

# **Defence Production: Should the markets be kept out?**

**Ketan Kapoor**

CCS Working Paper no. 185

Summer Research Internship Programme 2007-08

Centre for Civil Society

[www.ccs.in](http://www.ccs.in)

## TABLE OF CONTENTS

INTRODUCTION.....	3
EXECUTIVE SUMMARY .....	4
RESEARCH OBJECTIVE.....	5
RESEARCH METHODOLOGY .....	6
PROJECT MAP .....	7
A. GLOBAL DEFENCE STABLISHMENTS: AN OVERVIEW .....	9
<b>1. United Kingdom .....</b>	<b>9</b>
<b>2. South Korea .....</b>	<b>11</b>
<b>3. USA.....</b>	<b>11</b>
<b>4. India.....</b>	<b>12</b>
B. PROFILE OF BASKET COUNTRIES.....	13
<b>1. Military Expenditure .....</b>	<b>13</b>
<b>2. Export/Import Data .....</b>	<b>16</b>
C. POSSIBLE IMPACTS OF PRIVATE PRODUCTION OF DEFENCE: ALLOWING AN EFFICIENT UNREGULATED MARKET TO EXIST.....	20
<b>1. The Weapon Proliferation Scenario .....</b>	<b>20</b>
<b>2. Lobbying and Subversion of Regulations .....</b>	<b>22</b>
<b>3. The National Security Argument.....</b>	<b>27</b>
D. THE INDIA IMPACT.....	28
AN OVERVIEW OF THE DEFENCE SET UP IN INDIA .....	29
<b>1. The Worms Eye View .....</b>	<b>30</b>
<b>2. The Birds Eye View.....</b>	<b>33</b>
CONCLUSION.....	35
REFERENCES.....	36

## INTRODUCTION

The blossoming Indian economy is fast pacing into the 21<sup>st</sup> century with the potential of being an economic superpower. Spurred by economic reforms and the impact of liberalisation, privatisation and globalisation, India, is truly on the verge of carving its own niche in the world.

An economic superpower must also be a military super power, in terms of Military capability and strength. There should also be a dependable and reliable indigenous defence industrial base. A country which is self reliant and independent in its military requirements, and thus, also has access to technologically advanced capability can truly be termed as military superpower. The establishment of a well developed defence industrial base is of primary importance to any emerging super power.

Focus should be on capability development followed by numeral growth, not the other way round. A clear understanding and identification of the requirements and needs of the armed forces and ensuring that the requirements are met within the stipulated time, in a cost effective manner, should be the primary goal of any defence industrial base and the determinant of its success.

## EXECUTIVE SUMMARY

India is transitioning into a new era of military strength and capability. After the Dr Vijay Kelkar Committee recommendations, the Defence Industrial base in India is set for a metamorphosis. The private sector is being welcomed with open arms in the Defence production industry.

Various Kelkar recommendations such as Offsets, the Raksha Udyog Ratna title ship and greater information and requirement sharing are some of the ways in which the private sector is being heralded in defence production. By involving the private sector in production of defence equipment, it is believed that the capability base of the country i.e. the capability of the equipment at our disposal can be strengthened and expanded. Another reason for the involvement of the private sector is the near redundancy of the massive public sector base in defence production available in the country.

This research primarily aims at evaluating impacts of involvement of the private sector in production of defence equipment and whether there are unintended consequences of the same. This project primarily focuses on the case for keeping such markets out of defence production and whether this case is justified.

## RESEARCH OBJECTIVE

The objective of this research is to ascertain the possible impacts of private sector participation in defence production. This will be done with respect to a few select countries, and their experiences in the defence industry, with and without Private Sector participation.

Through this research, the following questions are being attempted to answer:

- How does the Private Sector participation in Defence Production affect the demand and supply of arms/ammunitions and other weaponry?
- Does Private Sector participation lead to an increase in exports and decrease in Imports?
- Does Private sector participation lead to an aggravated threat to national security?
- Is there a significant impact on the magnitude of lobbying and political favoring?

On the basis of all these questions and their answers, a final comment will be made on how the Private Sector should be treated in Defence Production, and whether markets should be kept out.

## RESEARCH METHODOLOGY

The methodology adopted to carry out this research primarily entails answering all these questions on the basis of the experience of a basket of 3 major countries. The experiences of these countries will then be used to analyse the impact of this public policy measure of opening up Defence Production to the Private Sector.

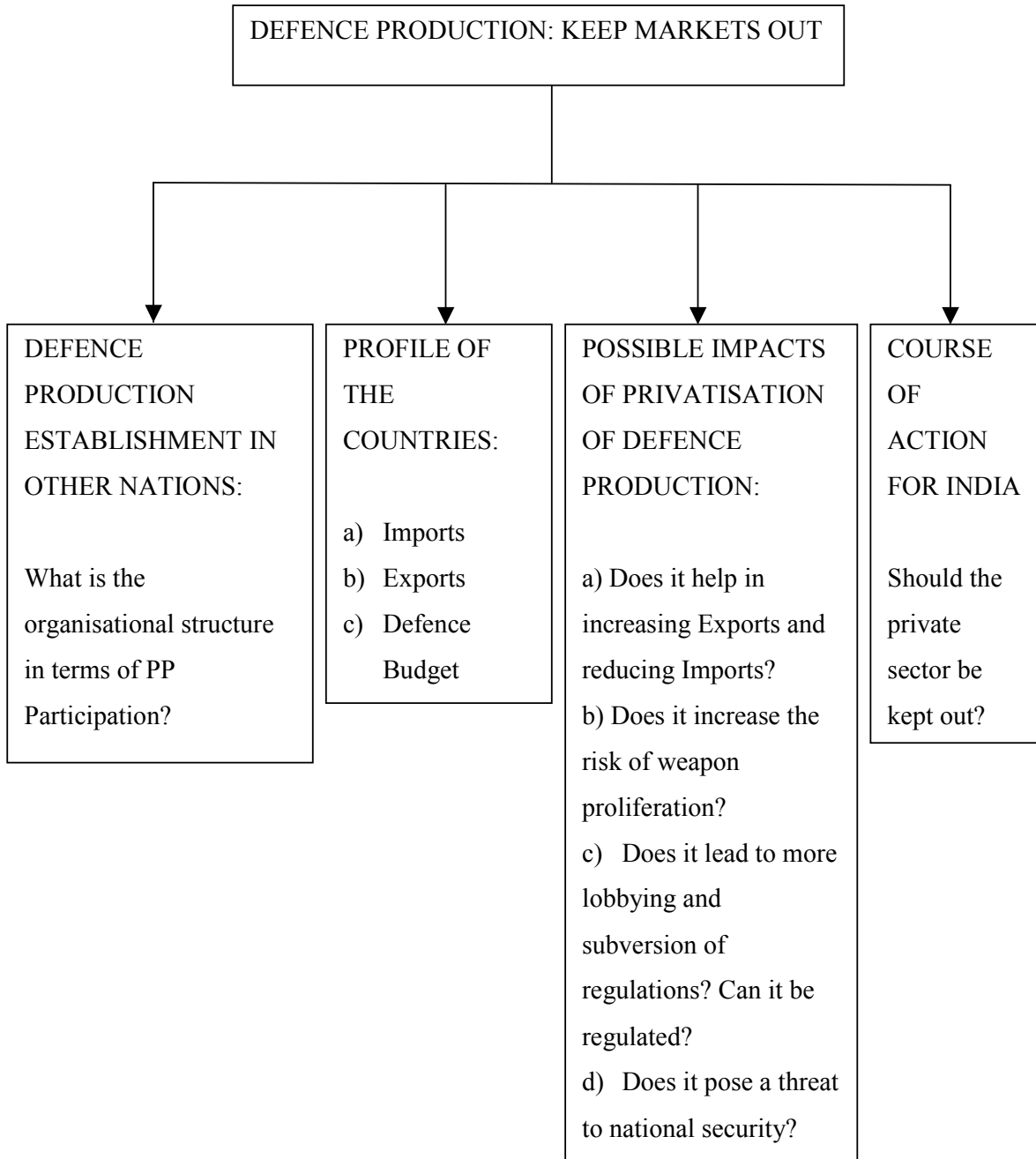
The basket of countries comprises:

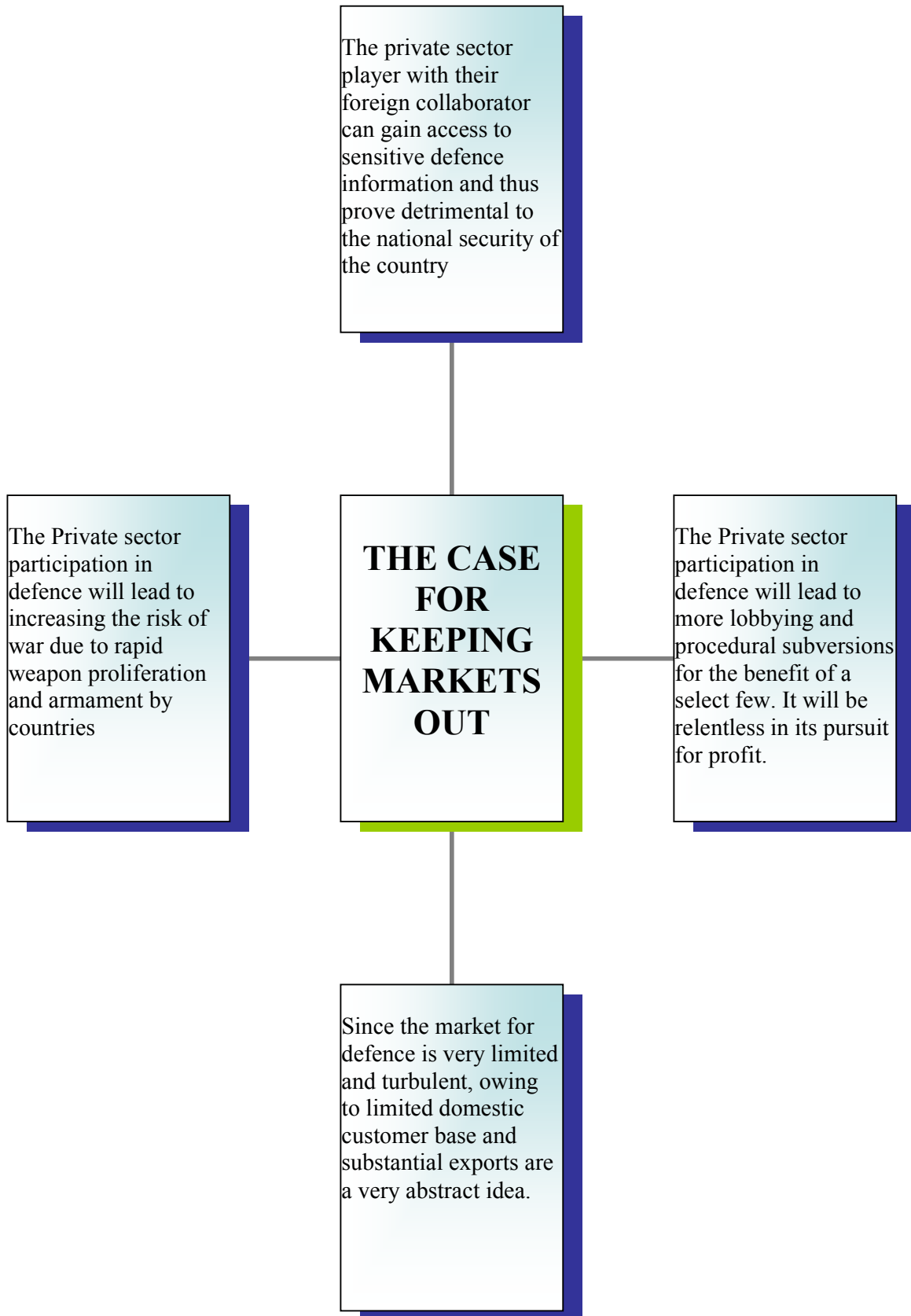
- a) The United States of America
- b) The United Kingdom
- c) The Republic of South Korea
- d) References will also be made to China/Russia.

In order to simplify the analysis and also to form a realistic case for all arguments, certain blanket assumptions will be made:

- a) The aim of the Government is to acquire long-term self-reliance in Defence Equipment, and it works towards the same.
- b) Weapons are the best possible way to protect the country.
- c) A Profit motivated Private sector and Welfare motivated Public sector.

## PROJECT MAP







## A. GLOBAL DEFENCE ESTABLISHMENTS: AN OVERVIEW

The Defence production establishments all over the world are undergoing an overhaul. Nations have begun to focus on revamping the system and its functioning to make it slimmer, sleeker, more streamlined and accurate, minimising wastage of resources. The main aim of all these reforms is to ensure availability of the latest, most reliable equipment to the Armed Forces of the nation in question, in a cost and time effective manner. The dynamics of these reforms becomes sharper if explained with the help of a few examples:

### **1. United Kingdom**

The story of the United Kingdom is perhaps the most contemporary and recent example of a metamorphosis in the structure and working of the Defence industry. The commitment of the Strategic Defence Review, which was conducted in 1998 for the UK Defence, was towards Public Private Partnership in defence, to best address the problems of declining funds and increasing competition from the civil sector faced by its premier technology evaluation and consolidation organisation: Defence Evaluation and Research Agency (DERA).

As a part of the Smart Procurement Process to streamline the Defence procurement and acquisition, relations were established and strengthened with the civil industry by via two main approaches<sup>i</sup> to facilitate benefit sharing.

#### a) Incentivisation:

The companies were given bonuses for value addition beyond the contractual requirements, in terms of time, cost efficiency and additional technical superiority. More freedom and flexibility were granted in terms of usage of the interim payments arrangements by which any retention against the contract price is adjusted to reflect good or poor performance. There also existed negative incentives for underperformance in terms of sanctions.

#### b) Gain Sharing:

Gain share is where the reopening and examining of existing contracts may bring benefit to both the MOD and industry and is central to Smart Acquisition. Benefits of gain share opportunities can include accelerated delivery of the product or service, performance improvements and

reduced costs - in other words faster, better, cheaper. Technology advances, changes to trials programs, innovative support arrangements and income stream opportunities from the transfer of assets are examples of gain share that may develop while a contract is in action.

### *Public Private Partnerships in Defence<sup>ii</sup>*

The United Kingdom follows an interesting Public Private Partnership model. It employs tools such as Private Finance Initiatives and Partnering to foster these relationships. A brief synopsis of one such strategy is given below.

#### a) Private Finance Initiatives (PFI)

The department's large and diverse PFI program encapsulates services accommodation, housing, information systems, utilities, training facilities and equipment. This led to a private sector investment of 2 Billion GBP in the defence sector. This PFI allows the government to share risks with the private sector where it is better placed to let them manage it.

According to the United Kingdom Ministry of Defence Policy Paper No 4 on Defence Acquisitions:

“Wherever the MOD needs substantial new capital investment, it considers whether or not it makes sense for that investment to come from the private sector rather than from public funds. In PFI the department contracts services rather than assets, so the MOD first needs to decide whether it would be practical to meet its requirements by means of a contract under which services are provided rather than by the outright purchase of assets such as buildings and equipment. If so, the Department next considers whether such an approach has the potential to offer better value for money than if it bought assets directly. PFI aims to achieve this by allowing the MOD to focus on its core military tasks supported by a private sector partner, who can offer services more efficiently or at less cost because it is able to do things that the MOD cannot.”

Payments are made only on the satisfactory completion of the project; the incentive to deliver the project in question becomes stronger. There is very little scope for additional payments within budgets.

The UK model also involves fostering a commitment towards long-term self-reliance in Defence and thus emphasizes on sharing of information between the MOD and Industry. This also involves inviting ideas and solutions of the Industry at the beginning of any contracted project so as to have a better understanding of the capabilities of the firm in question and also come up with solutions for the many problems associated with any project.

## 2. South Korea<sup>iii</sup>

South Korea's Defence Research and Development were primarily government driven in the 1980s and focussed on the improvement of conventional arms and weaponry. By the 90s a transition had come over the R and D and was now industry driven, it aimed at developing new weapon systems. The Government effectively focussed on the Development of Core technology and certain parts of strategic weapons.

The three Industrial 'Champions' or Chaebols primarily do the Defence Production in South Korea. They are Hyundai, Samsung and Daewoo along with a number of their subsidiaries. These three majors form the backbone of the Defence Production in South Korea and are Private sector companies.

## 3. USA

After the Cold War, the global spending on Defence was cut substantially, due to which massive Defence Industrial and Corporate consolidation started taking place world over. During the 1990s in the USA, 22 companies consolidated, leaving behind four major players in the market: Boeing, Lockheed Martin, Raytheon and Northrop Grumman. Similar consolidations were taking place all over Europe and the rest of the developed world. This trend indicated an industrial polarization towards pooling of resources, corporate consolidation, special advantages of economies of scale and a sustainable Defence Production Industry<sup>iv</sup>.

The United States, as we are well aware, is a relatively market oriented economy. This orientation is also true in case of Defence Acquisition<sup>1</sup>. According to Centre for Defence Information (CDI), an independent military research organisation located in Washington DC, the "Big Three" in the Defence Industry: Lockheed Martin, Boeing and Raytheon (all private companies) alone accounted for 26% of all defence contracts in Fiscal Year 1999<sup>v</sup>.

---

<sup>1</sup> Defence Acquisition as defined by the US Department of Defence is the designing, engineering, testing, evaluating, production, operation and support of Defence systems. (Kelkar Committee Report)

According to the research done by CDI<sup>vi</sup>, the total contracts issued by the US Department of Defence in 1999, were worth USD 118.1 billion, of which, 44% was accounted by the top 15 contractors.

#### **4. India<sup>vii</sup>**

India is the 3<sup>rd</sup> largest importer of Defence hardware in the world and is one of the top ten countries in Defence spending. At India's disposal is a massive public sector base, comprising 8 Defence Public Sector Units, 39 Ordnance factories and 50 Research and Development laboratories. This is primarily due to the Government's decision to keep Defence completely under its jurisdiction immediately after independence, since the Private sector was not developed enough to handle the requirement of Defence and also because the government believed that Defence is a critical and sensitive Industry and its control must lie with the Government. This huge Public Sector Establishment employs more than two lakh people and provides indirect employment to many Small and Medium Scale Enterprises. The role of the private sector was to primarily supply raw material and semi-finished products.

The decision to expand the role of the Private sector was recently implemented in the May of 2001, where the Government opened up the Defence Industry to 100% Private Equity and 26% Foreign Direct Investment. All the Defence items were removed from the 'Restricted' to the 'Licensed' list. This policy reform has only gained momentum after the submission of the Kelkar Committee Report, which suggested reforms on the lines of models existing in other countries.

## B. PROFILE OF BASKET COUNTRIES

### 1. **Military Expenditure**

The following pages contain data<sup>viii</sup> of Military expenditure<sup>2</sup> of the basket countries. This data assists in a consistent analysis of the Defence Expenditure patterns of Countries, which have private production of Defence Equipment Vs, those, which do not. USA, UK and South Korea fall into the former category whereas India and China into the latter since Private Production of Defence. After a graphical analysis of the data, a simple statistical analysis has been done.

The Military expenditure helps in understanding the consistency and uniformity in the allotment of the Defence budget of these countries. By accounting for the major economic and political happenings within this timeline, the analysis can be more precise.

These politico-Economic events include the Collapse of the USSR (1991), signifying the end of the Cold war. The Kargil War (1999), opening up of the Defence sector to Private Industry in 2001 in India, the September 11 World Trade Tower Attack in 2001, the Global War on Terror, thus led by the USA and its allies since after and all such events.

---

<sup>2</sup> SIPRI military expenditure data include all current and capital expenditure on: (a) the armed forces, including peacekeeping forces; (b) defence ministries and other government agencies engaged in defence projects; (c) paramilitary forces, when judged to be trained and equipped for military operations; and (d) military space activities. Such expenditures should include: (a) military and civil personnel, including retirement pensions of military personnel and social services for personnel; (b) operations and maintenance; (c) procurement; (d) military research and development; and (e) military aid (in the military expenditure of the donor country). Civil defence and current expenditures on previous military activities, such as veterans' benefits, demobilization, and conversion and weapon destruction are excluded.

Table 1.

Military Expenditure of Countries In Million USD (2005)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Periods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>USA</b>	483994	479060	457648	401949	424705	402375	377867	357382	337946	336185	328611	329421	342172	344932	387303	440813	480451	504638	528692
<b>UK</b>	62982	62027	60696	62348	58560	56393	54579	50818	50554	48276	47691	47529	47778	48760	50949	57452	60234	60076	59213
<b>S.KOREA</b>	13666	14294	14713	15476	16311	16706	16127	15689	16652	16706	16127	15689	16652	17120	17605	18197	19000	20333	21853
<b>INDIA</b>	11440	12219	12036	11238	10740	12131	12185	12550	12778	14144	14757	17150	17697	18313	18256	18664	19204	22273	23933
<b>CHINA</b>	N/A	12300	13200	13700	16500	15300	14600	15000	16600	16800	19300	21600	23800	28000	33100	36600	40300	44300	49500

Figure 1

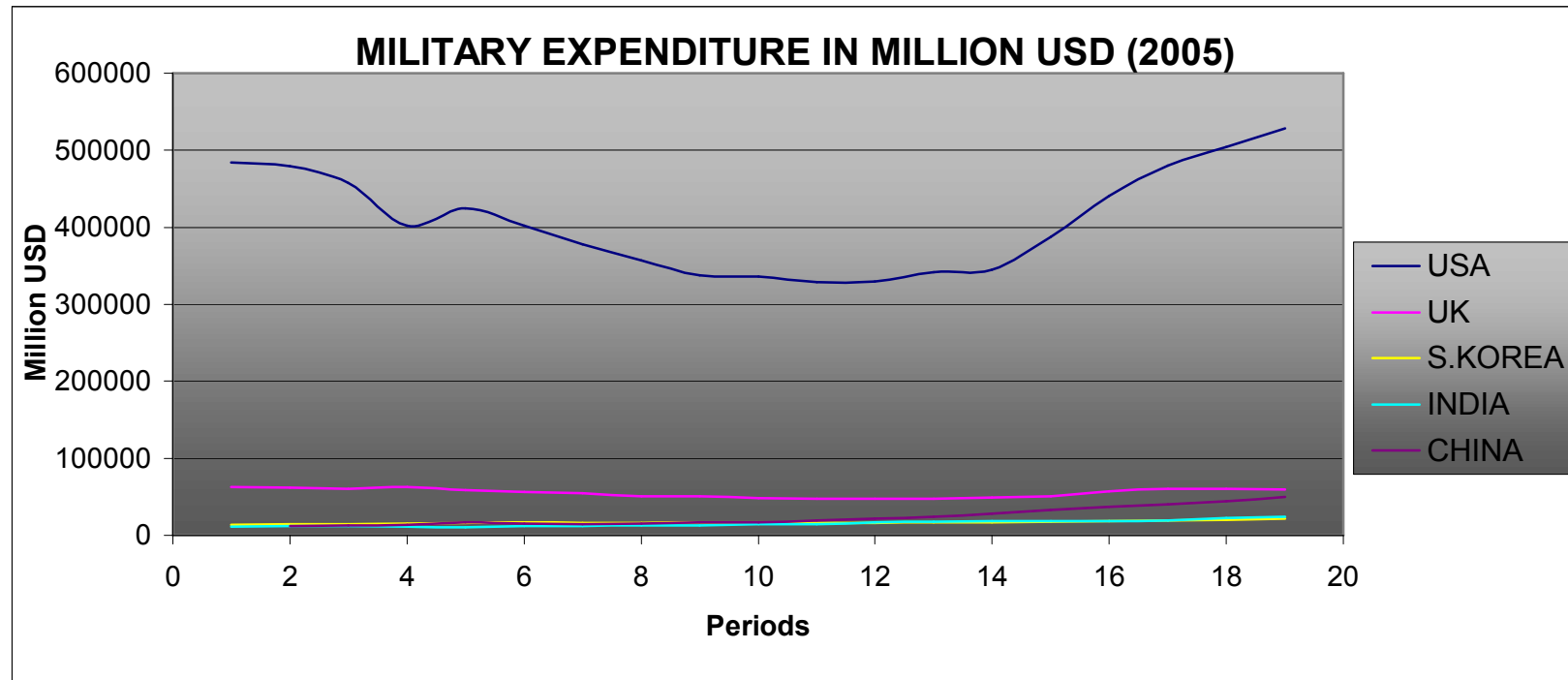


Table 2

## DESCRIPTIVE STATISTICS OF DEFENCE BUDGETS OF COUNTRIES

	USA <sup>3</sup>	UK <sup>4</sup>	S.KOREA <sup>5</sup>	INDIA <sup>6</sup>	CHINA <sup>7</sup>
<b>Mean</b>	407691.79	55100.79	16785.05	15353.05	23916.67
<b>Standard Deviation</b>	66088.33	5726.45	1992.18	3974.08	11834.36
<b>Minimum</b>	328611	47529	13666	10740.00	12300.00
<b>Maximum</b>	528692	62982	21853	23933.00	49500.00
<b>Coefficient of Variation (CV)<sup>8</sup></b>	16.21	10.39	11.87	25.89	49.48

The Coefficient of Variation measures the volatility of the data set around the mean: the greater the CV the greater is the volatility. In the case of the above 5 countries the CV is much higher for India and China, which have primarily centrally planned production of Defence equipment, whereas for countries like USA, UK and South Korea, which have a more privately produced of Defence equipment the CV is lower. This suggest more volatility or lack of consistency in the budgetary allocations for Defence in India and China, this reflects the pressure put on these

<sup>3</sup> Figures for USA are for financial years (1 Oct.-30 Sep.) rather than calendar years

<sup>4</sup> The series for the UK has a break between 2000 and 2001, because in 2001 the UK changed its accounting system for military expenditure from a 'cash basis' to a 'resource basis'. It is not clear what impact this change had on the trend in UK military expenditure.

<sup>5</sup> The figures for South Korea exclude arms imports as well as military pensions and paramilitary forces. Figures do not include military pensions. Figures do not include spending on paramilitary forces

<sup>6</sup> Figures for India include expenditure on paramilitary forces from the Border Security Force, Central Reserve Police Force, Assam Rifles and Indo-Tibetan Border Police, but exclude spending for military nuclear activities.

<sup>7</sup> Figures for China are for estimated total military expenditure. On the estimates in local currency and share of GDP for the period 1989-98, see Wang, S., 'The military expenditure of China, 1989-98', SIPRI Yearbook 1999: Armaments, Disarmament and International Security (Oxford University Press: Oxford, 1999), pp. 334-49. The estimates for the years 1999-2002 are based on the percentage change in official military expenditure and on the assumption of a gradual decrease in the commercial earnings of the People's Liberation Army (PLA).

<sup>8</sup> A statistical measure of the dispersion of data points in a data series around the mean. It is calculated as follows:

$$CV = (\text{Standard Deviation} / \text{mean}) \times 100$$

The coefficient of variation represents the ratio of the standard deviation to the mean, and it is a useful statistic for comparing the degree of variation from one data series to another, even if the means are drastically different from each other. ([www.answers.com](http://www.answers.com))

countries in terms of erratic allocations to defence, which can be for a variety of reasons. This high degree of variation in India and China can also be caused by the dependence on Imports and the Public Sector. The lump sum and erratic allocation of funds in specific years, which is characteristic of the public sector (at least in India) and is true of China as well, suggests inconsistency in allocation of Defence Funding. Delays in project completion and ad-hoc extensions given to Research and Development projects can be some of the reasons. All these are specifically true of the Indian Public Sector in Defence, as there are still a number of projects (Arjun Main Battle Tank, Trishul missile and Kaveri aircraft engine are such examples) which, even though have been in the pipeline for decades, are yet to be delivered. This suggests that countries which have Private production of Defence Equipment, tend to have a better-planned Defence budget, therefore fiscal pressure on the government is less. However in India's case, where an elaborate public sector for defence production already exists, there can be a possible fiscal pressure in parking funds with the private sector, however, if the public sector can be remodelled to become more efficient, the resources thus saved, can be directed to the Private Sector.

## **2. Export/Import Data**

The Export/Import data<sup>ix</sup> of Defence Equipment for these countries will help in assessing the relative technical and cost capability of the countries in question. The underlying premise for this analysis is that countries, which export more and import less, have a comparative advantage technically and financially, in the production of Defence equipment. The following page has a list of the top 15 Suppliers and recipients of arms in the Global Arms trade since 1988-2006.

The figures are not in financial terms, but are Trend Indicative Values<sup>9</sup>: i.e. they indicate the volume of transfer rather than the value. The primary reason for using TIV data over financial data is the lack of availability of consistent financial data for all the countries. The TIV can help in the estimation of the levels of efficiency and competency of the countries in Defence Production.

---

<sup>9</sup> The data can also be used to measure a particular country's share of the overall import or export market or the rate of increase or decline in its imports or exports. However, since TIVs do not represent the financial value of the goods transferred, they are not comparable to official economic data such as gross domestic product or export/import figures. [http://www.sipri.org/contents/armstrad/output\\_types\\_TIV.html](http://www.sipri.org/contents/armstrad/output_types_TIV.html)



Table 3  
Top 15 Suppliers of Arms In The World 1988-2006<sup>x</sup>

Rank 1988-2006	Supplier	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1988-2006
1	USA	11552	10916	10500	12690	14442	14612	11799	11288	10917	14252	15336	11399	7417	5743	5011	5601	6654	7083	7929	195141
2	Russia					2648	3524	1517	3363	3709	3130	2023	3810	4138	5742	5655	5442	6485	6449	6623	64258
3	USSR	12775	12816	9977	5331	9		9	9												40926
4	Germany (FRG)	1587	1250	1830	2544	1409	1560	2628	1459	1879	871	1752	1719	1621	825	899	1881	1001	1533	3850	32098
5	France	1772	2066	1609	966	1008	792	732	795	1763	3083	3336	1786	1027	1199	1312	1282	2687	2050	1557	30822
6	UK	1127	2049	1826	1399	1097	1446	1496	1402	1634	2393	1211	1129	1356	1116	742	680	1083	912	1063	25161
7	China	2103	1035	937	1124	624	1341	1017	1017	780	458	401	299	228	498	544	553	271	223	564	14017
8	Netherlands	767	588	412	448	357	445	582	421	477	606	584	318	259	184	243	343	271	877	1481	9663
9	Italy	499	381	359	521	452	466	309	365	436	440	420	511	192	224	407	321	216	787	860	8166
10	Sweden	499	400	281	185	189	115	126	222	331	84	321	370	306	849	127	468	306	587	472	6238
11	Ukraine					217	222	258	215	136	566	655	760	280	649	210	456	427	308	133	5492
12	Israel	45	180	69	83	86	124	78	113	217	229	191	128	321	298	365	309	533	244	258	3871
13	Czechoslovakia	1284	1034	587	371	207															3483
14	Spain	151	227	116	100	78	101	204	82	114	638	164	30	46	7	120	158	73	116	803	3328
15	Canada	198	50	90	105	115	119	145	326	137	89	34	75	83	129	182	279	305	193	227	2881
	Others	1089	1255	1667	1111	1075	1545	1177	1198	1065	1193	610	1502	1023	1238	1069	1572	1019	1097	12413	12705
	<b>Total</b>	<b>35998</b>	<b>34052</b>	<b>29815</b>	<b>27582</b>	<b>24085</b>	<b>26325</b>	<b>22498</b>	<b>22353</b>	<b>23612</b>	<b>28209</b>	<b>26958</b>	<b>23784</b>	<b>18117</b>	<b>18683</b>	<b>16862</b>	<b>19126</b>	<b>21603</b>	<b>22352</b>	<b>26716</b>	<b>468730</b>

Table 4  
Top 15 Recipients of Arms In The World 1988-2006<sup>xi</sup>

Rank 1988-2006	Recipient	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1988-2006
1	<b>India</b>	3944	3789	2547	1764	1297	757	747	968	996	1656	747	1054	813	915	1659	2928	2476	1387	1692	<b>32136</b>
2	<b>China</b>	60	101	209	252	1202	1232	288	641	1274	741	292	1684	1874	3234	2636	2068	2853	3791	3261	<b>27693</b>
3	<b>Turkey</b>	1636	1026	1239	1207	1824	2320	1816	1580	1510	1485	2463	1593	1039	402	887	585	174	845	486	<b>24117</b>
4	<b>Japan</b>	1907	2238	2692	2966	2420	2157	1008	1254	813	880	1511	1303	438	493	426	465	412	305	392	<b>24080</b>
5	<b>Saudi Arabia</b>	1484	1461	1994	1036	1104	2351	991	987	1725	2804	2518	1226	81	59	549	159	941	148	148	<b>21766</b>
6	<b>Taiwan</b>	607	261	399	625	447	1137	870	1356	1489	4936	4066	1725	598	434	314	116	341	775	624	<b>21120</b>
7	<b>Greece</b>	527	1150	895	481	2143	1011	1121	870	377	804	1681	784	650	700	480	2226	1985	1097	1452	<b>20434</b>
8	<b>South Korea</b>	1160	1598	1084	839	678	815	827	1788	1759	1048	1404	1547	1266	583	336	599	1030	627	1292	<b>20280</b>
9	<b>Egypt</b>	345	248	556	907	1054	1207	1908	1698	986	1055	523	509	826	804	676	576	542	740	538	<b>15698</b>
10	<b>UAE</b>	45	574	540	214	175	540	547	427	474	686	738	398	309	182	208	734	1348	2320	2439	<b>12898</b>
11	<b>Israel</b>	582	25	71	1222	1293	723	851	308	88	68	1370	1217	364	147	325	292	845	1092	994	<b>11877</b>
12	<b>UK</b>	269	211	112	1012	1223	1109	560	659	735	675	897	59	810	1228	715	789	137	28	463	<b>11691</b>
13	<b>Pakistan</b>	451	990	628	488	309	917	784	324	529	702	700	858	160	397	528	592	387	236	309	<b>10289</b>
14	<b>Australia</b>	761	702	343	184	350	464	269	149	582	27	523	634	366	1237	711	864	558	560	777	<b>10061</b>
15	<b>Iran</b>	529	207	474	1230	442	1028	459	355	630	309	383	312	400	546	538	439	377	327	891	<b>9876</b>
	<b>Others</b>	19451	15987	13286	8109	8295	9297	8828	10090	10302	7259	8713	8038	6914	5830	6456	6696	7488	11787	179313	38993
	<b>Total</b>	<b>35998</b>	<b>34052</b>	<b>29814</b>	<b>27580</b>	<b>24085</b>	<b>26327</b>	<b>22498</b>	<b>22356</b>	<b>23612</b>	<b>28212</b>	<b>26960</b>	<b>23781</b>	<b>18118</b>	<b>18690</b>	<b>16857</b>	<b>19121</b>	<b>21606</b>	<b>22354</b>	<b>26722</b>	<b>468743</b>

The above data is a clear indication of the results of Private Sector production of Defence equipment on the Export/ Import status of the country in the global arms trade market. From table it is evident that countries like the USA and UK, are exporting much more than they are importing, this can be attributed to the Private Production of Defence equipment in those countries. Countries like Indian and China are recipients rather than suppliers of Defence equipment, they figure in the list of top 15 recipients since 1988. Whereas USA and UK are in the list of the top 15 suppliers. The anomaly in this trend is in case of South Korea, which, even though has a Private Production system of Defence is a recipient rather than supplier (24<sup>th</sup> in Global supplier rankings).

The quest for self-reliance and indigenisation, it seems may or may not be dependent on Private sector Participation in production of Defence Equipment. Thus to prove the hypothesis that Private Sector participation in Defence Production leads to an increase in exports and decrease in Exports cannot be justified. Though even this conclusion can be reevaluated if we get a more holistic picture of the TIV for South Korea as some entries for certain years were missing. The data set for India and China, were also not absolutely holistic

However, on the basis of the complete data available for USA and UK, it can be safely said that countries have had a favourable experience with Private Production of Defence Equipment as they are supplying much more than they are importing (Data set for USA and UK were Complete).

## C. POSSIBLE IMPACTS OF MARKET ORIENTED DEFENCE PRODUCTION: ALLOWING AN EFFICIENT UNREGULATED MARKET TO EXIST

### **1. The Weapon Proliferation Scenario**

We can understand this idea with the help of a simple demand and supply model. Before the construction of such a model, we need to specify a few assumptions:

- a) There exists an upward sloping Supply curve and downward sloping Demand curve.
- b) There are no regulators in the markets i.e. only buyers and (Private) sellers exist
- c) Technological advancements are not exhaustive i.e. old and new technologies exist simultaneously.

Let us take the example of Nuclear Bombs. Assuming the only available bombs are of a certain technology (Say, Nuclear fission based), the demand and supply curve of the Nuclear Bombs market is given by Panel A in Figure 3. The Equilibrium quantity of exchange of Nuclear Bombs is  $Q_1$ .

Let us now imagine an improvement in technology, say the nature of Nuclear Bombs changes from Fission to Fusion based, the former being much more cost and capability effective (more devastating). Till this invention, there was no demand for Fusion based Nuclear Bombs; but the moment this innovation in technology occurred, there was an increase in the supply of weaponry (as more weapons were available by way of better technology), thus the supply curve shifts rightward.

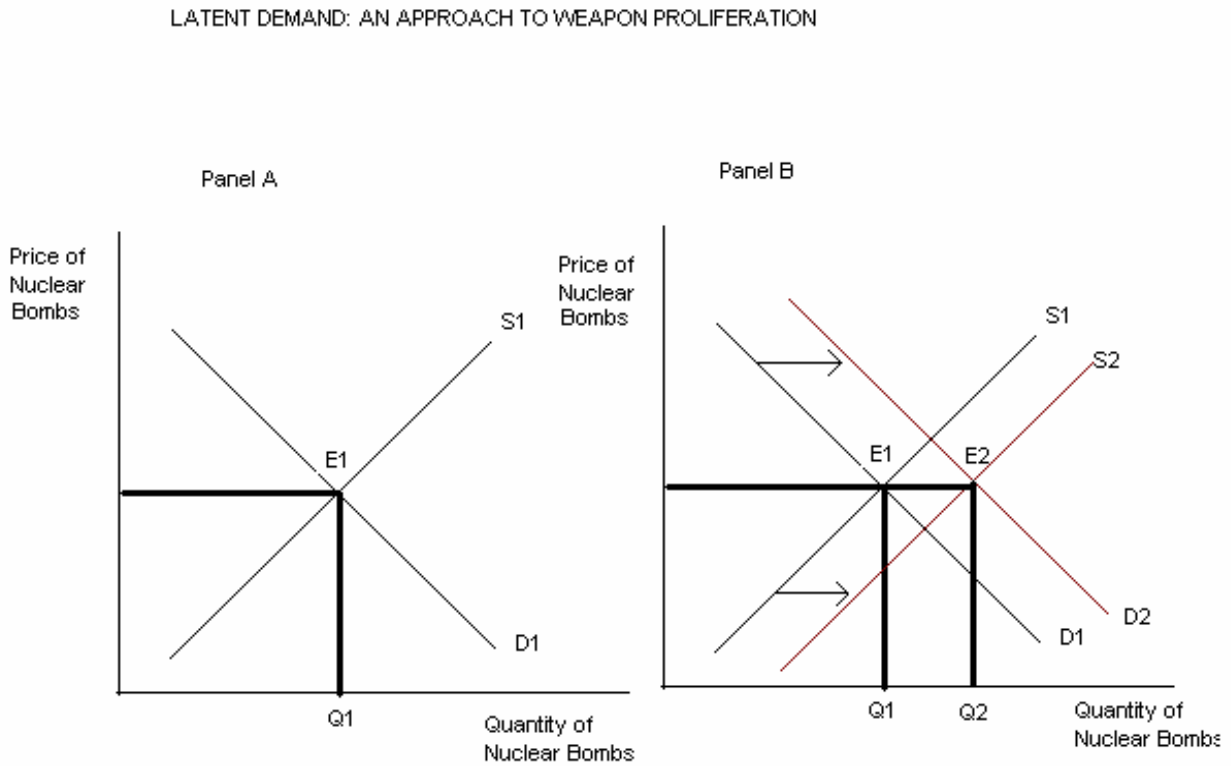
There is also a rightward shift in the Demand for weaponry; since the improvement in technology leads to the fulfilment of the 'Latent Demand'<sup>10</sup> in the weapons market. This demand is not apparent and is seen only when the requisite supply exists. One such real life example is that of mobile phones. Till the time conventional methods of telephony existed, there was no demand for mobile phones. However, as technological advancements took place, the latent demand for Mobile phones got fulfilled, and hence the quantity of telephonic communications

---

<sup>10</sup> Situation where demand cannot be met: a business environment in which demand for a particular product cannot be met by existing suppliers or is temporarily suppressed. From [http://encarta.msn.com/dictionary\\_561533438/latent\\_demand.html](http://encarta.msn.com/dictionary_561533438/latent_demand.html)

increased. The shifts in the Demand and Supply curve can be seen in Panel B of Figure 3, the new quantity of Nuclear Bombs exchanged in the market increases from Q1 to Q2.

Figure 3



- D1: Apparent demand curve of weapons
- S1: Supply curve for weapons
- D2: Latent demand curve for weapons
- S2: New Supply curve after technological advancement
- E1: Initial Equilibrium
- E2: New Equilibrium
- Q1: Initial quantity of Nuclear Bombs
- Q2: New quantity of Nuclear Bombs

This model, though specific to Nuclear Bombs, also holds true for other kinds of Defence Equipment and Weaponry. This proves that weapon proliferation is a very strong possibility if Private producers are allowed to undertake production of Defence Equipment. This model assumes a free market efficient equilibrium. In real life, this proliferation may not be as rapid as the model may seem to predict, as there are regulators in the form of Governments exist in the market. This model implies an efficient market outcome, where all the demand is met by the supply.

If we abstract ourselves from the ethical perspective towards weapon proliferation, then any kind of Governmental regulation, in terms of quotas, taxes, denial regimes and embargoes, will be

detrimental to the society as a whole, from an economic point of view. Any such distortions will lead to the emergence of a deadweight loss.<sup>11</sup>

Weapon proliferation is very closely related to export and import of weapons around the world, the major recipients of the arms exports around the world are mostly developing nations. The annual Congressional Research Service report, “Conventional Arms Transfers to Developing Nations, 1997-2004,” which was released on August 29, 2005, revealed that arms transfer agreements worldwide amounted to nearly \$37 billion in 2004, the largest total since 2000, and well above the 2003 sum of \$28.5 billion. Of the 2004 total, nearly \$21.8 billion worth of agreements were made with developing countries<sup>12</sup>, also the highest total since 2000.<sup>xii</sup>

The primary market for U.S. arms in the developing world continues to be the Near East, and the United States remains the largest arms exporter to the region (defined as Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates and Yemen). Between 2001 and 2004, US transfer agreements with the Near East came to \$18.8 billion, or just over 66 percent of the total, which marks a slight decrease from the totals between 1997 and 2000, during which 75.5 percent of U.S. agreements were with Near East countries.<sup>xiii</sup>

## **2. Lobbying and Subversion of Regulations**

The government regulates the market for weapons, unlike the one in the model, or what we call the state. The state decides what can be sold to other countries and at what prices. It sets limits on what the Producer can sell and to whom. In case the production base is government owned, regulation becomes easier, however if the base has a strong presence of the private sector, regulation becomes tricky.

The lobbying and subversion argument primarily implies the usage of the funds by the Private players (earned as profits through deals with the state; these funds are, therefore public money) to subvert regulations and bend the system as per their whims and desires. The primary threat here is the subservience of the National Interest to Private Interest.

---

<sup>11</sup> The costs to society created by inefficiency in the market. [www.investopedia.com](http://www.investopedia.com)

<sup>12</sup> The CRS report defines developing nations as all countries except the United States, Russia, the European nations, Canada, Japan, Australia, and New Zealand.

The researcher conducted a number of interviews with experts in the field of defence such as journalists, former army officials and representatives for industrial platforms, which are currently demanding a greater role of the private sector in defence production. On asking them whether lobbying was a serious threat (as a result of Private sector participation in Defence Production), the reply was casual enough to undermine the real impact of the situation. It was said that lobbying exists anyways, in all matters, pertaining to governance.

The argument of lobbying and regulation subversion will gain clarity when discussed through case studies. Below are case studies of two countries, which have had experiences of lobbying.

### **THE BRAZIL GUN BAN<sup>xiv</sup>**

According to the UN, every 15 minutes, someone dies of a gunshot in Brazil. Yet the world's first referendum on banning civilian guns in this country failed to pass in 2005. Earlier in 2005, there was 80% support for the ban, however, the pro-arms lobby (arms makers and activist groups) managed to play upon the fears of crime rates and succeeded in swinging the public vote. This violence can be seen as a hidden civil war fuelled by the proliferation of small arms (an estimated 17.5 million guns, with 90% in civilian hands and half of them illegal. More than 3600 people died due to gun violence alone in 2004.

Most of the guns manufactured in Brazil are made by Taurus, the largest but not the only arms manufacturer in Latin America the company has grown tremendously since its inception 64 years ago, thanks to exports, marketing and distribution in the USA and other nations. In the USA for example, purchase of each Taurus gun comes with a free NRA (National Rifle Association) Membership arms in Brazil are available easily (legally as well as from the thriving black market). Many military guns such as the Kalashnikovs which are from the Soviet Era are available for as cheap as the \$20 originate from many Central Asian Republics like the Balkan States and former Yugoslavia and find their way here; transforming gang rivalries into blood baths, domestic violence into massacres tranquil societies into battlefields.

The USA based NRA has been following Brazils referendums closely. The NRA Spokesperson Andrew Arulanandam denied that NRA had given financial support to influence the Brazilian vote, but had provided “advice to help secure that the ban isn’t passed.”

In 2001, the deputies of the State of Rio de Janeiro had approved new and innovative law prohibiting commerce and possession of light arms as well as the bearing of arms in the state. The National Producers and Retailers of Small Arms responded through its lobby to influence the Supreme Federal Court, which annulled the law.

Another case study is of a country, which is demographically different from Brazil. The USA has also had a very interesting experience with lobbying, which shall be studied below.

### **THE US DEFENCE CONTRACTORS LOBBY**

The ‘Big three’ contractors of Defence Equipment in the USA are Lockheed Martin, Boeing and Northrop Grumman. These three split \$50 Billion in Pentagon Contracts between them in the year 2003; with \$21.9 billion with Lockheed Martin, \$17.3 Billion with Boeing and the remaining \$16.6 billion with Northrop Grumman. This hefty figure of \$50 Billion represents a quarter of what the Pentagon shelled out on everything from rifles to rockets.<sup>xv</sup>

Lockheed Martin also led the defence industry in lobbying expenditures for the year 2000; doubling its spending to \$9.7 million, up from \$4.2 million in 1999. Other big spenders with interests in nuclear weapons and missile defence projects included Boeing (\$7.8 million), Northrop Grumman (\$6.9 million), General Dynamics (\$4.7 million), Raytheon (\$2.3 million), and TRW (\$1.1 million).

All these corporations support those parties and candidates who will do the most good to them. This kind of support and lobbying helps them in gaining influence over powerful committees and bodies to secure more and bigger contracts and...



...also receive continuous support for projects which have already been undertaken but not shown much success

A classic example of this is Curt Weldon, a Republican Congressman from the Philadelphia suburbs who decided early in his tenure to champion the cause of Boeing's V-22 Osprey, an aircraft designed to fly like a plane but take off and land like a helicopter (which not so coincidentally is built at a Boeing-Vertol plant in Weldon's district). Bush administration Defence Secretary Dick Cheney attempted to cancel the program in response to cost overruns and serious technical problems, which had resulted in several crashes of the aircraft during training exercises, but Weldon led an effort within Congress to revive the Osprey program. This won Weldon the gratitude of the Osprey's prime contractor, Boeing, which went on to become a major player in the missile defence program, another project that Weldon has worked vigorously to promote. This and other support and championing missions helped Weldon earn Contributions to a tune of \$46,000 from eight of the top ten missile defence and nuclear weapons contractors during the 1999/2000 and 2001/2002 election cycles.

The following is a list of the Political contributions made by some prime defence contractors to the Republicans and Democrat Parties in the US Election cycles.

Political Contributions by Ten Major Missile Defence and Nuclear Weapons Contractors,  
1999/2000 and 2001/2002,<sup>xvi</sup>

<b>Company</b>	<b>1999/2000</b>	<b>(%R/%D)</b>	<b>2001/2002</b>	<b>(%R/%D)</b>
<b>Lockheed Martin</b>	\$2,704,525	(61/39)	\$1,268,863	(64/35)
<b>Boeing</b>	\$1,914,886	(56/44)	\$784,236	(54/45)
<b>General Dynamics</b>	\$1,251,792	(60/40)	\$724,552	(72/28)
<b>Raytheon</b>	\$909,065	(62/38)	\$503,176	(52/43)
<b>Northrop Grumman</b>	\$686,930	(61/39)	\$543,710	(80/20)
<b>TRW</b>	\$487,334	(78/21)	\$140,200	(70/30)
<b>Honeywell</b>	\$330,766	(83/17)	\$59,500	(61/39)
<b>Bechtel</b>	\$212,925	(32/68)	\$118,600	(38/62)
<b>Fluor</b>	\$84,050	(58/42)	\$70,640	(90/10)
<b>BWX Technologies</b>	\$11,000	(86/14)	NA	
<b>Total</b>	<b>\$8,593,273</b>	<b>(61/39)</b>	<b>\$4,213,477</b>	<b>(64/36)</b>

Perhaps these two case studies are sufficient enough to show the gravity of the weapon proliferation and lobbying/ subversion of regulation argument. Indeed, as more and more importance is given to any organisation, like Lockheed Martin, Boeing and the likes, a great degree of manipulative prerogative is also invested in them. Public money, which they earn as profit, is used to siphon more public funding from the state, under the guise of national interest.

Perhaps, this is what Dwight D Eisenhower, former president of the USA, referred to as the Military Industrial Complex (MIC). In his farewell address he warned of the “potential for disastrous rise in misplaced power” posed by this unprecedented lobby, and he underscored the need for the citizenry of the republic to ensure that we “never let the weight of this combination endanger our liberties or democratic processes.”<sup>xvii</sup>

<b>THE MATHEMATICS OF LOBBYING</b>					
<b>Series A<sup>1</sup></b>					
<b>Lobbying Expenditures for the top 4 missile defence contractors (All Figures in million Dollars)</b>					
<b>Company</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>Total</b>
Boeing	6.6	8.4	8.2	7.8	31
Lockheed Martin	3.6	6.6	4.2	14.4	28.8
Raytheon	1.6	1.7	3.6	2.3	9.2
TRW	1.4	1.4	1.1	1.1	5
Yearly total	13.2	18.1	17.1	25.6	
1997-2000 total					74
<b>Series B<sup>1</sup></b>					
<b>Dollar Amounts of Pentagon Missile Defence Contracts 1998-2001(All Figures in million Dollars)</b>					
<b>COMPANY</b>	<b>Total in Million Dollars</b>				
BOEING CO.					3503
LOCKHEED MARTIN CORP					1739
RAYTHEON					601
TRW, INC.					711
Correlation coefficient between Series A and B: 0.87					
High Degree Of Positive Correlation Between Amounts spent in lobbying and missile contracts awarded in the USA					

Figures From:

Axis Of Influence: Behind the Bush Administration's Missile Defense Revival

A World Policy Institute Special Report by Michelle Ciarrocca and William D. Hartung. July 2002

<http://www.worldpolicy.org/projects/arms/reports/axisofinfluence.html#IId>

### 3. The National Security Argument

A favourite argument of critics of the Private player participation in Defence production is that these players with their foreign collaborators will gain access to sensitive information and thus lead to a threat to national security. This argument is hard to affirm or negate. The only possible protection against this argument, it seems, is the involvement of only capable and sizeable corporations. The involvement of small, fly by night operators, which have no market credibility or reputation<sup>13</sup> to maintain, can lead to a potential leak in the system. In any competitive environment, profit is the direct result of reputation, and loss of reputation implies a direct fall in profits.

For any private player to continuously reap profits, reputation acts as a powerful incentive. Large conglomerates like Lockheed Martin for example, or Mahindra and Mahindra will never consciously indulge in activities such as ‘Corporate Snitching’ as it will lead to a direct loss of business and profits for them. The risk of leaks and access to sensitive information exists in a fully governmental system as well. To say that this risk is non-existent in a government monopoly would be wrong, as the risk of information leak from the state or say, a corrupt state are more or less same, since the individual in the state machinery has more incentive to make profits from sharing information with those who are willing to pay the price, just as in any Private organisation.

---

<sup>13</sup> For a start, reputation is not easy to define. It is best understood as a conglomerate of perceptions that the stakeholders of a company – or any other organisation – form on the basis of observed performance and values (the market value of reputation,

<http://www.pwc.com/Extweb/pwcpublishings.nsf/docid/F9AEC096C0251371852571340001ED16>)

## D. THE INDIA IMPACT

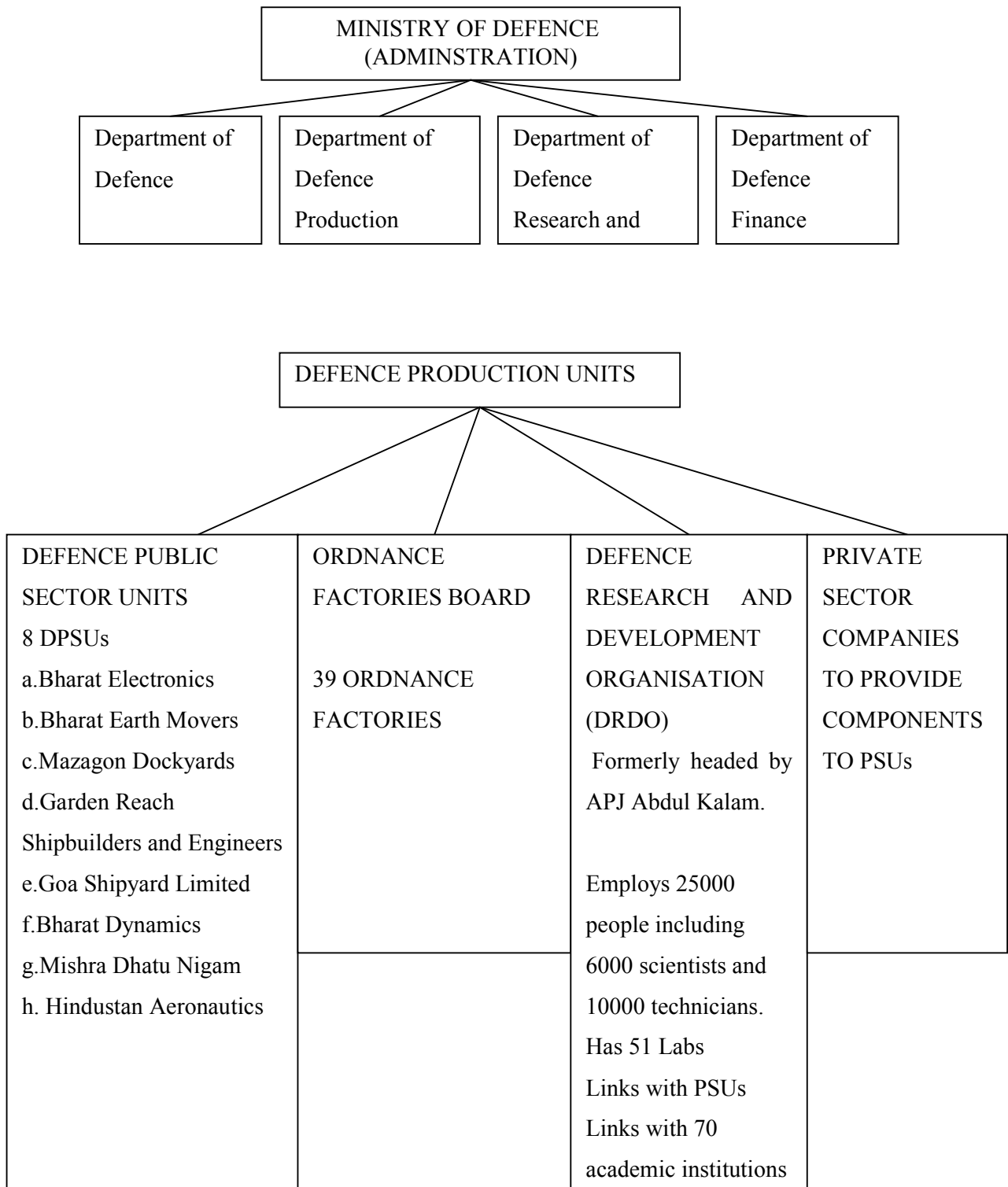
India is on the verge of revamping its defence industrial base, after the submission of the Kelkar committee report to the Defence Ministry in the April of 2005. The Kelkar report recommends provision of a level playing field to the Private Industry in Defence Production. It demands transparency in awarding defence contracts to Private and Public sector companies, and treat them at par with each other.

In India, Defence is considered to be the 'holy cow' of all state activities. The extent of participation of the civilian sector in defence production was very minimal, to the extent of only outsourcing of spares, small part assemblies and sub assemblies. The demand of all the industry chambers like CII, Assocham and FICCI is to expand the role of the private sector in defence equipment production, as not merely suppliers but also system integrators.

The government has had a monopoly over all Defence Production activities since independence. This has led to the creation of a massive public sector base in production, Research and Development. An overview of the existing establishment is given on the next page.

## AN OVERVIEW OF THE DEFENCE SET UP IN INDIA

Figure 4



## 1. The Worm's Eye View

An expert<sup>14</sup> in the field of Defence feels:

“Military strategy has undergone a massive facelift in recent times. War strategy today is not about making the other nations guess about our capabilities. Everyone knows what weapons/equipment a certain country has. Everyone knows how much who imports and from where. The real test of military leadership lies in keeping the other side guessing about how, when, and in what amount are they willing to use their resources. It is not how much that matters, but how and when. The face of the Indian Defence industry is thus, undergoing a change. We have realised the need for reforms in our defence industries.”

The country's main providers of most Defence Equipment are the Defence Public Sector Units. These Public Sector Units have lately been showing signs of illness and decrepitude. They face the limitations of being a wholly governmental organisation. The inefficiency, lack of accountability, absent sense of responsibility and insouciance are just a few. The government should encourage them as the need may be, what is undesirable is the lack of accountability which is ingrained by way of no autonomy and total central control. These PSU's are far from efficient and have been so because of the bureaucratic they have been moulded in.

Any organisation, in order to be successful has to follow certain business principals. Self-sufficiency and indigenous development are redundant concepts if there is no efficiency, accountability and autonomy in the organisation. The principles of self-sufficiency and indigenous development become meaningful only when linked with strengthening national defence capability. Even foreign agencies have criticized the working of the Indian Defence Industries. Organisations such as the CIA have gone on record and commented upon the industries lack of dynamism. Questions rise, certainly in case of the DPSUs' regarding their efficiency and ability to meet targets. One such example is that of the Garden Reach Shipbuilders, which took 12 years to build the INS Brahmaputra, whereas according to CIA estimates, the 'cash strapped' Russian could do it in about 4 years.<sup>xviii</sup>

The Defence organisations have a tendency to mislead. Lack of clarity in operational methodology and overestimation of their abilities are just a few of the many problems, which trouble the system today. There is no clarity of perspective; it seems, in the functioning of the organisations, goals are unclear and vague. The government organisations are focussing on

---

<sup>14</sup> Mr Vishal Thapar, Defence Correspondent, CNN-IBN  
*Centre for Civil Society*

‘reinventing the wheel’ as certain experts<sup>15</sup> put it. They are developing technology that is already easily available and at cheaper prices. This is a useless exercise, as what we end up producing is more expensive and less reliable than the equipment already available. One such example is the Arjun Main Battle Tank, the delayed-beyond-Infinity project, is touted to be an ‘indigenously’ developed, according to the 14<sup>th</sup> report of the Standing committee on Defence tabled in the Lok Sabha “Power pack, Gunner’s Main Sight and Track are imported items, which work out to 58% of the cost per tank.” The DPSUs and the DRDO, it seems mislead the public into believing their tall claims. They are currently facing an overwhelmingly alarming set of problems such as:

### **POOR HUMAN RESOURCE POLICIES**

The DRDO and many other DPSU’s are facing very high attrition rates due to their inability to attract and retain new talent. According to media reports, approximately 1404 scientists have left DRDO in the past 10 years.<sup>xix</sup> Most engineers’ leave for greener pastures i.e. Private sector IT firms where there is more money and incentive. A similar problem plagues the India’s state owned aviation manufacture HAL (Hindustan Aeronautics Limited). It has lost up to 917 assistant engineers, engineers, deputy managers, managers and above since 2003. In the last calendar year itself, 409 employees quit HAL for the private sector<sup>xx</sup> jobs.

The problem faced by these organisations stems from poor HR policies, lack of incentive and opportunity for growth. According to an official estimate, 42 scientists<sup>xxi</sup> have left DRDO to join high-tech start-ups with seed funds from venture capitalists. The main drivers here are entrepreneurial freedom and autonomy. This primarily reflects the frustration of these scientists with the typical government set up of no autonomy, motivation and initiative.

### **LACK OF ACCOUNTABILITY**

The DRDO and DPSUs escape accountability for their actions, or lack thereof. They receive perpetual ad-hoc extensions by the government. The delays in project deliveries are rarely if ever taken very seriously. This is more than evident, when one takes into account the continuous delay in delivery of various projects such as the Arjun Tank. It has been in the pipeline for more than 3 decades and is yet to come in the mainstream. Out of the 124 Arjun

---

<sup>15</sup> Lt. General Vinay Shankar, Director- General, artillery, Kargil war. He was also advising Larsen and Toubro In their defence Department, until last year.

Main Battle Tanks that the army placed an order for, only 15 are in service<sup>xxii</sup>. Perhaps the problem also lies with the higher authorities, which have never pulled up the DRDO and are complicit in it's' lethargy.

### *IS THIS AN INDIA SPECIFIC PROBLEM?*

Some experienced<sup>16</sup> professionals from the field of Defence feel that this lack of accountability is 'not' a problem specifically in state owned defence organisations, but is restricted to India. This laxity in performance and critical appraisal is also visible in all other sectors of the government. Returning to the domain of this issue, many state controlled defence sectors have actually done well for themselves; an example is of Russia, which is still one of the biggest sellers of Defence equipment to India and China. Even though the USSR was communist, the high degree of accountability was a driving catalyst in the Defence industry performing well in terms of equipment reliability, quality and Research and Development. All was not perfect in paradise though, as even the Soviet Union lagged in the upcoming fields of microelectronics, miniaturisation and software that go with it. Their equipment was also heavy, bulky and not very user friendly.<sup>xxiii</sup> Until the collapse of the USSR, the Soviet Union was one of the leading countries in fields such as producing defence equipment (the MiGs, the T-72) and space exploration (the USSR launched the worlds first artificial satellite in 1957).

### **THE TENDENCY TO OVERREACH**

The aim of establishing the DRDO was to develop indigenous technology and research and ensure availability of equipment and munitions to the Indian Armed Forces, as and when they require. The DRDO's focus, it seems is to take up bigger, better projects and funds without delivering. It insists on spreading its arms and taking up all that it can manage. There are innumerable projects in the DRDO's kitty, none, which has been very successful such as The Light Combat Aircraft, Tejas; the Main Battle Tank Project, Arjun; the Integrated Guided Missile Development Program, Agni, Prithvi, Trishul, Nag, Akash and Astra. The DRDO has also started with its first ever Inter Continental Ballistic Missile Program, Surya. None of these projects is complete. These are just a few of the many projects the DRDO's kitty.

Another allegation against the Indian organisation is the lack of enterprise. One such example is of the MiG 21s. They were first used in the 1971 war against Pakistan. Their crash history is

---

<sup>16</sup> Lt. General Vinay Shankar, Director- General, artillery, Kargil war. He was also advising Larsen and Toubro In their defence Department, until last year.



public knowledge, this led to the decision for phasing out the use of the MiG 21s and that is what has led to the Indian Air Force Squadron dwindling at a 40-year low of 28 squadrons of 12 to 18 jets each<sup>xxiv</sup>. This has happened due to the delay in acquiring replacements for ageing MiG-21s, which constitute 45% of the around 700 IAF fighters.

The Indian Navy, announced the unavailability of the Trishul system, and went in for the purchase of the Barak from Israel<sup>xxv</sup> instead. In the wake of foreign countries' acquiring state of the art equipment and weaponry from various other nations, it becomes even more imperative to constrict DRDO's basket, and make it focus on a few core projects. Some<sup>xxvi</sup> suggest that the DRDO should focus only on those projects where technology denial regimes exist. The DRDO they say must concentrate its energies on such projects. Research in growing vegetables, food preservation technologies and the like only consume precious resources, meant for defence. What is required, primarily, is the shedding of excess baggage. The organisation should focus on its core areas of thrust.

## **2. The Birds Eye View**

In India, as we have seen, the government monopoly in Defence Production has led to stagnation of technical advancement and growth in the Defence sector. Our technology is practically archaic in many projects such as the MBT and LCA Tejas. Even the projects, which have been declared successful, have their share of problems, such as the Prithvi missile, which is based on liquid fuel propulsion technology, which makes it imperative to be fuelled only an hour prior to launch, since the liquid fuel is corrosive and volatile.

India, as a developing nation, has huge potential in the field of defence, however, this potential will have to be tapped and channelled into niche markets, where not many players exist, because foreign players have already made quantum leaps in conventional areas aircrafts, ship building, rockets, and missiles. If we identify the right area and encourage participation from that specific industry in Defence, we can leverage our position and transform ourselves into suppliers and establish equilateral and bilateral ties which are strategic in nature, with other nations.

An example of such an industry is the Software and IT industry, which can provide exceptional technological platforms like data link systems, network-centric warfare and various platforms for the Navy, Air Force and land systems.

Another suggested idea is to be patient with the Private sector firms, which are participating in defence, if the Kelkar Committee recommendations are implemented (and properly so) then the Private sector will be given a level playing field with the DPSUs and will be thus treated at par with each other. We cannot expect companies/ firms, which till date, been only suppliers and not system integrators, to compete with foreign producers like Lockheed Martin or Boeing which have been in this industry for a considerable period. The need of the hour is not protection of the Indian Civil Industry, but proper incentivisation, to give them enough motivation to participate whole-heartedly in national defence capability building.

There has to be proper handholding between the Private and Public sector, both the sectors have to be more open and forthcoming and cooperative in terms of information, technology, capability and resource sharing.

## CONCLUSION

After the completion of the following research, the following conclusions can be drawn about the impact of the private players in production of defence equipment:

1. There is no significant increase in the threat to national security.
2. There is an increase in the chances of lobbying and attempt at procedural subversion. As we have seen, there is a significant degree of positive correlation between the amounts spent in lobbying and the magnitude of the contracts allotted to various vendors in the USA.

The argument here is more politico-ethical in the sense that, it is unfair to use the public money which these companies will earn as profits from their work with the government; to lobby and garner more public funds as bigger contracts.

3. The major importers of Defence equipment are generally the developing countries. If the domestic defence industrial base of India can be strengthened and advanced capabilities in niche areas developed and marketed, then India can catapult itself into the league of supplier countries even though it is itself a developing nation.
4. The involvement of the private sector can contribute significantly to speeding up the armament race and increase weapon proliferation.

An alternative to private sector involvement in defence production, can be the revamping and restructuring of the defence industrial base. Introducing elements of greater accountability and efficiency can be the first steps in this policy reform.

1. By making the organisation, such as DRDO, DPSUs and Ordnance factories, more accountable, and not providing them ad-hoc extensions in the time frame for project completion, their competitiveness can be encouraged.

For example: if a certain project has been given to a DPSU and its stipulated date of completion is 5 years and it has not been completed within those 5 years, the project should be transferred to the Private sector after it has been ascertained by an independent committee that the project has remained incomplete for no genuine reason.

There should be, in a way a threat looming over the public sector for project closure. Extensions should only be given if satisfying results have been shown. This disincentive over losing a precious project can act as a driving force in project development.

2. The project, at its inception stage, should be as realistic as possible. The project should be clearly based on required capability, rather than being a compendium of the best possible specification from the global market.
3. There should be proper incentives for the public sector as well to motivate it to strive towards excellence in its work. A revamping of the Human Resource policies of the DRDO and various DPSUs, is already underway as a check against the rising attrition rate.

Increasing pay, so as to not make the scientists feel underpaid and overworked and improving the working conditions, in terms of leaner and more effective administration are also some of the ways in which this problem can be tackled.

4. There should, but of course, be transparency in the contracts and deals made by the Ministry of defence. There should not be preferential treatment for the public sector, over any other vendor. The contractual allotment should strictly be ability based and competitive. The project should be allotted to those who have greater ability to complete it cost and time effectively and simultaneously not compromising on the quality of the product.

## REFERENCES

---

<sup>i, iii, i</sup> The International experience, *Towards strengthening self-reliance in Defence Preparedness*, Dr Vijay L Kelkar Committee Report, under the chairmanship of Dr Vijay L Kelkar, tabled in the Parliament in April 2005.

---

<sup>ii</sup> *Policy Paper No 4 2001 Defence Acquisition*. The United Kingdom, Ministry of Defence, Accessed on 27<sup>th</sup> June 2007 at [www.mod.uk](http://www.mod.uk)

<sup>v</sup> *Military Industrial Complex*. Accessed on 27<sup>th</sup> June 2007 at <http://www.cdi.org/issues/usmi/complex/>,

<sup>vi</sup> Hellman, Christopher. 1999. *Fact sheet*. Accessed on 27<sup>th</sup> June 2007 at [www.cdi.org/issues/usmi/complex/top15FY99.html](http://www.cdi.org/issues/usmi/complex/top15FY99.html)

<sup>vii</sup> *Towards strengthening self-reliance in Defence Preparedness*, Kelkar Committee Report, under the chairmanship of Dr Vijay L Kelkar, tabled in the Parliament in April 2005

<sup>viii</sup> *The Military expenditure database*. Accessed on 29<sup>th</sup> June 2007 at [http://www.sipri.org/contents/milap/milex/mex\\_database1.html](http://www.sipri.org/contents/milap/milex/mex_database1.html)

<sup>ix</sup>, <sup>x</sup>, <sup>xi</sup> *SIPRI Arms Transfers Database*. Accessed on 29<sup>th</sup> June 2007 at [http://www.sipri.org/contents/armstrad/output\\_types\\_TIV.html](http://www.sipri.org/contents/armstrad/output_types_TIV.html)

<sup>xii</sup>, <sup>xiii</sup> Schaeffar, Daniel. Rachel Stohl. *Annual CRS Report Shows Five Year High in Weapons Sales*. Accessed on 27<sup>th</sup> June 2007 at <http://www.cdi.org/program/issue/document.cfm?DocumentID=3129&IssueID=84&StartRow=1&ListRows=10&appendURL=&Orderby=DateLastUpdated&ProgramID=73&issueID=84>

<sup>xiv</sup> Foek, Anton. 25 October 2005. *Shot down: lobby kills Brazil gun ban*. Accessed on 1<sup>st</sup> July 2007 at [www.corpwatch.org/article.php?id=12703](http://www.corpwatch.org/article.php?id=12703)

<sup>xv</sup>, <sup>xv</sup> Hartung, William D. 22 June 2002. *Private Military Contractors in Iraq and Beyond: A question of balance*. Arms Trade Resource centre. Accessed on 3 July 2007 at [www.worldpolicy.org/projects/arms/updates/FPIFJune2004.html](http://www.worldpolicy.org/projects/arms/updates/FPIFJune2004.html)

<sup>xvi</sup> Hartung, William D. Jonathan Reingold *The Role of the Arms Lobby In the Bush Administration's Radical Reversal of Two Decades of U.S. Nuclear Policy*. May 2002. Accessed on 5<sup>th</sup> July 2007 at <http://www.worldpolicy.org/projects/arms/reports/reportaboutface.html#AppB>

---

<sup>xviii</sup> Vicziany, Marika. 2002. *Supporting paper 8: Indian Defence Industries* (Research paper). Accessed on 22 May 2007 at [www.tiac.wa.gov.au/india-08](http://www.tiac.wa.gov.au/india-08)

<sup>xix</sup>, <sup>xix</sup> Ranjan A. Aroor S. 17 November 2006. *Why they don't line up for DRDO job interviews*. Accessed on 3 June 2007 at [www.indianexpress.com](http://www.indianexpress.com). This report also goes ahead to quote a former Professor at IIT Kharagpur, who says that DRDO work is not lucrative enough for students.

<sup>xx</sup> 16 May 2007. *Migration of Skilled Work Force Worries Indian Defence Sector*. Accessed on 31 May 2007 at [www.india-defence.com](http://www.india-defence.com)

<sup>xxii</sup> Joseph, P Chacko. *History of Arjun Tank Development*. 25 May 2007. Accessed on 3 June 2007 at <http://frontierindia.net/history-of-arjun-tank-development>

<sup>xxiii</sup> Bakshi, Jyotsna. April-June 2006. India-Russia Defence Co-operation. *Strategic Analysis*. Vol 30, no. 2: 449

<sup>xxiv</sup> Pandit, Rajat. 19 July 2006. F-16s to Pak worry IAF chief. Accessed on 10 June 2007 at <http://timesofindia.indiatimes.com/articleshow/1779070.cms>. This article mentions the purchase of F-16s by Pakistan from USA and the delay in procurement of 126 Multi Role Combat Aircrafts.

<sup>xxv</sup> Aneja, Atul. 2001. Navy defends Barak deal. *The Hindu*, 5 April . Accessed on 6 June 2007 at [www.hinduonnet.com](http://www.hinduonnet.com),

<sup>xxvi</sup> Shankar, Vinay R. 2006. Our DRDO and don'ts. *The Indian Express*, 15 November Accessed on 25 May 2007 at [www.indianexpress.com](http://www.indianexpress.com)