in this volume.