

Chart I-4-2-1

Monbusho's budget for the promotion of scientific research

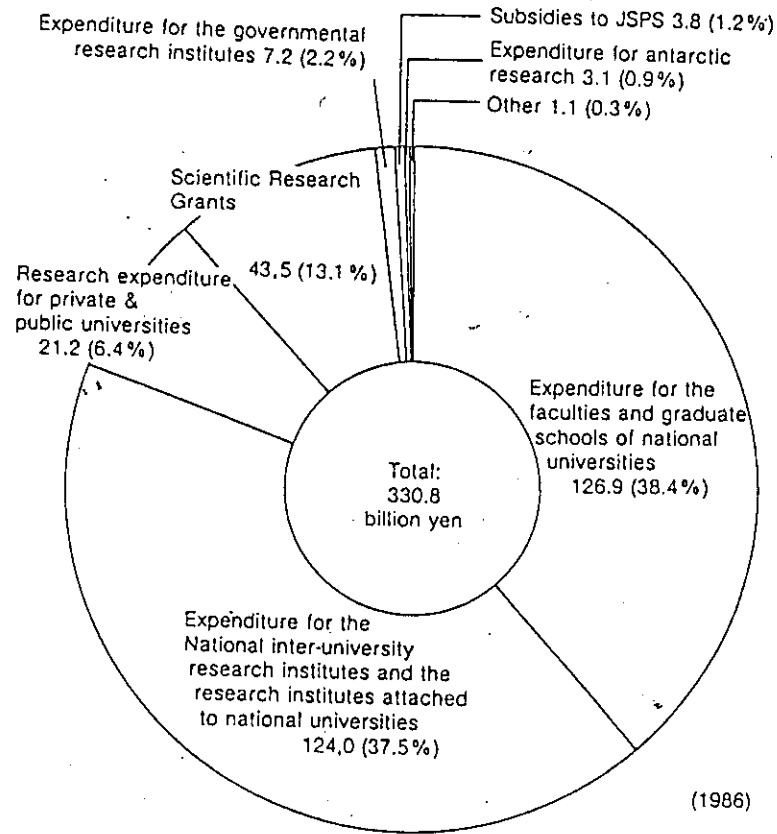
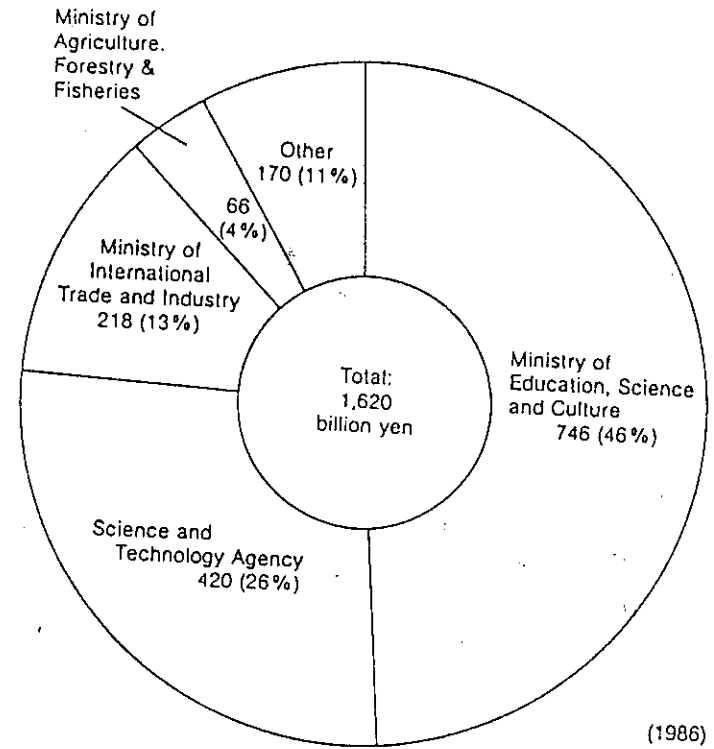


Chart I-4-2-2

Government budget related to science and technology  
(excluding humanities and social sciences)



### Distribution of Scientific Research Grants

|  |
|--|
| Special distinguished research (5%)    |
| Special long-term research (13%)       |
| Special project research (13%)         |
| Cooperative research (6%)              |
| General scientific research (34%)      |
| Encouragement of young scientists (9%) |
| Developmental research (9%)            |
| Overseas scientific survey (3%)        |
| Other (8%)                             |

Total: 42 billion yen

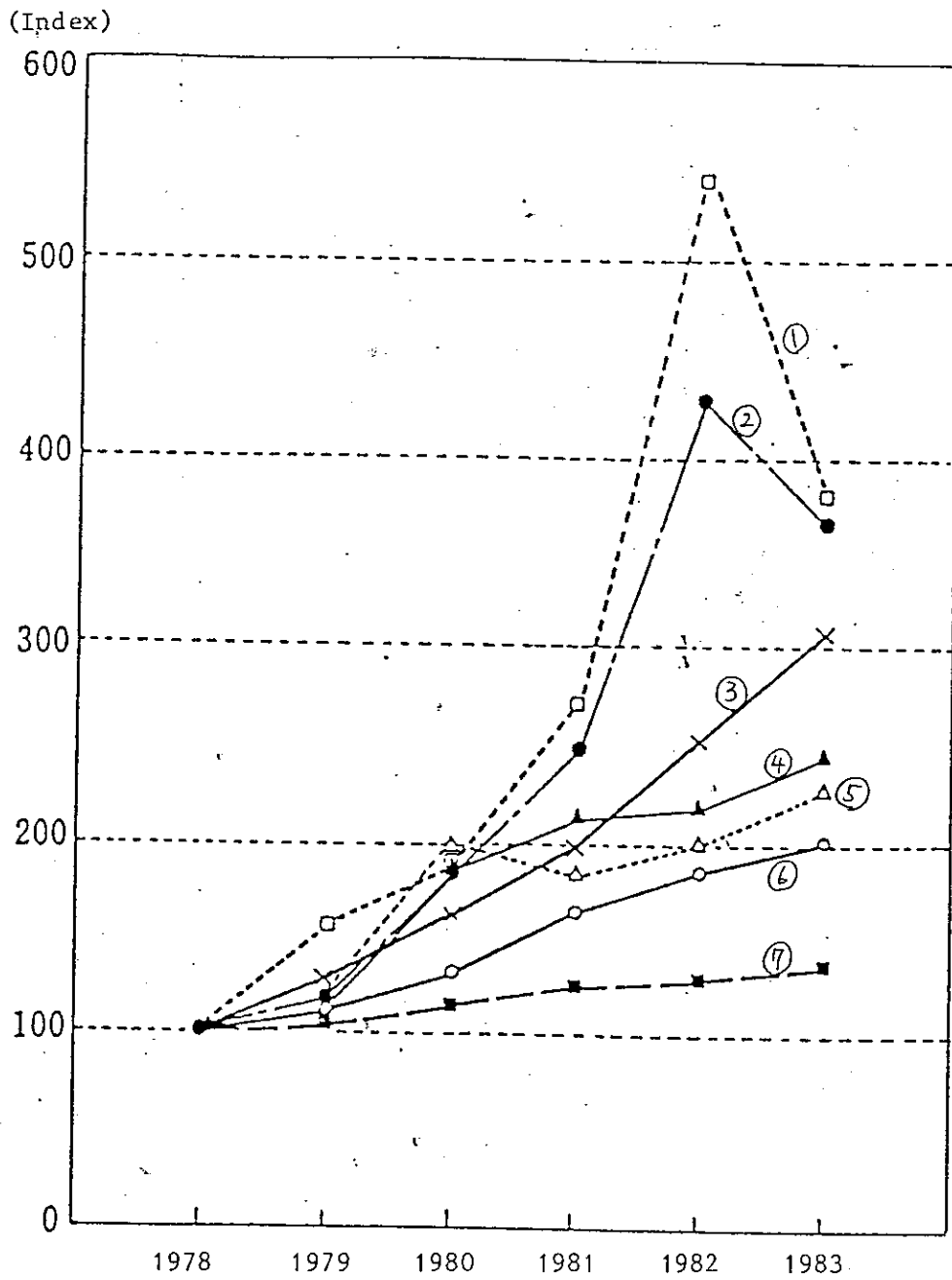
(1985)

- Internationally recognized research which is likely to produce outstanding results
- Long-term research in the field of especially strong scientific and social needs—cancer research, research in natural disasters, environmental sciences, energy research and fusion research
- Fixed-term research (3 years) in the field of strong scientific and social needs
- Cooperative research up to 3 years carried out by researchers belonging to different institutions
- Research up to 3 or 4 years carried out by a researcher, or group of researchers belonging to the same institution. Three categories exist according to the amount of funds required
- Research by a young researcher of research institutions, or a teacher of primary and secondary schools
- Applied research whose outcome is likely to be put into practical use
- Survey or research conducted abroad

## University-industry Cooperation Sponsored by Monbusho

|                         |                              | 1982  | 1983  | 1984  | 1985  | 1986 |
|-------------------------|------------------------------|-------|-------|-------|-------|------|
| Joint Research          | Number of projects           |       | 56    | 160   | 216   |      |
|                         | Budget (billion yen)         |       | 0.7   | 0.8   | 1.3   | 1.8  |
| Contract Research       | Number of projects           | 1,238 | 1,286 | 1,294 | 1,700 |      |
|                         | Funds Received (billion yen) | 2.4   | 2.6   | 2.8   | 3.5   |      |
| Donations (billion yen) |                              | 13    | 15    | 18    | 22    |      |

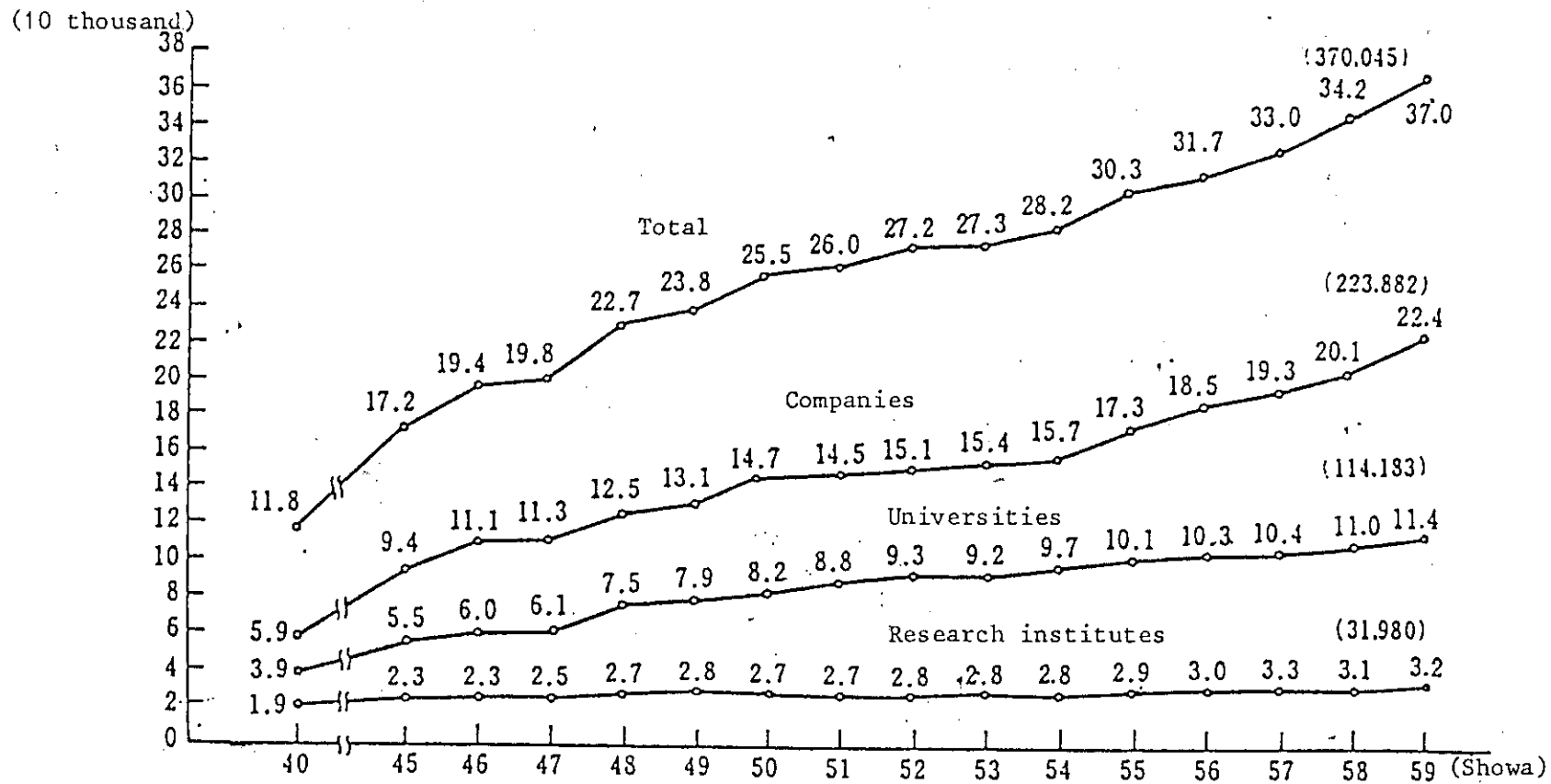
Flow of Research Funds among Sectors (with 1978 as 100)



- ① industry → foreign countries
- ② industry → government
- ③ industry → university
- ④ government → industry
- ⑤ industry → industry
- ⑥ expenditure used by industry
- ⑦ government → university

Source: Statistics Bureau, Kagaku Gijutsu Kenkyu Chosa Hokoku

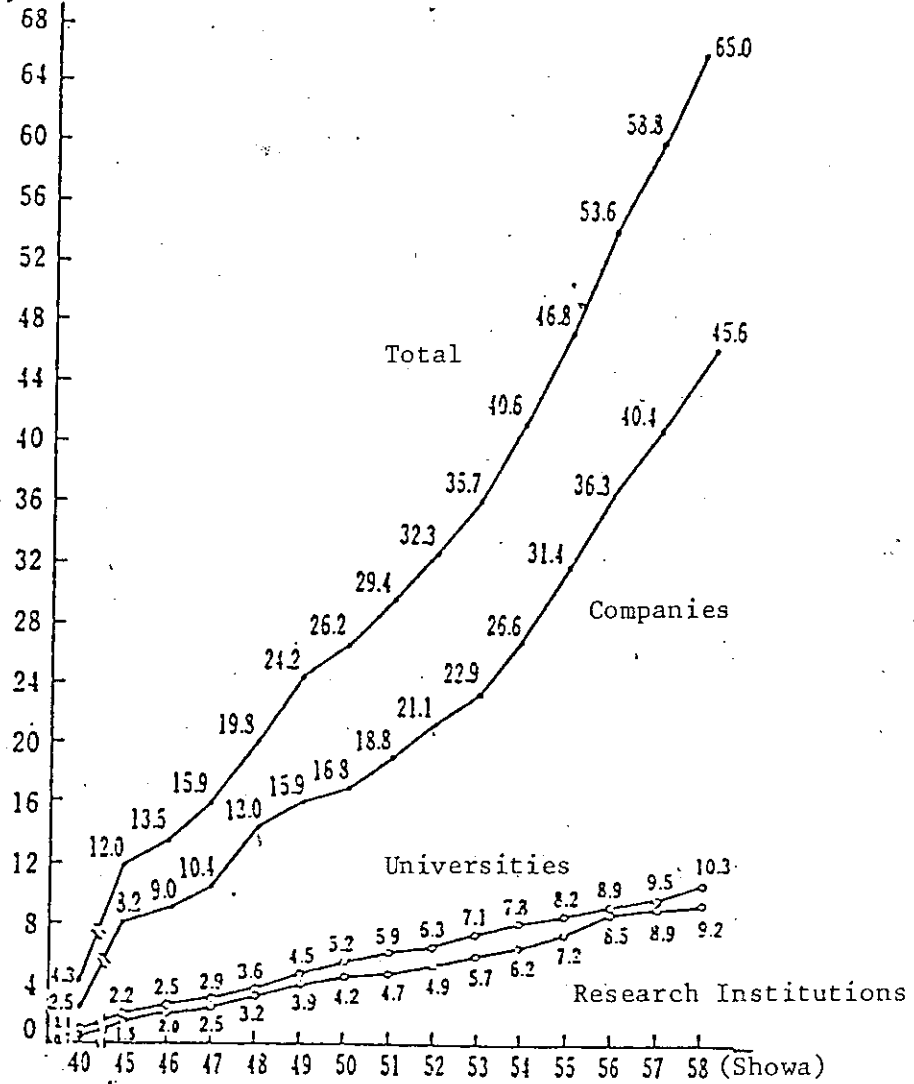
Increasing Trend in Number of Researchers



Source: Statistics Bureau: Kagaku Gijutsu Kenkyu Chosa Hokoku

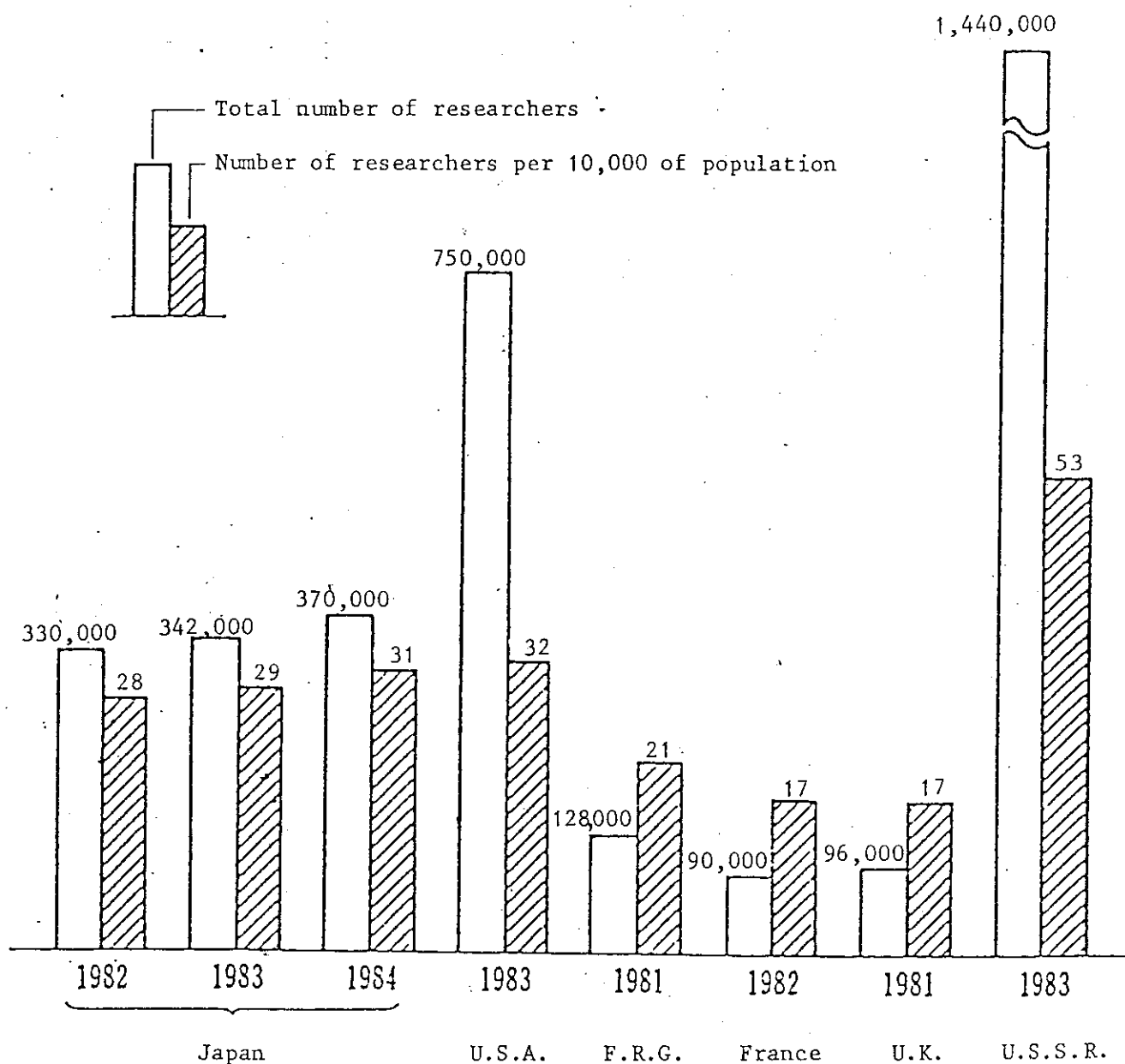
### Research Expenditures by Sector

(10 billion yen)



Source: Statistics Bureau, Kagaku Gijutsu Kenkyu Chosa Hokokū

### Number of Researchers in Main Countries



- Notes: 1) Values include both humanities, social sciences and natural sciences, but those for Japan include natural sciences only.
- 2) Values for U.K. include industries and governmental agencies, and not universities and private research institutes.
- 3) Values for U.S.A. are based on estimation.

Source: Kagaku Gijutsu Hakusho (White Paper on Science and Technology), 1985

R&D Expenditures by Country, Sector and Nature of Research

(unit: 100 million yen)

| Sector               | Nature   | Year | Japan  | U.S.A.  | F.R.G. | France | U.K.   |
|----------------------|----------|------|--------|---------|--------|--------|--------|
|                      |          |      | (1983) | (1983)  | (1981) | (1979) | (1975) |
| Government           | Basic    |      | 957    | 3,919   | 1,946  | 1,029  | 785    |
|                      | A. & D.* |      | 5,715  | 20,373  | 2,876  | 4,342  | 3,016  |
| University           | Basic    |      | 5,638  | 14,333  | 3,762  | 3,165  | 1,453  |
|                      | A. & D.  |      | 4,645  | 10,070  | 1,327  | 352    | 74     |
| Private**            | Basic    |      | 2,827  | 6,947   | 1,420  | 544    | 428    |
|                      | A. & D.  |      | 45,255 | 152,594 | 24,288 | 13,295 | 8,893  |
| Total                | Basic    |      | 9,422  | 25,199  | 7,128  | 4,739  | 2,666  |
|                      | A. & D.  |      | 55,615 | 183,036 | 28,492 | 17,989 | 11,983 |
| Population (million) |          |      | 119    | 234     | 62     | 54     | 56     |

Notes: \* A. & D.: Applied and Developmental Research

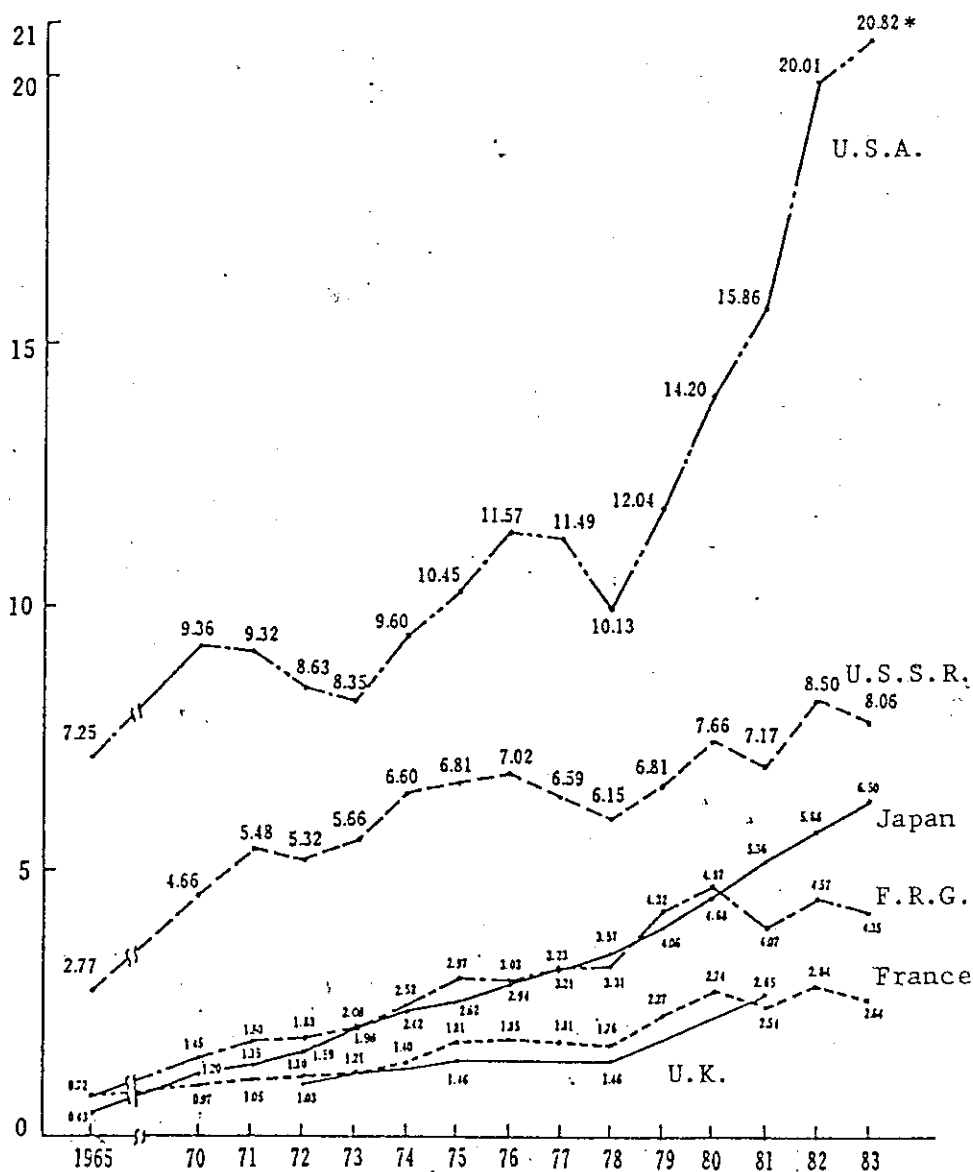
\*\* Private sector covers industries and private research organizations.

Source: OECD Statistics



Trends of Research Expenditures in Main Countries

(unit: trillion yen)



Notes: 1) Values include both humanities, social sciences and natural sciences, but those for Japan include natural sciences only. The U.K.'s value for 1981 includes natural sciences only.

2) The value marked with an asterisk(\*) is based on estimation.

Source: STA: Kagaku Gijutsu Hakusho (White Paper on Science and Technology), 1985