

Global R&D spread clouds local analyses

[PARIS] The 'globalization' of investment in industrial research and development (R&D) is complicating analysis of the link between a nation's public science base and its economic competitiveness. The notion of individual companies acting as 'national champions' has been rendered obsolete in the process.

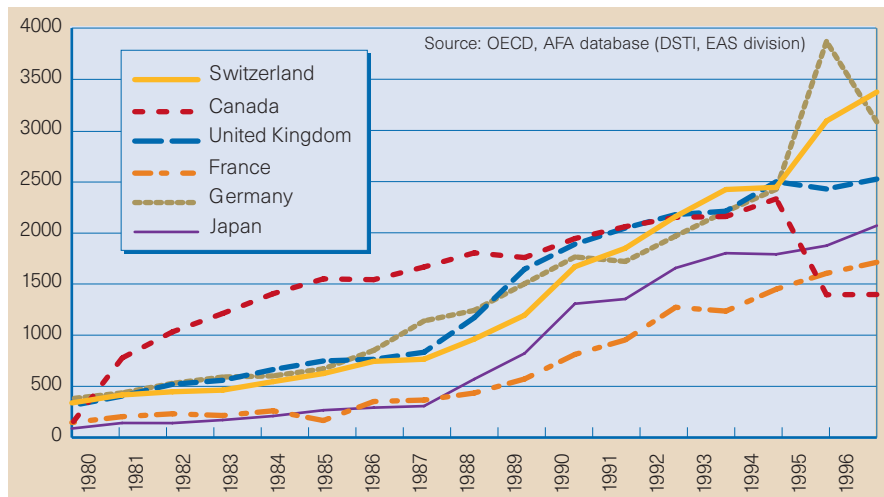
These conclusions emerge from a report from the Organization for Economic Cooperation and Development (OECD). The report reveals that, between 1977 and 1994, foreign investment in the United States increased from US\$933 million to \$15.6 billion (see chart). Most of this increase was accounted for by European companies, whose investment jumped from \$790 million to \$10.3 billion.

The same trend is apparent worldwide, says the report, which is the first major survey of the internationalization of industrial R&D. "It constitutes a very important document," says Nicholas Vonortas, associate professor of economics and international affairs at George Washington University's Center for International Science and Technology Policy. Vonortas says that the report brings together the first real data on the issue. "I think it will spur a new wave of much-needed empirical research on the subject."

One result of the growth in foreign R&D investment is that "it is becoming more difficult to assess what is 'national' industrial R&D, in our traditional perception of what is national", says Thomas Hatzichronoglou, the report's principal author. Hatzichronoglou is a senior official at the economic analysis and statistics division of the OECD's Science, Technology and Industry Directorate.

For example, whereas national league tables were relatively easy to establish when industrial research was dominated by 'national champions', the domination of multinational companies means that "it is increasingly difficult to establish who benefits from foreign investment in R&D", he says.

The report challenges the wide belief among economists that R&D is one of the few industrial operations to have escaped globalization, says Hatzichronoglou. Despite a clear economic case for decentralizing production



On the rise: increase in R&D expenditure (US\$ million) in the United States by foreign companies.

facilities close to markets and sources of cheap labour, there is a general perception that companies prefer to keep strategic R&D operations at home, he says.

"But if you look at the data this is not true," says Hatzichronoglou. The globalization of R&D is "much more pronounced than people believed, and the trend is accelerating".

Keith Pavitt, of the Science and Technology Policy Research at Britain's University of Sussex, cautions that investment by foreign subsidiaries — at around 12 per cent of total industrial R&D spending — is small compared with production and marketing. "It remains one of the least globalized of all business activities."

Pavitt says that the main question raised by the report's findings is the nature of the relation between a country's national science base and its welfare. "The past assumption of a flow from national laboratories to national companies is increasingly outdated," he says.

Competitiveness "does not necessarily flow through national companies", says Pavitt. He believes that more sophisticated thinking is needed on national industrial policy. "The links between the public science base and production are much more complicated [than often assumed]," he says.

One reason for globalization is that multinationals increasingly need to tailor products

— particularly drugs — to local market and regulatory conditions. But much of foreign industrial R&D investment is aimed at supporting worldwide markets, and companies seem to be seeking out research talent in universities and institutes. At the same time the Internet — and intranets — have lifted many of the logistical obstacles to managing multi-centre research programmes on a global scale.

According to the OECD report (*Internationalisation of Industrial R&D. Patterns and Trends*, 1998), in addition to alliances between companies and universities, the increase in foreign investment is strongly driven by mergers and acquisitions of foreign companies possessing significant research activities.

But Hatzichronoglou says the report shows that concern among countries over the transfer of R&D activities abroad by domestic companies is exaggerated. Although there are insufficient data for an unequivocal answer, the indications are that it is the parent company that profits most from decentralization, he says.

He points, for example, to the benefits of repatriated profits and skills and the improved knowledge of local markets. "Relocation is often badly perceived but ultimately it is the company that benefits."

Host countries clearly gain from attracting foreign research investment, in that this encourages high-technology jobs — 105,100 US jobs in 1994 were a result of foreign R&D investment — training, and technology transfer. But Hatzichronoglou believes that while host countries benefit, "the parent group is the main beneficiary", particularly in terms of patents.

Pavitt points out that there is no substitute for a strong domestic science base. But in the absence of this, a foreign presence is better than the alternatives — persisting with an inefficient domestic industry, or licensing in technology.

Declan Butler

Africa moves to strengthen biotechnology

[LONDON] Governments in Africa have set up an agency to help develop biotechnology across the continent. The African Agency of Biotechnology will hold its first regional workshop in September in Algiers, where the new agency is based.

According to its director-general, Samuel Nzietchueng, the agency is designed to encourage African states to develop

biotechnology, both as a tool to meet future food needs and as a means to create wealth from commercializing research.

The agency's aims include coordinating research, and encouraging countries with a stronger base in biotechnology to help weaker neighbours. Other objectives include harmonizing regulations on bioethics and intellectual property rights. □