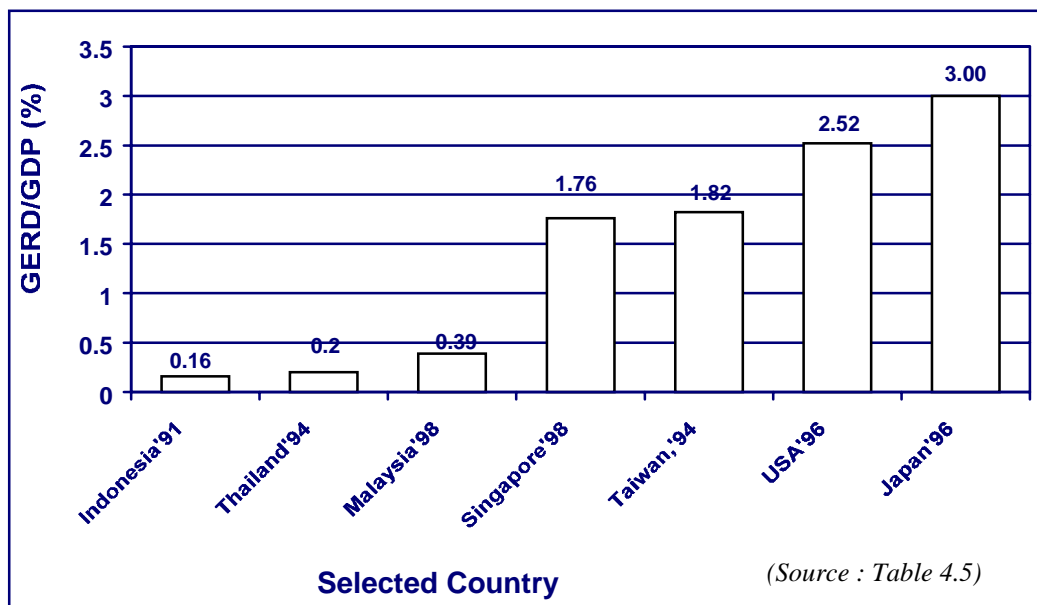


5.1 The GERD/GDP Ratio

At the regional level, Malaysia is slightly ahead of some of its ASEAN neighbours (e.g., Thailand and Indonesia) except Singapore in R&D performance. However, Malaysia has been lagging behind most of global players. In terms of the GERD/GDP ratio, Malaysia stood at 0.39% compared to Singapore (1.76%,1998), Taiwan (1.82%, 1994), USA (2.52%,1996) and Japan (3.0%,1996). [See Figure 5.1 and Table 4.5].



**Fig 5.1 : International comparison for selected country
- GERD/GDP Ratio (%)**

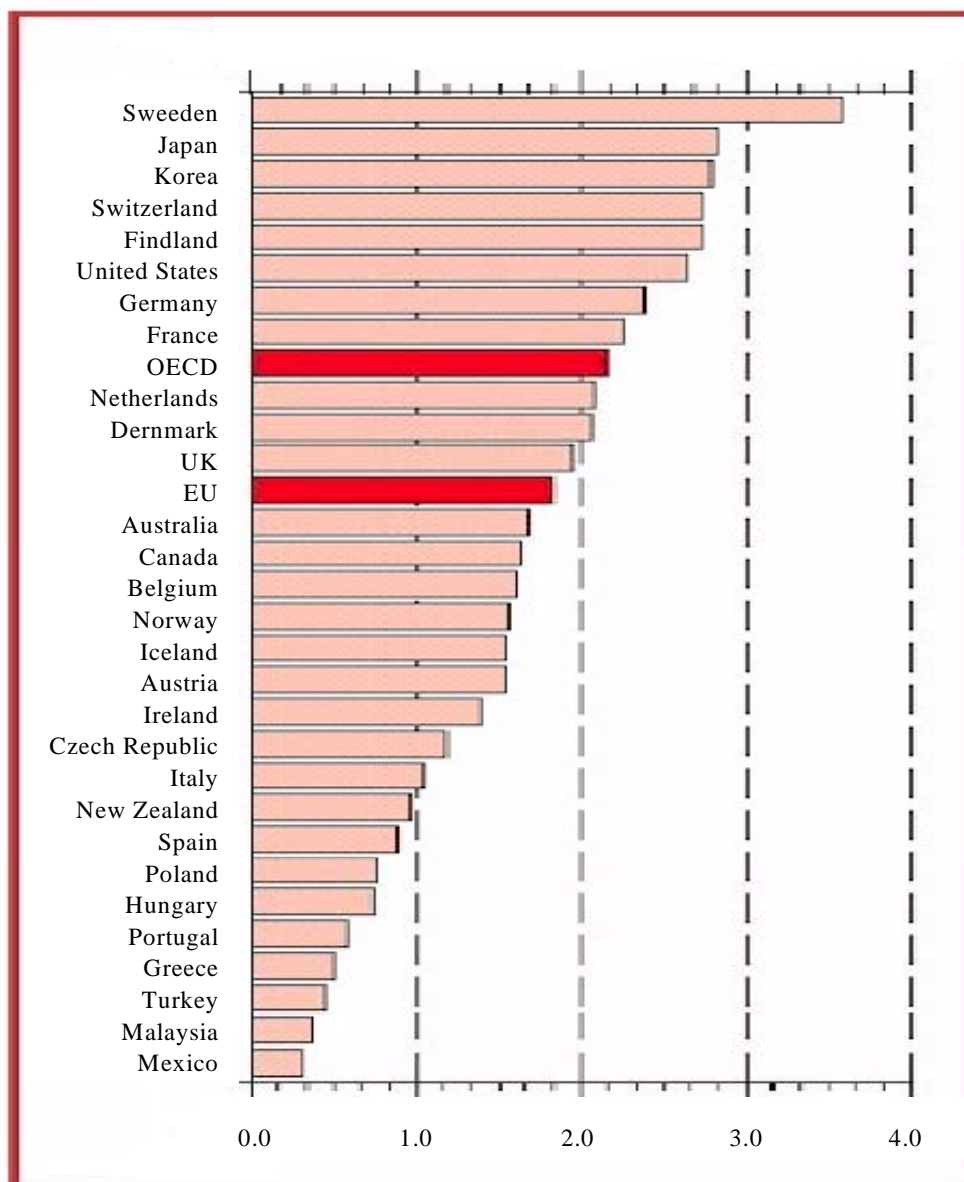


Figure 5.1a : Gross expenditure on R&D as a percentage of GDP 1998 figure or latest year available

Figure 5.1a shows the comparisons of the global scenario of GERD/GDP. The OECD plays a key role in the development of internationally comparable data on science and technology indicators; to monitor changes related to research and development (R&D). Global trends indicate that R&D spending is recovering after a period of stagnation in the early 1990s¹.

¹ Source: Policy Brief, Fostering scientific and technological progress, OECD

5.2 Manpower for R&D

The number of research personnel continued to grow, up 31.4% from the figure of 9,233 in 1996 to 12,127 in 1998. As a result, the ratio of researchers per 10,000 labour force increased to 7, compared to 5 in 1996. However, this figure is still far below the number of researchers produced by other leading countries such as Singapore 66 (1998), USA 76 (1996), and Japan 82 (1995). [see Figure 5.2 and Table 4.5].

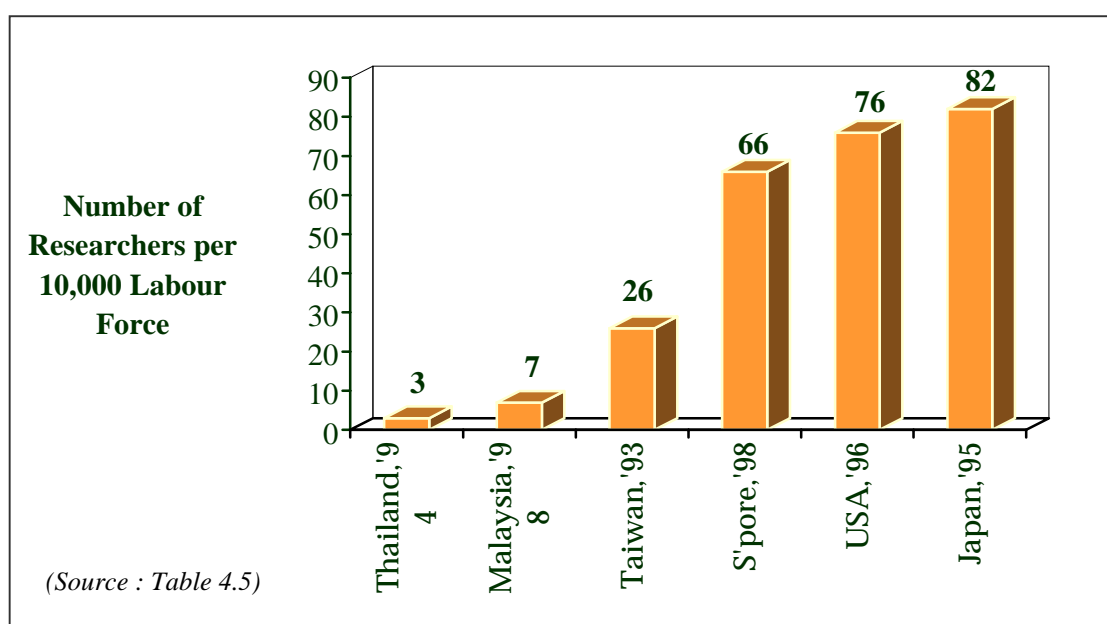


Fig 5.2 : International comparison - Number of Researchers for R&D

5.3 R&D Spending by Sector

The trend has been that private sector has provided the larger share of financial support for R&D in most countries. In Malaysia, the private sector contributed 66.2% of the total R&D spending, while for the United States, the private sector R&D funding accounted for 65.1% of the total GERD (US\$220.6 billion). The private sector also contributed significantly to Singapore's overall R&D performance. Despite the economic downturn, this sector's R&D expenditure continued to grow, reaching 60% (S\$1.4 billion) of the national spending. It is quite interesting to note that the R&D commitment by the private sector is expected to generate an estimated

\$15 billion in sales revenue for the companies, and the creation of more than 1,500 new jobs for scientists and engineers.

In Malaysia, the GRI accounted for 21.9% while the IHL had 11.9% share of the total R&D spending. For the United States, the GRI and IHL contributed only 30.2% and 4.7%, respectively, of the national R&D spending. As for Singapore, the GRI and IHL contributed 34% and 6%, respectively, of the total R&D expenditure. [see Figure 5.3 and Table 4.5]. In the case of Japan however, the IHL (20.7%) expenditure is higher than GRI (9.6%).

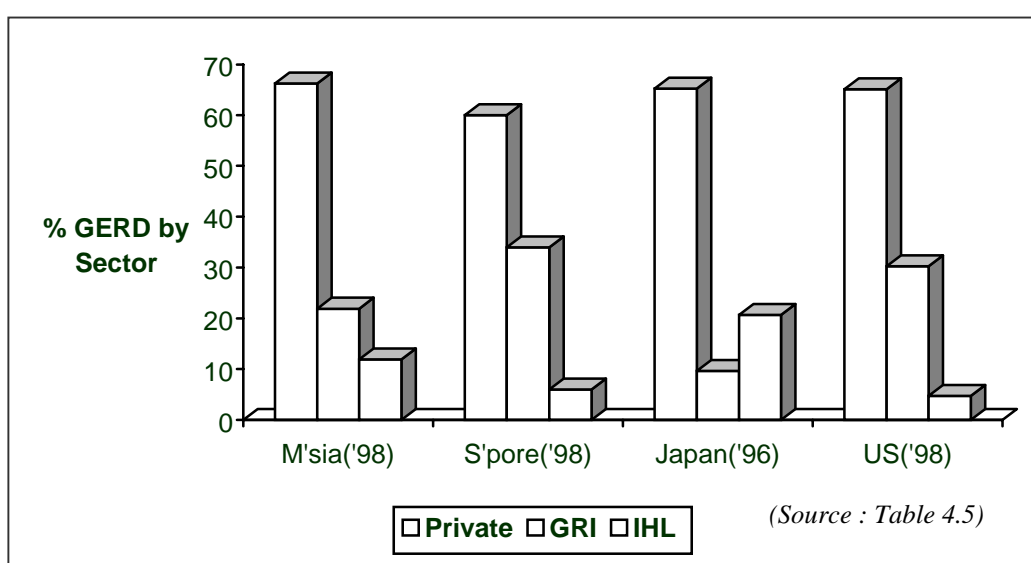
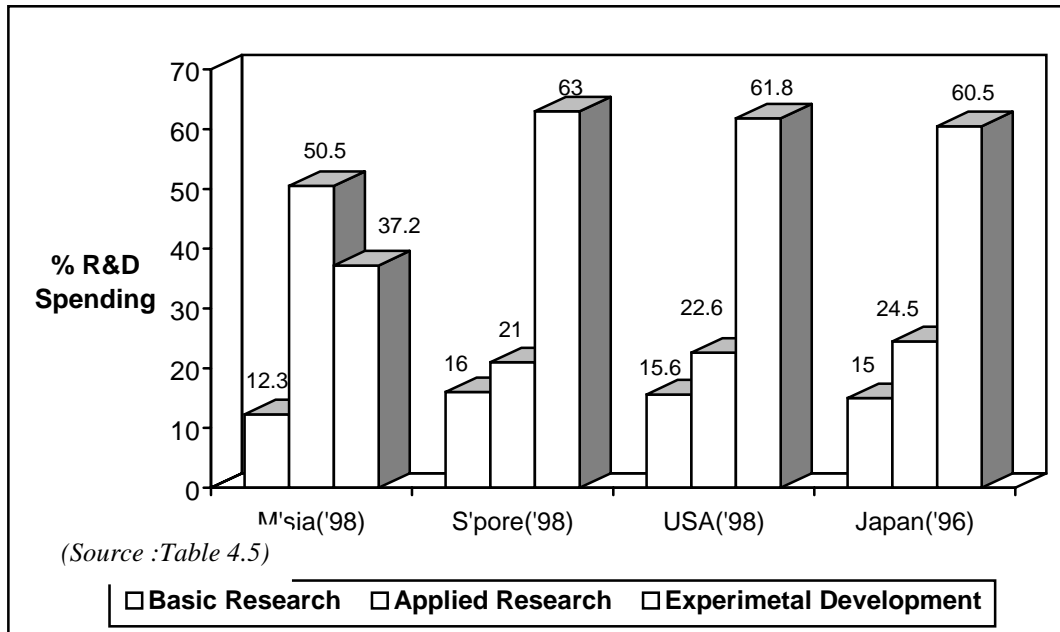


Fig 5.3 : International comparison - Sector Performance

5.4 R&D Spending by Types of Research

Leading countries in R&D such as the United States and Japan allocated a bigger portion of the total R&D expenditure on Experimental Development than the other types of research, i.e., Applied Research and Basic research. In 1998, the United States spent 61.8% of the total R&D spending for Experimental Development, while 23.2% was allocated for Applied Research, and only 17.3% went to Basic Research [Table 4.5]. Similarly, Japan spent the biggest portion (60.5%) of its total R&D spending on Experimental Development, followed by Applied Research (24.5%), and Basic Research (15%). At regional level, Singapore exhibits a similar picture in

spending pattern on these types of research. Of the Singapore's total R&D spending, the biggest share (63%) went to Experimental Development, followed by applied research (21%), and Basic research (16%). This is slightly in contrast with research focus (in terms of R&D spending) in Malaysia in which Applied Research received most attention (50.6%), followed by Experimental Development (37.2%), and Basic Research (12.3%). [See Figure 5.4 and Table 4.5]



**Fig 5.4 : International comparison for selected countries
- Types of Research**