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# Defence R&D and Defence industrial base:

## Some statistics about the French case

Abstract:

Dealing with statistics about the Defence industrial base is often a controversial subject; the aim of our article is to show what can be learned from, and what are the limits of, statistical surveys on a specific subject. Our topic is of major concern for the development and the future of Defence industrial base (DIB): the research and development effort in Defence. Two issues have developed, the place of defence R&D effort in the national system of innovation on the one hand, the role of firms obtaining defence R&D contracts on the other hand. This study leads to some stylised facts about the Defence R&D and its evolution during the last fifteen years in France.

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## Defence R&D and Defence industrial base: Some statistics about the French case

The Defence R&D addresses highly specific purposes, the equipment of armed forces with up-to-date technologies. This R&D corresponds to the requirements of a monopsony, the government. It is the market maker for these products by direct procurement and exports authorizations. The technological changes and the financial constraints lead the French ministry of defence to develop benefits from the duality of technologies *ie* to integrate civil developments from the IT sector for example. The respective roles of defence groups and the French procurement agency (DGA) largely evolved during the past decade in terms of Defence R&D effort. Firms perform a growing share of this R&D effort (see Bellais and Daffix, 2004).

This article is based on a French statistical survey on R&D inspired by the Frascati's manual (OECD). It collects all elements on who finances and who performs R&D, this distinction is of major interest in the case of defence where public and private actors develop cooperative projects. Questions on defence R&D are included that allow us to illustrate some stylized facts about Defence R&D. We will first present the place of defence in the national system of innovation, then we will focus on the increasing role played by defence firms.

### ***The place of defence in the national system of innovation***

The French ministry of defence realizes by itself and subcontracts to other organisms, both public and private, the R&D needed for equipping the armed forces and preparing for the future. The figures of the last decade show two major evolutions:

- The global spending in R&D of the ministry of defence largely decreased from 1992 to 1997 then remained stable until 2001. Since this date, an increased effort has taken place, but not enough to bridge the gap.
- The repartition of defence R&D funding between the research performed "in-house" by the ministry and the contracts given to firms and other research institutes has also evolved. Both investments were reduced; the cut was 50% for internal research, but only 20% for research contracts performed outside the Ministry. Firms carried out therefore a growing part of the defence R&D.

European countries decided in Lisbon (2000) to make an unprecedented effort on R&D to make Europe the most productive and competitive knowledge economy in the world. The quantitative target to be reached in 2010 is the 3 percent ratio of Gross Domestic Expenditures on R&D. This is still not the case in France (estimation: 2,13 % in 2005) but this gap is also still present in UK and Germany. At the national level, the defence-performed R&D represents a reduced share of the national effort in R&D despite the recent increase due to the 2003-2008 Military Programming Law. The defence-financed share of the overall R&D effort of businesses is also decreasing (8.3% in 2005 versus 12,6% in 1995).

### ***The changing role of DIB in R&D effort***

The research financed by the Ministry of Defence is increasingly carried out by companies. However, this financing is very concentrated around a small number of companies, 110 to 120 per annum. If the number of SME financed directly by defence remains stable over the period, their financing is reduced, this evolution can be explained partly by the transfer of control of work to the large industrial prime contractors. But the Ministry still requires that research contracts are maintained by SME's for specific subject matters.

The contracting companies of the Ministry represent a rather stable share of the sales and manpower of firms performing R&D between 1994 and 2002. In the same way, these companies collect between 80 and 90% of the public financings dedicated to R&D performed by firms. The companies whose R&D is financed by the Ministry for Defence ensured 41% of the BERD in 1992 against 23% in 2002; for the R&D financed by firms but outsourced, the ratios were respectively 48% and 33%. This means that about a quarter of the activities of R&D in companies in France is carried out by those whose research is directly financed by the Ministry.

In brief, the few 100 companies whose research is financed by the Ministry of Defense represents in 2002 about a quarter of the expenditure of research carried out in-house by the companies and a third of external expenditure outsourced and financed by these companies. This small number includes all industrial prime contractors and some very innovative SME's, it is therefore likely to have an important effect of driving forward the remainder of the industrial base, as shown by its representation in research and in particular in the research outsourced by firms (10% of the sales turnover, but 23% of the BERD and 33% of the outsourced research).