US DEFENCE INDUSTRY TRENDS

ASHOK SHARMA

The United States of America is a leading manufacturer and exporter of the major weapons systems of the world. But the United States has never been a traditional arms exporter to India because of the geo-political compulsions of the Cold War period. India has always looked to the erstwhile Soviet Union and now Russia for meeting its arms requirement. However, the end of the Cold War and demise of the Soviet Union opened up new vistas, and economic prudence has come to dominate the political considerations in arms exports. The terms of the arms trade conform more to the dictates of market dynamics and economic realities than political considerations. Amidst these, the relationship between India and the US has seen a positive trend in the post-Cold War and significant cooperation between these two nations can be seen in the defence and military sector. Most global defence industries, including the US defence industry, are looking towards India as an outsourcing hub for the development for technology as well as markets. With a robust economic growth, India's military modernisation has got a fillip in recent years with affordability to import major weapons systems at an accelerated pace. The modernisation needs of the Indian armed forces and improvement of overall standards; India's long-term goal of capacity to design, manufacture and develop arms; the need of adding more fighter aircraft to the Indian Air Force; the Indian defence sector allowing 100 per cent private sector participation, with foreign direct investment (FDI) capped at 26 per cent and US defence companies' eagerness to access India's profitable defence market; India,

Dr. Ashok Sharma is a Research Associate at the Centre for Air Power Studies, New Delhi.

on its part, also not averse to the idea of getting US arms, given its new obligations and pursuits in the Asian region; and improving Indo-US defence ties all augur well for India's closer ties with the US defence industry in the future. Hence, it becomes important to explore the ongoing trends and challenges confronting the US defence industry.

The US defence industry is the largest in the world. But the massive decline in defence spending since the end of the Cold War has altered the landscape of the American defence industry. Despite maintaining its supremacy in the global defence industry, the US defence industry is coping and transforming amidst the challenges emanating from the changing political environment, the resulting economic dislocations, and the rapid technological advances.

In the global context, the defence industry has been transformed over the last decade by trends in military expenditure and technology. The fixed costs of research and development (R&D) for major systems continue to grow, for both platforms and the infrastructure (such as satellites, strategic air assets) and information systems needed to support network-centred warfare. All countries except the US face structural disarmament as they are unable to afford the fixed costs needed to replace conventional military capability with modern systems comparable to those of the US. The decline in the total size of the market and the growing R&D requirements for major weapon systems has resulted in mergers and acquisitions (M&A), leading to consolidation in the defence industry.

All countries except the US face structural disarmament as they are unable to afford the fixed costs needed to replace conventional military capability with modern systems.

The trends of the US defence industry show that since the end of the Cold War, there has been continuous decline in the US defence budget in recent years. Since before the beginning of World War II, in terms of share of gross domestic product (GDP), the share devoted to defence is less than 3 per cent. As a portion of the federal budget, it is at its lowest point in modern history. As a benchmark, during the Kennedy Administration, defence represented about one-half of the federal

budget. Today, it is about one-seventh. After the end of the Cold War, the US defence industry got its marching orders in 1993 from Defence Secretary Les Aspin and Deputy Secretary William Perry at the now-famous "Last Supper": "consolidate or evaporate" was the message. In the last 15 years, the US defence industry has witnessed significant transformation. Thus, an insight into the trends and challenges that the US defence industry is facing is required.

This research paper aims at exploring the trends and challenges in the post-Cold War era that have been shaping the global defence industry in general and the US defence industry in particular. While exploring the trends of the global defence industry during the Cold War and post-Cold War eras, this paper's central objective is to look at developments in the US defence industry that have been dominant in the post-Cold War era amidst the increasing internationalisation of production, the growing importance of information technology (IT) companies within the defence sector, and the privatisation of services that were once provided by the military. In the end, briefly touching the US defence industrial base, this paper highlights the trends and the challenges within which the US defence industry will have to operate to maintain its preeminence in the global defence industry.

DEFENCE INDUSTRY DURING THE COLD WAR PERIOD

Before looking into the major trends of the defence industry in the post-Cold War era, it would be worthwhile to take a glance at the trends of the defence industry during the Cold War era.

The Cold War confrontation between the US and Soviet Union compelled the countries on each side to enhance their nuclear and conventional military capabilities. As a result, the nations increased their military spending substantially. This happened in spite of sluggish and uneven growth in the global economy, especially during the 1970s and 1980s. While the average annual real growth of world military expenditure between 1975 and 1980 registered 1.5 per cent, the figure had leapt to 3.2 per cent in the succeeding half decade, and did so despite a rate of increase in world GDP of only 2.4 per cent. These aggregate figures, however obscure, offer considerable geographical variations.

For the developing countries as a whole, the GDP grew at an annual rate of 1.8 per cent whereas military expenditure grew at 3.1 per cent. However, the North Atlantic Treaty Organisation (NATO) and the Warsaw Pact were responsible for 73.5 per cent of global defence outlays in roughly equal proportions.[1] A principal outcome was the increase in the share of defence outlays earmarked for equipment. Another trend being the incessant drive on the part of the advanced industrial countries to generate and maintain the technological advantage and its corresponding response – the desire of the newly industrialising countries to acquire as much defence production capabilities as possible. Thus, the post-World War II division of labour in defence production, marked by the overwhelming dominance of the USA and the USSR, had given way to a more stratified division among a great number of new producers.[2] During the early and till the late 1980s, considered the peak time of the Cold War, the global defence industry witnessed the culmination of an era marked by an unprecedented level of military efforts by the two rival superpowers, the cumulative impacts of which were felt the world over. A few indicators are in order for illustration for a single year, 1987, when global military expenditure touched an all time high of $1,260 billion after witnessing a near double digit real-term increase since the late 1970s, resources devoted to military research and development (R&D) were pegged at $50 billion, cumulative military procurement expenditure by NATO nations was $115.5 billion, and trade in major conventional weapons touched $39 billion (nearly 25 per cent increase from $30 billion in 1980).[3]

This period saw enormous effort by countries to build up their arsenals to meet the challenges posed by the Cold War. Consequently, defence budgets were increased substantially, millions of men and women were in the armed forces, constantly training for the high-tech demands of modern warfare; thousands of

1. Deba Mohanty, "Defence Industries in a Changing World: Trends and Options," *Strategic Analysis*, vol. XXIII no.10, January 2000. Also see Daniel Todd, *Defence Industries: A Global Perspective* (London: Routledge; 1988), pp. 1-37.
2. See the introductory comments in J.E. Katz, ed., *The Implications of Third World Military Industrialization* (Lexington, Massachusetts: Lexington Books, 1986).
3. For detail, see different volumes of annual publications of SIPRI. See chapters "Military Expenditure," "Conventional Arms Transfers" and Military Production" in *SIPRI Yearbook 1991* (Oxford: Oxford University Press, 1991).

nuclear-tipped missiles and nuclear-stocked bombers were kept in constant readiness for instantaneous launch; massive tank battalions and fighter plane squadrons were poised on both sides of the Central European dividing line; and defence industries pressed ahead, producing still greater quantities of more advanced weapons. The year 1987 was the peak year of the global military efforts: till this time, the military industry was full of business, production and sale of arms in which the two superpowers played a preeminent role.

However, by the end of the Cold War, the changed political climate in Europe culminating in the dismantling of the Warsaw Pact and the collapse of the Soviet Union challenged the flourishing defence industry trends that lasted for over four decades. In the changed international scenario, the following trends were significant in the global defence industry:[4]

- Disarmament efforts and reduction in armed forces, which till the early 1990s were modest, turned out to be the catchphrase.
- Economic constraints became quite obvious from the decline in value of military budgets in real terms. This is perhaps due to the fact that other economic priorities seem to be competing successfully against the military needs. Reversals of growth rates also forced the defence industry to reduce capacity.
- Arms exports reduction is another trend which the world witnessed after the end of the Cold War. There is every indication that the volume of arms exports have been going down since 1987. The period between 1987 and 1992 witnessed a major decrease in the volume of major conventional weapons exports and since then it has shown a fluctuating trend, with the year 1997 showing a considerable upward jump.
- The defence industry witnessed a consolidation process. During the Cold War, the international arms industry was not as consolidated as some other high-technology industries such as commercial aerospace or pharmaceuticals.

CHALLENGES AT THE END OF THE COLD WAR

In the post-Cold War era, the defence industry faced challenges emerging from the reductions in both domestic and international demand for arms. Political and

4. *SIPRI Yearbook 1998*, pp. 318-319.

economic factors contributed to a drastically changed international environment, with reduced business prospects for the defence industry. This is witnessed in several core areas like shrinking arms sales, loss of jobs, and reduced profit opportunities. Rapid transformation in military technology rendered existing military technology obsolete that necessitated new dimensions in arms production. In fact, fundamental changes in the defence industry were required to tackle the situation arising out of inconsistent performance coupled with considerable decrease in demands for military equipment. In such a scenario, several steps like downsizing, restructuring, conversion and diversion were pursued.

However, an adjustment process which was instituted by most countries and most companies, to deal with the changed international environment, started moving from the initial phase of rapid downsizing, rationalisation, and concentration into a phase in which top individual companies that maintained a strong defence orientation, were positioning themselves in the smaller market for their survival. Among the developed countries, downsizing and consolidation have been most distinct in the United States. The subsequent consolidation of the industry resulted in the elimination of more than 1.5 million jobs. These efficiencies allowed US companies alone to begin to pass along savings of approximately $2.6 billion per year to their customers, primarily to the Department of Defence (DoD). And those savings continue to help hold down the costs of products in the future.

The United States consolidation of the industry resulted in the elimination of more than 1.5 million jobs.

Consolidation resulted in the formation of a few very large conglomerates in the US and West European countries. However, this process was slow in the European countries. Another important development has been that the defence industries of the European nations have been striving for cross-border consolidation to strengthen their position vis-à-vis the US and other industries and to remain competitive at the international level.[5] In recent years, a number of

5. Vance D. Coffman, CEO of Lockheed Martin, "The Future of the US Defense Industry," October 1, 1998, available at http://www.cfr.org/publication/3117/future_of_the_us_defense_industry.html?breadcrumb=%2Fissue%2F10%2Findustrial_policy.

trans-Atlantic cooperative armament programmes have taken place within the framework of NATO, with special emphasis on standardisation, and harmonisation, primarily of military equipment.

Defence industrial capabilities of major states have shown fluctuations in accordance with their shifting security priorities. Declining military expenditure led to a continuing reduction in the demand for military equipment, especially in the domestic sector. Likewise, arms exports declined. For example, arms sales by major European countries fell by nearly 30 per cent during the period 1991-2000. Arms exports to Third World nations fell by nearly 40 per cent during the same period. The number of arms manufacturing units as well as employment in them declined, putting the defence industry under severe stress. Arms producers adopted different strategies to cope with the changing times – rationalisation, concentration and internationalisation, to name a few. The West was the quickest to respond, followed by Russia, China and second-tier producers. While the US witnessed unprecedented changes in its defence industrial sector, Europe was the next to follow.

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Apart from top arms producing companies which are generally concentrated in the US and West Europe, there are several companies in the Organisation for Economic Cooperation and Development (OECD) and developing countries that have been active in the international weapons market. The issues of size and competitiveness are now found on their agendas. Consolidation, standardisation, and privatisation of large state-owned military industrial units are now being contemplated in many countries like Australia, Israel, Greece, and Spain. Also indicative is a trend in the reverse direction by countries like Finland which has combined major domestic arms industrial units into a newly established state-owned holding company. [6]

In fact, many developing countries' main concerns have been threats to internal security and, thus, there has been little need to create sophisticated

6. *SIPRI Yearbook 1998*, p. 204.

military industries. But many developing states also face possible external threats, from regional neighbours or outside forces. It is these threats which are most likely to generate a demand for advanced military capabilities and expanded military bases.

US DEFENCE INDUSTRIAL BASE

Probing the significance of the productive and technological base in Great Power rivalry, Paul Kennedy in *The Rise and Fall of the Great Powers* says:

> The history suggests that there is a very clear connection in the long run between an individual Great Power's economic rise and fall and its growth and decline as an important military power. . . . Technological and organizational breakthroughs . . . bring greater advantage to one society than another.

The Cold War, in large part, turned out to be a contest between the superpowers' productive and technological bases. While the United States experienced steady growth, the declining Soviet productive base could not support both the demands of the military establishment and those of the Soviet people. However, US economic and technological prowess is under pressure to maintain its preeminence.

Concerns have been shown about the impact on business conditions in the United States from the investment in new capacity that is not being made here but in China and elsewhere. The money is going overseas to build competitors' capabilities, while at the same time, the US is losing that capability, and there are greater societal costs that are difficult to measure.

Another significant trend being witnessed in the US defence industrial base is the foreign investment. This trend is quite visible in the case of the US aerospace sector, which is among the most attractive sectors in the United States for foreign direct investment – in both aerospace firms and the facilities that they build from the ground up in the United States. Global suppliers are increasing investments in the US defence industrial base and from the viewpoint of the global industrial base, the US defence industry is one of the most attractive sites for direct investment.

Also a blurring of the line between commercial industry and defence industry has become a visible trend, and seems likely to continue into the future. In the present scenario, it is difficult to classify exactly where commercial industry ends and the defence industrial base starts. This is mostly visible in the organisations that produce aircraft, space systems, command, control, and communications systems and the infrastructure and support systems associated with them.

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Pressure is mounting on the Pentagon to begin developing strategies to avert the loss of strategic industries.[7] There is growing concern over the broader US industrial base upon which the defence industrial base depends. The DoD is dependent on the health of these industries to generate revenues to fund R&D for the next generation of technology.

In fact, massive decline in defence spending since the mid-1980s, has transformed the landscape of the American defence industry. With now only half as much in real-terms to spend on defence equipment, the Pentagon is finding that it has to make crucial procurement decisions to keep key strategic production lines open. A number of programmes such as the F-15E Strike Eagle, are reaching the end of their lives and direct replacements are still some time from entering production. Where the next generation of combat aircraft and helicopters are built over the next decade will determine the fate of a number of large airframe assembly facilities. The need to cut costs to boost corporate share prices and reduce unit prices is likely to collide head-on with the influence of several Congressional leaders who want defence jobs and dollars to remain in their districts.

The two main armoured vehicle manufacturers, General Dynamics and United Defense, have large order books for upgrade work on existing platforms, but apart from the Crusader self-propelled artillery system and some specialist

7. "What Is The Real Health of The Defense Industrial Base?" at http://www.manufacturingnews.com/news/05/0222/art1.html

engineer vehicles, there are no major new builds of armoured vehicles planned until well into the second decade of this century.

The tremble in the share price of a number of major US defence contractors in the last few years indicated that internal consolidation is likely to be high on the agenda to reduce real costs from companies' balance sheets. How the Pentagon reacts to further plant closures and losses of real capabilities will be a major issue over the coming year.

In the present scenario, more relevant questions appear to be whether the industrial base can, on an ongoing basis, supply the new technologies and weapons that will ensure an overwhelming advantage for the US and allied forces, and whether the military can incorporate these new technologies into its inventory on a timely basis. Given the present national security concern of the United States and the role it intends to play in the international arena and the threats it might face requires on-hand weapons and munitions, obviating the need for a massive industrial mobilisation.

The US defence industrial base has survived amidst the challenges emanating after the end of the Cold War and, by most measures, it is innovative and healthy. The US defence industry is competing globally to have economic prowess and is carefully focussing on the most critical and demanding of war-fighting capabilities in order to have war-fighting prowess.

The US defence industry is the largest in the world. It produces every type of weapon system known to man, from nuclear weapons down to combat knives. Major players involved in the manufacturing of weapons include AAI Corporation, BAE Systems Inc., Boeing, Carlyle Group, Colt's Manufacturing Company, General Atomics, General Electric (primarily through GEAE), General Dynamics, Honeywell, Lockheed-Martin, Northrop Grumman Corporation, Raytheon Corporation, and United Defense (now BAE Systems Land and Armaments). The US defence companies maintain their lead in the global defence market. (See Table 1.)

Table 1 shows the major US arms companies. In 2003, the US firms accounted for the top 4 companies in the top 5, and 6 in the top 10 arms companies in the SIPRI list of the top 100 arms companies. Overall arms

Table 1: Major US Arms Companies

US Company	Arms sales (US $ million)	Arms as share of total company sale (%)
Lockheed Martin	24,910	78
Boeing	24,370	48
Northrop Grumman	22,720	87
Raytheon	15,450	85
General Dynamics	13,100	79
United Technologies	6,210	20

Source: *SIPRI Yearbook*, 2005.

companies comprised 37 of the top 100 and the European Union's (EU's), 36 of the top 100.

The US defence industry base is quite strong and maintains its superiority in comparison to its foreign competitors. Yet, the base is constantly changing. The major forces affecting the base include:[8]

- A sharp rise in the service sector coupled with a steady growth in manufacturing production.
- A greater reliance upon trade as a source of national income.
- Increased globalisation of information, manufacturing, and finance.
- Expansion of the role of international firms in world affairs.
- The rise of information technology dominated by the United States.
- Reduced defence expenditures for R&D and procurement, resulting in a smaller defence industrial base.
- A significant change in defence acquisition focussed toward increased use of commercial items and technology.

The task for the United States will be to exploit the economic growth capacity of new technologies and industries to remain the world's premier power. The ability of the US military to maintain its leading edge will increasingly depend on its success in adapting the rapid advances in sensor,

8. Gerald Abbott and Stuart Johnson, "The Changing US Defence Industrial Base," http://www.ndu.edu/inss/strforum/SF_96/forum96.html

computing, and telecommunications technologies in the commercial sector to military requirements.

TRENDS IN THE US DEFENCE INDUSTRY IN THE POST-COLD WAR PERIOD

Like many other industries, the US defence industry witnessed rapid changes during the past decade. The factor that has been responsible for the rapid transformation could be traced to events such as the enactment of the Competition and Contracting Act (CICA) in 1984 and the demise of the Soviet Union, leading to the end of the Cold War.

Most large aerospace companies began to experience real challenges for follow-on-procurement, which had often awarded on a single –source basis prior to CICA. After the demise of the Soviet Union, the United States had to face a changed world order which was engulfed with:[9]

- "Peace dividend" expectations.
- Rising costs of weapons.
- Loss of economies of scale.
- New national security challenges with a radically different threat that caused the reassessment of the entire defence strategy.
- A threat that is more tactical and less strategic.
- The need to more rapidly respond to localised threats.
- No need for as large a military force.
- An opportunity to significantly reduce the defence budget.

As a result, the declining trend in the demand for military equipment has been noted for quite some time, especially since 1994. It appeared to have slowed down during the period 1995-96. Yet, the level of demand was significantly lower than what it was in the pre-1987 period. This trend has had a major impact on arms producing companies. The vast arms industry, for decades nurtured by the Cold War, faced unprecedented contractions in arms procurement orders.

The overcapacity of the industrial base problem was alleviated in large part by the consolidation of companies. As a result of the significant reduction in the

9. Barry G. Campbell, "Challenges Confronting the Defence Industry Today: To Become More Competitive Often Requires Painful Changes," at www.dau.mil/pubs/pm/pmpdf96/campbell.pdf.

defence budget, especially the procurement budget, the numbers of employees working in the defence industry were reduced drastically when compared with the mid-Eighties period. The industry may take many more years to stabilise as it has been in the process of adjusting its production to a situation which is fundamentally different from that of the late 1980s.

The overall decline in the defence market resulted in reduced arms sales by most companies. The combined arms sales of the US companies slowed down in 1996. As a result of the completion of a large number of major mergers and acquisitions initiated during 1996 and 1997, both the shares of arms sales and the number of companies are likely to go down in the near future. In comparison, the West European companies have shown a better result primarily due to significant growth in the sales of the British and German companies. Other OECD companies have suffered as their total share has also fallen by nearly 0.3 per cent. However, the United States completely dominated the international market, providing about two-fifths of all weapons transferred to the developing countries in the 1992-99 period (measured in dollar terms).[10]

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Another trend in the US defence industry in the post-Cold War period can be seen in the context of the 1991 Gulf War which affected US arms sales abroad. The US Administration approved a number of major military sales abroad, claiming they served to enhance US security by bolstering the forces of friendly nations in strategic areas, especially the Middle East. On the pretext that the United States had vital security interests in the Middle East – notably the free flow of oil – and that countries such as Kuwait, Saudi Arabia, and the United Arab Emirates (UAE) would be of help in any future encounter with Iraq or Iran. The US government authorised the transfer of $46.5 billion worth of military hardware to the Middle East in 1993 -2000, an amount that represented about three-fourths of the total value of all US military transfers to the developing world. Saudi Arabia was the principal beneficiary of this largesse, obtaining 72

10. "Arms Transfers and Trade," at http://www.answers.com/topic/arms-industry-1

advanced F-15XP Eagle jet fighters, 150 M-1A2 Abrams tanks, 12 Patriot air-defence missile batteries, and thousands of missiles of various types; Kuwait obtained 6 Patriot missile units, 256 M-1A2 Abrams tanks, and 16 AH-64 Apache attack helicopters; and the UAE obtained 10 AH-64s and 80 F-16 fighters.[11]

Mergers and Acquisitions

The US defence industry witnessed rapid consolidation efforts. It was restructuring initiatives in which mergers and acquisitions (M&A) took place, leading to the consolidation of the US defence industry. This resulted in overall reduction in the size and overall structure of the US defence industry. The consolidation efforts in the US defence industry were most prominent in the aerospace sector, which continued till the late 1990s. Another trend was the tilt towards the military electronics sector from the mid-1990s onwards. The purchase of Bath Iron Works by General Dynamics was the only major deal outside the aerospace and electronic sectors. There has been an outstanding concentration of the volume of production in the US military aerospace industry. During years 1990-95, military aircraft sales declined by 32 per cent in real terms and missile sales by 54 per cent.[12] Notwithstanding these downward trends, the US aerospace industry performed reasonably well. The profit margins in the aerospace industry, after registering two years of record profits in 1992-94, declined in 1995. But, it bounced back again since 1995-96 to register profit margins.[13]

The consolidation efforts in the US defence industry were most prominent in the aerospace sector, which continued till the late 1990s.

In fact, the M&A process was adopted because this was the established way to expand a business and succeed in the post-Cold War defence environment. Industry leaders gave substantial amounts of their time in

11. Ibid.
12. For details, see Harvey M. Sapolsky and Eugene Gholz, "Private Arsenals: America's Post-Cold War Burden," in Ann R. Markusen and Sean S. Costigen, eds., *Arming the Future: A Defence Industry for the 21st Century* (New York: Council on Foreign Relations Press, 1999), pp. 191-206. Also see, *SIPRI Yearbook 2004.*
13. Sapolsky and Gholz, Ibid.

thoroughly carrying out the M&A process, and in downsizing and consolidating operations than ever before. In this environment, only the fittest and most competitive could survive.

The US DoD supported the consolidation efforts[14] with the objective of achieving savings in weapons cost through rationalisation of production. In fact, it was since 1993 that DoD had provided the opportunity for companies to write off their restructuring costs against military contracts. During 1993-97, the US DoD share of certified restructuring costs for seven major M&A deals was $765 million, with the forecast that this would result in US DoD savings in weapon acquisition of more than $4 billion over a period of five years. However , these positive developments have been challenged on the ground that rationalisation of production through M&A would lead to monopolistic pricing and the dominant market position of single arms producers is likely to increase their strength in relation to the US DoD. This was evident from the fact that five companies receiving the largest US DoD prime contract awards accounted for nearly 30 per cent of total contract awards in 1998 as compared 20 per cent in 1990, and the single company receiving the largest award accounted for 10 per cent in 1998 as compared to 6.2 per cent in 1990. The most dominant prime contractors in the US defence industry have been in the aerospace sector.[15]

However, in the period between 1999 and 2003, the data of Infobase, a commercial producer of statistics on worldwide M&A activities in the defence and aerospace industry, indicate a strong declining trend in the total value of M&A deals from $65.9 billion in 1999 to $27.2 billion in 2002. Also, 129 acquisitions of defence related firms had taken place in the first half of 2003, a 30 per cent increase in comparison to the corresponding time in 2002, as per Infobase data. The trend was, in fact, in the number of M&A, not in their values, which could include a large number of small acquisitions. Reports and data released by the US DoD indicate that the number of M&A had increased. There

14. Congress and Executive Agencies spent considerable time attempting to improve the acquisition process. Changes were incorporated into Federal Acquisition Regulations to support the consolidation process. Federal Acquisition Regulation (FAR), http://www.acqnet.gov/FAR/.
15. Deba R. Mohanty, "Trends in Defence Industry" in Jasjit Singh, ed., *Aerospace Power and India's Defence* (New Delhi: Kowledge World, 2007), pp.99-119.

is also a trend towards lower values for each of these and a shift in transactions from the prime contractor level toward the sub-contractor level.[16]

Most of the companies have shown an increasing trend in defence sales in recent times mainly because of acquisitions of defence units from other companies. However, toward the end of 2003, commercial and industrial interest in M&A seemed to be declining. It was anticipated that high value defence M&A would slow down as a result of cooling defence stocks, rising potential for deals in commercial aerospace and a resurgence of commercial information technology (IT) firms, which would draw investors away from the defence industrial sector. In fact, M&A and company strategies are basically increasingly driven by the desire to obtain capabilities in growing sectors like aerospace, electronics, communications, IT and services. The process is based on long-term trends in the development of military technology and the transformations of military forces that emerged in the 1990s and this happened mainly because of the increase in US procurement spending since 2001-02. In fact, trends indicate that companies are inclined towards those areas where procurement budgets are increasing. The US DoD is playing a significant role in facilitating and promoting industrial transformation in this direction. The stated US policy includes purchase from, and cooperation with, non-US companies in order to get new technical knowhow.[17]

Looking at the trends in recent years, M&A in the defence industry remained the fashion in 2005, albeit at a less rapid pace than during the 1990s. One major difference from that period is that the largest arms producing companies have order backlogs and are currently "awash in cash."[18] Companies may have been using, and will continue to use, some of this free cash flow for spending on acquisitions. According to one estimate , "free cash flow" – the amount of cash that a company has left after paying all its expenses, including investments – at the world's largest defence companies, grew from $8.9 billion to $ 17.5 billion in 2004.[19]

16. Mohanty, Ibid.
17. For an account of trade offsets witnessed in the US defence industry in recent times , see Jasjit Singh, "Arms Trade Offsets: The Key to Energise our Defence Industry," *Air Power*, vol.2, no.1, Spring 2005, pp.149-177.
18. L. Wayne, "Cash puts US Military Contractors in Bind," *The New York Times*, May 13, 2005, at http://www.iht.com/articles/2005/06/12/business.contract.php.
19. The analysis was conducted by J.P. Morgan and reported in Ratnam, "Industry's Full Pockets: Surplus Cash, Tight US Budgets May Mean Wave of Acquisitions," *Defence News*, May 16, 2005, p.16.

Mainly two factors continue to drive further consolidation in the arms industry.

- The first is the rush into those sectors of the arms industry that company managers and investors consider to be expanding. These are primarily the military service sector, which supplies services and logistical support to the armed forces, and the information technology sector, which provides products and services in support of network-centric programmes. In order to succeed in these sectors, companies continue to seek to acquire smaller companies that have particular skills that they lack.[20]
- The second factor is the desire of non US-based companies to access the lucrative US market by acquiring (either directly or through a local subsidiary) a US arms producing company.[21]

Five very large acquisitions that were concluded in 2005, each with a deal value close to, or greater than, $2 billion, make it a particularly significant year for arms industry consolidation. In 2004, there was only one acquisition of comparable size. By far, the largest and most strategically noteworthy acquisition of 2005 was that of United Defense (USA) by BAE Systems (UK) for $4,192 million. This was the largest ever acquisition of a US defence company by a non - US company. An extraordinary result is that a British company is now the sixth largest contractor for the US DoD.[22] Three of the large acquisitions in 2005 were in the IT sector: L-3 Communications (USA) acquired Titan Corporation (USA) in a deal valued at $2,650 million; General Dynamics (USA)) announced an agreement to acquire Anteon International (USA) for approximately $2,200 million; and DRS Technologies (USA) spent $1,970 million to acquire Engineered Support Systems (USA).[23]

The BAE Systems acquisition of United Defense highlights an important development in their industry: BAE Systems is not alone in its strategy of gaining access to US markets by acquiring a US company. For example, another British company, QineteQ, acquired two US aerospace and defence companies in 2004 and another in 2005. VT Groups (UK) also acquired a US company, the Cube

20. *SIPRI Yearbook 2006*.
21. A. Chuter, and P. Tran, "UK Firms Flex Muscles in US Market," *Defense News*, August 22, 2005, p.16.
22. A. Rothman, and E. Lococo, "BAE Buys United Defense to tap US Military Sales," Bloomberg.com, March 7, 2005.
23. *SIPRI Yearbook 2005*, p. 392.

Corporation, and announced its intention to double the size of its business in the USA by 2008. Thales and Finmeccania have also expressed their desire to increase their sales, possibly by acquiring US companies.[24] Efforts by the non-US companies to access a greater part of the large US procurement budget in this way have been characterised as an "uphill battle," however, because of the ongoing political debates in the USA about the procurement of foreign military equipment.

The early years of M&A in the defence industry in 1988-89 and those in 2005 are distinct in two ways. In the earlier years of acquisitions in the defence industry, there were 18 transactions noted in 1988-89 and 54 transactions in 2005. There has been attempt by European companies to move into the US market and apart from that there have been seven trans-Atlantic acquisitions of US companies in 2005.[25]

US ARMS TRADE

Trends in world military spending can be divided into two major periods in the post-Cold War period: a marked decline from the Cold War peak in 1987, then a bottoming around 1998 and an increase in 1998-2005. Indeed, world military spending in 2005 exceeded in (real terms) the peak of spending during the Cold War. The US has been the main contributor to the upward trend in world military expenditure, with the combined expenditure of the next five largest spenders – the UK, France, Japan, China and Germany–less than half that of the USA. The 26 members of just one military alliance, NATO, account for 70 per cent of world military expenditure in 2005.

After the end of the Cold War, there was an immediate fall in the demand of arms that questioned the ability of the major powers, including the USA, to maintain a domestic defence industrial base. As a result there was not just a quantitative change in the number of weapons required, but a qualitative change in the types needed. There has been marked qualitative change in the nature of technology as civil technology became increasingly important for weapon systems. Since World War II to the 1980s, military technology had tended to be

24. *SIPRI Yearbook 2005*, p.393.

25. D.G. Jones, "The Rise of Europe's Defence Industry," *US-Europe Analysis Series* (Washington, DC: Brookings Institution, May 2005), at http://www.brookings.edu/fp/cuse/analysis/>

ahead of civil technology but now the focus is more on "spinning-in" civil technology to the military sector.

As a result of M&A, there has been a structural change in the defence industry. At the end of the Cold War, the international arms industry was not concentrated, with the top five companies accounting for 22 per cent of the total arms sales of the SIPRI top 100. By 1995, it reached 28 per cent, by 2000, it reached 41 per cent, and by 2003, total arms share of the top five (in which four were US companies) reached 44 per cent. In fact, the most intensive period of concentration was between 1993 and 1998 and further a smaller increase between 1998-2003.[26]

By 2003, total arms share of the top five (in which four were US companies) reached 44 per cent.

Looking at international arms transfers by nations, the trends show that one of the most noticeable facets of major arms transfer is the stable composition of the group of major suppliers, with the Soviet Union/Russia, and the United States comprising a category of their own. The total volume of arms sales reached its peak in 1982, when the Soviet Union, the United States, France, the United Kingdom and Italy accounted for about 82 per cent of the world total. In 2005 also, the five largest suppliers – the USA, Russia, France, Germany and Netherlands – still accounted for about 82 per cent of total deliveries, although the total global volume was only 51 per cent of that of 1982, thus, showing the post-Cold War decrease in transfer of major weapons.[27]

Coming to the United States, it remains by far the largest exporter of weapons in the world, with a sales volume that exceeds the next 14 countries combined. Military sales equal about 18 per cent of the federal budget, far and away the greatest proportion of any nation (estimated budget authority as presented in the president's budget). Due to the consequent fall in the gross domestic product (GDP) the US government has been relying on arms sales.[28]

US arms are sold either as foreign miltary sales (FMS), in which the Pentagon is an intermediate negotiator, or as direct commercial sales (DCS), where a

26. *SIPRI Yearbook 2005*, pp.397-412.
27. *SIPRI Yearbook 2006*, p.449.
28. See John Ralston Saul, *The Collapse of Globalism* (Atlantic Books, 2005).

company directly negotiates with the buyer. Most sales require a licence from the State Department. The Defence Department manages the excess defence articles (EDA), weapons from the US military given away or sold at bargain prices, emergency drawdowns, assistance provided at the discretion of the president, and International Military Education (IMET).

From 1989 to 1996, the global value of direct commercial arms sales was US $ 257 billion, of which 45 per cent was exported from the US. According to the 2005 annual US Congress reports, 58 per cent of all US arms trade contracts are made with developing countries.

In 2003, the US transferred weaponry to 18 of the 25 countries involved in active conflicts. From Angola, Chad and Ethiopia, to Colombia, Pakistan and the Philippines, transfers through the two largest US arms sales programmes (FMS and DCS) to these nations totalled nearly $1 billion in 2003, with the vast bulk of the dollar volume going to Israel ($845.6 million).

In 2003, more than half of the top 25 recipients of US arms transfers in the developing world (13 of 25) were defined as undemocratic by the US State Department's Human Rights Report: in the sense that "citizens do not have the right to change their own government" or that right was seriously abridged. These 13 nations received over $2.7 billion in US arms transfers under the FMS and DCS programme in 2003, with the top recipients including Saudi Arabia ($1.1 billion), Egypt ($1.0 billion), Kuwait ($153 million), the United Arab Emirates ($110 million) and Uzbekistan ($33 million).

In fact, in the period 2001-05, the USA accounted for 30 per cent of global deliveries of arms. The four largest recipients – Greece, Israel, the UK and Egypt – accounted for 36 per cent of US deliveries in 2001-05.[29] The year 2005 was important for US bilateral arms relations with three countries in particular – India, Israel and Japan. Increasing US arms relations with India and Japan can be seen in the context of counter-balancing Chinese influence in the Asian region and India as a viable market for its arms industry. US arms trade with these countries will see a more positive trend.

29. F. Berrigan, W. D. Hartung, and L. Heffel, *US Weapons at War 2005: Promoting Freedom or Fuelling Conflict?* (New York: World Policy Institute, June 2005) at http://www.worldpolicy.org/projects/ arms/reports/ wawjune2005.html.

SCENARIO AHEAD

There have been marked changes in the structure of the international arms industry since 1990. The future prospects for the US defence industry would hinge upon its ability and preparedness to meet a number of factors and challenges, which include the following:

Globalisation

Increasing globalisation has forced the US industry to secure markets outside their home market to sustain their revenues, profits and share prices. Foreign customers had been demanding local production, offset or workshare as a prerequisite for purchasing American defence equipment. Since the end of the Cold War, US defence companies have been trying to cope with the Pentagon's cut down in its defence equipment purchasing, and research funding, and international cooperation is increasingly being seen as a way for US defence companies to gain access to technology and products that they have neither the time nor the resources to develop themselves. The Pentagon too is not averse to supporting international partnerships by American defence companies, where they coincide with US security policy goals or allow US production lines to remain open.

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Technological Challenge

As long as the US had to face mechanised warfare, the major defence industrial challenge was basically a question of evolving new technologies and manufacturing the weapons. In the post-World War II period, the shortfall in the US force structure was compensated by its strategic and nuclear forces. But the technological challenge for defence today is fundamentally different. While the need for restructuring was only the first of many questions facing industry leaders and US policy-makers, the

technological challenge that exists and would remain in the future is how well the US defence industry adapts itself to the IT revolution; maintains a technology base that will ensure its military superiority in years to come; and responds to the competitive demands of an increasingly global and interdependent economy.

The Changing Nature of Warfare

It appears unlikely that the US and Europe (that is, NATO) will face an enemy that can provide a symmetric response; asymmetric conflict is most likely. This can change the nature of warfare and lead to more informal, guerrilla-type conflicts with implications for the weapon systems required.

The Pace of Obsolescence of Some Major Weapon Systems Such as Fighter Aircraft

Recent defence analysts have suggested that many fighter aircraft are coming to the end of their lives and will need to be replaced.[30] Also, the challenge is coming from the increasing use of unmanned aerial vehicles (UAVs) and the establishment of network-centric warfare.

The New Security Environment and its Demand for New Types of Military Missions

There is likely to be an increasing role for NATO and EU troops in crisis management and peace-keeping roles around the world. This changes both the nature and structure of the required armed forces and the types of weapons systems they need.

The New Technologies Introduced as a Result of the War on Terrorism

The global war on terrorism that confronts an uncertain enemy and US homeland security has stimulated the demand for communication and surveillance technologies. Where companies do not have these technologies, they are acquiring them.

30. According to one report, by 2011, the "global fighter aircraft market will reach a new post-Cold War peak, with deliveries reaching $16 billion." See M. Fabey, "US JSF Casts Long Shadow on Fighter Market," *Defense News*, June 6, 2005.

The Degree of Outsourcing of Services from the Military Sector (Armed Forces and Defence Ministries)

Defence ministries (particularly the US DoD) are increasingly using private companies to undertake tasks that would have been done by the military in the past.

Ageing Work Force

The problem of an ageing work force will need to be addressed. The average age of the civilian workforce is 46.7 years and the number of workforce members with 30-plus years of experience continues to increase. The US defence sector is losing a significant amount of corporate knowledge, experience, and capability. There is an impending talent gap created by the workforce problem.

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CONCLUSION

After the end of Cold War, the US defence industry has shown a tremendous amount of pliability and shock- absorbing capability to face the challenges. The inherent strengths of the US defence industry such as the industry being the most proficiently ordered, which allows interaction between the industry and the government, its sheer size, its high stakes involved in the international arms market, enabling it to foresee the forthcoming difficulties, the investment strength of private firms helping in the consolidation process, and the desire to maintain preeminence in defence related technology and its interests appear to have helped the US defence industry overcome the scenario that raised questions on its survivability.

In the post-Cold War era, restructuring and concentration have been the prominent trend in the US defence industry. But at the global level, this still has some way to go in Europe. In the coming years, the growing trans-Atlantic nature of the defence industry will be major driver of the restructuring of the US

defence industry in terms of both the European companies' aspirations to become major players in the US market and the USA's acceptance that interoperability requirements, the benefits of cooperative defence programmes, and an increasingly global industrial infrastructure require that the US DoD be prepared to accept the benefits offered by access to the most innovative, efficient, and competitive suppliers worldwide. The USA will continue to dominate the industry and the US defence market will see more and more non-US companies attempting to access it.

And given the global role that the United States has to play in the near future, the defence industry cannot be taken as just another business industry. It is backbone of US national security and its share in providing business and employment is large. The US defence industry will need to keep the US forces at the forefront the technology. Hence, active engagement of the US defence industry in the global economy, updating itself it with the latest technology, developing greater partnerships with the defence industries of its allies as well as partnerships with the private sector industry and commercial industry in the US to share both R&D and production expenses, can ensure the maintenance America's technological military preeminence and supremacy in the global defence industry.