

that by the mid-1990s it will take 15 to 18 per cent of the world market to cover the underlying costs of R&D in a new generation of central office switches compared to only 3 to 4 per cent of the global market in the early 1980s.

#### b) The Canadian Response

The matter of R&D raises some thorny issues. One issue is how Canada could respond if, as some expect, the EC requires companies to locate R&D facilities in Europe. Such a requirement would tend to erode intramural R&D spending in Canada, whether by Canadian-owned firms or by Canadian subsidiaries of foreign (usually U.S.) firms, wishing to enter the EC market. There is probably little Canada could do short of negotiating some form of exemption for Canadian firms. Another issue is whether the Canadian government should provide financial support for R&D projects undertaken by Canadian firms who wish to participate in R&D ventures with European firms. This is an issue that the Canadian government has addressed, by implementing, in 1986, the Technology Opportunities in Europe Program (TOEP).

The impetus for TOEP, an R&D program with a European focus, was the decision in 1985 by 18 European governments to launch EUREKA, a program to sponsor co-operative research between European high-technology firms and research institutes. The focus of EUREKA projects included, among several technologies, that of information and telecommunications. If Canadian companies wish to participate in a EUREKA project, an understanding must be reached with the European industries involved. TOEP was set up in 1986 to provide financial support to Canadian firms wishing to (a) explore opportunities for participating in EUREKA projects and to (b) undertake collaborative R&D with European partners.

It is widely acknowledged that TOEP was not a clear success. It attracted little

interest from Canadian firms and has been criticized on organizational and program delivery grounds. Large firms evidently did not need TOEP and small firms found it too expensive to participate in a EUREKA project with or without TOEP. When TOEP's sunset date in the spring of 1989 arrived there was little support for its continuation.

The need for a geographic focus on Europe was clearly a policy question that had to stem from a strategic objective of encouraging collaborative R & D ventures with European firms. TOEP's termination does not settle the question of whether some sort of Canadian initiative to support co-operative R&D is a necessary complement to efforts by Canadian high-tech firms to take advantage of Europe 1992. For example, Canada engaged in a large co-operative telecommunications program under the auspices of the European Space Agency. One result of this co-operation was the launch of the Olympus satellite.

In the case of telecommunications and computer firms, attention naturally focuses on the means of facilitating Canadian participation in RACE and ESPRIT. As already noted, participation in RACE and ESPRIT by extra-EC firms will, short of some negotiated agreement between governments, require having an EC subsidiary. Although the subsidiary requirement may shift some economic activity to EC soil which might otherwise be undertaken in Canada, it is not clear that any Canadian government program could improve the opportunities for R&D co-operation. It is also not clear whether participation in RACE or ESPRIT would be of much use to small- and medium-sized Canadian firms wishing to penetrate niches in a much-expanded EC market.