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**« ECONOMIC CAUSES OF EVENTUAL  
REARMAMENT »**

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With the collapse of the socialist experiment in Eastern Europe and the Soviet Union, the process of disarmament emerged at the end of the 1990s. Most studies have sought to assess economic dividends of this emerging peace. Globally, military expenditures have been reduced by a third over the last decade. While Russia and the United States have accounted for most of this reduction, some contribution has been made by other countries, especially those experiencing considerable economic downturns. The empirical conclusions are not so clear, because while the US achieved very good economic results, that was not the case in Russia. During the Cold War, Soviet military expenditures are estimated to have amounted to about 20%–30% of GNP in terms of administratively set prices but probably more than 60% in terms of market prices<sup>1</sup>, with 75% of investment in science ultimately going to the military sector. The military-industrial complex (VPK) was made up of 1100 production enterprises and about 920 research centres controlled by nine military ministries, which were themselves under the control of the Military-Industrial Commission of the USSR Council of Ministers. A large proportion of the VPK output, about 40% before the budget expenditure cuts, was represented by civilian goods (civilian planes and ships, 15% of tractors, 80% of motorcycles, 80% of washing machines, optical equipment, televisions). At the same time, several production units controlled by civilian ministries produced goods for the VPK (clothes, transport, medical facilities and equipment). The share of military production is, therefore, high, with about 15 million people working directly or indirectly for the defence sector. With production of civilian goods included, total employment which the VPK of the Soviet Union actually accounted for exceeded 20 million. According to estimates, about 5 million people were involved in production of arms systems alone<sup>2,3</sup>.

After the Cold War, the conversion program hardly took off the ground, because of the break-up of the Soviet Union and ensuing reforms in a situation of a very tight budgetary policies pursued by the first governments of the 90s. The defence industry is in a very difficult position due to a

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<sup>1</sup> Fontanel, J., Coulomb, F. (1998), Le succès de la conversion des industries d'armement, condition nécessaire de la réussite de la transition, dans *L'avenir de l'économie russe en question*, sous le dir. de J. Fontanel, pp. 99 – 113, Collection “ Débats ”, PUG, Grenoble.

<sup>2</sup> As a share in industry as a whole, VPK employment varied depending on the region: 35% in the Leningrad region, from 40% to 60% in the Voronezh region, the Kaluga region and the autonomous republics of Mari-El and Udmurtia.

<sup>3</sup> Brunat, E. (1998b), Transformation et conversion du système industriel russe et désordre : contraintes structurelles et créations d'activités, *Conversion*, n°4, décembre.

decrease in budget allocations, the loss of the R&D base and technological and production potential, as well as the weakness of the state.”<sup>4</sup>.

**Table 1. Changes in Russia’s general economic indicators**

	1992	1993	1994	1995	1996	1997	1998	1999	2000 (e)
GDP, % <sup>5</sup>	-14.5	-8.7	-12.6	-4.2	-3.8	1.0	-5.0	3.2	8.2
Industrial production, %	-18.2	-14.2	-20.9	-3.0	-4.0	1.9	0.1	8.1	9.0
Fixed investment, %	-40.0	-12.0	-27.0	-13.0	-18.0	-5.0	-6.2	1.0	17.7
Unemployment %	1.0	1.5	3.1	4.4	5.1	4.3	4.4	2.9	2.4

Source : Goskomstat.

Disarmament led to the destruction of the old economic system and social equilibrium in the countries of the former USSR, due to a profound economic crisis, which resulted in the severe shortage of investment. Following the global collapse of production since 1991 (in 1997 military production was 15%–17% of the 1991 output<sup>6,7</sup>), conversion in Russia has probably become the most important way to retain scientific potential and skills of the personnel engaged in design and production of equipment.

Maintenance or salvaging of technological potential of the Russian defence complex is a systemic political and social issue of extreme importance, because the collapse of output occurred with a more or less constant use of manpower.<sup>8</sup> The profile that the conversion process had at the beginning of the 90s is difficult to justify because it was not accompanied by industrial policy specifically adapted to different products and regions, as well as specific workforce constraints.

The absence of a more «dirigiste» and especially more pragmatic interventionist policy to offset fiscal policy, which had a restraining effect on the economy, inexorably – as a chain reaction – led to a collapse, which is criticised today even by the liberals who promoted this policy: according to Glybin each rouble of the military expenditure cut has resulted in a loss of between 1.5 and 2 roubles in industry in general. This phenomenon, seen as irreversible, proves extreme militarisation of the core of the former Soviet industrial system.

The defence industry conversion programmes in 1993-1995 aimed to combine minimum reduction in employment with utmost utilisation of the scientific and technological potential of the military-industrial complex through development of civilian applications: the programme priorities were oriented towards agricultural equipment, energy, naval construction, aviation, medicine and light industry. But the theoretical objectives were not translated into political policy or practical measures. Only the desire to gradually substitute national production for imports through support for dual technology was defined with a greater degree of detail: precision tools for diamond cutting, liquid crystal displays, fibre optics, medical equipment, etc. There was even an attempt to start international certification of certain products.<sup>9</sup> On the whole, however, this period saw a drastic fall in production and a very limited number of new activities related to the defence sector.

<sup>4</sup> Fontanel, J., Coulomb, F., Samson, I. (2001), Military conversion and transition in Russia, First Conference of Rutgers University on Defence and Peace, May, 10, 11.

<sup>5</sup> Goskomstat adjusts the GDP figure to allow for unofficial economic activity and non-monetary transactions. Moreover the externalisation of certain service activities, for example, those related to dismantling of big units of economic activity, helps to increase GDP compared with figures obtained by the method of calculation used in 1991 or earlier.

<sup>6</sup> Reduction in military production in the principal NATO countries is about 4% per year over the same period.

<sup>7</sup> Glybin, Y. (1997), On Some Aspects of Conversion at Russian Enterprises, in *Conversion of Military Enterprises, a practical approach*, W.G. Puppe, D.V. Sergeev, A.I. Nikkonen eds., pp. 3 – 7, NATO ASI Series, Kluwer Academic Publishers, The Netherlands.

<sup>8</sup> E. Brunat (1998b), Op. Cit.

<sup>9</sup> The TU 204 aircraft made by Tupolev, and the KA 32-1, MI 34 and MI 26 helicopters.

The programmes for 1995-1997 and even subsequent periods were thought out along the same lines, except that the need to develop civilian capacity in transport and communications was spelled out more clearly. What was new, however, was the recognition of the need to retain the technological core of the defence industry itself, if only primarily for the sake of preservation as such. Around four hundred companies were excluded from the privatisation programme and remained federal property. These enterprises are intended to constitute the key elements of Russian R&D and the basis of national technology. One cannot be sure, however, that the prolonged absence of clear vision in the matters of industrial policy can be immediately compensated by such privileged key elements, when they are composed of sectors far removed from, and hardly sensitive to, the signals coming from the market economy.

As regards the US, the excellent economic indices were not necessarily directly related to the reduction of military expenditure. In model simulations of defence reductions, there is a noticeable decline in GDP during the early years of the cut (known as military-Keynesian effects). In the longer run, however, supply-side effects take over and GDP regains strength. World model simulations, for example, predicted that there would be more consumption by the public at large among the leading NATO countries. This is a striking example of “guns or butter”<sup>10</sup>. The US emerged from the Cold War as the only military and economic superpower, while reducing substantially military spending and force levels. It obtained “peace dividends and investments” of reduced pressures on the federal budget, lower interest rates and expansion of investment.

In spite of this global reduction of arms spending, countries of South-East Asia began to progressively accumulate new weapons systems and their expenditures grew accordingly. One can find ample evidence of these basic trends in the databases maintained by the Stockholm Institute for Peace Research (SIPRI: [http://projects.sipri.se/milex/mex\\_data\\_index.html](http://projects.sipri.se/milex/mex_data_index.html)) and the Arms Control and Disarmament Agency, now the Department of Arms Control and International Security, a part of the US Department of State (<http://www.state.gov/www/global/arms/>).

We have witnessed six fundamental changes in the global military situation since the fall of the Berlin Wall in 1989.

1. Nuclear arsenal has indeed reduced the probability of a conventional war between nuclear powers with the nuclear threat reduced. However, recent developments have increasingly caused concern that progress in nuclear arms control and disarmament has stagnated, with rejection by the US Senate of the ratification of the 1996 Comprehensive Nuclear Test-Ban Treaty (CTBT), the failure of the Conference on Disarmament to open negotiations on a global fissile material treaty (FMT), the Russian Federal Assembly’s denial to ratify the START II Treaty and the controversy over anti-ballistic missile defence.
2. A fundamental change in the nature of threats, which have changed from the bipolar, client-based regional and territorial conflicts to conflicts over national independence, terrorism, immigration, corruption, money laundering, and ethno-nationalism. Today, the transition process engendered by the collapse of the Soviet system marked the end of direct confrontation between nuclear superpowers. The main threats will now be proliferation of mass destruction weapons, nationalities problems, controversial consequences of the economic crisis and the globalization process, as well as difficulty to reach international agreement on the world’s political and strategic rules. Consensus is emerging in the US in favor of developing and deploying limited National Missile Defence to protect the nation against attacks by a by “rogue states”, terrorists or mafias using a small number of long-

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<sup>10</sup> Klein, L.R. (1999), The Relationship between Disarmament and Development, and Some Policy Suggestions, ECAAR Papers, United Nations 1999 Symposium on Disarmament and Development, New York, p. 7.

range missiles launched. However, economic competition for world hegemony is over, as well as imperialist expansion in its primitive military forms<sup>11</sup>.

3. The rise in internal conflicts, especially involving violence by the state against civilian population, like in Bosnia, Kosovo, Somalia, Rwanda, Liberia, Sierra Leone, to name just a few countries, is really worrying. For Collier and Hoeffler<sup>12</sup>, the level of military expenditure is strongly influenced by the expenditure of neighbours. There exists an 'arms race multiplier' for low-income countries. Then, military expenditure is a 'regional public bad'. However, this effect must be deleted because rebellions are regionally contagious, but they are not deterred by military expenditure. For Peter Dunne and Sam Perlo-Freeman<sup>13</sup>, demand for military spending in developing countries depended on neighbors' military spending and internal and external conflicts. Democracy and population numbers are both related negatively to military burden, before and after the Cold War.
4. The tactical and strategic focus on «zero death» tactics in the Western strategy of war and humanitarian interventions is still dominant as regards a lot of potential conflicts. During WWII 214 people per day were killed, in the Korean War – 32, in the Vietnam War – 19, in Panama – 4, and in the Persian Gulf War – 0.7.
5. In the US, even after the cutbacks in procurement of the 1990s, real outlays fell no lower than the levels of the end of the 1970s–beginning of the 1980s. Less equipment is required. However, a fighter plane R&D program ran to about \$7 bn in the 1980s and to more than \$20 bn in 2000. The share of procurement in the US military budget is increasing rapidly, mainly due to the cost of weapons (\$170 million per F-22 aircraft). Then the economies of scale in the production of defence systems are reduced, resulting in much reduced equipment purchases absorbing a proportionately greater share of a smaller budget. The obvious alternative is the reduction of the number of suppliers, limiting competition for defence contracts to two or three firms.

**Table 2 - Prime Contractors in U.S. Defence Market Sectors**

Sector	1990	1999
Tactical missiles	13	4
Fixed wing aircraft	8	3
Expendable launch vehicles	6	3
Satellites	8	6
Surface ships	8	3
Tactical wheeled vehicles	6	3
Tracked combat vehicles	3	2
Strategic missiles	3	2
Torpedoes	3	2
Rotary wing aircraft	4	3

Source: General Accounting Office (1998); Undersecretary of Defence for Acquisition and Technology (2000)

6. There is a revival of economic means as a form of strategic conflict. The concept of globalization includes a lot of complex conflicts that introduce the idea of equivalent management for enterprises and countries<sup>14</sup>.

<sup>11</sup> Fontanel, J, Coulomb, F. (2000), Disarmament in the Next Millenium, Defence and Peace, Vol. 11, n°1, 2000 (pp.105-125).

<sup>12</sup> Collier, P., Hoeffler, A. (2001), Regional Military Spillovers, First Conference of Ruthers University on Defence and Peace, May, 10, 11.

<sup>13</sup> Dunne, P., Perlo-Freeman, S. (2001), The Demand for Military Spending in Developing Countries, paper presented at the Cesa/IDN International Conference on Defence Economics and Security in Mediterranean and Sub-Saharan Africa, Lisbon, Mimeo, Middlesex University, April.

<sup>14</sup> Fontanel, J. (2001), L'action économique de l'Etat, Pour Comprendre, L'Harmattan, Paris.

In October 1999, French Prime Minister Lionel Jospin gave a speech at the French Institute for Advanced Defence Analysis, emphasizing the need to build a European system of security and defence as a means of advancing disarmament and consolidating advances in world politics towards a system controlled by peaceful norms and international law. He noted that France, along with many other countries, had undertaken to reorient its strategic and defence policies towards an environment focused on the future, not on the past, which had been accompanied by an active diplomacy that focused on reduction of chemical, biological, and nuclear weapons stockpiles (and their atmospheric testing). He concluded by noting: “nuclear weapons will not become a battlefield weapon” It is clear from this official proclamation that France remains focused on and committed to a policy of disarmament.

However, in France and around the world, the new military budgets of the Bush administration – both their modest increases and the scope of planned developments – have drawn renewed attention to the potential rebirth of expensive and competitive armament procurement policies. In addition, the rapid growth in Asian military spending, the broad purview of the military in China, along with the increasing tensions between China and its neighbors, as well as among other Asian societies, have fuelled fears of rapidly escalating military competition.

The following three fundamental questions, which have guided studies of the putative links between the economic conditions and defence policy as well as thinking on the economics and disarmament, reemerge as salient:

1. Guns and butter? What are the opportunity costs of military spending? During periods of economic growth this question may seem to disappear, or to become less salient, but in the period of economic downturn, these tradeoffs are put in bold relief. Thus, a reading of global, as well as regional and national economic conditions may be necessary to gauge correctly the severity of the impact of this tradeoff. A growing economy may actually reduce the pinch of such tradeoffs.
2. Bang for the Buck? What new synergies between private and public enterprises will evolve and how will they affect the cost structure of defence? Does the civilian supply of military goods produce improvement of economic efficiency, thus allowing more arms to be obtained with the same amount of money? It is easy to see rising costs but equally easy to ignore some of the potentially transformative cost savings.
3. What is the right level of spending? Given that societies have military as well as nonmilitary goals but relatively limited resources, even if they are growing, how much should governments allocate to defence even in an epoch in which the overall level of threat is diminished but the uncertainty of particular threats is high? It is the main question of the policy of arms race.

Using these yardsticks, can we see evidence of a renewed competitive armament process, or, as many may argue, do current modest increases in spending simply represent a counter-cyclical process inevitably brought about by the last ten years of disinvestment? We examine these questions in terms of the fundamental theoretical issues connecting the economy and the military during periods of investment as well as disinvestment. We conclude by examining the course of rearmament as well as the transient and cumulative character of this new investment.

### **New arms race or counter-cyclical institutional spending?**

Has the basic trend towards disarmament, which has reduced global levels of military spending by a third, changed in the last few years? After a period of clear downward evolution in military spending, is a new trend emerging?

## The Disarmament Process

We highlight five strong tendencies in military spending since the end of the Cold War:

1. The reduction of military spending has been important and significant. The cuts have persisted in part because military requirements have changed so dramatically. As a result, however, there has been a sharp decline in military R&D.
2. The arms industries themselves reeled under these cuts, aggravated by overproduction and market constraints. In some cases, arms exports were “pauperizing”, with real prices inferior to real costs. A few companies survived this crisis, in fact were strengthened and became dominant. But many were eliminated or could no longer be heavily subsidized.
3. Industry-government joint ventures consolidated operations in order to create and maintain economies of scale in such market conditions, particularly in Europe
4. The consolidation of the American arms industry was rapid and profound, in spite — if not because — of the reduction of military spending around the globe. This was achieved partially through the normal process of mergers and acquisitions dominant in contemporary markets. Indeed, 30 of the 100 largest defence firms from a decade ago are no longer independent, recognizable players in the market.
5. The US federal government has provided considerable assistance (\$2 bn over the period) to this rationalization process, along with the accompanying programs of cost reduction. This policy resulted in the higher level of concentration, including that of research and development, than in other countries. Indeed, the government acts as a monopolist of sorts, allocating market shares and anointing official suppliers of different types of weapons systems, a process, which, once instituted, is protected for at least a while from pervasive competition. These measures secured strong profitability of the increasingly concentrated defence sector, despite the shrinking market. In Western Europe as well, state intervention in the defence market remains strong. France, for example has over 10,000 subcontractors in the defence sector, but only 25 sizable companies, five of which account for two-thirds of all the business.

## Is military spending on the rise?

According to SIPRI (as shown in Table 1) from the end of the Cold War to 1998, world military expenditure declined significantly. Asian expenditures grew about 27% over the period, but in Russia and the former republics of the Soviet Union total expenditures fell as much as 90%, by some accounts, while the US spending at constant prices had fallen from almost \$400 bn to around \$250 bn by the end of the 1990s.

**Table 3 – Military spending of the largest countries, billions of 1995 dollars**

Country	1989	1992	1994	1996	1998	1999
USA	374	331	296	264	256	259
Russia	240	48	40.5	23.4	18.1	22.4
China	10	14	12	13.7	16.9	18.4
France	52	51	50	47	46	47
UK	43	39	37	34	33	32
India	8	7	8	8	9	10
Pakistan	3	3.6	3.4	3.6	3.2	3.3
South Africa	5.2	3.4	3.2	2.9	2.3	2.2
Japan	47	49	50	51	51	51
World	1050	817	762	708	704	719
Africa	12.2	9.8	9.5	8.9	9.5	10.6

America	406	339	326	294	287	294
Asia/Oceania	104	124	127	134	137	139
Europe	483	275	253	226	221	226
Middle East	37	50	47	46	49	49

Source: SIPRI 1999 and 2000

This reduction has continued but primarily in Russia (which saw a reduction of 55% in 1998 alone, in real terms).

**Table 4 - Russian military expenditures as a percentage of GDP**

Years	Total military expenditures in billions of current rubles	GDP (current rubles, bn)	Total military expenditure as a percentage of GDP
1992	1.05	19.1	5.5
1993	9.04	171.5	5.3
1994	35.9	610.7	5.9
1995	63.2	1540.5	4.1
1996	82.5	2145.7	3.8
1997	105.0	2521.9	4.2
1998	85.6	2684.5	4.1
1999 (e)	171.1	4476.0	3.8
2000 (e)	212.0	5350.0	4.0

SIPRI Yearbook 2000

**Table 5 - Russia output and employment in the defence complex, %**

Years	Military output	Civilian output	Total output	Total employment
1991	100	100	100	100
1992	49.5	99.6	80.4	90.3
1993	32.5	85.6	64.6	79.9
1994	19.9	52.6	39.2	78.2
1995	16.6	41.3	31.2	67.1
1996	12.8	29.1	22.7	58.6
1997	9.4	28.7	19.7	52.7
1998	9.9	26.5	19.2	47.3
1999	13.5	34.1	25.5	44.4

SIPRI Yearbook 2000

If we examine the share of military spending in GDP, the US has shown a decline from 6% in 1985 to about 3% currently. We shall point to two small glitches in this analysis, however. The first is related to accuracy of estimation of defence spending, long a sore point with defence analysts. SIPRI uses constant prices to arrive at a decline in spending, whereas NATO, using current prices, comes up with growth over the same period. The second glitch is the factor composition of defence purchases, which has not been constant over the period under consideration but has adapted to the new strategic environment. Privatization of R&D, for example, allows growth in procurement, even in the face of declining budgets. This aspect of military spending is hidden by these kinds of aggregate analyses. In this spirit, (see Table 5) some have argued<sup>15</sup> that there has been a substantial increase in arms spending in the United States, as the military has become more broadly funded. The last figures from the Clinton exercise do not confirm this hypothesis. However, the Bush administration seems to be set on increasing military expenditure, in particular on the ABM program. This trend is even stronger in China, where the People's Army takes on a variety of civil functions, ranging from banking to building the technological infrastructure.

<sup>15</sup> Markusen, A. (1999), The rise of world weapons, Foreign Policy, Spring.

The budget approved for FY 2001 is \$310 bn, which, at constant prices, is very close to the average annual budgets during the Cold War. During the presidential campaign, George W. Bush was discussing the possibility of an increase in defence spending by \$45 bn over the next ten years for modernization of the existing weapons and production of more lethal and mobile new generation weapons.

**Table 6 – US Military Spending Projections, at constant 2000 prices, proposed by Clinton administration, \$bn**

Expenditures	1999	2000 Adopted	2001 Requested	2002 Planned	2003 Planned	2004 Planned	2005 Planned
Total	268.9	287.9	291.1	288.6	288.2	288.3	288.9
Personnel	73.6	76.1	75.8	76.0	75.7	76.0	76.0
Operations & Maintenance	99.8	108.7	109.3	105.5	105.0	105.4	105.3
Purchases	49.8	55.1	60.3	62.0	64.4	64.0	65.8
R&D	37.3	39.0	37.9	37.7	36.3	35.4	33.7

Source: SIPRI, 1999, p. 281

The military research and development has also contracted sharply. In 1998, the R&D total was \$60 bn, with US spending \$38 bn, NATO – \$49 bn, the OECD countries – \$53 bn. This reduction came to an end as the US decided to step up its effort, focusing on research in the area of anti-ballistic missile defence. In the United States, aviation and avionics account for 45% of the R&D effort, about the same amount as the ABMD and the nuclear program combined. The US spending on military R&D, for example, is 7 to 8 times as high as in France, its closest “competitor” in this area.

**Table 7. R&D expenditures in the military sector, 1986-1997 (millions of 1995 dollars at 1995 exchange rates.)**

Country	1986	1989	1992	1995	1997
USA	51000	51000	44000	37000	38000
France	6200	7100	6800	5200	4600
UK	5400	4100	3500	3300	3300
Germany	2300	3100	2400	2000	2100
Japan	800	1100	1400	1600	1800
Italy	540	750	600	560	

SIPRI Yearbook 1999

Finally, in 1998, international weapons sales reached almost \$22 bn for conventional weapons, a market roughly equal to that last seen in 1994, but far reduced from its highs during the Cold War.

This rough reading of the raw data — but any data are raw — does not support the impression of a re-emerging and dangerous arms race, even if there is some worrisome information. If the data don't support the notion that an arms race has been resumed, one has to pose a question what aspects of theory are not supported.

### **Are the theoretical prerequisites for an arms race present or anticipated?**

Dominant economic thinking considers economic development to be pre-condition for disarmament. However, the arms race model introduced by Richardson to explore the arms buildup

leading to the First World War shows a different understanding of the potential positive and negative influence of economic development on the course of a competitive armament process.

## Arms race models

War is no longer the principal security concern in contemporary societies, even if the threat of violent conflict is always present. Capitalism for a long time considered Communism a major threat. Indeed, during the cold war it was considered enough of a threat to help define and mould the identity of the so-called capitalist block. Disappearance of Communism as a threat undermined the prime motivation for armament at the same levels. This resulted in several trends, often described by those in the defence industry as crises:

1. First and foremost, a crisis in terms of the drastically falling demand for weapons systems;
2. A crisis of national identity, especially in the context of the ongoing globalization of economic interactions.
3. A technological crisis resulting from the need to compete in the private sector, without huge subventions to distort competition, with organizations often more flexible, with reduced cost structures.

The first arms race models demonstrated that defence budgets would grow in preparation for war, and showed how this growth would escalate across rival countries. Intriligator and Brito<sup>16</sup> posed this question differently, asking whether an arms race would inevitably lead to war. They examined three major aspects, each of which operates simultaneously with the other in their analysis, now considered classic.

1. The military spending of rivals will stimulate military spending via a positive feedback relationship. Today, this evolution has been obviated, however. If rivals are not threatening, it seems implausible that spending patterns will escalate in a competitive fashion. As a result, the levels of military spending of rivals and potential enemies are not especially informative in a period which enjoys a détente of considerable scope and extent. Further, in a new era, it is not entirely clear who potential enemies are, even if it does become clear that old enemies are no longer threatening. Moreover, we have learned from literature on the arms race that theory has not always been in line with the idea of a lockstep competition in any case. Military budgets are often determined as much by internal domestic political considerations as by foreign policy. Even in the foreign policy area, policy choices are often constrained and enabled by strategic as well as tactical decisions made in consultation with allies.
2. The cumulative effect of military spending has been conceptualized as a burden on the economy. Although this is not entirely clear in all cases—spending can of course stimulate the economy as well—to the extent that there is a burden, it will be harder to carry during a period of economic difficulties. In a situation where GDP growth rates around the world are almost universally positive, this burden becomes lighter. If we believe that military spending stimulates productivity growth, we reach a similar conclusion: it is easier to support higher levels of spending if they are desired.
3. The rationale that all national governments offer for their military spending is national interests and the existence of real and potential threats to the nation or the world. Today, major powers pose few threats to one another, especially compared with earlier, historical

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<sup>16</sup> Intriligator, M.D., Brito, D.L. (1989), Arms Control, in Kolodziej & Morgan, Eds., Security and arms control, vol.1, Wesport, Greenwood Press.

periods. This means that disagreements and conflicts that do emerge are less likely to pit major powers against each other in the first place, and less likely to broaden to a global from a regional scale, something that was decidedly not characteristic of the Cold War era.

Thus, of the three conditions for an arms race, only one is plausibly met. There is no strategic competition among rivals in the arms sector. Nor is there a high level of grievances or long-standing threats. It is true, however, that the burden of military spending is reduced by widespread growth in the global economy.

### **Economic factors of armament or disarmament**

Military expenditures can be viewed as partially exogenous and partially endogenous so as to reveal several important facets of the economic determinants of military spending. Since a strong economy produces sizable tax revenues for the state, it becomes easier for decision-makers to allocate resources to the military in prosperous periods. This is counterbalanced by the distaste that the public generally has for military spending. However, it is clear that there is a synergy, especially in wealthy times, between the non-military and military parts of the federal budget. In lean times this relationship may be strongly reciprocal, with spending in one crowding out the other. But in richer periods, budget constraints are less tight, and crowding out may not always occur. In general, however there is always some constraint, one expressed by the stylized fact of a necessary choice between guns and butter. If there is more than enough butter to go round, this constraint may become very weak.

In general, the wealth effect is likely to permit — but not require — growth in the military budget. As speculative values are augmented — via petrodollars or transferable equities or currencies — this tendency may be augmented. Thus, the presence of a wealthy, functioning capitalist economy may actually be beneficial at a host of levels for the health of the military budget. At the same time, wealth and legitimacy may also be symbiotic. For liberal theorists of globalization, democracy, institutional order, and commerce will drive out the unwanted war monster. If trade flows across the globe, it is less likely that soldiers and missiles will have to follow the same pattern. The trumpeted victory of globalization may also carry with it heavy burdens not entirely apparent, unless it also solves the problems of inequality and poverty. Yet these monsters also appear to be on the loose, despite much protest to the contrary.

Indeed, new information technologies will create a new form of foreign policy, which reinforces the beneficial effects of trade, reduced military spending and increased productivity. But this may be all for naught, unless we recognize that the most violent conflict around the globe today is not conflict between sovereign nations but is, rather, ethno-national, civil, or communal. Rather than the threat of regional client conflicts spilling over into a global domain, we are faced with the threat of widespread outbreaks of civil and ethno-national conflicts in localized arenas, but at levels that are very intense (with millions of victims in a short period of time). These conflicts pose perhaps the gravest threat.

Some see in these trends the seeds of rearmament, however wrongheaded that response may appear. Yet, nothing herein would support the notion that there is a new arms race rather than a creeping growth of arms spending in response (often misguided) to general problems.

### **The presence of creeping rearmament**

A period of so-called creeping rearmament is supported by several factors: economic, political, strategic, and even ideological. Increased economic competition brings with it the reduction of costs, better information about fundamental requirements on defence, quest for intensification of

international cooperation, often privatization of national companies, and an intense search for economies of scale. These scale effects interact synergistically with a considerably larger set of potential gains from collaboration, as the number of potential allies increases and as the threats and disincentives are virtually eliminated. Thus, it seems obvious now that the theory of alliances is especially important in peacetime, maybe even more so than during periods of conflict.

Three new factors need to be examined, however, in any contemporary evaluation: the invention of new weapons systems, new management tools, and new strategies. All three characterize the contemporary epoch.

## **New Weapons Systems**

Old weapons systems have not disappeared; indeed they are extensively present, especially in Russia and other countries where the costs of disarmament have been more severe than predicted<sup>17</sup>. Indeed reliance on nuclear defence has several linchpins. First, it is cheaper than conventional weaponry, once the decreased costs of development are paid. It can be implemented without large labor costs. Moreover, since the goal is conflict avoidance/deterrence, the costs of fighting a war are essentially nil and do not engender any spending. Finally, as the superpowers have finally recognized (while France and other nations recognized it long ago), we can implement a nuclear strategy with only a few nuclear weapons; more isn't always better. So, even small stocks of ancient weapons can be useful in the long term but also during transition to newer weapons systems under development.

Even if the putative geostrategic ambitions of the US are not clear, it is evident that this country has a staggering military superiority. Even so, if the US wishes to play the role of a world policeman, it has insufficient resources and capacity. Moreover, the strategy of the Desert Storm type of operation: massive air strikes followed by massive ground action, might prove to be of limited availability and use. Even if this strategy worked in Bosnia — along with the assistance of the Croats — it will not always be an appropriate plan of action. Allies will not always be so willing to join in these activities. In particular, the political environment may not always permit such a large coalition to coalesce. Particularly uncertain are the roles that China and even Russia will play, should such possibilities arise in the future.

Today, the art of warfare will be influenced more by the evolution of international politics than by technological progress. Instead of fighting between them, or even threatening each other, the great powers are more likely to get drawn into localized conflicts, over economics and territories. This strategy is not completely exclusive and unique, there is also an opportunity for a superpower to use its temporary supremacy to deter new arms race or to heighten its aggressiveness in order to obtain some military or economic advantages. In the same way, the difference between offensive and defensive weapons has its clear meaning only in theoretical situations, even if the surprise and tactical exercises keep their efficiency. A conflict, thus, might not become a war of attrition. Because of the transformation of the political strategic environment, it becomes essential again to take into account threats that may weigh on the civilian economies and enterprises. This, leads us to come full circle to reflect on some similarity to the early 20th century as well, where commercial interests were especially paramount. In this sense, the American strategic situation is more troubling for its European and Asian partners than its purely military superiority.

For proponents of the “revolution in the military affairs” (RMA), strategy requires an especially effective use of the military, materiel, and information systems, while minimizing or eliminating the

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<sup>17</sup> GAO (1999), Weapons of mass destruction. Effort to reduce Russian arsenals may cost more, achieve less than planned GAO/NSIAD-99-76, United States General Accounting Office, Washington.

loss of life. At the same time, to be successful, one has to be relatively independent of allies as well. Clearly the source of this revolution has been the massive and rapid development of new technologies, often funded initially by the government but widely adapted and reinvented by commercial enterprises. It is essential to have in place powerful new networks of information, which themselves may transform the day-to-day mission of the military. There is a large share of defence output accounting for electronics.

President Bush is strongly committed to deploying Missile Defence (MD)<sup>18</sup>. An announcement is expected later this year, revealing the form of MD to pursue, pledging more money for research and development and larger investment in a wider range of missile defence-related technologies. The longer-term goal is the elimination of the threat posed by ballistic missiles to USA. Deployment would take many years hence. The MD system will not be deployed before 2007 for the system of land-based interceptors and 2011 (at the earliest) for the sea-based Aegis systems. Space-based directed-energy weapons could be deployed in an even more remote future. As far as Bush is concerned, this system must be deployed at the earliest possible time for USA and the Asian allies. The program mainly intended for countering the developing missiles capabilities of North Korea and Iran would cost about \$100 bn. This means a new generation of weapons, a new space arms race and huge R&D outlays. However, the deployment is not imminent and it is not inevitable, bearing in mind the reduced threat from “rogue” states, budgetary and technology constraints, national political changes and the positions of China, Russia and allies.

Thus, information becomes more important than materiel. Three technologies stand behind this development: quantification of strategic and logistic information, computer programs capable of handling this information easily across networks in real time, and a global system of ge-positioning information available to decision makers as well as commanders at a moment’s notice. This system of defence implies that the cost benefit structure of potential adversaries is identical to that of potential defenders. If such an assumption does not hold, the liabilities of such an approach become more apparent. If the loss of human life is relatively unimportant or if the current international norms are ignored, suicide missions to inflict collateral damage become more meaningful threats. Indeed, it is this kind of threat that has provoked the US into major new (or renewed) initiatives to combat “terrorism” as well development of ballistic missile systems.

## **New management tools**

The new management is based on the opening of markets, cooperation, and rationalization of cost structures in the framework of a market system. We no longer live in a world in which corporations produce solely for the Pentagon, with the latter’s budget now reduced by a third. As a result, many things that were previously developed solely for the defence market are now developed with the private and global market in view. These businesses have been converted into more private market-oriented corporations but at the same time kept their government and defence contracts. In the US one of the peace dividends has been the conversion of defence industries into more profitable enterprises which produce a broader range of goods and services and have a broader and more extensive set of customers. The use of civilian contracting approaches by the Pentagon, in the US, has accelerated this transition, and made these corporations adapt to a fluid marketplace.

Since the production of weapons is not only characterized by high profits but also by extreme costs of research and development as well as large economies of scale, export of weapons systems can help to reduce unit costs, increasing the effects of the training and subsidizing part of the new strategy of independence. The essential argument in favor of the national monopoly of the defence

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<sup>18</sup> Pullinger, S. (2001), *Missiles Defence : Preserving Strategic Stability*, Centre for Defence Studies, London, n°5, April.

industry rested on the idea of the supremacy of national interests. Moreover, a strong industrial base was regarded as an essential condition for national political independence and political power. However, the autarkical production of weapons is both costly and dangerous, and inaccessible to most countries unless they are willing to forego economic growth, which may itself endanger their safety in the long run. European countries, for example, have to make significant economic choices in this regard, as budget constraints appear to be tighter for them than for the US. One strategy would simply be to rely on the Americans. Another might be to adopt a position of relative neutrality. However, cooperation is a third possibility. Hartley and Cox (1992) show that a liberalized competitive market, with common purchases by a specialized Agency would lead to average savings of about 6%.

The ongoing phase of mergers and acquisitions in the aeronautics field is well known and important. Frequent joint marketing and development agreements among the American, Chinese, Russian, and European manufacturers of these technologies are no longer exceptions to the rule. Lockheed-Martin has worked jointly with Khrounitchev and Energia to market Proton rockets around the globe. Boeing has similar agreements with Ukrainian Zenit. In these agreements, the Americans might play a dominant role, just as the Germans did in the merger of Daimler-Benz with Chrysler. One certain result has been the increasing domination of a small number of defence firms globally: Lockheed-Martin-Loral, Boeing-McDonnell-Rockwell, Raytheon, Texas Instrument-Hughes provide some salient examples. In a situation of continuing excess capacity, such aggregation is likely to persist in the short run, even if it entails normal risks to overconcentration in the long term. Moreover, the level of productivity that this approach requires builds on a resource base and infrastructure that has by and large been already paid for. It would simply be too expensive and prohibitive to start afresh from ground zero.

Satellites provide a good example, in which, in a reversal of classic roles, the military are able to piggyback on commercial endeavors, saving lots of money in the bargain. But this raises the question of whether the firms themselves are actually acquiring massive amounts of military capacity, which they alone control, even if they are willing to rent it out occasionally to the military. Before 1990s, the dual-use of hi-tech was dominated by the military sector, now it is dominated by the civilian sector. There has been an explosive growth in space-based commercial communications systems over the last decade, but, surprisingly, the military share of missiles and space vehicles has also increased. Today, military customers account for less than half of the sales of U.S. aircraft industry, which has never happened since the 1930s. However, Pentagon is putting forward the idea of replacing currently flying satellites by commercial ones. The important synergy effects produce a reduction of costs (scale economies), an enlargement of technological choices, a new research in profit-earning capacity and greater economic flexibility. Reduction of costs allows the purchase of more products with the same outlays, in order to improve “the bang for a buck”. Generalization of this situation is not possible for two main reasons. First, the shipbuilding industry, because of its strategic capabilities, such as nuclear-powered propulsion or submarines, is clearly a defence industry in the United States, with little commercial activities. Second, globalization of the American firms can reduce their own feeling of patriotism and give them an exorbitant military power in the choice of their customers. The risk does not exist today. But what about this risk tomorrow?

The implications for Russia’s industrial policy and its military-industrial complex are far-reaching. Russia’s high-tech sector must prepare itself for entering the global innovation networks, where large corporations form alliances to market their innovations.<sup>19</sup> Russia has to offer a large potential market and skilled labour. Realisation of this potential seems to be a question of courageous

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<sup>19</sup> Lock, P. (1998), The role of civilian high-tech and international co-operation for the efficiency of the defence sector, *Conversion*, n°4, décembre.

corporate concentration within Russia capable of joining the global “players”. Any attempt to seek a “late-comer” path shielded by protectionist policy would be self-defeating because the volumes of venture capital which are internationally invested in innovation are several times larger than any late-comer can hope to be able to invest under the best circumstances. Russia’s defence sector urgently needs an industrial policy background that will allow exploiting the potential of civil-military synergies which other comparable countries increasingly rely upon<sup>20</sup>. It has to be admitted, though, that such a step requires – not only in Russia – change in political attitudes and the technological culture in the defence sector<sup>21</sup>.

An error could be committed if the idea of international co-operation is side-tracked and if technological improvement is to be undertaken outside the normal civilian processes.

The Russian process should be linked to:

- structural changes
- overall modernisation of the country on a technological basis,
- maintenance and improvement of the overall level of technology
- a continuous flow of minor innovations.

The objective henceforth consists in several points which relate the concept of conversion of the armament industries in Russia to the general question of the transformation of the whole system and questions of social policy and employment:

- maintenance of a high level of security from the standpoint of maintaining equipment ;
- preservation and modernisation of high-level technology is necessary ;
- training of management and scientific personnel who continue to underestimate the complexity of market reflexes and the necessity to re-think institutional development and the legal framework ;
- government monitoring of co-ordination and promotion of technological development.

All these points taken together should be viewed in the framework of a differentiated and pragmatic industrial policy which takes into account grass-root conditions (in the sense used by E. Mason), of the preservation and development of technology oriented towards civilian outlets, as well as the need to secure certification and quality recognition of products.<sup>22</sup> The involvement of regional authorities is essential in this respect in order to reactivate the principle of localised certification («Oboroncertifikat»)<sup>23</sup>. The authorities must as a matter of urgency announce a government scientific and technological programme in order to arrest the intellectual haemorrhage and avoid a situation in which regions pursue their own industrial and monetary policies, which are well removed from the general interests, thus threatening the unity of the Federation.

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<sup>20</sup> Brunat, E. (1998), Conversion of defence industry and systemic transformation: an integrated approach in Russia, *Defence and Peace Economics*, Special issue, n°4, Vol 9, York, UK.; Brunat, E., Sanchez A. (2000), Reestructuración Industrial en Rusia, in *Reestructuración Industrial en las Economías en Transición*, livre édité par le GATE, le ROSES et le GASI, pp 69 – 90, Fiatc Seguros, Universitat de Barcelona, 206 p.

<sup>21</sup> Lock, P. (1998), Op. Cit.

<sup>22</sup> E.Brunat, (1998b), Op.Cit. ; Brunat, E. (1999), Corporate transformation and specificity of assets in Russia, International Conference « The Emergence and the restructuring of Corporate Groups in P.R. of China », Hong-Kong University, November 4 – 5.

<sup>23</sup> Y.Glybin , 1997, Op. Cit.

## New strategic thinking

The US is the world's unrivalled superpower. The challenge is to preserve national competencies and capabilities in the face of ever fewer programs. Incentives of R&D are problematic, with the large uncertainty about the nature of DoD demands, the need of a radical acquisition reform and the industrial bets for defence contractors. There is an idea to reinforce the role of Europe in the global security management, but a stronger Europe will undoubtedly change the balance of power in transatlantic decision-making. Russia with its nuclear capability is still a major power that matters, It has the industrial and scientific capacity to spread conventional and unconventional technology around the world.

**Table 8 - START I aggregate numbers of strategic nuclear delivery vehicles and accountable warheads, 2000**

Category	Russia	Ukraine	Ex USSR	USA	Final limits 5 December 2001
Strategic nuclear delivery vehicles	1338	59	1397	1451	1600
Total treaty-accountable warheads	6472	526	6998	7763	6000
ICBM and SLBM	5876	270	6146	6185	4900

*SIPRI Yearbook 2000, p. 456*

New strategic thinking cannot focus solely on politics among sovereign states. Certain threats do have a state-based nature and must not be ignored. For example, the US, Libya, Iraq, and North Korea answer this description. And these threats account for the lion's share of strategic budgets. At the same time, peace maintenance may be equally difficult and important but currently accounts for less than 1% of contemporary budgets. Human rights and democratic institutions also serve the cause of peace perpetuation. Thus, strategic interactions may move, more appropriately, to the arena of discussion and enforcement (war criminals, embargos, for example). Peace-keeping activities have new alternative means of responding to emerging crises. There are economic costs and benefits from the perspective of financial resources. For Klein and Marwah<sup>24</sup>, a standing army will cost between \$50 bn to \$100 bn per year. For Parai<sup>25</sup>, standby forces which UN member states take pride in appear to be economically the most efficient means of providing UN peace-keeping, compared with a feasible alternative to a UN standing army or police force. They require no major additional new resources for peace-keeping. A draft budget and contributions by participating members reimburse the member states that contribute to the missions of peace-keeping forces. A standing UN army remains unacceptable to many member states. Moreover, Klein and Marwah put an emphasis on the issue of whether the UN peacekeeping efforts are sufficient vis-à-vis the forces of the main nuclear superpowers and the lack of political will.

In a fundamental way, the new American strategy is based on the success of globalization. In his State of the Union Address (January 27, 2000), former U.S. President William J. Clinton noted that a new defence would be based on new networks of nations in which he saw the US as the center: "We must admit that we cannot build our future without helping others to build theirs."

Three things are required. The first one is the need to reach a consensus on the expansion of international commerce, especially as it pertains to the opening of markets in less developed societies. At the same time, local norms and standards may stand in the way of such opening, as

<sup>24</sup> Klein, L.R., Marwah, K. (1996), Some related economic aspects of peacekeeping operations, in Gleditsch (ed.), *The Peace Dividend*, North Holland, Amsterdam. Klein, L.R., Marwah, K. (1997), *Burden Sharing in Support of the United Nations*, Yale University Library ([www.library.yale.edu/un/burdnshar/](http://www.library.yale.edu/un/burdnshar/)).

<sup>25</sup> Parai, L. (2001), Economic cost and benefit aspects of alternative peacekeeping options, *The First Annual Research Conference on Defence and Peace ectoprotces*, Rutgers University, May 10-11, 2001.

evidenced by the “battle of Seattle” and other extensive anti-WTO protest movements. It is the heart of the new strategic thinking. National security is a fundamental part of the US economic policy (funds given by IMF, arms transfers, decisions on the capital volatility, etc.). Second, institutions that establish, promote and safeguard democracy as well as domestic tranquility must be supported. There is some difficulty in mobilizing democratic states in the regional wars. The main problem is recognition by superpowers of their mutual responsibilities and interests. Integration of former adversaries into such international organizations must be accomplished fast. Finally, it will be necessary to achieve some degree of agreement on the moral order. This will be difficult, for in spite of globalization, a wide diversity of goals and opinions is still evident. Indeed it is exactly the confluence of democratization and globalization that has nourished this diversity.

Perhaps for Clinton — and even for Bush — each nation is like a large company competing on the world market. The concept of defence thereby expands beyond the military sector, and widely beyond what is conventionally thought of as weapon systems. Defence includes technological domains as well, especially as they relate to information and information management. There was a significant decline in U.S. weapons systems procurement in the 1990s and reduction in the number of prime contractors. However, decline in the sales of most U.S. defence industries seem to have been modest, with exports booming and concentration increasing drastically. The U.S. defence industry does not seem to be mired in the economic crisis.

## Conclusion

Technological change has forced upon contemporary decision-makers the requirement to reorganize world politics. The postindustrial society, especially evolving into an information society, will significantly modify institutions that were inherited from the industrial age. This holds true for the institution of the arms race. The arms race of the future will not be a returning of the arms race of the past. In these terms, it is easy to reject the notion that an arms race has returned. The fundamental hostilities and grievances that motivated the fear and threat behind the arms race during the last half of the 20th century simply either no longer exist or are considerably muted below any appreciable threshold. On the other hand, contemporary strategies and weapons are less centered on the public and military domain and are derived more clearly from the private sector’s strength. As a result of this technological imperative, technological as well as political economic grievances may emerge anew. However, it is clear that many of the tools of future competition will have dual uses, with the primary use and broadest markets in the private sector. As these capabilities are diversified, it is easy to see that transformation costs of taking private technologies into public domains, such as defence, will not be considerable relative to developing them afresh in isolation.

It would be wrong to talk about a new global arms race, because at the global level the United States has convincing and overwhelming military superiority. To have a race — in the proper sense of the word — at least two contestants must show up at the start line. At the dawn of the 21st century, despite the many projections to the contrary during the last part of the 20th century (see P. Johnston), the U.S. stands alone in terms of military strength. Asia may be a small exception to this at a regional level, where accelerating arms spending seems widespread as well as competitive. But it is not yet clear whether this will have enormous global implications. The main point, however, is that recognizing that there is no (old) arms race reemerging, even if it is displaced, does not eliminate the considerable potential for a newer form of rearmament which is based on entirely new strategies and technologies, many of which were primarily based in the private and commercial sector, even if they were frequently paid for by central governments.

Economic problems will play a central role in the shaping of future international relations. Indeed, wars are caused by nationalism, racism, genocide, but also by inequalities, domination,

pauperization and inequities. Without a real will for world democratization and poverty eradication, the planet Earth will remain insecure and disarmament an eternally recurring hope, regularly reappearing in economists' thoughts. Conversion and disarmament ensure peace only if a long-term economic development is established. The short-term goal for disarmament is not economic prosperity, but peace, and in the long run it requires international solidarity. Development is certainly a condition for peace. Disarmament will be a stage on the road to development, if it allows inequalities and domination effects reduction, and increases the level of satisfaction of human needs (the « entitlements »)<sup>26</sup>.

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<sup>26</sup> J.Fontanel, F.Coulomb, I.Samson (2001), Op. Cit.

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