



HAL
open science

The economic reorganization of the military sector

Jacques Fontanel, Fanny Coulomb

► **To cite this version:**

Jacques Fontanel, Fanny Coulomb. The economic reorganization of the military sector. Cahiers de l'Espace Europe, 2003, n° 15. hal-02553445

HAL Id: hal-02553445

<https://hal.univ-grenoble-alpes.fr/hal-02553445>

Submitted on 24 Apr 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

The economic reorganization of the military sector

Jacques Fontanel, Fanny Coulomb

Cahiers de l'Espace Europe

N°15

Grenoble, 2003

As the military and strategic needs are different from those that were necessary during the cold war, the new shapes of armament are also done on the basis of “disarmament” of a certain number of activities. Since September 11, 2001, the world geopolitical conditions changed. The reorganization of industries of armament was initially presented like a factor of “creative destruction”. The reorganization of armament is conceived as a factor of economic development and of regional industrial crises. However, the conflicts of interest and the hatred accumulated by the common history of the people exist. The globalization, dominated by the richest countries, necessarily does not lead to peace.

Comme les besoins militaires et stratégiques sont différents de ceux qui étaient nécessaires pendant la guerre froide, les nouvelles formes d'armement se font également sur la base du "désarmement" d'un certain nombre d'activités. Depuis le 11 septembre 2001, les conditions géopolitiques mondiales ont changé. La réorganisation des industries de l'armement a été initialement présentée comme un facteur de "destruction créatrice". La réorganisation de l'armement est conçue comme un facteur de développement économique et de crises industrielles régionales. Cependant, les conflits d'intérêts et la haine accumulée par l'histoire commune des peuples subsistent. La mondialisation, dominée par les pays les plus riches, ne conduit pas nécessairement à la paix.

Military sector, Military R&D, creative destruction, military industry

In 1988, Paul Kennedy, in a book as famous as disputed, proposed to show the idea according to which, at any period, the excessive importance attached to the military capacity by the great economic powers was an inescapable factor of decline. Nearly two decades later, the assumption of the decline of “the American empire” proved, at least temporarily, contradicted by the facts, in particular those relating to the collapse of the socialist system, the rise of the economy of the new information and to the American revivals of the economy and technology. Thus, of declining country, the United States is henceforth perceived like the great hegemonic power of this beginning of XXIe century, while at the same time its government remained particularly sensitive to the cold in the way of a reduction of the military expenditure, contrary to the old socialist countries, it true is brutally concerned with the end of the planned economy and the installation of policies of transition towards a market economy. The United States to spend as much as China, Russia, France, Japan, the United Kingdom, Germany, India, joined together Pakistan and Israel. As regards military RD, the United States spends more half of the corresponding expenditure of its European allies. Since 1987, the world military expenditure was reduced of more than one third, mainly in Russia, in the economies of transition and certain Western countries. However, the countries of Southeast Asia rearm gradually and year 2000 is characterized by a beginning of inversion of the tendency. It results a loss from it from the strategic reference marks and emergence, even not revealed, of an hegemonic temptation.

The reorganization of industries of armament was initially presented like a factor of “creative destruction”. As the military and strategic needs are different from those that were necessary during the cold war, the new shapes of armament are also done on the basis of “disarmament” of a certain number of activities. The influence of these processes is heterogeneous, it depends on the conditions of its installation. Lastly, since September 11, 2001, the world geopolitical conditions changed. It results from it from new interrogations as for the new means to set up to fight against the new threats.

I. The reorganization of industries of armament as a factor of development

The economic reorganization of the military sector implies certain forms of partial disarmament in a sector or an area. In this case, the industrial facilities and the military personnel are directly concerned. It is a question of finding new activities to them. The forms of defence are considered to be unsuited and it is

at the same time necessary to restructure the sectors whose military interest is considered declining and on the contrary to invest again in the activities necessary to the new strategy.

The economic analysis of disarmament can partially come us to assistance. There are several forms of disarmament, with the naturally different economic consequences, like the reduction of the military expenditure, the removal of stocks of weapons, or the elimination of some particular weapons. The military expenditure represents an opportunity cost, they are shown to divert financial means and to thus limit the civil investments. Taking into account their unproductive character (within the framework of a cosmopolitan or peaceful economy), the military expenditure exerts a priori negative effects on the world growth in the long run. However, with the ell of the recent observations, the “dividends of peace” are distributed in a very unequal way, until being negative short-term for certain countries. One can make three observations.

- Initially, any disarmament is not equivalent to a reduction of the military expenditure. The destruction of stocks of weapons or the checking of the agreements implies additional costs.

- Then, a removal of stocks of weapons constitutes a true disarmament. However, according to its volume and its nature, it guarantees neither the reduction in the strategic capacity, or that of the military expenditure. Partial disarmament (on the chemical weapons or for example) modifies the reports/ratios of force and often implies a procedure of disarmament/rearmament.

- Lastly, the immediate conversion of the military productions into civil productions proves often inadequate, either for technological reasons (fast maladjustment of a military technology sophisticated with the constraints of a mass production), or for commercial reasons (the market is already strongly encumbered), or finally for economic reasons (the cost of the products resulting from conversion not being competitive). The transfers between military and civil technologies suppose an adaptation of the priorities.

The reports/ratios of the United Nations of the beginning of the Eighties stressed the importance of the sums engaged in the military sector, while insisting on the considerable opportunity cost that they represented in particular for the countries in the process of development. The end of the cold war resulted in substituting for the logic of “the *arms control*”, impregnated fight of the blocks that of disarmament or maintenance, in the States, forces. However, the procedure of spontaneous reduction of the military expenditure did not cause important the awaited “dividends of peace”, without to reduce, in fine, significantly the threats, in particular because of always important existence of nuclear stocks of weapons. On the contrary, disarmament caused sectoral and regional crises economic major, in particular in the countries of the ex the USSR.

In fact of dividends, disarmament proposes a situation of immediate economic recession rather. To face there, it is advisable to engage of heavy national investments, regional and sectoral, that the “made savings” do not allow, initially, to mobilize, because of the forced obsolescence of an important productive capital. If the American economy thus could release from the resources at civil ends, to use military technologies of information in the civil sector, to receive financings of the whole world to finance its own growth, the “spontaneous” disarmament of the Soviet Convention country was lived like an ideological, political and economic defeat. Russia thus lost the “florets of its industry”, because those, based on the military capacity, were unsuited to the new economic conditions of the transition. In the reports/ratios of the United Nations, one considered that it was probably in the USSR that conversion was to be most interesting economically, taking into account the existence of a considerable potential of unsatisfied, weakness of competition and of capacity of the companies to produce goods with double use, soldier and civil solvent consumption. However, taking into account the obsolete infrastructures, of the effects of inertia, the exceeded industrial facilities, a very insufficient commercial culture and economic crisis, the results were catastrophic. One can even think that the provisional failure of the transition is due, at least partially, with the incapacity of the military sector to reconvert itself. However, Gorbachev himself had based great hopes on the forces of the military industrialization complex to start again the national economy. But it ran up against “will nomenklatura”, its privileges and the idea of the size of Soviet Union. The experiment shows, that in the short run there exists little of dual applications for the directly manufactured products to fine soldiers. Later on, the “repercussions” are folds interesting. Thus, Internet was, at the origin, a communication network between American laboratories of nuclear armaments.

The military secrecy and the excessive research of the creation of new performances supported the creation of products with “technology baroque”, the segregation in the work and of the practices of public prices slightly constraining for the companies accustomed to the mysteries administrative. The secrecy exerts a double conflict role. On the one hand, it prevents the civil sector from propagating a new technology possibly adaptable to a civil production. In addition, from its presence and its pregnancy on the whole of research, it encourages with the development of “bunches of research” on close topics, opening to the protagonists increased possibilities of contracts, as well in the military sector as in the civil sector. The obstacles of the military secrecy and the very strict administrative rules create a true culture of company, not very in conformity with the requirements of the market. For General Electric, the administrative cost of the procedure of production of only one driving program was evaluated with more than 5 million dollars per annum.

The industry of armament forms part gradually of universalisation. Military Industrial Complex (CMI) always had of privileges and political and economic supports considerable. It was seen allotting the leadership of vital industrial sectors. Today, it is internationalized, even if the markets remain still mainly national and if the governments always support exports of weapons of their nationals. The United States sought to make profitable their military repercussions within the framework of the reconversion of industries of defence, by reducing initially to half the regular suppliers of Pentagone and by setting commercial standards for the military purchases. The dissolution of Cocom, replaced by the arrangement of Wasemaar to keep some restrictions against the countries “hooligans”, opened the way with exports of products likely to be used in the weapons, in particular the materials of telecommunication and computers. Thus, dual technologies could be expressed in the civil field. Today, military and civil technologies of the satellites are very close. Pentagone even expressed the idea to replace its old satellites by commercial satellites. Within the framework of the globalization, the United States made a success of the conversion of their military effort, while remaining the great world economic and military power of today. This hegemony is likely, in the long term, to pose problem.

For the producer countries of weapons, a procedure of reorganization can have perverse effects in the short run, in particular for the industries and areas directly concerned with the industrial activities of armament. The partisans of direct conversion (of the sword to the plough) consider that there are often important opportunities in the civil sector that were not exploited. However, several economic situations good known can moderate their argumentation, like the costs of the conversion of the industrial facilities and the recycling of labour forces and management, the financial commitments important to enter the civil markets or the existence of spaces of profit on the civil markets concerned. The compression of the military expenditure, by itself, increases unemployment. The substitution of the military expenditure in favour of the civil expenditure does not allow the fast financing of the capital necessary to the maintenance of the employment made precarious by the obsolescence or the maladjustment of the installations intended for the production of the armaments. An adapted economic policy thus is essential, whose effectiveness will depend obviously on the quality of the public decisions.

II. The reorganization, factor of regional industrial crises

Before 2001, there were five heavy tendencies as regards industry of armament since the end of the cold war. Firstly, the reduction of the budgets, in particular of the military RD, was important, even in the United States.

Secondly, the search for industrial co-operations, in order to increase the series and to develop the economies of scale, became a need, in particular for military Europe too “burst” in the national production of the armaments of its components. Thirdly, the overproduction characterized an excess of the offer of the companies on a partially regulated market, supporting “reducing to poverty exports”, the transfers of activity (Nobel Industries was sold, in its military part, in Celsius), the recessions (Sequa or Sundstrand) or fusions, in a context of reduction, even of suppression, role of the States in the capital of the companies. Fourthly, the consolidation of the American industry of armament was very fast, thanks to the time using the States for the rationalization and of the reduction of the costs, and with a policy of concentration of the military activities, in opposition with the “antitrust” authorities, in order to join together all the capacities to know to make and of search and development for high technology near a national firm. Finally, in Western Europe, the process of internationalization did not lead to a better rationalization, fact even of administrative heaviness, the still weak share of the rules of the market and excessive weight of the national firms on the choices of States. The large obstacles with a European defence relate to the principle of “just reward”, the supranational character of the long-term purchases, the importance of the “European preference” and the maintenance of the transatlantic co-operation.

Vis-à-vis the reorganizations, States engaged standard a lot of economic actions. Initially, in the short run, exports of weapons were favoured, on a market however very largely depresses and dominated by the second-hand equipment of the old countries of Warsaw Pact and the sophisticated weapons of American industry. The prices broke down and of many countries engaged in procedures of reducing to poverty exports. Then, the reorganization of the companies, by a reduction of the volume of the production, the settings with foot, the sale or closing-down of factories was accompanied by a large wave of concentration or specialization towards the niches or the crenels with strong potentials of profits. Moreover, the development of technologies generic (or dual), likely to give place to civil applications was encouraged, as well as the diversification of the military or civil line of goods. A policy of delocalization of the military productions was engaged, just as the diversification of the wallet, the customers or the production. Lastly, the privatization and the fusion of the public or private companies of armament rest on the idea according to which the market is able to ensure, by itself, the necessary operations and costs (in particular social) of the survival of the company. Only the criteria of management are transformed, by the research of the profit and the weakening of the concepts of safety and defence main roads.

The concept of globalization expresses the integration of the productive and commercial activities in a system of total market. It applies to the chain of creation of the value, of the simple export to the total integration of the

production, while passing by all the intermediate stages. At the beginning, the reorganization has a cost. Like any process of investment, it supposes possible successes or failures, and thus of the economic risks. From a cultural point of view, the military sector is expressed mainly in the field of the high technology, but the “priority defence” that it exerts is likely to delay or modify technological progress. It privileges certain technologies, which influence then, by oil tasks, the civil sector. It is possible, in spite of rigidities and the “practice effects” to apply the military research and development to its counterpart civil. Three assumptions are generally retained for the study of the economic effectiveness of the Military R&D. Initially, the effect of ousting supposes that the appropriations engaged in the Military R&D are it with the detriment of the civil sector (men, equipment, innovations), which the recent history did not make it possible to check. Then, the technology transfers between the military sector and the civil sector suppose the passage of a technological and strategic priority (often held secret) at an economic priority. Often, the Military R&D prevented the civil R & D from producing results of high technology. Lastly, the effect of traction of the request (“demand-sweater effect”) indicates that an additional request for R & D supports the forces of innovation.

The reorganization of industries of armament calls today upon civil technologies, to which it is difficult to apply, a posteriori, of the new criteria of confidentiality.

III. The reorganization and peace

Disarmament is today in potential crisis, because its bases are called into question, that a news gives international takes shape and that the imperial situations lead ineluctably to the conflicts. Since 2001, the reorganization does not want to say any more disarmament, but “recasting” of the military and economic strategies according to the new constraints and threats international.

The fundamental variables of the arms race are comparatively numerous, but three of them were systematically retained by the theorists. Initially, more the economic growth increases, more the military expenditure tends to increase. The military nature of the threats grew blurred, when well even the solution with the problems of terrorism, for example, was found in the armed intervention in Afghanistan and Iraq. Perhaps it acts, in the species, of the last violent demonstrations warlike which should leave their place to more sophisticated military and economic strategies, less dangerous and more effective. Under these conditions, the military expenditures would owe, in the future, being less correlated on the level of the economic growth of States. Then, the “objections” changed nature. They are not expressed any more in the order systemic. The risks of genocide (often with the bayonet) in Africa are not extinguished yet, but they do not imply a military expenditure expanding. The

conflicts of interest and the hatred accumulated by the common history of the people exist. With the extension of NATO and the presence of the SOEC, the risks of conflicts between the great powers, great causes of the arms races grow blurred. It is necessary however today to pay a detailed attention on the new forms of conflict, in particular the rise of the terrorist attacks. New objections seem to be done day, likely in the long term, to or not provide new reasons to the arms races declared. Thus, the effort to give more safety to the air traffic should pass from 2,5 to 6% of the price of the tickets. Will it be necessary to enter this cost in the military expenditure (and thus in the defence of the countries) or to integrate it in a broader way in the accountancy of the companies, without reference to the warlike character of the operation? Lastly, the arms race is influenced by the military expenditure of the enemy country, adversary or competitor. The United States engaged, mainly only, in a military increase in the expenditure, towards a redeployment of the forces and the installation of new strategies. In 2004, their effort accounts for almost 40% of the world expenditure military, which makes an hegemonic country of them, since the countries closest to this expenditure account for at most only 12% their military expenditure, that they are in addition his allies or of the economies unbalanced by their fast economic development (China) or by their major economic crisis (Russia). Nevertheless the importance of the American armament, turned a priori towards the zero defect of national defence, is likely to start again the conflicts in numbers of fields, obliging the adversaries to innovate and find new techniques to erode the American capacity.

The Treaty of Rome and the World Trade Organization recognize with the governments an inalienable right on management of their defence and their safety main roads. If in the beginning, the argument of national independence was decisive in the choice of the production of the weapons, it gradually lost of its explanatory capacity to leave room to the economic reasons (reduction of the imports and rise of exports of weapons), technological (development of the high technology or importance of the repercussions of the Military R&D on national civil research), regional (creation of jobs) and policies (existence of a dense network of interests to the rise of the industry of armament). States always used the military sector to set up their industrial policy.

If in 1980, the majority of the American analysts still spoke about the superiority of the Soviet army on those of NATO and Atlantic Pact, today the economic crisis of socialist the in the past country is such as an important imbalance grew hollow in opposite direction, for the almost exclusive benefit of the United States. Three factors seem to characterize this new situation:

- Initially, the reduction of the military expenditure of 1990 to 2001 caused strategic imbalances, of which the effects and the reversible character are still difficult to determine. If it does not depend on the only political factors, it less did not have of it repercussions in favour of a process of globalization strongly

influenced by the private and/or American interests. The reinforcement of the considerations and the economic means in the military strategies led States to turn to industrial co-operations with other countries. However, the co-operation is more often the result of a decision more political than economic, in spite of the practice of the “just reward”.

- Then, the reorganization of industries of armament of the great powers proceeded in an atmosphere of regional and sectoral economic crisis. Positive economic effects fell under the duration, comparable with those produced by the productive investments. One thus could speak “about investment of peace”.

- Lastly, American industries of armament were restructured and their capacity of pressure was reinforced, but new threats emerge at the horizon that the processes of globalization risk in the long term, to make more difficult to accept. The threats change nature and arm with today are not necessarily adapted to prevent them from being carried out.

The end of the cold war brutally swept the assumptions on which the plans of the future systems of weapons rested. The United States set up new programs and a new generation of armaments, at the considerable costs. Started in 1991, construction by the United States of the programs F-22 (delivery envisaged in 2004) and F/A-18E/F (delivery planned for 2001) will respectively cost 17 and 2 billion dollars of research and development. For France, the Rafale, started in 1987 and left in 2004, will cost 7 to 8 billion dollars in R & D. The United States launched Joint Strike Fighter (JSF) for 2,2 billion dollars, for 3000 apparatuses for 2008. Europeans study Future Offensive Aircraft for an initial operation in 2015. The domination of the countries of NATO is without division, in spite of the potential threat of China and India.

Today, the art of warfare remains with the listening of technological progress, but the political considerations become extensive. The great powers will intervene in the local conflicts, without to threaten it mutually. Rising generation of weapons is founded on information technologies, in the forms of meta-systems, thus qualifying the complete overlap of the systems of weapons and the chain of the commands. The installation of data-processing viruses likely to make inoffensive the weapons of the adversaries constitutes an instrument of a considerable power. It is mainly a question of setting up a system of the systems, founded digitalization, the data-processing treatment and total geopolitical positioning and in this field; the United States has a length in advance. One will attend “the rise to power of information compared to that of the masses of material products”. A limited number of industrialists control the production of these new materials, thus reinforcing the influence of the military complex militaro-industrialist. Europe being connected on the American networks, it results from it an unquestionable dependence that reinforces the supremacy of the American army. The United States claims even the independence of the equipment on the basis of American military technology. In

this case, the law of the strongest seems to carry it, with important civil repercussions on the domination of the American companies in the world.

At the beginning of the years 1960, J.K. Galbraith had wondered, with other scientists, about the risks inherent in the peace or more exactly with the disappearance of the wars. For him, none the programs suggested concerning the economic reconversion required by disarmament took sufficiently account of the exceptional extent of the adjustments, which it would involve. Under these conditions, the proposals in favour of a transformation of the production of war into projects of public works of benevolence hardly highlighted the limits of the economic system. The assumptions of reconversion are not always politically acceptable, in particular because they do not take account of the elections and the acquired interests. There are not valid substitutes with the military functions of the conflicts. Indeed, the war has important functions. Initially, it provides the most effective means of realization of the stability and the control of the national economies. It is then an instrument of stability of the governments. The subordination of the citizens to the States and the control of the social dissensions and the antisocial tendencies are factors largely dependent on international safety. Lastly, in the economic plan, disarmament supposes the installation of a system of wasting independent of the normal economy of supply and. New institutions will have to be created to avoid the destruction of the company and the adhesion of the citizens to a political authority. The system based on the war showed its effectiveness since the beginnings of the history; it provided the bases necessary to the development of many civilizations. In the same current of thought, for Jacques Attali, the war is the extreme demonstration of industrial competition, the creation of request and the development of the productive forces. The conflict allows the revival of the production; it transforms the modes of consumption and the practices social. The history of capitalism implies the emergence of a brutal phase, which, if it does not give place to a military war, led with the development of alienation symbolic system. Today, the latter could be found in the modern ideology of the globalization.

For the United States, the opening of the economic borders is a factor of world peace. The paradigm of “laissez-faire” reminds dominant and, as underlines in all the liberal analyzes, it is a factor of peace and disarmament. However, the economical strategic interventions of States are however current currency, in particular those of the United States. For Clinton, national safety depends initially on the economic power and each nation is in competition with the others on the world markets. This idea fought by Paul Krugman (“a country is not a company”) led to the development of the geoeconomy to the detriment of geopolitics. The United States obtained an important administrative machinery to act on the international trade (in particular with Advocacy Center or War room). With the end of the cold war, the United States engaged in an

economic war, the military requirements not being often that an excuse to develop an industrial policy, to support the research and development and to subsidize the national companies. The use of the economic intelligence and the forces of against-intelligence (with the development of the NISI (“National Industry Security Information”), of the DTIC (“Defense Technical Information Center”) and of the CIRI (“Central Information Reference Collection”) carries testimony from there.

The economic development of Nations is a fundamental factor of international safety. In a world of scarcity, the expenditure military, essentially unproductive, constitutes a wasting, in particular in the absence of international conflicts or when they are oversized compared to the threats. However, when the dignity of the men is threatened, it frequently happens that Nations prefer the combat with the status quo. International safety cannot durably be maintained within the framework of effects of domination or economic and social inequalities excessive. For Claude Serfati, universalization goes hand in hand with the regressive dynamics of capitalism. Beside small islands of prosperity, the world economy is in crisis and the ditch grows hollow ineluctably. The globalization, dominated by the richest countries, necessarily does not lead to peace. Kenneth Arrow points out opportunely that the preceding age of the globalization, end of XIXe century, beginning of XXe century, culminated with the First World War. What shows that the opening of the borders is not a stage necessary towards peace. However, the military authorities of today combine an insatiable request for new weapons and an increased aversion for their use. It is not so much the globalization which the factors which encourages it which provides the signal of a reduction of the possibilities of international wars.

Bibliography

Binnendijk, H. (2002), *Transforming America's military*, National Defence University Press, Washington.

Blanc, G (2000), *Dépenses militaires, restructuration de l'industrie d'armement et privatisation de la défense. Analyse comparée France-Etats-Unis 1995/1995*. Arès, Défense et Sécurité n°46.

Earle, J.S., Komarov, I. (2001), *Measuring defence conversion in Russian industry*, *Defence and Peace Economics*, 12(2).

Chatterji, M., Fontanel, J., Hattori, A. (1996), *Arms spending, development and security*, Ashing Publishing House, New Delhi.

Fontanel, J., Bensahel, L. (2002), *Guerre et économie. Les liaisons dangereuses*, *Revue Géoéconomie*, fin 2002.

Fontanel, J. (1993), *The economics of disarmament*, in *Handbook of Defense Economics*, Vol.1. (Hartley and Sandler eds), North Holland, Elsevier Sciences, Amsterdam.

Fontanel, J. (1993), L'industrie d'armement face au désarmement, in "Quelle défense pour la France ?" (Pierre Pascallon, Ed.), Dunod, Paris, 1993 (24 pages)

Fontanel, J. (1994), L'industrie d'armement de la France en question, in Eisner, Fontanel & Schwartz, Les économistes face au couple paix-développement, Cahiers de l'Espace Europe n° 5 Grenoble, mars 1994.

Fontanel, J. (1998), Industries et marchés de l'armement, la nouvelle donne internationale dans l'après guerre froide. CEDSI, UPMF, Grenoble. **Hal-02373146**

Fontanel, J, Ward, M. (2000), Military Expenditures, Armaments and disarmament, Defence and Peace Economics, Taylor & Francis (Routledge), 1993, 4 (1), pp.63-78

Fontanel, J., Coulomb, F., Samson, I. (2001), Military conversion and transition in Russia, Pax Economica (6).

Fontanel, J. (2002), L'avenir de la défense européenne, in G. Casale : Europe, what kind of integration ? Europa : verso quale integrazione ? FrancoAngeli, Milano, Italie, 2002.

Fontanel, J., Brunat, E. (2002), Les causes économiques d'un réarmement, in « Les incertitudes d'aujourd'hui », Cahiers de l'Espace Europe, Grenoble, 2002.

Fontanel, J., & Bensahel, L. (2002). Les Stratégies de la guerre économique. Globalisation économique et sécurité internationale. Introduction à la géoéconomie. Collection Côté Cours, Université Pierre-Mendès-France, Grenoble, 29-50.

Gansler, J. (1980), The defence industry, MIT Press, Cambridge.

Gicquiau, H. (1996), Aspects industriels de la reconversion des entreprises du CMI russe, Le Courrier des Pays de l'Est, n°414, novembre.

Gonchar, K., Kuznetsov ; Y., Ozhegov, A. (1995), Conversion of the Post-Soviet defence industry: implications for russian economic development, Bonn International Center for Conversion, February, Bonn.

Hébert, J-P. (2002), Le rapport des dépenses militaires Etats-Unis/Europe se réduit en longue période. Le Débat stratégique (60).

Kaldor, M. (1982), The baroque arsenal, London, Deutsch Edition.

Krugman P. (1994), Competitiveness : A dangerous obsession, Foreign Affairs, v. 73, n°2, p. 28-44

Krugman, P. (1996), A country is not a company, Harvard Business Review, January-February.

Ohmae, K. (1990), the Borderless World, Collins, London.

Ohmae, K. (1993), The rise of the region State, Foreign Affairs, 71(2),

Ravi, K., Sandler, T. (1999), The future of development assistance : Common pools and international public goods, Overseas Development Council, Washington, D.C. distributed by John Hopkins University Press, Baltimore.

Reich, R.B. (1992), The Work of Nations, Vintage Books, New York.

Shkaratan ,O., Fontanel, J. (1998), Conversion and personnel in the Russian Military-Industrial Complex Defence and Peace Economics, Vol. 9. 1998.

Smith, R., Fontanel, J. (1987), Capital-Labour substitution in defence provision", in "Defence, Security and Development", (DEGER & WEST, Ed.), Francis Pinter, London, June 1987