

research and technology

bulletin published by the press and information services
of the commission of the european communities

REPRODUCTION AUTHORIZED

Brussels, 19 May 1970

No. 54

Research and Development Funding in the Community Countries

In 1969 each Community inhabitant contributed an average of 22 u.a. to the research and development (R&D) effort of the governments of the European Community countries.

This emerges from a major survey carried out by statisticians of the Community countries at the request of the Working Group on Scientific and Technical Research Policy. The assembled data, brought into comparable form, will make it possible to compare the member countries' research plans and budgets and to pinpoint any convergences and divergences, duplications and gaps.

1. Overall R&D Expenditure

It will be seen from the two tables on the next page that:

- the appropriations for R&D in 1969 totalled around 4,200 million u.a., or about 1% of the Community's gross domestic product;
- France picks up the tab for nearly half the public R&D expenditure, whereas it provides only one-third of the Community's GDP. Italy's R&D expenditure, however, is less than 10% of the total, whilst the Italian GDP is about 20% of the Community figure. If civil appropriations only are considered, the disparities are smaller but still exist;

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- during the period 1967-69 the growth rates were very similar in the different countries (8-9% p.a.), only the Netherlands standing out with a higher rate. This relative uniformity is all the more striking in that the year-to-year growth was irregular in several countries and also because it is the result of varied expenditure on widely differing objectives in each country;

Central government expenditure on R&D						
	Bel.	Fr.	Ger.	It.	Neth.	EEC
1. Expenditure in 1969 (in millions of u.a.)						
- total	106	2,008	1,439	334	271	4,158
- civil	103	1,391	1,166	320	256	3,236
- international contributions	115	247	144	50	17	473
2. Annual average growth rate of expenditure						
1967-69 (%)	9.5	8.5	8.0	8.0	15.3	8.7
1969-70 (%)	16.8	-5.8	13.0	37.2	13.7	6.0
3. R&D expenditure for 1969 per capita, in u.a.						
- total	11	40	24	6	21	22
- civil	11	28	19	6	20	17
4. Expenditure for 1969, in % of GDP						
- total	0.5	1.4	1.0	0.4	1.0	1.0
- civil	0.5	1.0	0.8	0.4	0.9	0.8
5. R&D expenditure, in % of total central govern- ment expenditure						
1969 (1967)	n.d. (1.7)	n.d. (6.9)	n.a. (3.8)	n.d. (1.9)	n.d. (3.7)	n.d. (4.3)

Breakdown by country of population, GDP, public R&D funding and total R&D expenditure (public and private) (in %)					
Country	Population (1969)	GDP (1969)	Public R&D funding (1969)		Total R&D exp. (public and private) (1967)
			total	civil	
Belgium	5	5	3	3	3
France	27	33	48	43	42
Germany	32	36	35	36	38
Italy	29	19	8	10	8
Netherlands	7	7	6	8	9
Community	100	100	100	100	100

- except in Germany, the growth of government expenditure on R&D has not, in recent years, exceeded that of total spending by the public authorities; in real terms, i.e., after deducting the growth effects due to prices and wages, this rate indicates a very moderate overall growth of research expenditure (some 4% p.a.);
- except in France and, to a lesser extent, in the Netherlands, the estimates for 1970 nevertheless point to a substantially higher growth rate. According to these estimates, the country with the lowest starting point (Italy) will record the strongest growth figures (40%), whilst the converse will be true of the country with the highest level at the outset (France).

2. Breakdown of Appropriations by Major Categories

Central government appropriations for R&D in 1969 tabulated according to major fields (in %)							
No.	Major category	Bel.	Fr.	Ger.	It.	Neth.	EEC
0	Defence	3	30	19	4	5	22
I	Advanced technologies (nuclear, space, data proc.)	39	25	25	36	14	25
II	Social purposes	8	7	6	8	13	7
III	Agriculture and industry	16	15	7	8	16	12
IV	General education and information	43	23	43	44	52	34
	Total	100	100	100	100	100	100

This table shows that:

- only Germany and, in particular, France devote a substantial portion of their expenditure to defence;
- the amount earmarked for advanced technologies - the kernel around which the science policy of most of the countries is formed - is still 25-35% of the total, except in the Netherlands;
- except in France, nearly half the public appropriations go to the general furthering of education, particularly in the universities;
- R&D for industrial, agricultural and, more especially, social purposes is of secondary importance as regards financing, except perhaps in the Netherlands on the farming and social side. It should be noted, however, that R&D spending on defence and the advanced technologies partly concerns industrial research.

Looking only at the civil expenditure calculated per capita for 1967-70, one may add that:

- under the influence of university expansion, there is a practically general tendency for expenditure on general education to rise rapidly;
- the promotion of industrial R&D is acquiring increasing importance in Italy and Belgium;

- nowhere, except perhaps in the Netherlands, is there a major financial effort on behalf of research for social purposes.

3. Breakdown of Appropriations by Individual Objectives

- a) Apart from university research and military research, the nuclear objective is the most important from the financial standpoint in all the Community countries. Except in Belgium its share is dwindling, however, a trend due to the cutting back of the contributions to international programmes. (Community average: 3.9 u.a. per capita in 1969.)
- b) Public financing of space research is concentrated mainly in France and Germany, which are developing national programmes in addition to their substantial contributions to international projects. These countries are likewise the only ones with significant defence research programmes. (Community averages: space 1.4 u.a., defence 4.9 u.a. per capita in 1969.)
- c) In most of the countries, research funding for the exploration and exploitation of natural resources is relatively modest. (Community average: 0.3 u.a. per capita in 1969.)
- d) The Netherlands and Germany devote proportionally larger sums than the other countries to the promotion of human health. (Community average: 1.7 u.a. per capita in 1969, including university medical research.)
- e) Except in France and the Netherlands, the level of research expenditure for improving the human environment is relatively low. (Community average: 0.5 u.a. per capita.)
- f) The Netherlands make an exceptionally high government contribution to agricultural research. (Community average: 0.9 u.a. per capita in 1969.)
- g) Spending on industrial research often shows a more than proportional increase as compared with the figures for total expenditure. In France, where the expenditure under this head is highest, the appropriations to the aircraft industry top the list. Interest in this field is also keen in Germany and the Netherlands. In Belgium the funds tend to flow more towards the traditional branches of activity whilst Italy's attention is directed more towards electronics. (Community average: 1.7 u.a. per capita in 1969.)

- h) Expenditure on data processing is still mainly centred in France and Germany, which are the only countries to have set up consistent programmes in this field. This expenditure doubled between 1967 and 1969. (Community average: 0.3 u.a. per capita in 1969.)
- i) The chief expenditure on the social and human sciences is found in Germany, France and particularly the Netherlands; the Dutch effort in relation to the GDP and population is twice as high as in the other two countries. (Community average: 0.3 u.a. per capita in 1969.)
- j) Public expenditure on the general furthering of education and information is expanding vigorously, especially in the university sector. (Community averages: university sector 5.6 u.a., extra-university sector 1.9 u.a. per capita in 1969.)
- k) Contributions to multilateral and bilateral activities now amount to an average of 11% of public research funding and are falling back on all fronts. In all countries cooperative nuclear and space projects account for a goodly proportion of these contributions; to these must be added aeronautics for France and defence for Germany and France.

4. Initial Convergences Observed

Detailed analysis of the collected data reveals fairly clear convergences in four of the seven sectors regarded as priority fields for European scientific cooperation - meteorology, pollution, new transport methods and oceanography.