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# Economic Impact of Dual-Use Industries in France

Jean-Paul Hébert, Jacques Fontanel

Research Report

Eurostrategies

Brussels, 1991

Résumé : Le secteur militaire a sans doute pris une part active dans le développement économique de la France, notamment dans le domaine nucléaire, l'aéronautique, les technologies de l'espace, les hélicoptères ou l'électronique. Cependant, les 10 plus grandes entreprises françaises ne sont que faiblement concernées par le secteur militaire et en terme d'emplois 1,1% de la population active est concerné. Cependant, l'industrie de défense joue un rôle important dans certaines régions et industries Te en termes d'exportation. Les industries françaises vendent aujourd'hui plus d'armes à l'exportation qu'à l'armée française.

The military sector has undoubtedly played an active part in France's economic development, particularly in the nuclear field, aeronautics, space technologies, helicopters and electronics. However, the 10 largest French companies are only marginally involved in the military sector and in terms of employment 1.1% of the active population is concerned. However, the defence industry plays an important role in certain regions and industries in terms of exports. French industries now sell more arms for export than to the French army.

Exportations d'armes, technologies militaires, industries d'armement, France

Arms exports, military technologies, arms industries, France

The industrialization of France was originally based on its iron mines of Lorraine, together with some coal, which allowed for a steel industry. But the depletion of the coal mines and the relative loss of importance of steel compelled France towards a conversion into other industrial sectors, especially in aeronautics and nuclear energy, two sectors where it had many pioneers.

The lack of oil resources became a strong incentive in favour of nuclear energy, and this was increased by the decision taken in the late 1950s to build up an independent nuclear force. Actually, this decision had a major impact on the whole French industry, because it gave a boost not only to the nuclear sector, but also all the sectors associated with vectors of nuclear warheads, i.e. aircraft, submarines and missiles, all of them with a strong share of electronics. And, except for submarines, these sectors happen to be strongly "dual".

This military boost should not be exaggerated, but it certainly played a role in the achievement of such civil programmes as :

- nuclear plants and associated facilities, as indicated in the sectorial analysis;
- civil fixed-wing aircraft, such as French participation in Concorde, Airbus, ATR and other smaller programmes ;
- the typically dual helicopter industry, which exports 87% of its production ;
- space technologies, especially launchers, with a prominent position in the Ariane programme ;
- electronics, a late-comer in terms of military spinoff, now turning to the reverse situation where the real spinoff is from civil to military uses.

None of the defence companies or even of the dual groups appears within the top 10 French companies, as will be seen in the structure of the industry. Nevertheless, the defence

industry as a whole accounted for approximately 2.4% of the GNP in 1989 (17,100 Million ECU). Table 3.1 shows that this percentage has been decreasing during the last years.

This industry employs approximately 260,000 people, including the state tasks of the government agency DGA (see "structure of the industry") which account for approximately 24,500.

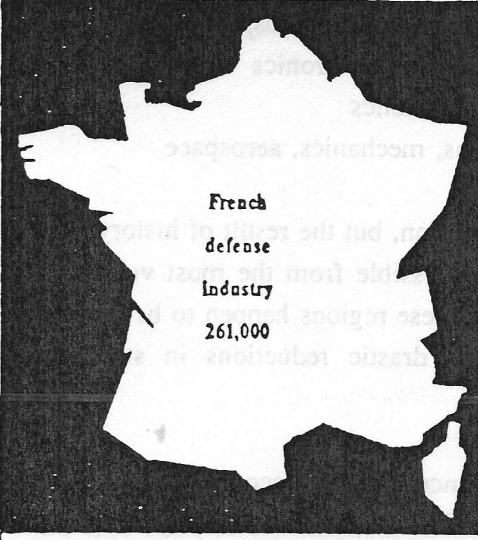
Table 3.2 gives a more precise breakdown, as of 1 January 1989. These employees represent 1.1% of the active population and 5.4% of the industrial manpower, exclusive of construction and public works (BTP in the French statistics). Taking into account all the goods which contribute to this production (raw materials, components, services, etc.), the manpower "concerned" by the armament industry (i.e. the one which would suffer from possible reductions of its activity) amounts to approximately 400 000 people.

TURNOVER OF THE FRENCH ARMAMENT INDUSTRY			
Year	Turnover (Million ECU)	% of GNP	% exported
1983	12,580	2.6%	38%
1984	14,380	2.7%	43%
1985	15,360	2.7%	42%
1986	15,950	2.6%	40%
1987	15,440	2.4%	32%
1988	16,490	2.4%	33%
1989	17,100	2.4%	31%

Table 3.1 Source : French Ministry of Defence



Defence industry manpower in France as of 1 January 1989

		France 207,000	Export 54,000	
State tasks DGA 24,700		 <p style="text-align: center;">French defense Industry 261,000</p>		
DGA Industrial Not inc. GIAT 29,600				DGA Not inc. GIAT 54,300
GIAT* 14,900				GIAT* 14,900
CEA 10,400				Nuclear 10,400
Public sector firms 81,400				Aerospace Industry 63,600
Other firms 100,000				Electronics Industry 53,500
Other industries 64,300				
Industrial tasks 236,300		Paris area 93,400	Other areas 167,600	

Active resident population	24,141,500
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Industry manpower (Exc. BTP) Armament manpower/Active population	4,829,859 1.08%
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Armament manpower/Industry manpower	5.40%
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(\*) GIAT converted to a national company as from 1/7/90.

Table 3.2

Source : French Ministry of Defence

## Regional impact

The defence industry is shared in a very heterogeneous mode among the different regions of France, both quantitatively as shown in table 3.3 and in Fig.3.4, and qualitatively, i.e. when taking into account the specializations of the main regions :

- Paris area : headquarters, electronics, aerospace
- West : shipbuilding, mechanics, electronics
- South-West : aerospace, mechanics
- South-East : naval weapons, mechanics, aerospace

This is a not random distribution, but the result of history : the French arms industry was originally located as far as possible from the most vulnerable borders, i.e. those of the North and East. Nowadays, these regions happen to be those most stricken by the closing of the coal mines and the drastic reductions in steel production, which generated considerable unemployment.

This distribution of the defence industry accounts for :

- a very low density in the Northern and Eastern regions (and in Corsica),
- and a very high density in Brittany, the South-West and the South-East, where the armament industry provides 15 to 20% of the total employment.

Brittany remains the traditional region for shipbuilding. The South-West has more recently specialized in the aerospace industry (civil and military). The South-East activity is diversified. The Paris area has recently become a fourth pole of the armament industry, with most of the headquarters and a specialization in electronics.

All other regions are in an intermediate position, except for the Centre-South, which is unaccountably void of defence industries.

The map in Fig. 3.5 focuses on the aerospace industry and its share of electronics, by locating the main relevant industries. A sharper focus leads to putting emphasis on 5 city-areas with a high concentration of defence or dual industries :

- Paris and its immediate surroundings host most of the headquarters, together with a number of industrial units requiring a reduced infrastructure, mainly electronics (Thomson-CSF, Dassault Electronics, Sextant, Alcatel, Intertechnique) and laboratories or advanced technology centres (Aérospatiale, SEP, Bertin). It also hosts the main

SNECMA facility for turbine engines. The space industry is also represented with Matra, but the main space facility is 80 km West of Paris, at Les Mureaux, with the Aérospatiale (and Ariane) assembly plant.

- The Nantes-Lorient area, in the South of Brittany (a region mostly devoted to electronics), is a pole of the shipbuilding industry, both civil (Chantiers de l'Atlantique, at Nantes) and military (DCN, at Lorient).

Country: France		
REGIONAL BREAKDOWN		
Region	Total Defence Employment	% of the National Total
Paris area	93,440	36%
West	57,360	22%
South-West	47,950	18%
South-East	44,130	17%
East	9,000	3%
North	8,900	3%
Overseas	720	1%
Total	261,400	100%

TABLE 3.3

Source: French Ministry of Defence

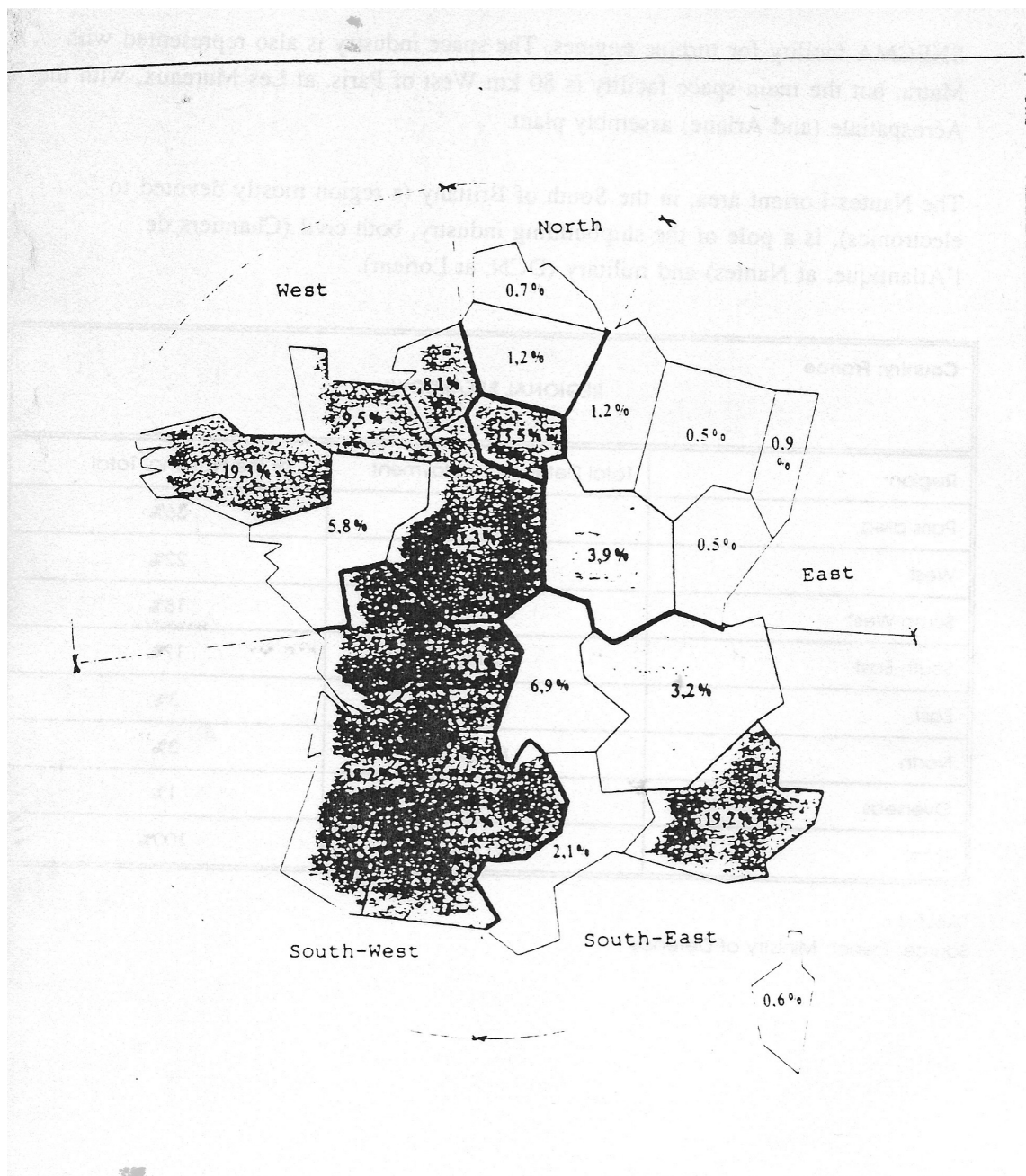


Figure 3.4 - Ratio of the employment in defence industries to the total industrial employment in each of the 22 political regions (excluding overseas) in 1988.

Source: French Ministry of Defence



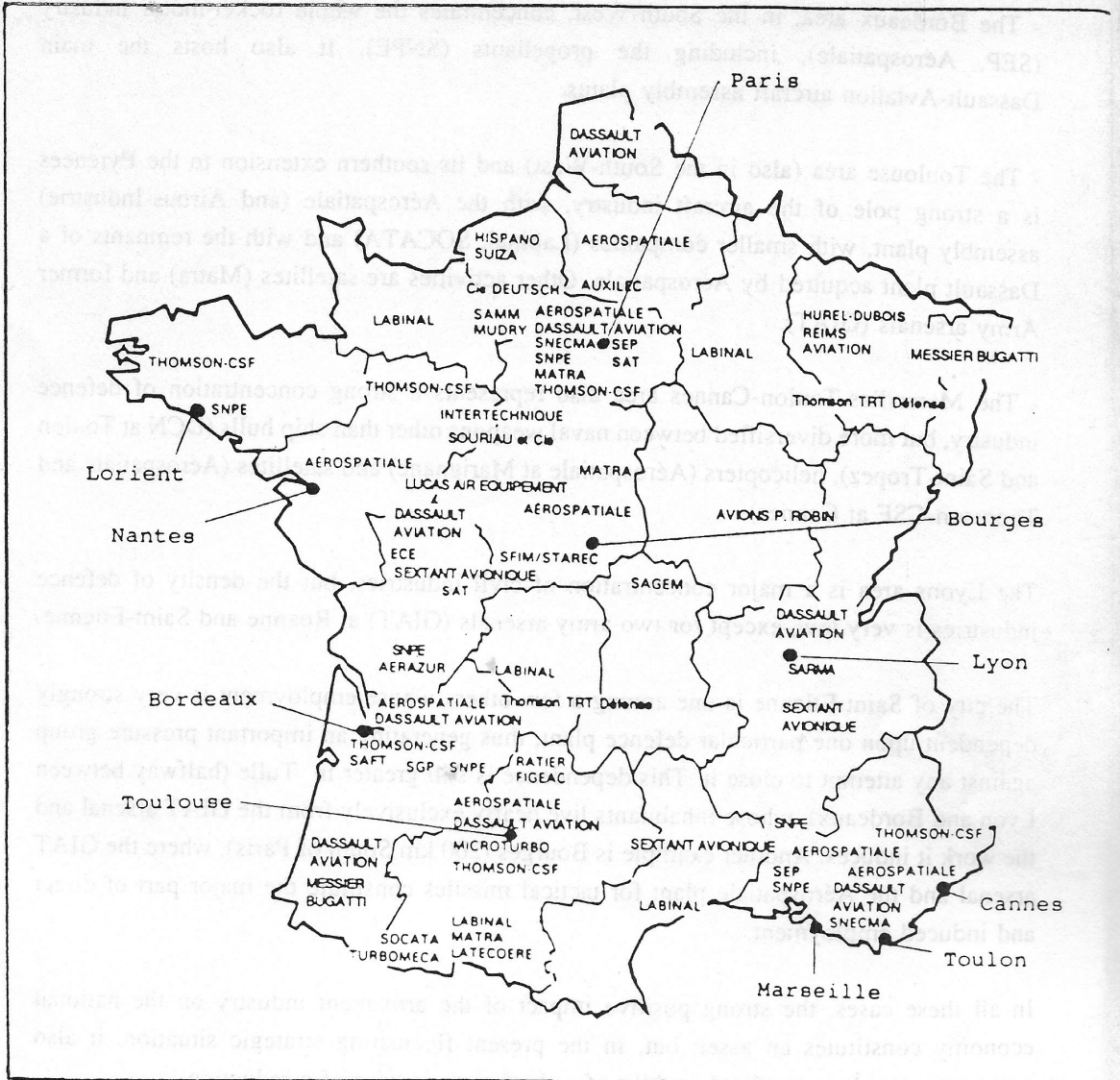


Fig 3.5 Location of the main aerospace companies (including electronics) and identification of the main poles of defence industry in mainland France.

Source : French Ministry of Defence

## Exports

Indeed, the turnover of the French defence industry results from two factors :

- the part of the defence budget attributed to equipment, i.e.  $25,952 \times 53.7\% =$  Million ECU 13,936 in 1989;
- and the export turnover, i.e. 17,100 Million ECU in 1989.

A simple subtraction shows that the total defence turnover exceeds the national equipment budget by Million ECU  $17,100 - 13,936 = 3\ 164$ . This proves that France is an arms exporter (third to the USA and the USSR for a number of years). Now, export statistics give a higher value for the export turnover in 1989 : 5,370 Million ECU. This proves that France is also an arms importer :

- from industrialized countries, mainly within cooperation agreements;
- but also from third world countries - such as Brazil - due to offset obligations linked to its exports.

More precisely, in 1989 :

- the defence exports amounted to 5,310 Million ECU (i.e. 31% of the defence turnover, and 3.3% of the total exports), and accounted for the employment of 54 000 people (i.e. the equivalent of half the Thomson group);
- the defence imports amounted to 1,920 Million ECU (i.e. 1.1% of the total imports).

This left a surplus of 3,450 Million ECU, whereas the overall industrial balance for purely civil products showed a deficit of 16,200 Million ECU. The positive balance for military equipment covered roughly one third of the negative balance for energy.

Now, the situation of defence exports is deteriorating rapidly. After a "golden age" in the 1970s and in the early 1980s, these exports started decreasing for two main reasons:

- the decrease of oil prices deprived oil suppliers of resources which they had previously devoted to the equipment of their armed forces;
- more and more third-world countries build up their national arms industries, which are technologically insufficient for their needs, but which allow them to claim for offsets.

As shown in table 3.1, exports represented 43% of the defence turnover in 1984. This percentage was only 33% in 1988 (5,430 Million ECU) and 31% in 1989 as indicated above (5,370 Million ECU). Now, the most serious problem is the drop of the orders in hand. Indeed, while the actual exports in 1989 (i.e. those resulting from former orders) only slightly decreased with respect to 1988, the amount of new orders (i.e. future work) was halved, and this evolution continued during the first half of 1990.

This very extensive coverage of possibly military goods eliminates many sources of hypocrisy, but it is a source of discrepancy in international statistics, and also in international programmes, where the same component or subsystem may be considered military under the French law and civil according to the laws of the other participants.

When a given country purchases French military goods, its government must certify that it is the end user. A flaw was discovered in this system during the Gulf war between Iran and Irak, when French munitions were found to be delivered to Iran (in spite of the French embargo) by private companies, thanks to forged certificates. A correction was applied to the system in order to eliminate such problems, but no absolute solution seems to exist against leaks.

Iran was only one example of a French embargo. Others were Israel (decided in 1967 and still being enforced), South Africa (decided in 1977 and still enforced) and, very recently, Taiwan. These embargoes are costly : Taiwan was about to order 1,400 Million ECU worth of frigates, South Africa ordered about 150 Million ECU per year of military equipment before the embargo, and so did Israel. In addition, Israel's response to the embargo was to steal the plans of the Mirage III fighter, and to use them to build the Kfir and sell it to other countries.

Such embargoes are not frequent, and they can only result from high-level political decisions. But the CIEEMG refuses many other sales in a less conspicuous manner, mainly for reasons of military security, or for financial restrictions. Most refusals occur on a case-by-case basis, but there are some general rules, e.g. nuclear propulsion for submarines (although this would not be contrary to the non-proliferation treaty).



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